PHILIPS

Data handbook

Electronic components and materials

Components and materials

Book C20 1984

Wirewound components

for TVs and monitors

WIREWOUND COMPONENTS
for TVs and monitors

DATA HANDBOOK SYSTEM

Our Data Handbook System comprises more than 60 books with specifications on electronic components, subassemblies and materials. It is made up of four series of handbooks:

ELECTRON TUBES	BLUE
SEMICONDUCTORS	RED
INTEGRATED CIRCUITS	PURPLE
COMPONENTS AND MATERIALS	GREEN

The contents of each series are listed on pages iv to viii.

The data handbooks contain all pertinent data available at the time of publication, and each is revised and reissued periodically.

When ratings or specifications differ from those published in the preceding edition they are indicated with arrows in the page margin. Where application information is given it is advisory and does not form part of the product specification.

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ELECTRON TUBES (BLUE SERIES)

The blue series of data handbooks is comprised of the following parts:

T1 Tubes for r.f. heating

T2a Transmitting tubes for communications, glass types

T2b Transmitting tubes for communications, ceramic types

T3 Klystrons, travelling-wave tubes, microwave diodes

ET3 Special Quality tubes, miscellaneous devices (will not be reprinted)

T4 Magnetrons

T5 Cathode-ray tubes
Instrument tubes, monitor and display tubes, C.R. tubes for special applications

T6 Geiger-Müller tubes

T7 Gas-filled tubes
Segment indicator tubes, indicator tubes, dry reed contact units, thyratrons, industrial rectifying tubes, ignitrons, high-voltage rectifying tubes, associated accessories

T8 Picture tubes and components
Colour TV picture tubes, black and white TV picture tubes, colour monitor tubes for data graphic display, monochrome monitor tubes for data graphic display, components for colour television, components for black and white television and monochrome data graphic display

T9 Photo and electron multipliers
Photomultiplier tubes, phototubes, single channel electron multipliers, channel electron multiplier plates

T10 Camera tubes and accessories

T11 Microwave semiconductors and components

T12 Vidicons and Newvicons

T13 Image intensifiers

T14 Infrared detectors

SEMICONDUCTORS (RED SERIES)

The red series of data handbooks comprises:

S1 **Diodes**
Small-signal germanium diodes, small-signal silicon diodes, voltage regulator diodes(< 1,5 W), voltage reference diodes, tuner diodes, rectifier diodes

S2 **Power diodes, thyristors, triacs**
Rectifier diodes, voltage regulator diodes (> 1,5 W), rectifier stacks, thyristors, triacs

S3 **Small-signal transistors**

S4a **Low-frequency power transistors and hybrid modules**

S4b **High-voltage and switching power transistors**

S5 **Field-effect transistors**

S6 **R.F. power transistors and modules**

S7 **Microminiature semiconductors for hybrid circuits**

S8 **Devices for optoelectronics**
Photosensitive diodes and transistors, light-emitting diodes, displays, photocouplers, infrared sensitive devices, photoconductive devices.

S9 **Power MOS transistors**

S10 **Wideband transistors and wideband hybrid IC modules**

INTEGRATED CIRCUITS (PURPLE SERIES)

The purple series of data handbooks comprises:

EXISTING SERIES

IC1	**Bipolar ICs for radio and audio equipment**
IC2	**Bipolar ICs for video equipment**
IC3	**ICs for digital systems in radio, audio and video equipment**
IC4	**Digital integrated circuits** CMOS HE4000B family
IC5	**Digital integrated circuits – ECL** ECL10 000 (GX family), ECL100 000 (HX family), dedicated designs
IC6	**Professional analogue integrated circuits**
IC7	**Signetics bipolar memories**
IC8	**Signetics analogue circuits**
IC9	**Signetics TTL logic**
IC10	**Signetics Integrated Fuse Logic (IFL)**
IC11	**Microprocessors, microcomputers and peripheral circuitry**

NEW SERIES

IC01N **Radio, audio and associated systems**
Bipolar, MOS

IC02N **Video and associated systems**
Bipolar, MOS

IC03N **Telephony equipment**
Bipolar, MOS

IC04N **HE4000B logic family**
CMOS

IC05N **HE4000B logic family uncased integrated circuits** (published 1984)
CMOS

IC06N **PC54/74HC/HCU/HCT logic families**
HCMOS

IC07N **PC54/74HC/HCU/HCT uncased integrated circuits**
HCMOS

IC08N **10K and 100K logic family**
ECL

IC09N **54/74: STD, LS, S, F logic series**
TTL

IC10N **Memories**
MOS, TTL, ECL

IC11N **Analogue - industrial**

IC12N **Semi-custom gate arrays & cell libraries**
ISL, ECL, CMOS

IC13N **Semi-custom integrated fuse logic**
IFL series 20/24/28

IC14N **Microprocessors, microcontrollers & peripherals**
Bipolar, MOS

Note

Books available in the new series are shown with their date of publication.

COMPONENTS AND MATERIALS (GREEN SERIES)

The green series of data handbooks comprises:

C1 **Assemblies for industrial use**
PLC modules, PC20 modules, HNIL FZ/30 series, NORbits 60-, 61-, 90-series, input devices, hybrid ICs

C2 **Television tuners, video modulators, surface acoustic wave filters**

C3 **Loudspeakers**

C4 **Ferroxcube potcores, square cores and cross cores**

C5 **Ferroxcube for power, audio/video and accelerators**

C6 **Synchronous motors and gearboxes**

C7 **Variable capacitors**

C8 **Variable mains transformers**

C9 **Piezoelectric quartz devices**
Quartz crystal units, temperature compensated crystal oscillators, compact integrated oscillators, quartz crystal cuts for temperature measurements

C10 **Connectors**

C11 **Non-linear resistors**
Voltage dependent resistors (VDR), light dependent resistors (LDR), negative temperature coefficient thermistors (NTC), positive temperature coefficient thermistors (PTC)

C12 **Variable resistors and test switches**

C13 **Fixed resistors**

C14 **Electrolytic and solid capacitors**

C15 **Film capacitors, ceramic capacitors**

C16 **Permanent magnet materials**

C17 **Stepping motors and associated electronics**

C18 **D.C. motors**

C19 **Piezoelectric ceramics**

C20 **Wire-wound components for TVs and monitors**

INTRODUCTION

This new Handbook C20 gives full technical data on our range of wirewound components for television and data graphic displays. The tables on the following pages show the recommended combinations for the different applications. An index of type numbers and a conversion list of 12-digit catalogue number to type number follow the tables.

The data on wirewound components were formerly included in the last two chapters of Handbook T8, which is now split into three books, viz.:

- Handbook T8 * Colour TV picture tubes and colour monitor tubes for data graphic displays;
- Handbook T16** Black and white TV picture tubes and monochrome monitor tubes for data graphic displays;
- Handbook C20 Wirewound components for TVs and monitors.

For data on picture tubes and monitor tubes please refer to the relevant Handbook, mentioned above.

* New edition expected April 1985.

** New edition expected November 1984.

SELECTION GUIDE

TYPE NUMBER INDEX

CONVERSION LIST

RECOMMENDED COMBINATIONS FOR COLOUR TELEVISION

90°

Picture tube	A37-570X	AT37-590X	A42-570X	A42-590X	A51-570X A51-580X	A51-590X
Deflection unit	AT1205	AT1206	AT1215	AT1216	AT1237	AT1236 or AT1480
Screen diagonal	37 cm	37 cm	42 cm	42 cm	51 cm	51 cm
Multipole	AT1052	AT1052	AT1052	AT1052	AT1052	AT1052
Degaussing coil single insulation	3122 138 99840	3122 138 99840	3122 138 99850	3122 138 99850	3122 138 55220	3122 138 55220
Mains filter choke	AT4043/90	AT4043/90	AT4043/90	AT4043/90	AT4043/90	AT4043/90
Switched mode driver transformer	AT4043/58	AT4043/82	AT4043/58	AT4043/82	AT4043/58	AT4043/82
Switched mode transformer	AT2097/02 or /01		AT2097/02 or /01		AT2097/02 or /01	
Mains transformer		TS561/2 or TS521B		TS561/2 or TS521B		TS561/2 or TS521B
Current sensing transformer		AT4043/46		AT4043/46		AT4043/46
Input choke		AT4043/81		AT4043/81		AT4043/81
Sync. power-pack transformer		AT2076/80 or AT2077/80		AT2076/80 or AT2077/80		AT2076/80 or AT2077/80
Line output transformer	AT2077/81 or AT2076/81		AT2077/81 or AT2076/81		AT2077/81 or AT2076/81	
Linearity control unit	AT4042/02 or AT4042/90		AT4042/02 or AT4042/90		AT4042/02 or AT4042/90	
East-West correction bridge coil	AT4043/68		AT4043/68		AT4043/68	

110°

Picture tube	A51-540X		A56-540X		A66-540X	
Deflection unit	AT1250		AT1260		AT1270/00 or AT1271	
Screen diagonal	51 cm		56 cm		66 cm	
Degaussing coil single insulation double insulation	3122 138 55220 or 3122 138 94380		3122 138 55220 or 3122 138 94380		3122 138 55230 or 3122 138 94350	
Mains filter choke	AT4043/55	AT4043/55	AT4043/55	AT4043/55	AT4043/55	AT4043/55
Driver transformer		AT4043/17		AT4043/17		AT4043/17
Switched mode driver transformer	AT4043/45		AT4043/45		AT4043/45	
Mains transformer	TS561/2	TS561/2	TS561/2	TS561/2	TS561/2	TS561/2
Current sensing transformer	AT4043/46	AT4043/46	AT4043/46	AT4043/46	AT4043/46	AT4043/46
Bridge coil		AT4043/68		AT4043/68		AT4043/68
Power-pack system supply choke	AT4043/52A		AT4043/52A		AT4043/52A	
Input choke		AT4043/16		AT4043/16		AT4043/16
Sync. power-pack transformer	AT2076/70A	AT2077/82	AT2076/70A	AT2077/82	AT2076/70A	AT2077/82
Power-pack system line choke	AT4043/53	AT4043/53	AT4043/53	AT4043/53	AT4043/53	AT4043/53
Linearity control unit or linearity corrector	AT4042/08 or AT4042/30	AT4042/30	AT4042/08 or AT4042/30	AT4042/30	AT4042/08 or AT4042/30	AT4042/30

RECOMMENDED COMBINATIONS FOR COLOUR DATA GRAPHIC DISPLAYS

Line/field frequency	16 kHz/50 Hz	18,8 kHz/60 Hz	16 kHz/50 Hz	24 kHz/50 Hz	32 kHz/60(72) Hz	64 kHz/60 Hz
Picture tube						
screen diagonal	10 in, 12 in	12 in	14 in, 16 in, 20 in	14 in, 16 in, 20 in	14 in, 16 in, 20 in	16 in, 20 in
deflection angle	76^{o}	76^{o}	90^{o}	90^{o}	90^{o}	90^{o}
Line output transformer	AT2076/81	AT2076/81	AT2076/81	AT2076/51	AT2076/51	AT2076/60
Linearity control unit	AT4042/02, /08	AT4042/08	AT4042/08	AT4042/08	DT4042/32A	DT4042/32A
Driver transformer	AT4043/01	AT4043/01	AT4043/01	AT4043/01	AT4043/01	AT4043/01, /87
Shift transformer	AT4043/09	AT4043/09	AT4043/09	AT4043/09	AT4043/09	AT4043/09
Dynamic focusing transformer	AT4043/67	AT4043/67	AT4043/67	AT4043/67	AT4043/67	
Bridge coil	AT4043/68	AT4043/69	AT4043/68	AT4043/69	AT4043/68	AT4043/08A

RECOMMENDED COMBINATIONS FOR MONOCHROME DATA GRAPHIC DISPLAYS

Line/field frequency	16-22 kHz/50 Hz	16 kHz/50 Hz	21,5 kHz/50 Hz	32 kHz/50 Hz	64 kHz/50 Hz	15-64 kHz/50/60 Hz
Picture tube screen diagonal deflection angle	9 in, 12 in, 14 in 90°	12 in, 15 in 110°	12 in, 15 in 110°	12 in, 15 in 110°	12 in, 15 in 110°	12 in, 15 in 110°
Line output transformer	AT2240/16 or AT2140/16B	AT2102/04C	AT2102/06C	AT2076/53	DT2076/54	AT2076/84
Linearity control unit	AT4042/46	AT4042/08	AT4042/08	AT4036		DT4042/33A
Driver transformer		AT4043/59	AT4043/59	AT4043/83	AT4043/87	AT4043/64
Amplitude control	AT4044/39*					AT4044/35*
Shift transformer				AT4043/29	AT4043/29	AT4043/29
Dynamic focusing transformer			AT4043/67			

* Data not included in the Handbook.

INDEX OF TYPE NUMBERS

CONVERSION LIST

Conversion of catalogue number to type number.

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3111 108 32290	line driver transformer	AT4043/56	253
33100	mains filter choke	AT4043/90	279
33360	mains filter choke	AT4043/91	281
34030	line output transformer	AT2102/04C	105
34040	line output transformer	AT2102/06C	109
34450	line output transformer	AT2140/16B	115
3112 318 35733	mains transformer	TS521B	289
36191	mains transformer	TS561/2	293
3112 338 30140	line driver transformer	AT4043/01	215
30160	line driver transformer	AT4043/83	273
30230	universal horizontal shift transformer	AT4043/09	221
30320	input choke	AT4043/16	223
30330	driver transformer	AT4043/17	227
3122 108 28230	adjustable linearity control unit	AT4042/02	139
39270	adjustable linearity control unit	AT4036	137
3122 138 26060	line driver transformer	AT4043/87	275
28650	adjustable linearity control unit	AT4042/08	143
35610	line output transformer	AT2102/02	99
35840	asynchronous power pack transformer	AT2076/60	41
35990	diode-split line output transformer	AT2076/51	15
36200	miniature diode-split line output transformer	AT2076/80A	53
36230	diode-split line output transformer	AT2076/53	25
36240	miniature diode-split line output transformer	AT2076/81A	59
36290	miniature diode-split line output transformer	AT2076/80	53
36300	miniature diode-split line output transformer	AT2076/81	59
36440	synchronous power pack transformer	AT2076/70A	47
36520	line output transformer	AT2240/16	119
36560	diode-split-box line output transformer	AT2077/80	75
36570	diode-split-box line output transformer	AT2077/81	81
36580	diode-split-box line output transformer	AT2077/82	87
36660	universal diode-split line output transformer	AT2076/84	69
36770	diode-split line output transformer	AT2078/06	93
50000	input choke	AT4043/81	269
50240	drive transformer	AT4043/82	271
50290	degaussing coil		199
50450	luminance delay line	DL390	161

catalogue number	description	type number	page
3122 138 50560	degaussing coil		199
52860	mains filter choke	AT4043/92	283
53860	mains filter choke	AT4043/93	285
54000	linearity corrector	AT4042/90	133
71800	bridge coil	AT4043/69	267
73740	line driver/d.c. shift transformer	AT4043/29	229
75581	degaussing coil		201
75941	degaussing coil		201
90070	line driver transformer	AT4043/89	277
90290	switched-mode driver transformer	AT4043/45	231
90300	current sensing transformer	AT4043/46	233
90580	thyristor trigger and transistor driver transformer	AT4043/48	239
91930	switched-mode transformer	AT2097/01	209
91940	switched-mode driver transformer	AT4043/58	255
93240	mains filter choke	AT4043/55	251
93390	current sensing transformer	AT4043/47	235
93400	thyristor trigger and transistor driver transformer	AT4043/63	239
93410	power pack system supply choke	AT4043/52	243
93420	power pack system line choke	AT4043/53	247
93520	line driver transformer	AT4043/59	257
94350	degaussing coil		203
94380	degaussing coil		203
96042	luminance delay line	DL330	157
96550	bridge coil	AT4043/68	265
96570	dynamic focusing transformer	AT4043/67	261
97750	linearity corrector	AT4042/30	127
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99420	luminance delay line	DL270	153
99470	luminance delay line	DL470	165
99840	degaussing coil		205
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4322 027 84661	glass delay line	DL680	171
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84771	glass delay line	DL701	175
84781	glass delay line	DL711	179
84811	glass delay line	DL800	191
84841	glass delay line	DL872	195
8212 839 71160	east/west choke	DT4043/08A	217
71820	power pack system supply choke	DT4043/52A	245
8222 279 52121	line driver transformer	AT4043/64	259
8222 289 30101	switched-mode transformer	DT2097/02	213
30212	universal diode-split line output transformer	DT2076/54	35
34001	adjustable linearity control unit	DT4042/32A	145
34761	adjustable linearity control unit	DT4042/33A	149

LINE OUTPUT TRANSFORMERS

DIODE-SPLIT LINE OUTPUT TRANSFORMER

- Three-layer e.h.t. coil, focus tap for hi-bi
- Aluminium foil primary winding
- Piggy-back type
- For Data Graphic Displays

QUICK REFERENCE DATA

For transistor line output stages

deflection angle	110^{o}	90^{o}
I_{eht}	max. 1,5 mA	max. 1 mA
E.H.T.	25 kV	25 kV
$R_{i(eht)}$	1,86 MΩ	2,45 MΩ
$I_{p\text{-}p}$ deflection (incl. 6% overscan)	5,3 A	2,85 A
Supply voltage (V_B')	151 V	151,5 V
Supply current ($I_{average}$) at	477 mA (I_{eht} = 1,5 mA)	291 mA (I_{beam} = 1 mA)
Voltages of primary windings *	V_p = + 114, + 520 + 1060, + 1090	+ 112, + 515 + 1050, + 1080
Voltages of auxiliary windings	V_p = −280, −149, + 64, + 227, + 326 picture tube heater voltage	−275, −146, + 62 + 223, + 322

APPLICATION

This transformer has been designed to provide the required scanning amplitude for 110^{o} and 90^{o} colour picture tubes in transistor equipped receivers presenting 625 lines at 50 fields per second (CCIR) or 525 lines at 60 fields per second (USA).
It is intended for use in conjunction with:

deflection angle	110^{o}	90^{o}
– deflection unit	AT1270/00, AT1260, AT1250	AT1235/00
– bridge coil	AT4043/68	AT4043/68
– linearity control unit	AT4042/08 or /30	AT4042/02 or /90
– line output transistor	BU508A	BU508A

– screened e.h.t. cable with a length of 1 m; catalogue number 3122 137 58254.

DESCRIPTION

The magnetic circuit of the transformer comprises 2 Ferroxcube U-cores, screwed together. The primary winding of aluminium foil and the secondary windings are situated on one leg of the core. The e.h.t. winding is moulded in flame retarding polyester, meeting the self-extinguishing requirements of IEC 65, para. 14.4 and UL492, para. 280-SE1. The transformer has 2 M3 screw-studs for mounting.** External circuit connection is made to connecting pins, positioned as indicated in Fig. 1, enabling the unit to be soldered directly into a printed-wiring board (Fig. 2).

* D.C. component on these pulses is V_B' (see Fig. 3).
** For mounting on the printed-wiring board a washer of 20 mm in diameter has to be used. Tightening torque on printed-wiring board: 500 + 100 mNm.

MECHANICAL DATA

Dimensions in mm

Outlines

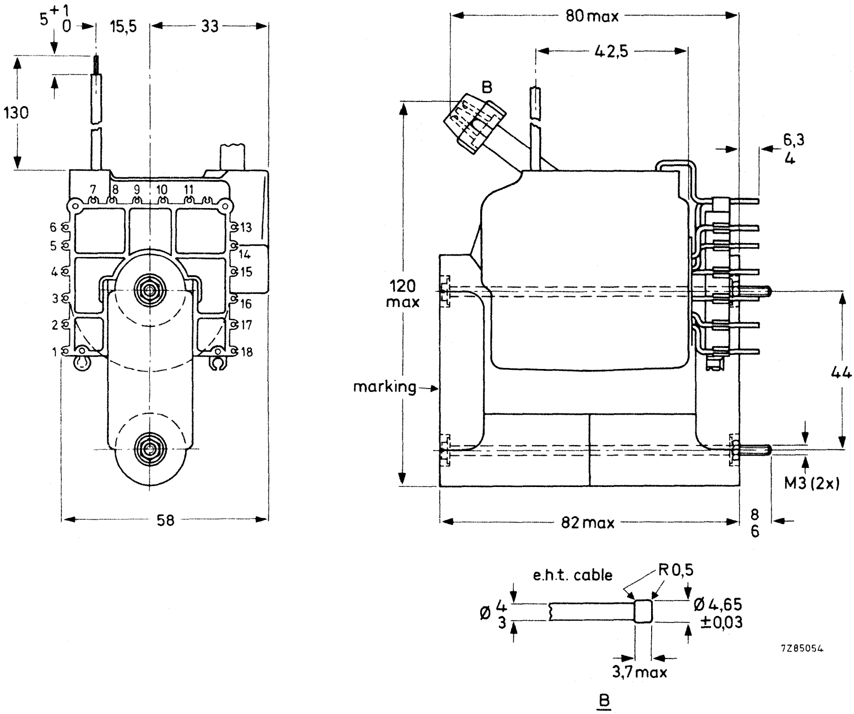


Fig. 1.

Solderability in accordance with IEC 68, Test T

MOUNTING

The transformer may be mounted on either a printed-wiring board or, under certain conditions, on a metal chassis. Two securing studs (M3) are provided. The fit of the connecting and the mounting pins in a printed-wiring grid with a pitch of 2,54 mm is illustrated in Fig. 2.

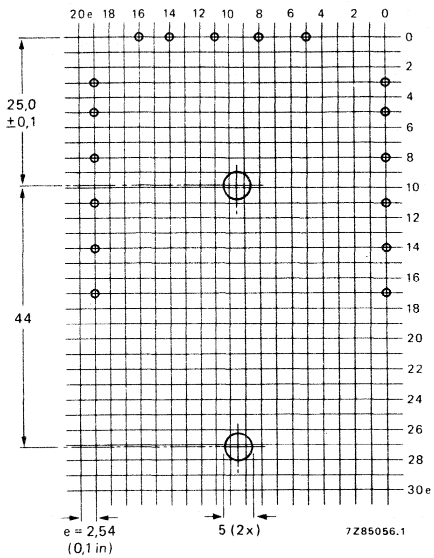


Fig. 2 Hole pattern for mounting on a printed-wiring board (solder side). Grid hole diameter 1,3 ± 0,1 mm.

Whether the transformer is board or chassis mounted, **the core must be earthed**.

Temperature

The operating temperature of the e.h.t. coil should not exceed + 85 °C under worst conditions, i.e. taking into account:

- over-voltage on the coils;
- low atmospheric pressure (at high altitudes) implying bad cooling by convection;
- high ambient temperature (up to 45 °C).

To satisfy this requirement it is recommended to provide sufficient flow of cool air around the transformer.

Distances

The following minimum distances between the transformer and **neighbouring conductive flat surfaces** must be maintained:

From the e.h.t. coil radially, 10 mm
From the e.h.t. coil axially, 10 mm

Sharp edges of conductive parts must have greater distances than given above.

The transformer, leads and components carrying high voltage pulses, should be kept free from metal particles, solder drops etc.

ELECTRICAL DATA with 110° COLOUR PICTURE TUBES

E.H.T. supply	I_{eht}	mA	0,03	1	1,5
	e.h.t.	kV	25,0	23,2	22,2
	$R_{i(eht)}$	MΩ		−1,86−	
Power supply	V_B	V	158,5	158,5	158,5
	V_B'	V	151	147,2	145,0
	$I_{average}$	mA	259	397	477
Output transistor	V_{CEM}	V	1240	1210	1190
	$+I_{CEM}$	A	3,5	3,6	3,65
Deflection	$I_{p\text{-}p}$	A	5,3	5,2	5,15
	$t_{flyback}$	μs	11,4	–	–
	Overscan	%	6	–	6,5
V_{focus}		kV	8,6	8,1	7,8
Auxiliary windings: picture tube heater voltage $V_{3\text{-}1}$ (r.m.s.)		V	9,04	8,74	8,54
peak voltages at					
pin 2	V_2	V	−280		
pin 6	V_6	V	−149		
pin 4	V_4	V	+64		
pin 11	V_{11}	V	+227		
pin 8	V_8	V	+326		
pin 9	V_9 *	V	+114		
pin 14	V_{14} *	V	+520		
pin 16	V_{16} *	V	+1060		
pin 17	V_{17} *	V	+1090		

Above measurements using circuits of Figs 3, 4a and 4b.

An alternative 3-diode modulator circuit is shown in Fig. 4c.

* D.C. component on these pulses is V_B'.

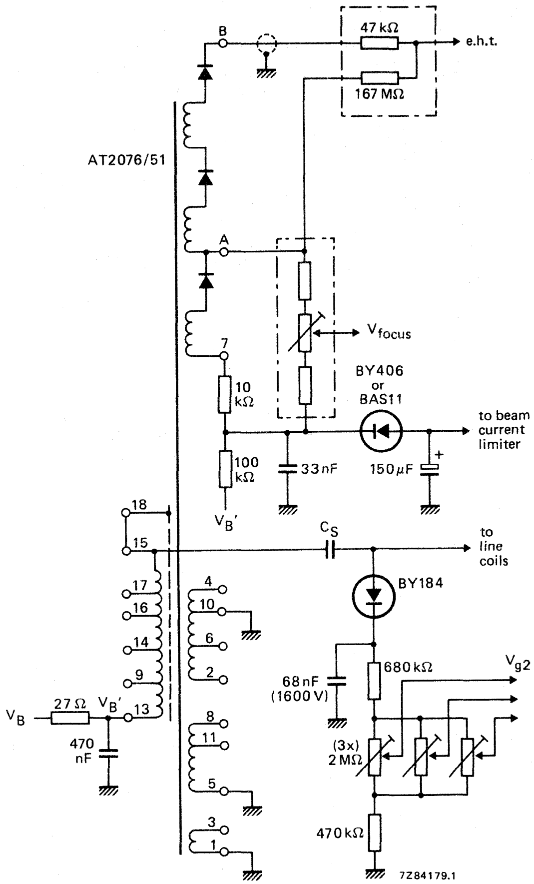


Fig. 3 Circuit diagram of transformer, and e.h.t., focus voltage and V_{g2} circuits.

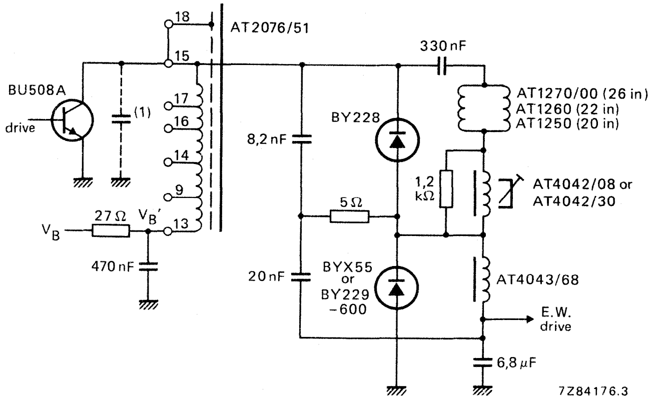


Fig. 4a Diode modulator with split tuning.

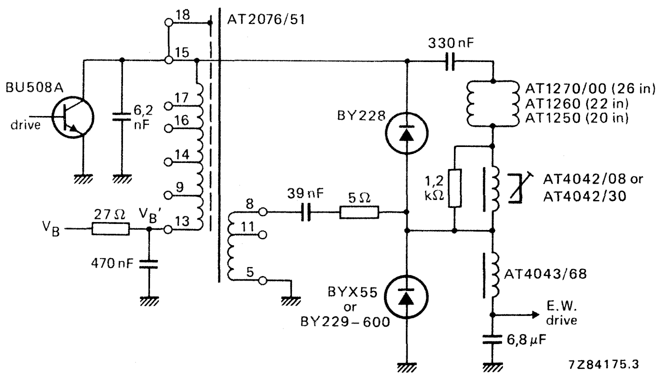


Fig. 4b Diode modulator with tap on transformer.

(1) Transformer stray capacitance.

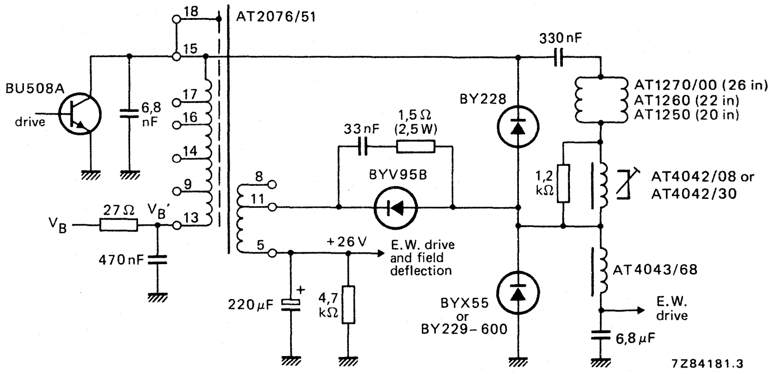


Fig. 4c Three-diode modulator circuit.

ELECTRICAL DATA with 90° COLOUR PICTURE TUBES.

			Figs 3 and 5a V_B = 154,5 V		Figs 3 and 5b V_B = 134,3 V	
E.H.T. supply	I_{eht}	mA	0,03	1	0,03	1
	e.h.t.	kV	24,55	22,1	25,0	22,5
	$R_{i(eht)}$	MΩ	–2,45–		–2,5–	
Power supply	V_B'	V	151,5	148,1	130,0	126,1
	$I_{average}$	mA	168	291	226	375
Output transistor	V_{CEM}	V	1220	1150	1060	995
	$+I_{CEM}$	A	2,0	2,1	2,4	2,5
Deflection	I_{p-p}	A	2,85	2,7	2,9	2,75
	$t_{flyback}$	µs	11,45		11,45	
	Overscan	%	6	7,5	6	7,5
V_{focus}		kV	8,45	7,7	8,6	7,8
Auxiliary windings: picture tube heater voltage V_{3-1} (r.m.s.)		V	9,13	8,7	9,30	8,79
peak voltages at						
pin 2	V_2	V	−275		−280	
pin 6	V_6	V	−146		−149	
pin 4	V_4	V	+62		+64	
pin 11	V_{11}	V	+223		+227	
pin 8	V_8	V	+322		+326	
pin 9	V_9 *	V	+112		+114	
pin 14	V_{14} *	V	+515		+520	
pin 15	V_{15} *	V			+1240	
pin 16	V_{16} *	V	+1050			
pin 17	V_{17} *	V	+1080		+1090	

Above measurements using circuits of Figs 3, 5a and 5b.

* D.C. component on these pulses is V_B'.

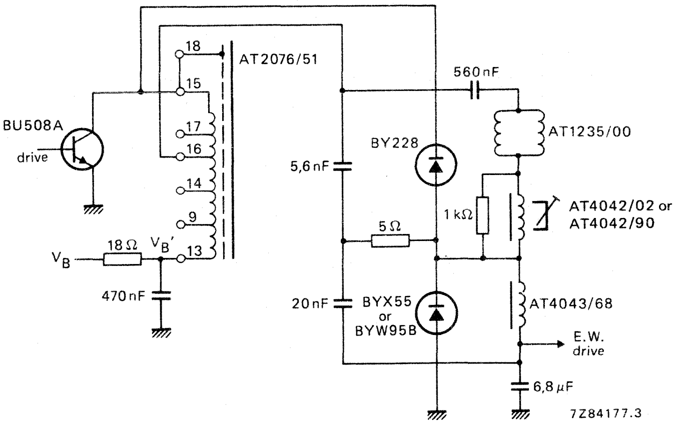


Fig. 5a Diode modulator, V_B = 154,5 V.

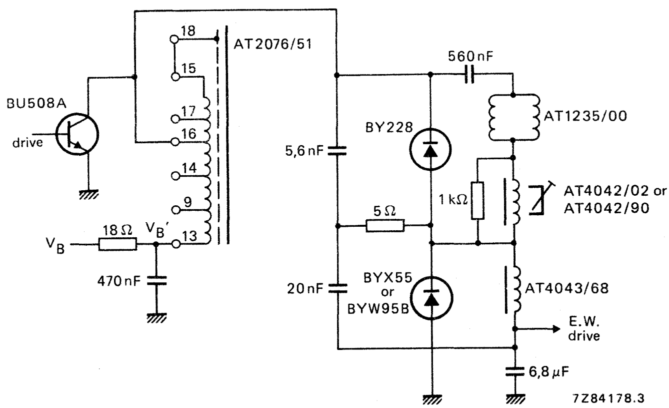


Fig. 5b Diode modulator, V_B = 134,3 V.

DIODE-SPLIT LINE OUTPUT TRANSFORMER

- Three-layer e.h.t. coil
- Aluminium foil primary winding
- Piggy-back type
- For Data Graphic Displays.

QUICK REFERENCE DATA

For transistor line output stages

deflection angle	110°	90°
I_{eht}	max. 1,5 mA	max. 1 mA
E.H.T.	25 kV	25 kV
$R_{i(eht)}$	1,86 MΩ	2,45 MΩ
$I_{p\text{-}p}$ deflection (incl. 6% overscan)	5,3 A	2,85 A
Supply voltage (V_B')	151 V	151,5 V
Supply current ($I_{average}$) at	477 mA (I_{eht} = 1,5 mA)	291 mA (I_{beam} = 1 mA)
Voltages of primary windings *	V_p = +114, +520 +1060, +1090	+112, +515 +1050, +1080
Voltages of auxiliary windings	V_p = −280, −149, +64, +227, +326 picture tube heater voltage	−275, −146, +62 +223, +322

APPLICATION

This transformer has been designed to provide the required scanning amplitude for 110° and 90° colour picture tubes in transistor equipped receivers presenting 625 lines at 50 fields per second (CCIR) or 525 lines at 60 fields per second (USA).

It is intended for use in conjunction with:

deflection angle	110°	90°
– deflection unit	AT1270/00, AT1260, AT1250	AT1235/00
– bridge coil	AT4043/68	AT4043/68
– linearity control unit	AT4042/08 or /30	AT4042/02 or /90
– line output transistor	BU508A	BU508A

– screened e.h.t. cable with a length of 1 m; catalogue number 3122 137 58254.

DESCRIPTION

The magnetic circuit of the transformer comprises 2 Ferroxcube U-cores, screwed together. The primary winding of aluminium foil and the secondary windings are situated on one leg of the core. The e.h.t. winding is moulded in flame retarding polyester, meeting the self-extinguishing requirements of IEC65, para, 14.4 and UL492, para. 280-SE1. The transformer has 2 M3 screw-studs for mounting. ** External circuit connection is made to connecting pins, positioned as indicated in Fig. 1, enabling the unit to be soldered directly into a printed-wiring board (Fig. 2).

* D.C. component on these pulses is V_B' (see Fig. 3).

** For mounting on the printed-wiring board a washer of 20 mm in diameter has to be used. Tightening torque on printed-wiring board: 500 + 100 mNm.

MECHANICAL DATA

Dimensions in mm

Outlines

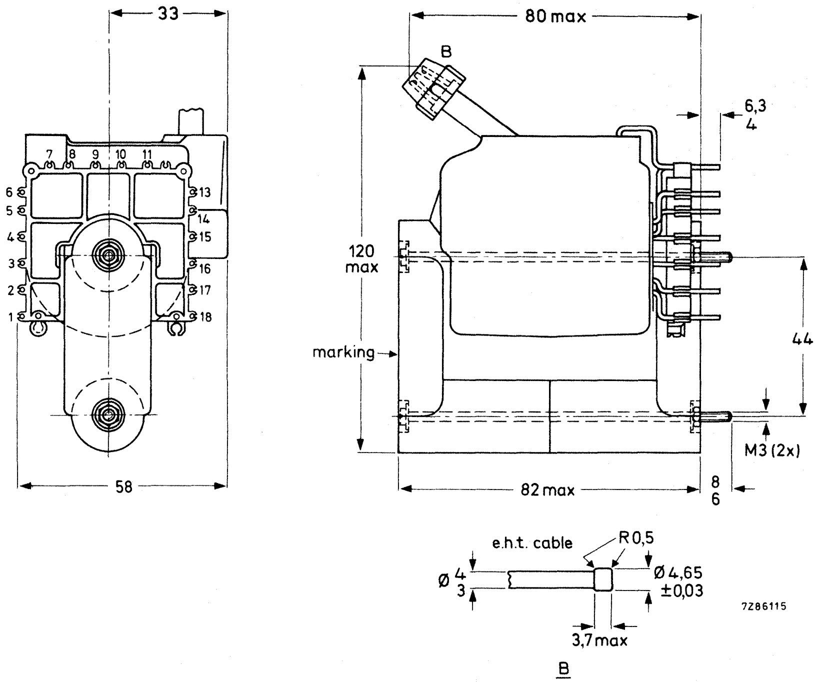


Fig. 1.

Solderability in accordance with IEC68, Test T

MOUNTING

The transformer may be mounted on either a printed-wiring board or, under certain conditions, on a metal chassis. Two securing studs (M3) are provided. The fit of the connecting and the mounting pins in a printed-wiring grid with a pitch of 2,54 mm is illustrated in Fig. 2.

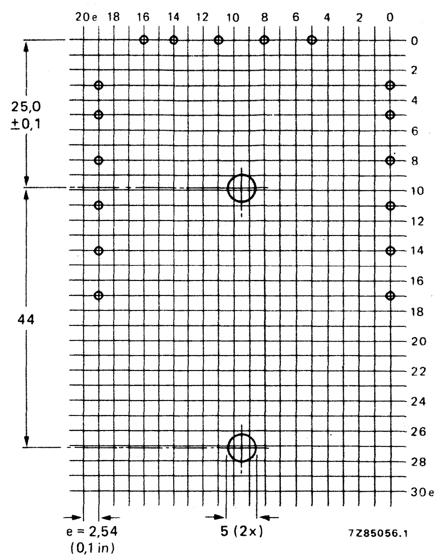


Fig. 2 Hole pattern for mounting on a printed-wiring board (solder side). Grid hole diameter 1,3 ± 0,1 mm.

Whether the transformer is board or chassis mounted, **the core must be earthed.**

Temperature

The operating temperature of the e.h.t. coil should not exceed +85 °C under worst conditions, i.e. taking into account:

- over-voltage on the coils;
- low atmospheric pressure (at high altitudes) implying bad cooling by convection;
- high ambient temperature (up to 45 °C).

To satisfy this requirement it is recommended to provide sufficient flow of cool air around the transformer.

Distances

The following minimum distances between the transformer and neighbouring conductive flat surfaces must be maintained:

From the e.h.t. coil radially, 10 mm.
From the e.h.t. coil axially, 10 mm.

Sharp edges of conductive parts must have greater distances than given above.

The transformer, leads and components carrying high voltage pulses, should be kept free from metal particles, solder drops etc.

ELECTRICAL DATA with 110° COLOUR PICTURE TUBES

E.H.T. supply	I_{eht}	mA	0,03	1	1,5
	e.h.t.	kV	25,0	23,2	22,2
	$R_{i(eht)}$	MΩ		–1,86–	
Power supply	V_B	V	158,5	158,5	158,5
	V_B'	V	151	147,2	145,0
	$I_{average}$	mA	259	397	477
Output transistor	V_{CEM}	V	1240	1210	1190
	$+I_{CEM}$	A	3,5	3,6	3,65
Deflection	I_{p-p}	A	5,3	5,2	5,15
	$t_{flyback}$	µs	11,4	–	–
	Overscan	%	6	–	6,5
V_{focus}		kV	8,6	8,1	7,8
Auxiliary windings: picture tube heater voltage $V_{3\text{-}1}$ (r.m.s.)		V	9,04	8,74	8,54
peak voltages at					
pin 2	V_2	V	–280		
pin 6	V_6	V	–149		
pin 4	V_4	V	+64		
pin 11	V_{11}	V	+227		
pin 8	V_8	V	+326		
pin 9	V_9*	V	+114		
pin 14	V_{14}*	V	+520		
pin 16	V_{16}*	V	+1060		
pin 17	V_{17}*	V	+1090		

Above measurements using circuits of Figs 3, 4a and 4b.

An alternative 3-diode modulator circuit is shown in Fig. 4c.

* D.C. component on these pulses is V_B'.

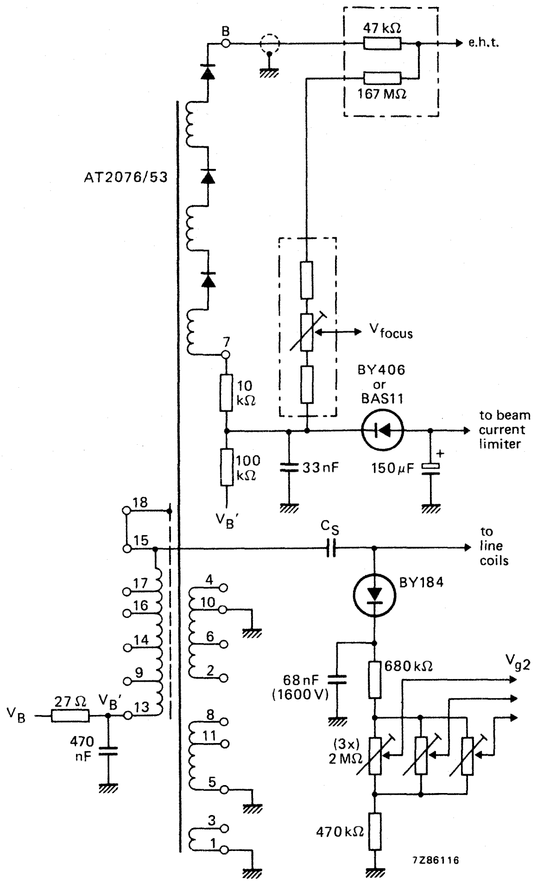


Fig. 3 Circuit diagram of transformer, and e.h.t., focus voltage and V_{g2} circuits.

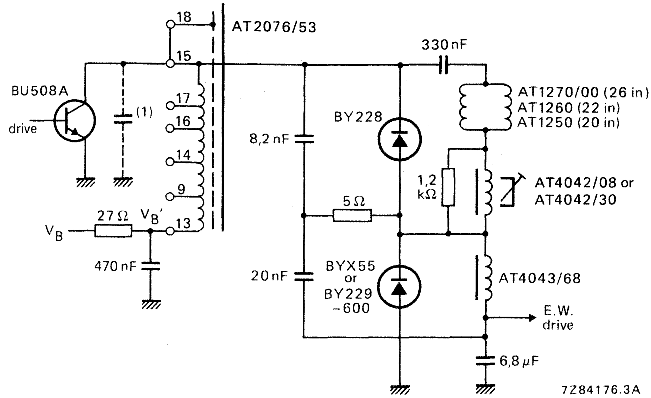


Fig. 4a Diode modulator with split tuning.

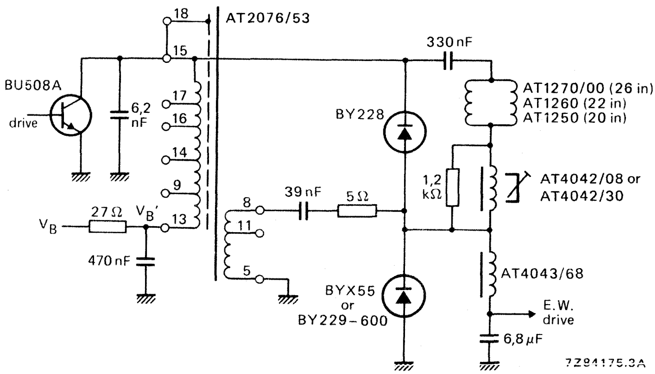


Fig. 4b Diode modulator with tap on transformer.

(1) Transformer stray capacitance.

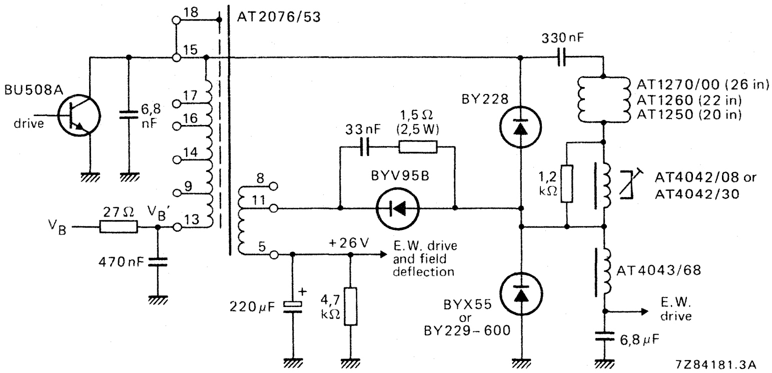


Fig. 4c Three-diode modulator circuit.

ELECTRICAL DATA with 90° COLOUR PICTURE TUBES

			Figs 3 and 5a V_B = 154,5 V		Figs 3 and 5b V_B = 134,3 V	
E.H.T. supply	I_{eht}	mA	0,03	1	0,03	1
	e.h.t.	kV	24,55	22,1	25,0	22,5
	$R_{i(eht)}$	MΩ	–2,45–		–2,5–	
Power supply	V_B'	V	151,5	148,1	130,0	126,1
	$I_{average}$	mA	168	291	226	375
Output transistor	V_{CEM}	V	1220	1150	1060	995
	$+I_{CEM}$	A	2,0	2,1	2,4	2,5
Deflection	$I_{p\text{-}p}$	A	2,85	2,7	2,9	2,75
	$t_{flyback}$	µs	11,45		11,45	
	Overscan	%	6	7,5	6	7,5
V_{focus}		kV	8,45	7,7	8,6	7,8
Auxiliary windings: picture tube heater voltage $V_{3\text{-}1}$ (r.m.s.)		V	9,13	8,7	9,30	8,79
peak voltages at						
pin 2	V_2	V	–275		–280	
pin 6	V_6	V	–146		–149	
pin 4	V_4	V	+62		+64	
pin 11	V_{11}	V	+223		+227	
pin 8	V_8	V	+322		+326	
pin 9	V_9*	V	+112		+114	
pin 14	V_{14}*	V	+515		+520	
pin 15	V_{15}*	V			+1240	
pin 16	V_{16}*	V	+1050			
pin 17	V_{17}*	V	+1080		+1090	

Above measurements using circuits of Figs 3, 5a and 5b.

* D.C. component on these pulses is V_B'.

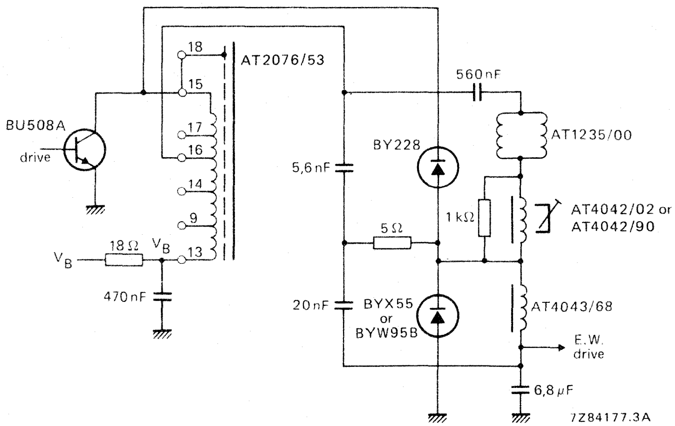


Fig. 5a Diode modulator, V_B = 154,5 V.

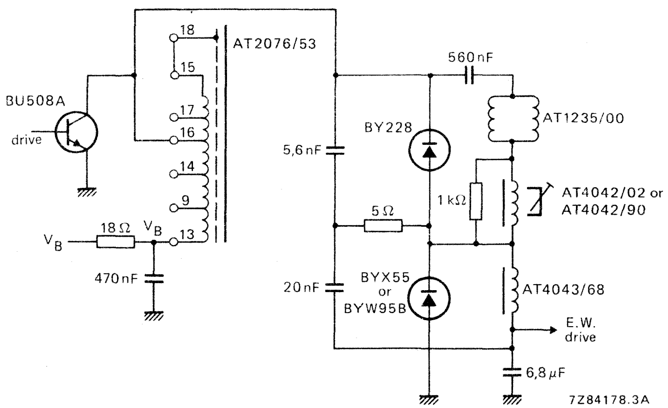


Fig. 5b Diode modulator, V_B = 134,3 V.

UNIVERSAL DIODE-SPLIT LINE OUTPUT TRANSFORMER

- For monochrome Data Graphic Displays
- Three-layer e.h.t. coil
- Aluminium foil primary winding
- Piggy-back type

QUICK REFERENCE DATA

For transistor line output stages, deflection angle 110°, scan frequency 32 kHz.

I_{eht}	max. 0,5	mA
E.H.T.	17	kV
$R_{i(eht)}$	1,3	MΩ
$I_{p\text{-}p}$ deflection	3,8	A
Supply voltage (V_B)	129	V
Supply current ($I_{average}$)	210	mA
Flyback time	5,4	μs
Auxiliary voltages	+ 6 V, −6 V, + 11 V, + 26 V, + 41 V, + 52 V, −150 V, heater voltage 9,8 V(r.m.s.)	

APPLICATION

This transformer has been designed to provide the required scanning amplitude for 38 cm (15 in)/110° monochrome data graphic display tubes, at line scan frequencies of 15,625 kHz, 32 kHz or 64 kHz.
It is intended for use in conjunction with:
– deflection unit AT1039/00 (for 'portrait' scan mode, scan frequency 64 kHz) or AT1039/01 (for 'landscape' scan mode, scan frequency 15,625 kHz or 32 kHz);
– line output transistor BU508A;
– screened e.h.t. cable, length 1 m, catalogue number 3122 137 58254.

DESCRIPTION

The magnetic circuit of the transformer comprises 2 Ferroxcube U-cores, screwed together. The primary winding of aluminium foil and the secondary windings are situated on one leg of the core. The e.h.t. winding is moulded in flame retarding polyester, meeting the self-extinguishing requirements of IEC 65, para. 14.4 and UL492, para. 280-SE1. The transformer has 2 M3 screw-studs for mounting.* External circuit connection is made to connecting pins, positioned as indicated in Fig. 1, enabling the unit to be soldered directly into a printed-wiring board (Fig. 2).

* For mounting on the printed-wiring board a washer of 20 mm in diameter has to be used. Tightening torque on printed-wiring board: 500 + 100 mNm.

MECHANICAL DATA

Dimensions in mm

Outlines

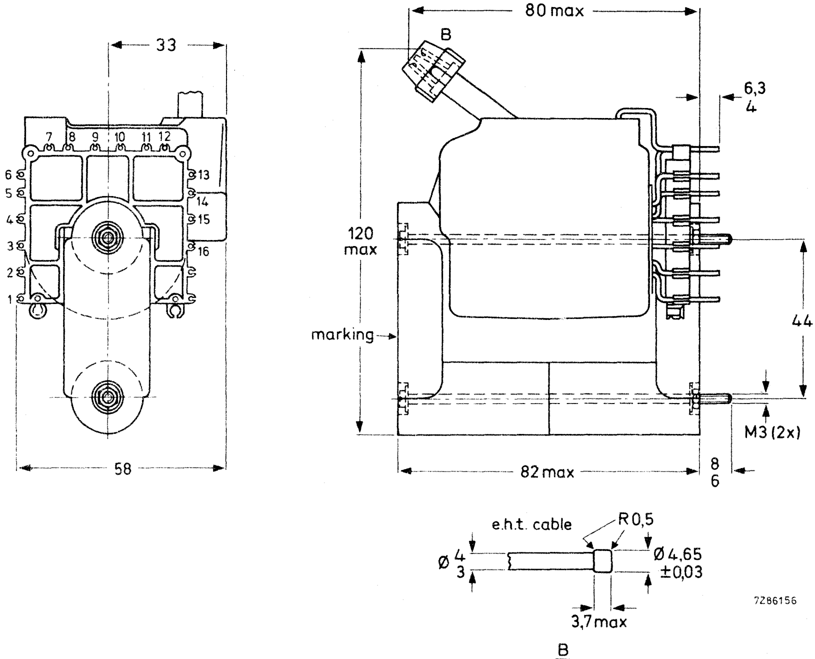


Fig. 1.

Mass approx. 500 g

Solderability in accordance with IEC 68, Test T

MOUNTING

The transformer may be mounted on either a printed-wiring board or, under certain conditions, on a metal chassis. Two securing studs (M3) are provided. The fit of the connecting and the mounting pins in a printed-wiring grid with a pitch of 2,54 mm is illustrated in Fig. 2.

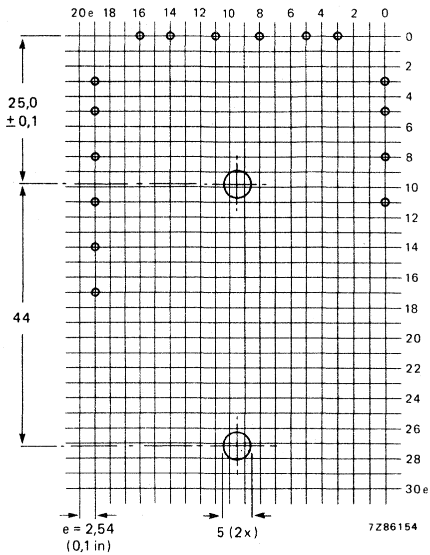


Fig. 2 Hole pattern for mounting on a printed-wiring board (solder side). Grid hole diameter 1,3 ± 0,1 mm.

DEVELOPMENT SAMPLE DATA

Whether the transformer is board or chassis mounted, **the core must be earthed.**

Temperature

The operating temperature of the e.h.t. coil should not exceed + 85 °C under worst conditions, i.e. taking into account:

- over-voltage on the coils;
- low atmospheric pressure (at high altitudes) implying bad cooling by convection;
- high ambient temperature (up to 45 °C).

To satisfy this requirement it is recommended to provide sufficient flow of cool air around the transformer.

Distances

The following minimum distances between the transformer and neighbouring conductive flat surfaces must be maintained:

From the e.h.t. coil radially, 10 mm.
From the e.h.t. coil axially, 10 mm.

Sharp edges of conductive parts must have greater distances than given above.

The transformer, leads and components carrying high voltage pulses, should be kept free from metal particles, solder drops etc.

ELECTRICAL DATA

Scan frequency		Hz	15625 (Fig. 3)		31250 (Fig. 4)		62500 (Fig. 5)	
E.H.T. supply	I_{eht}	mA	0,035	0,55	0,035	0,55	0,035	0,55
	e.h.t.	kV	17,3	16,8	17,85	17,25	17,6	16,6
	$R_{i(eht)}$	MΩ	1,1		1,3		2,0	
Power supply	V_B	V	68,5	68,5	129	129	100	100
	$I_{average}$	mA	385	530	210	285	310	410
Output transistor	V_{CEM}	V	560		1120		780	
Deflection	$I_{p\text{-}p}$	A	3,95	3,95	3,75	3,75	5,80	5,80
	$t_{flyback}$	μs	11,2	11,2	5,4	5,4	3,0	3,0
Tuning capacitor	C1	nF	20		2,2		1,6	
Auxiliary windings:								
heater voltage (r.m.s.)	$V_{4\text{-}6}$	V	9,53		9,83		9,92	
voltages (d.c.)* at								
pin 15 (V_{g2}, load 1MΩ)	V_{15}	V	+757		+842		+773	
pin 1 **	V_1	V	+49,7		+49,7		+55,4	
pin 3 **	V_3	V	+38,5		+38,5		+42,9	
pin 5 **	V_5	V	+24,5		+24,5		+27,3	
pin 2 (V_{g1}, load 10 kΩ)	V_2	V	−156		−166		−155	
pin 8 **	V_8	V	+10,5		+10,5		+11,8	
pin 11 **	V_{11}	V	+6,4		+6,4		+7,15	
pin 12 **	V_{12}	V	−6,4		−6,4		−7,15	

* Pins 9 and 10 connected to earth.
** Load 1 kΩ.

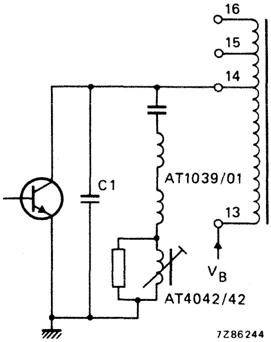


Fig. 3.

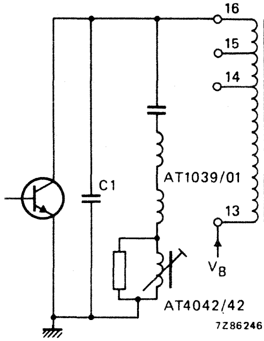


Fig. 4.

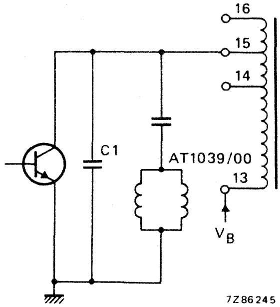


Fig. 5.

DEVELOPMENT SAMPLE DATA

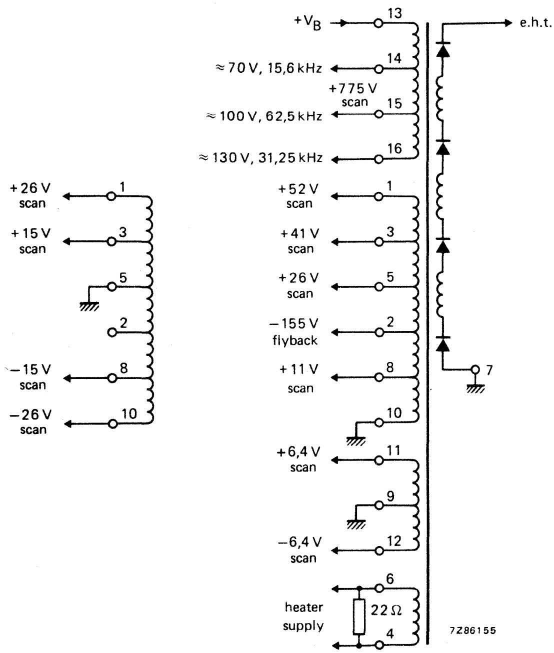


Fig. 6 Application circuit.

ASYNCHRONOUS POWER PACK TRANSFORMER

- For colour Data Graphic Displays
- Mains isolation
- Aluminium foil primary winding and screens

QUICK REFERENCE DATA

E.H.T.	25 kV
I_{eht}	max. 1,6 mA
$R_{i(eht)}$	1 MΩ
Supply	
voltage (d.c.)	+300 V
current (I_{eht} = 1,5 mA)	400 mA
Voltages of auxiliary windings	−9 V, +20 V, +31 V, +42 V, +150 V, +200 V, +225 V

APPLICATION

This transformer has been designed for use as a mains isolated supply transformer in colour monitors. It provides the required stabilized auxiliary voltages including an e.h.t. supply with low internal resistance. The transformer is suitable for 90° and 110° deflection systems using 25 kV e.h.t. It is intended for use in conjunction with:
- mains filter choke AT4043/55;
- mains transformer TS561/2;
- line driver transformer AT4043/87;

and for 110° tubes:
- deflection unit AT1270/00, AT1260 and AT1250;
- line choke AT4043/53;
- linearity control unit AT4042/08;
- line driver transformer AT4043/87 (if separate drive of line output stage is required);

and for 90° tubes:
- deflection unit AT1235/00;
- line choke AT4043/53;
- linearity control unit AT4042/02.

DESCRIPTION

The magnetic circuit of the transformer comprises two Ferroxcube U-cores screwed together. The primary winding of aluminium foil with screens and the e.h.t. winding with incorporated diodes are moulded in flame retarding polyester.

The device is provided with two securing M3 studs. External circuit connection is made to connecting pins, positioned as indicated in Fig. 1, enabling the unit to be soldered directly into a printed-wiring board (Fig. 3).

MECHANICAL DATA

Dimensions in mm

Outlines

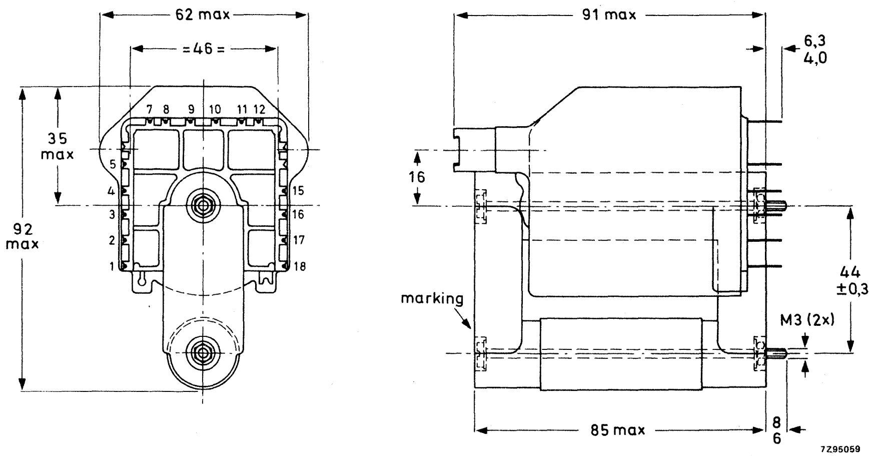


Fig. 1 Transformer AT2076/60.

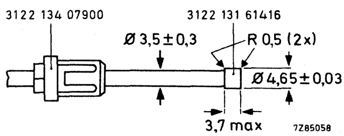


Fig. 2 Plug for connection to e.h.t.

Mass	530 g
Solderability	max. 240 °C, max. 2,5 s

Mounting

The transformer may be mounted on either a printed-wiring board or on a metal chassis. Two securing studs (M3) are provided. For mounting on a printed-wiring board, a washer of 20 mm outer diameter has to be used; the tightening torque on the printed-wiring board is 500 + 100 mNm. The fit of the connecting pins and the studs in a printed-wiring grid with a pitch of 2,54 mm is illustrated in Fig. 3.

Whether the transformer is board or chassis mounted, *the core must be earthed.*

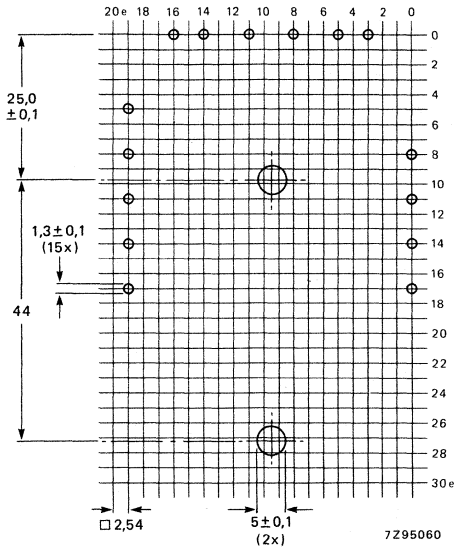


Fig. 3 Hole pattern for mounting on a printed-wiring board (solder side).

Temperature

The ambient temperature in the set should not exceed +65 °C under worst conditions, i.e. taking into account:

- maximum output power;
- maximum supply voltage;
- low atmospheric pressure (at high altitudes) implying bad cooling by convection;
- high ambient temperature (up to 45 °C).

To satisfy this requirement it may be necessary to provide an ample cool air flow around the transformer.

Distances

The following minimum distances between the transformer and neighbouring conductive flat surfaces must be maintained (it should be noted that edges of conductive parts must have a greater distance):

from the e.h.t. coil, radially 10 mm, axially 10 mm.

The transformer, and the leads and components carrying high voltage pulses, should be kept free from metal particles, solder drops etc.

ELECTRICAL DATA (measured in circuit of Fig. 4, mains voltage 220 V)

E.H.T. supply	I_{eht}	mA	0,1	1,6
	e.h.t.	kV	25	23,7
	$R_{i(eht)}$	MΩ	0,9	
Power supply	V_B *	V	300	297
	$I_{average}$	mA	270	390
Supply transistor (BU208A)	V_{CEM}	V	1000	1000
	$+I_{CM}$	A	1,9	2,5
Flyback time		μs	9,5	10,5
Auxiliary windings (typical values **):				
picture tube heater voltage	V_1	V	−9 (6,5 W)	
drive winding	$V_{15\text{-}16}$	V	+100	
field time base	V_9	V	+42 (13 W)	
line time base	V_{10}	V	+150 (20 W)	
	V_4	V	+200 (22 W)	
video output	V_8	V	+225 (9 W)	
audio output	V_2	V	+31 (5 W)	
small signal output	V	V	+20 (10 W)	

* Stabilization range V_B from 215 V d.c. (165 V mains) to 350 V d.c. (265 V mains).
** Values apply to voltages after rectification, and pins 3, 11 and 12 connected to earth.

DEVELOPMENT SAMPLE DATA

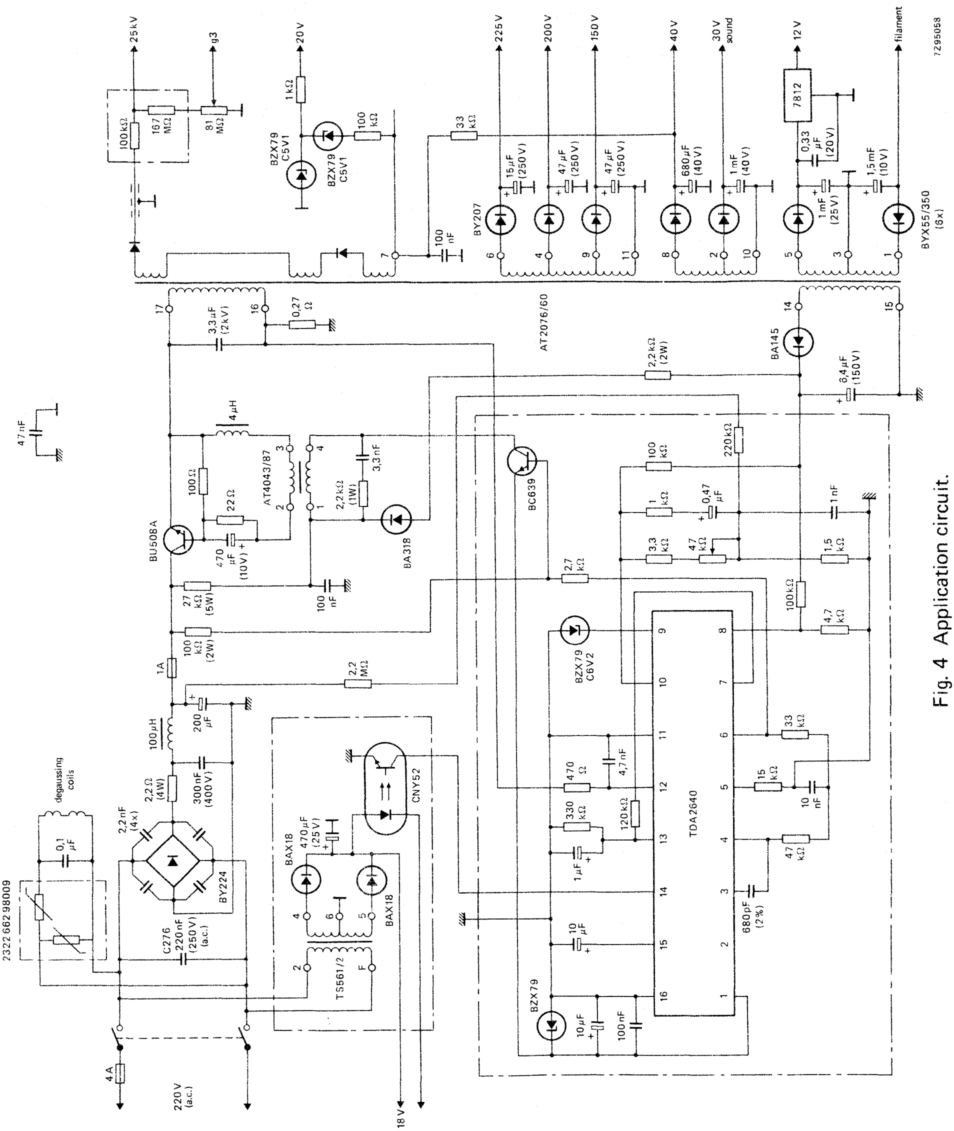


Fig. 4 Application circuit.

SYNCHRONOUS POWER PACK TRANSFORMER

for colour television

- Piggy-back type
- Mains isolation
- Aluminium foil primary winding and screens

QUICK REFERENCE DATA

E.H.T.	25 kV ± 3%
I_{eht}	max. 1,6 mA
$R_{i(eht)}$	1 MΩ
V_x (see Fig. 3)	6,25 kV ± 3%
Supply	
voltage d.c.	+ 295 V
current (I_{eht} = 1,6 mA)	450 mA
Voltages of auxiliary windings	
r.m.s.	4,3 V, 8 V
d.c.	7,5 V, 18 V, 25 V, 33 V, 150 V, 205 V

APPLICATION

This transformer has been designed for use as a mains isolated supply transformer in colour television sets. It provides the required stabilized auxiliary voltages including an e.h.t. supply with low internal resistance. The transformer is suitable for 90° and 110° deflection systems using 25 kV e.h.t. It is intended for use in conjunction with:
- mains filter choke AT4043/55;
- mains transformer TS561/2;
- current sensing transformer AT4043/46;
- driver transformer AT4043/45;
- supply choke AT4043/52;

and for 110° 20, 22 and 26 inch tubes:
- deflection unit AT1270/00, AT1260 and AT1250;
- line choke AT4043/53;
- linearity control unit AT4042/08 or AT4042/30;
- line driver transformer AT4043/87 (if separate drive of line output stage is required);

and for 90° 20 inch tubes:
- deflection unit AT1235/00;
- line choke AT4043/53;
- linearity control unit AT4042/02 or AT4042/90.

DESCRIPTION

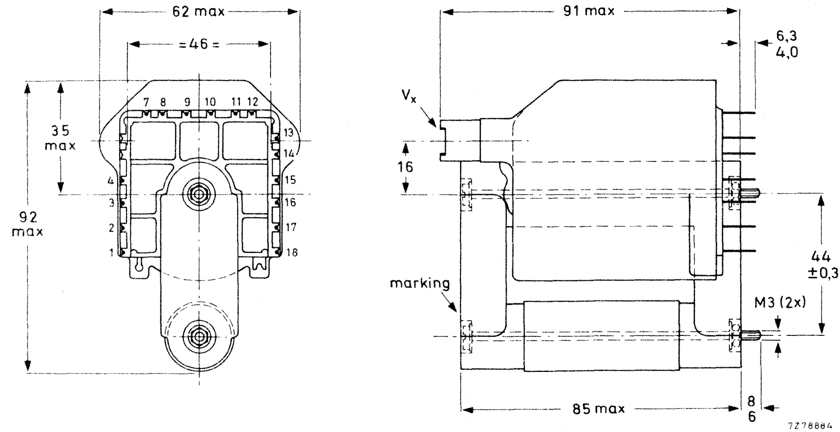
The magnetic circuit of the transformer comprises two Ferroxcube U-cores screwed together. The primary winding of aluminium foil with screens and the e.h.t. winding with incorporated diodes are moulded in flame retarding polyester.

The device is provided with two securing M3 studs. External circuit connection is made to connecting pins, positioned as indicated in Fig. 1, enabling the unit to be soldered directly into a printed-wiring board (Fig. 2).

MECHANICAL DATA

Dimensions in mm

Outlines



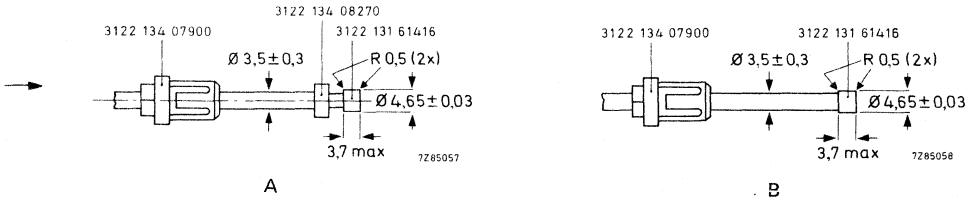


Fig. 1 A is plug for connection to V_x, B is plug for connection to e.h.t.

Mass 540 g

Solderability max. 240 °C, max. 2,5 s

Mounting

The transformer may be mounted on either a printed-wiring board or, on a metal chassis. Two securing studs (M3) are provided. For mounting on a printed-wiring board, a washer of 20 mm outer diameter has to be used. Tightening torque on printed-wiring board 500 + 100 mNm. The fit of the connecting pins and the studs in a printed-wiring grid with a pitch of 2,54 mm is illustrated in Fig. 2.

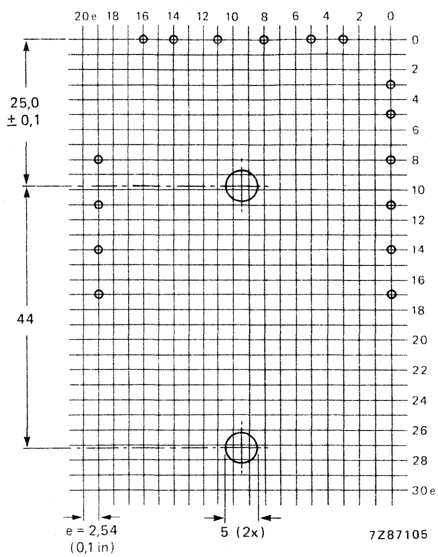


Fig. 2 Hole pattern for mounting on a printed-wiring board (solder side). Grid hole diameter 1,3 ± 0,1 mm.

Whether the transformer is board or chassis mounted, the core must be earthed.

Temperature

The ambient temperature in the set should not exceed +65 °C under worst conditions, i.e. taking into account:
- maximum output power;
- maximum supply voltage;
- low atmospheric pressure (at high altitudes) implying bad cooling by convection;
- high ambient temperature (up to 45 °C).

To satisfy this requirement it may be necessary to provide an ample cool air flow around the transformer.

Distances

The following minimum distances between the transformer and neighbouring **conductive flat surfaces** must be maintained (it should be noted that edges of conductive parts must have a greater distance):

from the e.h.t. coil, radially 10 mm, axially 10 mm.

The transformer, and the leads and components carrying high voltage pulses, should be kept free from metal particles, solder drops etc.

ELECTRICAL DATA (measured in circuit of Fig. 3, mains voltage 220 V)

E.H.T. supply	I_{eht}	mA	0,15	1,6
	e.h.t.	kV	25,2	23,7
	$R_{i(eht)}$	MΩ	1,0	
Power supply	V_B *	V	297	292
	$I_{average}$	mA	230	450
V_o prim		V	150	150,5
Supply transistor (BU208A)	V_{CEM}	V	1250	1260
	$+I_{CM}$	A	2,8	3,1
Flyback time		μs	14,8	15,0
V_x		kV	6,25	–
Auxiliary windings (typical value):				
picture tube heater voltage	V_{18} (r.m.s.)	V	8,0 (730 mA)	
drive winding	$V_{15\text{-}17}$ (r.m.s.)	V	4,3 (1 A)	
Voltages after rectification, pins 10 and 11 to earth:				
field time base	V_8	V	33 (325 mA)	
line time base	V_9	V	150 (125 mA)	
	V_{12}	V	7,5 (1000 mA)	
video output	V_{13}	V	205 (10 mA)	
audio output	V_{14}	V	24,6 (500 mA)	
audio output	V_{16}	V	17,8 (530 mA)	

Note: The power pack is capable of supplying 45 W extra output power if required, e.g. higher audio output power from pin 14.

* Stabilization range V_B from 215 V d.c. (165 V mains) to 350 V d.c. (265 V mains).

APPLICATION CIRCUIT

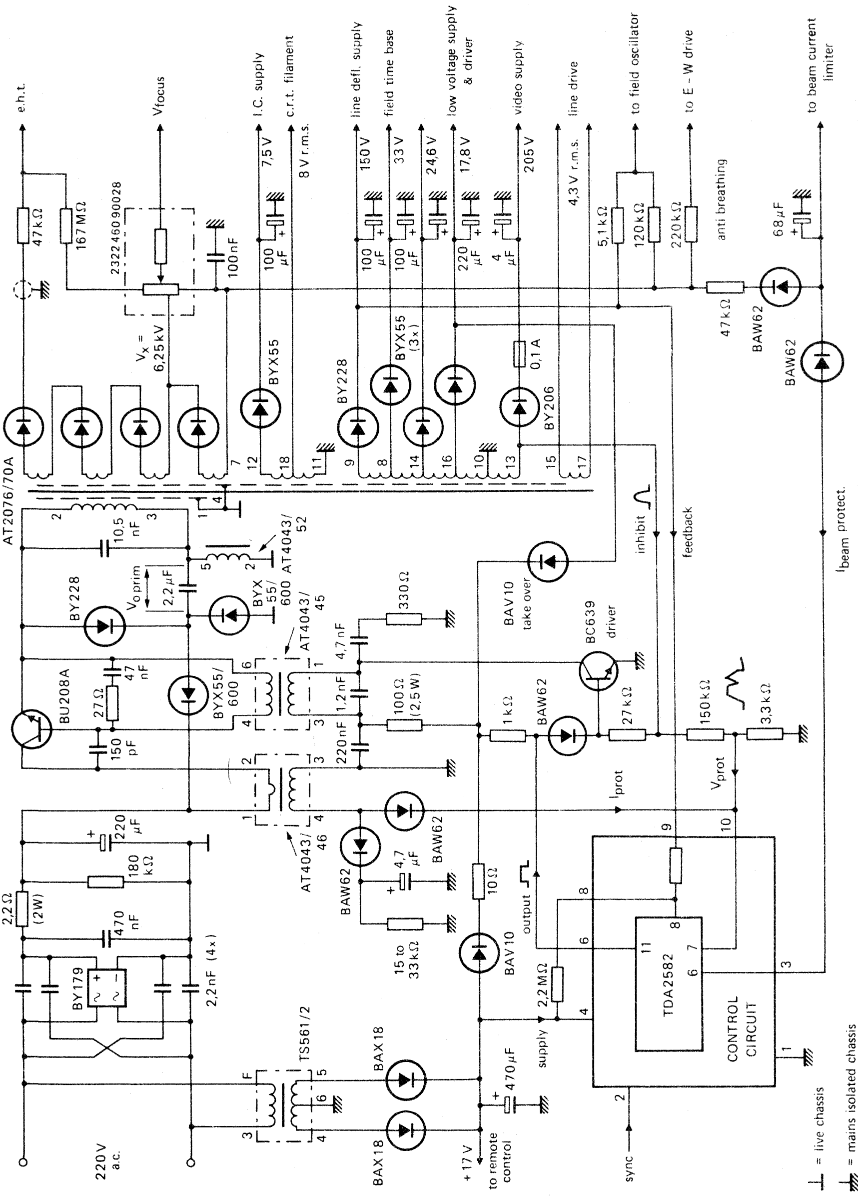


Fig. 3.

MINIATURE DIODE-SPLIT LINE OUTPUT TRANSFORMER

- For 90° colour TV and colour monitors
- Three-layer e.h.t. coil, focus tap for hi-bi
- Aluminium foil primary winding
- Simplified synchronous power pack system
- Raster correction free

QUICK REFERENCE DATA

For transistor line output stages; 90° deflection angle

I_{eht}	0 mA	0,6 mA
E.H.T.	23,0 kV	21,2 kV
$R_{i(eht)}$	2,6 MΩ	
$I_{p\text{-}p}$ deflection	3,2 A	3,12 A
Supply voltage (V_B)	111 V	109,6 V
Supply current ($I_{average}$)	350 mA	460 mA
Auxiliary voltages	7,9 V(r.m.s.), −500 V(p-p), −420 V(p-p), −210 V(p-p), −124 V(p-p), −14 V(p-p), +28 V(p-p), +210 V(p-p), +440 V(p-p)	

APPLICATION

This transformer has been designed to provide the required scanning amplitude for 90° colour picture tubes in transistor or gate turn-off thyristor equipped television receivers presenting 625 lines at 50 fields per second (CCIR) or 525 lines at 60 fields per second (USA). The transformer may also be used in colour monitors.

It is intended for use in conjunction with:
- deflection unit AT1206/20, AT1216/20 or AT1236/20,
- input choke AT4043/81;
- driver transformer AT4043/82;
- sensing transformer AT4043/46;
- line output transistor BU508A;
- screened e.h.t. cable, length 1 m; catalogue number 3122 137 63370;
- focus cable, length 31 cm; catalogue number 3122 131 00732.

Note: Types AT2076/80 and AT2076/80A differ only in manufacturing technique; apart from this the transformers are identical.

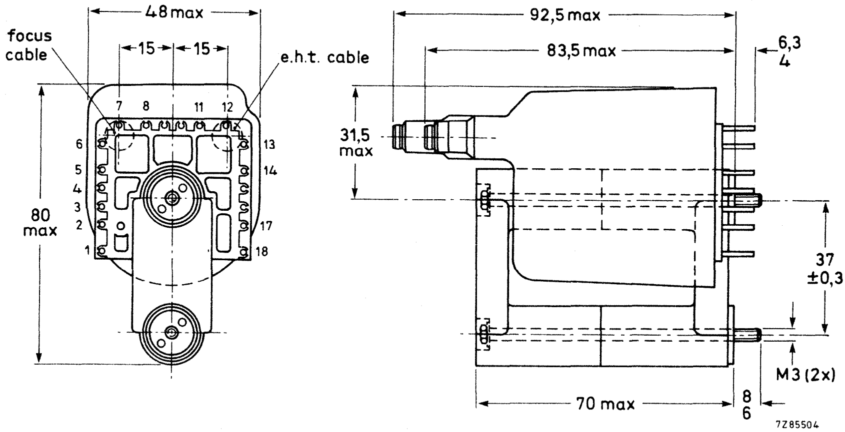
DESCRIPTION

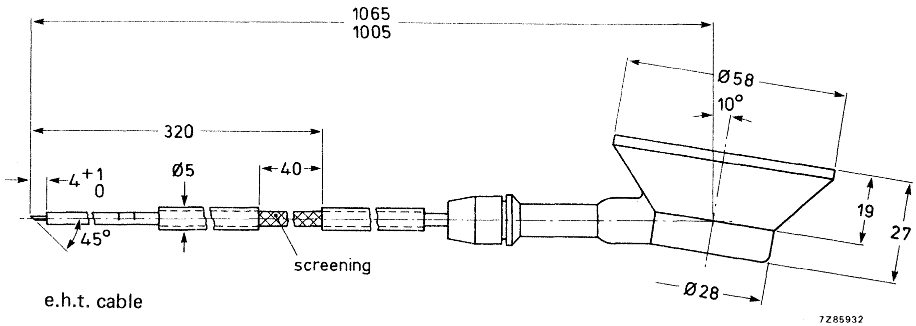
The magnetic circuit of the transformer comprises 2 Ferroxcube U-cores, screwed together. The primary winding of aluminium foil and the secondary windings are situated on one leg of the core. The primary winding together with its e.h.t. winding are moulded in flame retarding polyester, meeting the self-extinguishing requirements of IEC 65, para. 14.4 and UL492, para. 280-SE1. The transformer has 2 M3 screw-studs for mounting. External circuit connection is made to connecting pins, positioned as indicated in Fig. 1, enabling the unit to be soldered directly into a printed-wiring board (Fig. 2).

MECHANICAL DATA

Dimensions in mm

Outlines





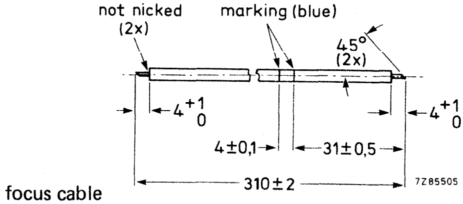


Fig. 1.

Mass 325 g

Solderability in accordance with IEC 68, test T

Mounting

The transformer may be mounted on either a printed-wiring board or, under certain conditions, on a metal chassis. Two securing studs (M3) are provided. For mounting on a printed-wiring board a washer of 20 mm outer diameter has to be used; the tightening torque on the printed-wiring board is 500 + 100 mNm. The fit of the connecting pins and the studs in a printed-wiring grid with a pitch of 2,54 mm is illustrated in Fig. 2.

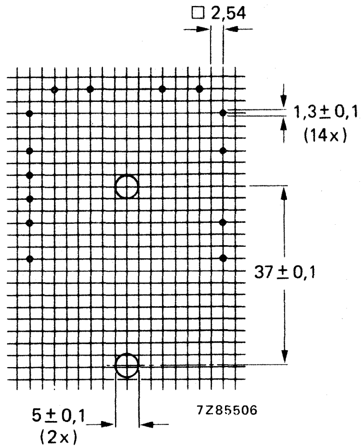


Fig. 2 Hole pattern for mounting on a printed-wiring board (solder side).

Whether the transformer is board or chassis mounted, **the core must be earthed.**

Temperature

The operating temperature of the e.h.t. coil should not exceed + 85 °C under worst conditions, i.e. taking into account:

- over-voltage on the coils;
- low atmospheric pressure (at high altitudes) implying bad cooling by convection;
- high ambient temperature (up to 45 °C).

To satisfy this requirement it is recommended to provide sufficient flow of cool air around the transformer.

Distances

The following minimum distances between the transformer and **neighbouring conductive flat surfaces** must be maintained:

From the e.h.t. coil radially, 10 mm
From the e.h.t. coil axially, 10 mm

Sharp edges of conductive parts must have greater distances than given above.

The transformer, leads and components carrying high voltage pulses, should be kept free from metal particles, solder drops, etc.

ELECTRICAL DATA with 90° COLOUR PICTURE TUBES

E.H.T. supply	I_{eht}	mA	0	0,6
	e.h.t.	kV	23,0	21,2
	$R_{i(eht)}$	MΩ	2,6	
Power supply	V_B	V	111	109,6
	$I_{average}$	mA	350	460
Output transistor	V_{CEM}	V	1285	1280
	$+ I_{CEM}$	A	2,95	2,95
Deflection	$I_{p\text{-}p}$	A	3,2	3,12
	$t_{flyback}$	μs	12,0	12,0
	Overscan	%	6	–
V_{focus}		kV	7,65	7,05
Auxiliary windings:				
picture tube heater voltage (r.m.s. value)		V	7,97	7,72
Voltages (peak-to-peak values) at				
pin 1	V_1	V	+440	
pin 17	V_{17}	V	−420	
pin 6	V_6	V	−500	
pin 2	V_2	V	−210	
pin 5	V_5	V	−124	
pin 8	V_8	V	+28	
pin 4	V_4	V	+210	
pin 14	V_{14}	V	−14	

Above measurements using circuit of Fig. 3.

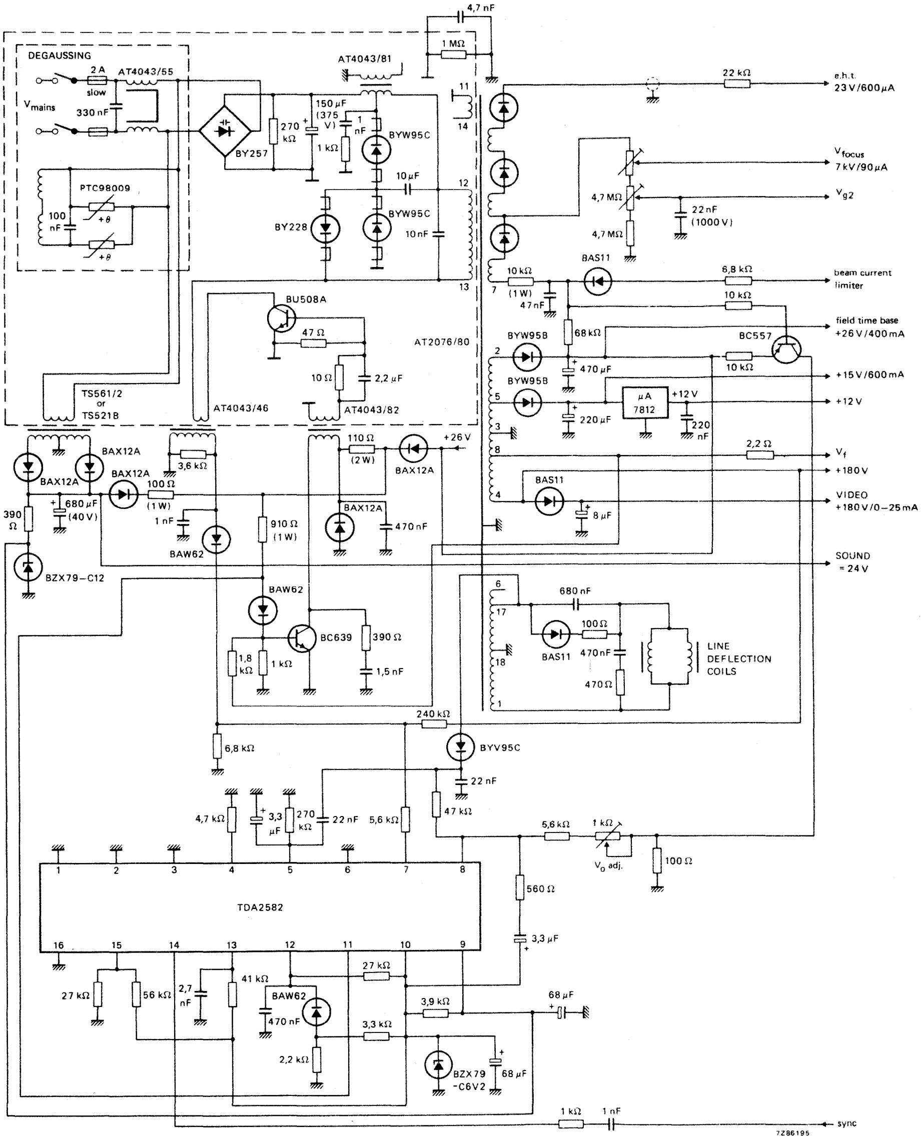


Fig. 3 Application circuit.

MINIATURE DIODE-SPLIT LINE OUTPUT TRANSFORMER

- For 90° and 110° colour TV and colour monitors
- Three-layer e.h.t. coil, focus tap for hi-bi
- Aluminium foil primary winding
- Reduced dimensions, reduced mass

QUICK REFERENCE DATA

For transistor line output stages

	110° deflection angle	90° deflection angle
I_{eht}	max. 1,5 mA	max. 1 mA
E.H.T.	25 kV	25 kV
$R_{i(eht)}$	1,6 MΩ	2,9 MΩ
$I_{p\text{-}p}$ deflection (incl. 6% overscan)	5,3 A	2,85 A
Supply voltage (V_B')	150 V	148,1 V
Supply current ($I_{average}$)	466 mA	299 mA
Voltages of primary windings*	+ 98 V_p, + 530 V_p, + 960 V_p, + 1060 V_p	+ 100 V_p, + 514 V_p, + 930 V_p, + 1030 V_p, + 1190 V_p
Voltages of auxiliary windings	−290 V_p, −230 V_p, −148 V_p, + 62 V_p, + 105 V_p	−270 V_p, −222 V_p, −141 V_p, + 60 V_p, + 105 V_p
	picture tube heater voltage	

APPLICATION

This transformer has been designed to provide the required scanning amplitude for 110° and 90° colour picture tubes in transistor or gate turn-off thyristor equipped television receivers presenting 625 lines at 50 fields per second (CCIR) or 525 lines at 60 fields per second (USA). The transformer may also be used in colour monitors and monochrome monitors at 17 kV e.h.t.

It is intended for use in conjunction with:

	110° deflection angle	90° deflection angle
— deflection unit	AT1271, AT1270/00, AT1260, AT1250	AT1235/00, AT1235/40
— bridge coil	AT4043/68	AT4043/68
— linearity control unit	AT4042/08, AT4042/30	AT4042/02, AT4042/90
— line output transistor	BU508A	BU508A

— screened e.h.t. cable, length 1 m; catalogue number 3122 137 63370.
— focus cable, length 31 cm; catalogue number 3122 131 00732.

Note: Types AT2076/81 and AT2076/81A differ only in manufacturing technique; apart from this the transformers are identical.

DESCRIPTION

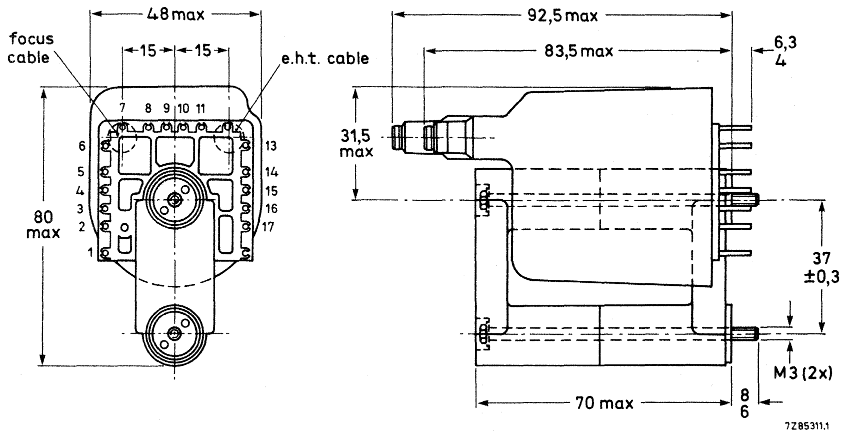
The magnetic circuit of the transformer comprises 2 Ferroxcube U-cores, screwed together. The primary winding of aluminium foil and the secondary windings are situated on one leg of the core. The primary winding together with its e.h.t. winding are moulded in flame retarding polyester, meeting the self-extinguishing requirements of IEC 65, para. 14.4 and UL492, para. 280-SE1. The transformer has 2 M3 screw-studs for mounting. External circuit connection is made to connecting pins, positioned as indicated in Fig. 1, enabling the unit to be soldered directly into a printed-wiring board (Fig. 2).

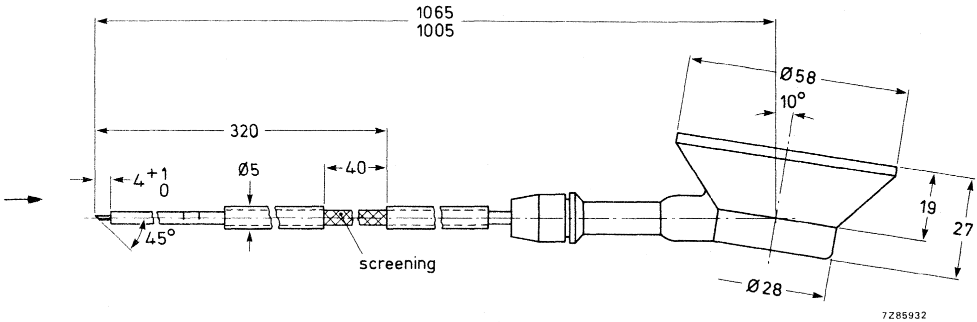
* D.C. component on these pulses is V_B' (see Fig. 3).

MECHANICAL DATA

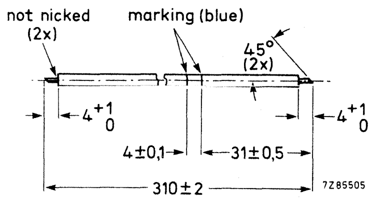
Dimensions in mm

Outlines





e.h.t. cable



focus cable

Fig. 1.

Mass 325 g

Solderability in accordance with IEC 68, test T

Mounting

The transformer may be mounted on either a printed-wiring board or, under certain conditions, on a metal chassis. Two securing studs (M3) are provided. For mounting on a printed-wiring board a washer of 20 mm outer diameter has to be used; the tightening torque on the printed-wiring board is 500 + 100 mNm. The fit of the connecting pins and the studs in a printed-wiring grid with a pitch of 2,54 mm is illustrated in Fig. 2.

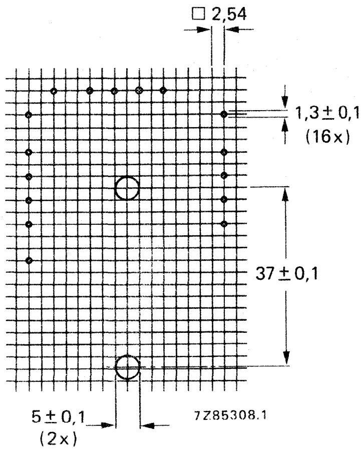


Fig. 2 Hole pattern for mounting on a printed-wiring board (solder side).

Whether the transformer is board or chassis mounted, **the core must be earthed.**

Temperature

The operating temperature of the e.h.t. coil should not exceed + 85 °C under worst conditions, i.e. taking into account:

- over-voltage on the coils;
- low atmospheric pressure (at high altitudes) implying bad cooling by convection;
- high ambient temperature (up to 45 °C).

To satisfy this requirement it is recommended to provide sufficient flow of cool air around the transformer.

Distances

The following minimum distances between the transformer and **neighbouring conductive flat surfaces** must be maintained:

From the e.h.t. coil radially, 10 mm
From the e.h.t. coil axially, 10 mm

Sharp edges of conductive parts must have greater distances than given above.

The transformer, leads and components carrying high voltage pulses, should be kept free from metal particles, solder drops, etc.

ELECTRICAL DATA with 110° COLOUR PICTURE TUBES

E.H.T. supply	I_{eht}	mA	0,03	1	1,5
	e.h.t.	kV	25,0	23,4	22,6
	$R_{i(eht)}$	MΩ	1,6	1,6	1,6
Power supply	V_B	V	157,8	157,8	157,8
	V_B'	V	150,2	145,7	143,3
	$I_{average}$	mA	242	393	466
Output transistor	V_{CEM}	V	1240	1220	1200
	$+I_{CEM}$	A	3,6	3,7	3,7
Deflection	I_{p-p}	A	5,3	5,1	5,0
	$t_{flyback}$	µs	11,4	—	—
	Overscan	%	6	—	—
V_{focus}		kV	8,1	7,9	7,8
Auxiliary windings: picture tube heater voltage V_{3-1} (r.m.s.)		V	8,3	8,0	7,8
peak voltages at					
pin 2	V_2	V	−290		
pin 6	V_6	V	−148		
pin 4	V_4	V	+ 62		
pin 5	V_5	V	−230		
pin 8	V_8	V	+ 105		
pin 9	V_9*	V	+ 98		
pin 14	V_{14}*	V	+ 530		
pin 17	V_{17}*	V	+ 960		
pin 16	V_{16}*	V	+ 1060		

Above measurements using circuits of Figs 3, 4a and 4b.

An alternative 3-diode modulator circuit is shown in Fig. 4c.

* D.C. component on these pulses is V_B'.

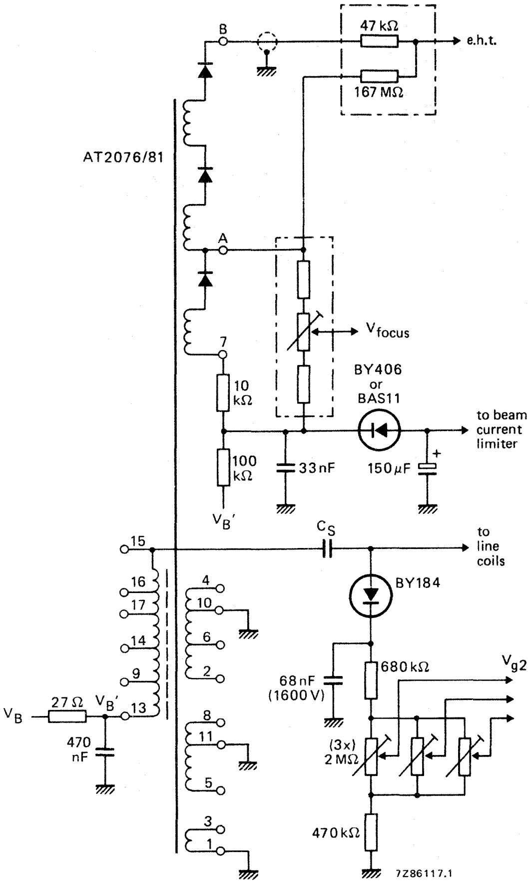


Fig. 3 Circuit diagram of transformer, and e.h.t., focus voltage and V_{g2} circuits.

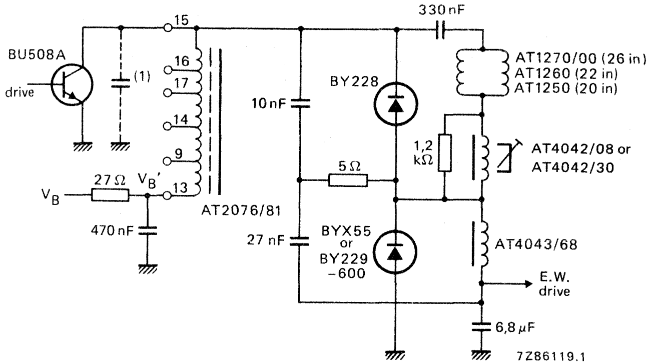


Fig. 4a Diode modulator with split tuning.

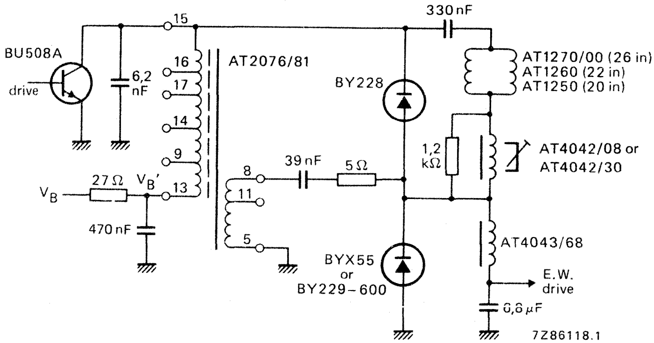


Fig. 4b Diode modulator with tap on transformer.

(1) Transformer stray capacitance.

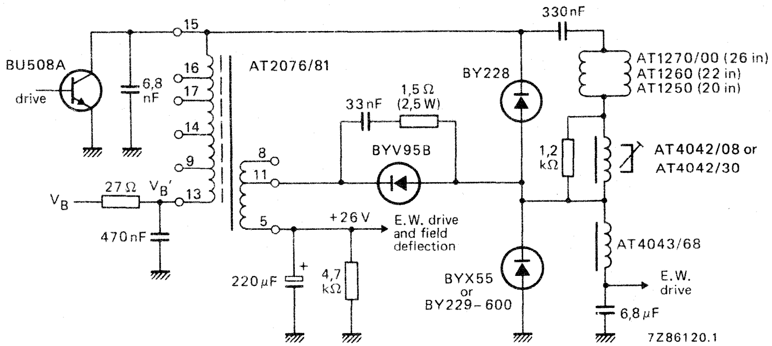


Fig. 4c Three-diode modulator circuit.

ELECTRICAL DATA with 90° COLOUR PICTURE TUBES

			Figs 3 and 5a V_B = 154,5 V		Figs 3 and 5b V_B = 134,3 V	
E.H.T. supply	I_{eht}	mA	0,03	1	0,03	1
	e.h.t.	kV	25,0	22,1	25,0	22,0
	$R_{i(eht)}$	MΩ	2,9		3	
Power supply	V_B'	V	151,5	148,1	130,0	126,1
	$I_{average}$	mA	173	299	245	389
Output transistor	V_{CEM}	V	1220	1150	1060	995
	$+ I_{CEM}$	A	2,0	2,2	2,4	2,6
Deflection	$I_{p\text{-}p}$	A	2,90	2,78	2,92	2,89
	$t_{flyback}$	µs	11,45		11,45	
	Overscan	%	6	7,0	6	7,0
V_{focus}		kV	8,45	7,40	8,6	7,65
Auxiliary windings: picture tube heater voltage $V_{3\text{-}1}$ (r.m.s.) peak voltages at		V	8,11		8,15	
pin 2	V_2	V	−270		−274	
pin 6	V_6	V	−141		−144	
pin 4	V_4	V	+ 60		+61	
pin 11	V11	V	−222		−225	
pin 8	V_8	V	+ 105		+ 105	
pin 9	V_9*	V	+ 100		+ 102	
pin 14	V_{14}*	V	+ 514		+ 520	
pin 15	V_{15}*	V	+ 1190		+ 1200	
→ pin 16	V_{16}*	V	+ 1030		+ 1040	
→ pin 17	V_{17}*	V	+ 930		+ 940	

Above measurements using circuits of Figs 3, 5a and 5b.

* D.C. component on these pulses is V_B'.

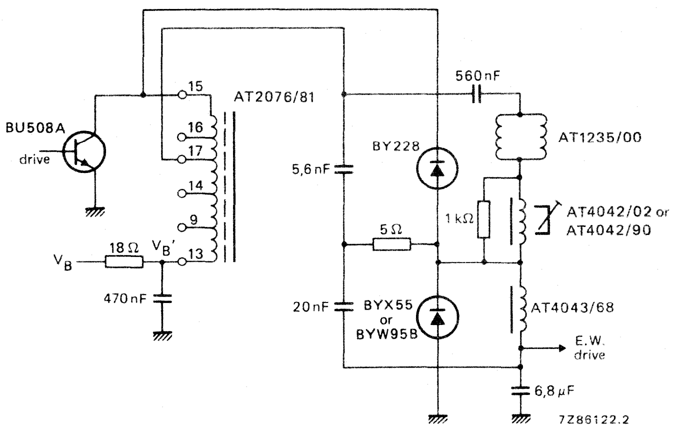


Fig. 5a Diode modulator, V_B' = 150 V.

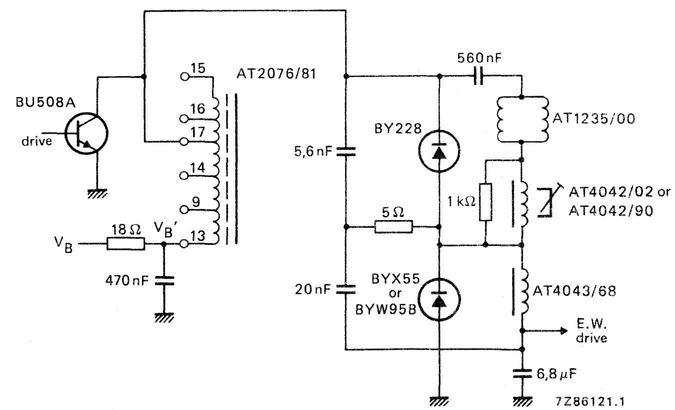


Fig. 5b Diode modulator, V_B' = 130 V.

UNIVERSAL DIODE-SPLIT LINE OUTPUT TRANSFORMER

- For monochrome Data Graphic Displays
- Three-layer e.h.t. coil
- Aluminium foil primary winding
- Piggy-back type

QUICK REFERENCE DATA

For transistor line output stages, deflection angle 110°

	landscape	portrait
$I_{e.h.t.}$	max. 0,5 mA	
E.H.T. at I_B = 0 mA	17 kV	
$R_{i(e.h.t.)}$	1,2 MΩ	
Flyback time	4 to 9 μs	3 to 8 μs
Line scan frequency range	15 to 50 kHz	15 to 70 kHz
Primary voltages	+ 94 $V_{(p-p)}$, + 188 $V_{(p-p)}$, + 540 $V_{(p-p)}$, + 730 $V_{(p-p)}$, + 990 $V_{(p-p)}$	
Auxiliary voltages	+ 85 V_p, −85 V_p, + 24 V_p, + 55 V_p, −150 V_p, heater voltage	

APPLICATION

This transformer has been designed to provide the required scanning amplitude and e.h.t. for 110° monochrome data graphic display tubes, at line scan frequencies of 15 to 70 kHz in both landscape and portrait scan mode. A choice can be made from different flyback times.
The transformer is intended for use in conjunction with:
- deflection unit AT1039 series at line scan frequencies of 15 to 70 kHz (portrait scan mode) or of 15 to 50 kHz (landscape scan mode);
- line output transistor BUW12A;
- linearity control unit AT4042/42 or DT4042/33;
- screened e.h.t. cable, length 1 m; catalogue number 3122 137 63370.

DESCRIPTION

The magnetic circuit of the transformer comprises 2 Ferroxcube U-cores, screwed together. The primary winding of aluminium foil and the secondary windings are situated on one leg of the core. The transformer is moulded in flame retarding polyester, meeting the self-extinguishing requirements of IEC 65, para. 14.4 and UL492, para. 280-SE1. The transformer has 2 M3 screw-studs for mounting. External circuit connection is made to connecting pins, positioned as indicated in Fig. 1, enabling the unit to be soldered directly into a printed-wiring board (Fig. 3).

MECHANICAL DATA

Dimensions in mm

Outlines

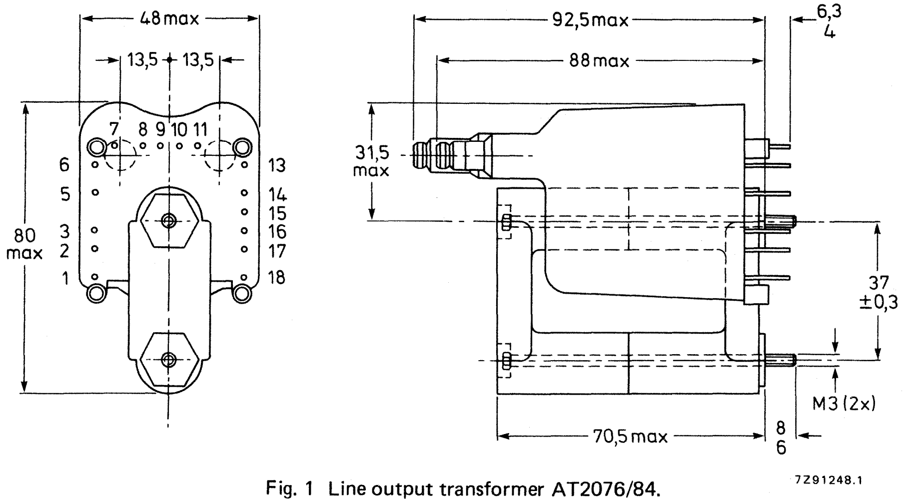


Fig. 1 Line output transformer AT2076/84.

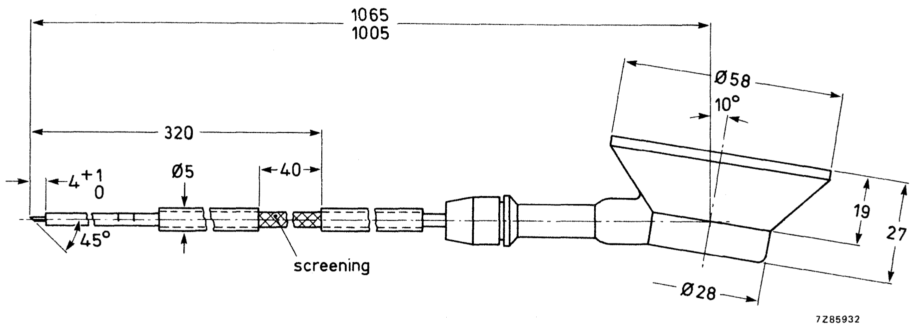


Fig. 2 E.H.T. cable 3122 137 63370.

Mass	approx. 325 g
Solderability	in accordance with IEC 68-2-20, test Ta.

Mounting

The transformer may be mounted on either a printed-wiring board or, under certain conditions, on a metal chassis. Two securing studs (M3) are provided. For mounting on a printed-wiring board a washer of 20 mm outer diameter has to be used; the tightening torque on the printed-wiring board is 500 + 100 mNm. The fit of the connecting pins and the studs in a printed-wiring grid with a pitch of 2,54 mm is illustrated in Fig. 3.

Whether the transformer is board or chassis mounted, **the core must be earthed.**

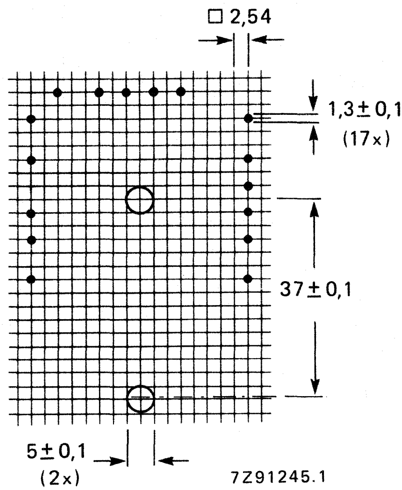


Fig. 3 Hole pattern for mounting on a printed-wiring board (solder side).

Temperature

The operating temperature of the e.h.t. coil should not exceed + 65 °C under worst conditions, i.e. taking into account:

- over-voltage on the coils;
- low atmospheric pressure (at high altitudes) implying bad cooling by convection;
- high ambient temperature (up to 45 °C).

To satisfy this requirement it is recommended to provide sufficient flow of cool air around the transformer.

Distances

The following minimum distances between the transformer and neighbouring conductive flat surfaces must be maintained:

From the e.h.t. coil radially, 10 mm.

From the e.h.t. coil axially, 10 mm.

Sharp edges of conductive parts must have greater distances than given above.

The transformer, leads and components carrying high voltage pulses, should be kept free from metal particles, solder drops etc.

ELECTRICAL DATA (see also Figs 4 and 5)

Landscape scan mode

Line scan frequency range 15 to 50 kHz

	line deflection coils parallel connected			line deflection coils series connected		
Taps of primary winding to be used	13/17	14/17	15/17	15/18	13/17	14/17
Flyback time	4,0 μs	4,8 μs	5,9 μs	7,0 μs	8,0 μs	9,0 μs
Flyback capacitor (C1)	7,5 nF	10 nF	18 nF	7,5 nF	10 nF	15 nF
Deflection current	8,4 $A_{(p-p)}$	8,4 $A_{(p-p)}$	8,4 $A_{(p-p)}$	4,2 $A_{(p-p)}$	4,2 $A_{(p-p)}$	4,2 $A_{(p-p)}$
Deflection voltage	730 $V_{(p-p)}$	630 $V_{(p-p)}$	540 $V_{(p-p)}$	800 $V_{(p-p)}$	730 $V_{(p-p)}$	630 $V_{(p-p)}$

Portrait scan mode

Line scan frequency range 15 to 70 kHz

	line deflection coils parallel connected			line deflection coils series connected		
Taps of primary winding to be used	13/17	14/17	15/17	15/18	13/17	14/17
Flyback time	3,1 μs	4,2 μs	4,9 μs	5,9 μs	6,6 μs	7,9 μs
Flyback capacitor (C1)	3,3 nF	6,8 nF	10 nF	4,7 nF	5,6 nF	10 nF
Deflection current	6,2 $A_{(p-p)}$	6,2 $A_{(p-p)}$	6,2 $A_{(p-p)}$	3,1 $A_{(p-p)}$	3,1 $A_{(p-p)}$	3,1 $A_{(p-p)}$
Deflection voltage	730 $V_{(p-p)}$	630 $V_{(p-p)}$	540 $V_{(p-p)}$	800 $V_{(p-p)}$	730 $V_{(p-p)}$	630 $V_{(p-p)}$

Primary voltages (peak-to-peak values)

Pins 13/14	+ 94 V
Pins 13/15	+ 188 V
Pins 13/16	+ 540 V
Pins 13/17	+ 730 V
Pins 13/18	+ 990 V

Auxiliary voltages (peak values)

Pins 5/8	heater voltage
Pin 1	+ 55 V (video supply)
Pin 2	− 150 V (V_{g1})
Pin 3	+ 24 V (field time base)
Pin 10	− 85 V
Pin 11	+ 85 V

V_{g2}-circuit supply should be taken from pin 17 or 18 by means of peak rectification.

Note: For detailed information see Technical Publication 115.

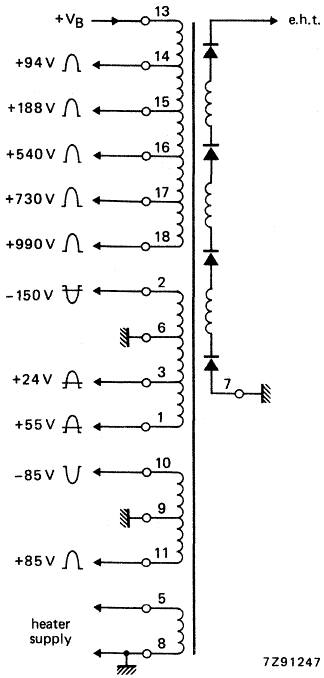

+V_B
13
e.h.t.
+94 V
14
+188 V
15
+540 V
16
+730 V
17
+990 V
18
−150 V
2
6
+24 V
3
+55 V
1
7
−85 V
10
9
+85 V
11
5
heater
supply
8
7Z91247

Fig. 4.

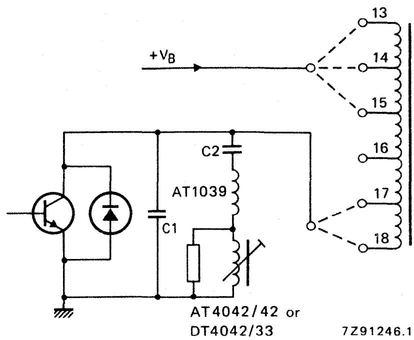

13
+V_B
14
15
C2
16
AT1039
17
C1
18
AT4042/42 or
DT4042/33
7Z91246.1

Fig. 5.

DIODE-SPLIT-BOX LINE OUTPUT TRANSFORMER

- For 90° colour TV with single switch power pack system (S^2P^2)
- Three-layer e.h.t. coil
- Aluminium foil primary winding
- Incorporated potentiometers for focusing and V_{g2} adjustment
- Mains insulation

QUICK REFERENCE DATA

For transistor line output stages; 90° deflection angle

I_{eht}	0 mA
E.H.T.	23 kV
$R_{i(eht)}$	≤ 2,4 MΩ
$I_{p\text{-}p}$ deflection	3,0 A
Supply voltage (V_B)	112 V
Supply current at I_{eht} = 0,6 mA	460 mA
Focusing voltage control	5,1 to 7,6 kV
Grid 2 voltage adjustment	230 to 830 V
Auxiliary voltages	6,3 V (heater supply) 200 V (video supply) 26 V (frame) 16 V (small signal)

APPLICATION

This transformer has been designed to provide the required scanning amplitude for 90° colour picture tubes in transistor equipped television receivers presenting 625 lines at 50 fields per second (CCIR) or 525 lines at 60 fields per second (USA). The transformer may also be used in colour monitors.

It is intended for use in conjunction with:
- input choke AT4043/81;
- driver transformer AT4043/82;
- sensing transformer AT4043/46;
- mains transformer TS561/2 or TS521B;
- mains filter choke AT4043/90;
- linearity corrector AT4042/90 (for narrow neck tubes), or AT4042/91 (for mini neck tubes);
- screened e.h.t. cable, length 1 m; catalogue number 3122 137 63370;
- focus cable, length 31 cm; catalogue number 3122 131 00732.

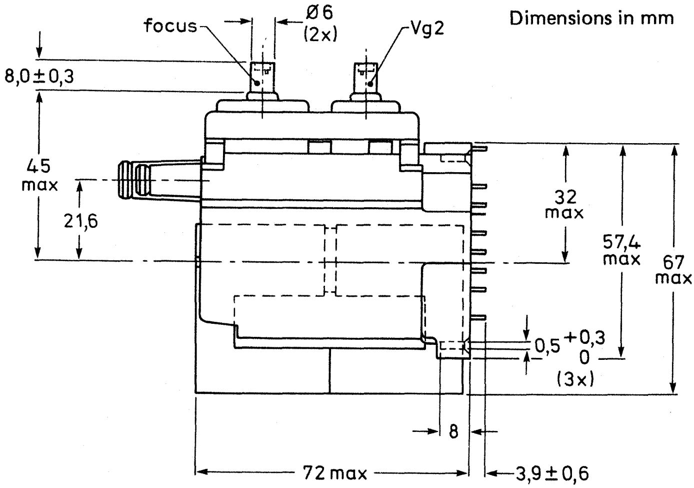
DESCRIPTION

The magnetic circuit of the transformer comprises 2 Ferroxcube cores, glued together. The primary winding of aluminium foil and the secondary windings are situated on one leg of the core. The primary winding together with its e.h.t. winding and e.h.t. diodes are encapsulated with epoxy resin in a pre-moulded case. The transformer has potentiometers for focusing control and V_{g2} adjustment. The transformer case has 3 holes that enables fixing to a printed-wiring board with self-tapping screws. External circuit connection is made to connecting pins, positioned as indicated in Fig. 1, enabling the unit to be soldered directly into a printed-wiring board (Fig. 4).

MECHANICAL DATA

Outlines

Dimensions in mm



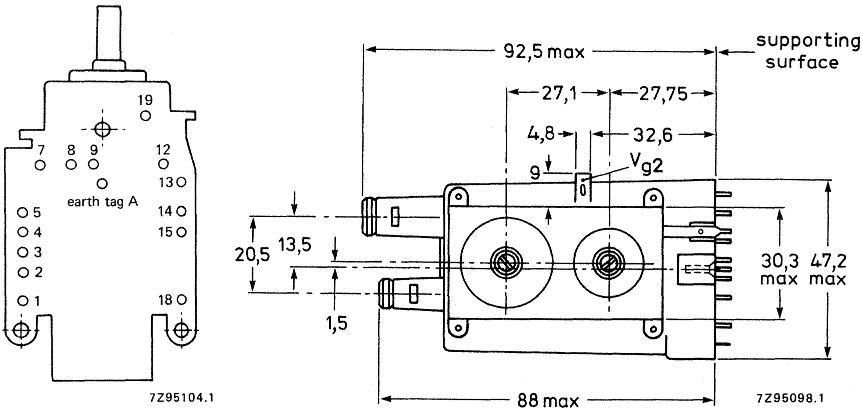


Fig. 1 Line output transformer AT2077/80.

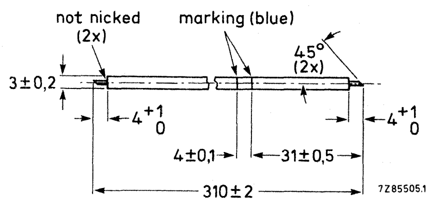


Fig. 2 Focus cable 3122 131 00732.

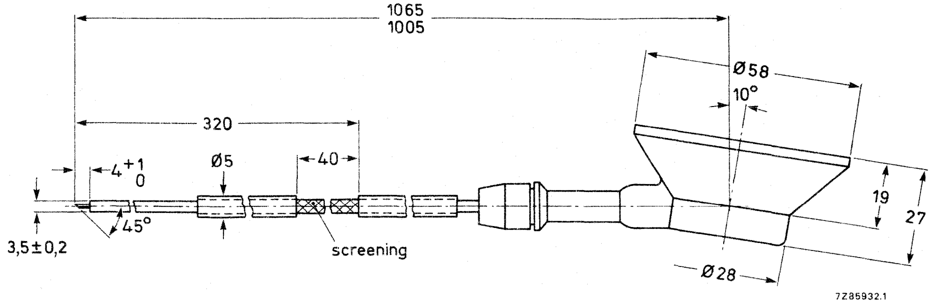


Fig. 3 E.H.T. cable 3122 137 63370.

Mass approx. 375 g

Solderability in accordance with IEC 68, test T

Packing 27 transformers per box

Mounting

The transformer may be mounted on a printed-wiring board. It can be secured with 3 self-tapping screws; the tightening torque on the board is 500 + 300 mNm. The fit of the connecting pins in a printed-wiring grid with a pitch of 2,54 mm is illustrated in Fig. 4. The transformer core must be earthed via the earth tag (see Fig. 1).

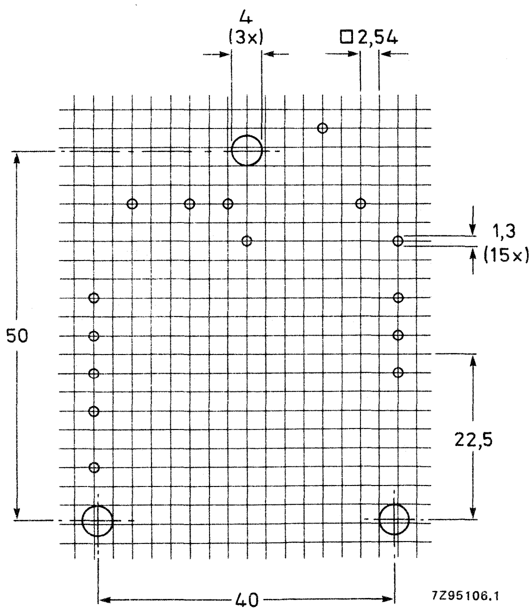


Fig. 4 Hole pattern for mounting on a printed-wiring board (solder side).

Temperature

The operating temperature of the e.h.t. coil should not exceed + 60 °C under worst conditions, i.e. taking into account:

- over-voltage on the coils;
- low atmospheric pressure (at high altitudes) implying bad cooling by convection;
- high ambient temperature (up to 45 °C).

To satisfy this requirement it is recommended to provide sufficient flow of cool air around the transformer.

Distances

The following minimum distances between the transformer and **neighbouring conductive flat surfaces** must be maintained:

From the e.h.t. coil radially, 10 mm
From the e.h.t. coil axially, 10 mm

Sharp edges of conductive parts must have greater distances than given above.

The transformer leads and components carrying high-voltage pulses, should be kept free from metal particles, solder drops, etc.

ELECTRICAL DATA with 90° colour picture tubes

E.H.T. supply	I_{eht}	mA	0	0,1	0,6
	e.h.t.	kV	23,0	22,4	21,2
	$R_{i(eht)}$	MΩ		2,4	
Power supply	V_B	V	112		108,5
	$I_{average}$	mA	350		460
Output transistor	V_{CEM}	V	1285		1270
	$+I_{CEM}$	A	2,55		2,60
Deflection	deflection current	$A_{(p-p)}$	3,0		2,88
	flyback time	µs	11,95		11,95
	overscan	%	6		
Focusing voltage	min.	kV	5,1		
	max.	kV	7,6		
Grid 2 voltage (V_{g2})	min.	V	230		
	max.	V	830		
Auxiliary voltages*	heater voltage	$V_{(r.m.s.)}$	8,0		7,7
	pin 2	$V_{(p-p)}$	+ 190		
	pin 3	$V_{(p-p)}$	−208		
	pin 4	$V_{(p-p)}$	+ 27,5		
	pin 5	$V_{(p-p)}$	−138		
	pin 8	$V_{(p-p)}$	+ 845		
	pin 9	$V_{(p-p)}$	+ 920		
	pin 12	$V_{(p-p)}$	+ 70		

* Pins 1 and 18 connected to earth.

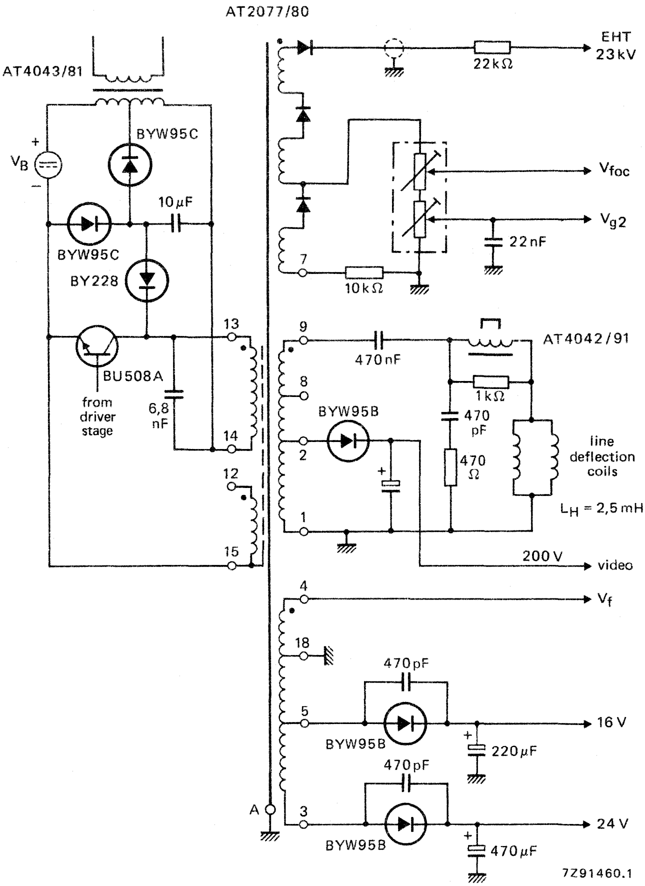


Fig. 5 Application circuit.

DIODE-SPLIT-BOX LINE OUTPUT TRANSFORMER

- For 90° and 110° colour TV and colour monitors with separate power supply
- Three-layer e.h.t. coil
- Aluminium foil primary winding
- Incorporated potentiometers for focusing and V_{g2} adjustment

QUICK REFERENCE DATA

For transistor line output stages; 90° and 110° deflection angle

I_{eht}	0 mA
E.H.T.	25 kV
$R_{i(eht)}$	≤ 1,5 MΩ
I_{p-p} deflection (6% overscan)	5,3 A
Supply voltage (V_B')	150 V
Voltages of primary windings (peak-to-peak values)*	+ 110 V, + 524 V, + 960 V, + 1064 V
Voltages of auxiliary windings (peak-to-peak values)	−283 V, −226 V, −149 V, + 59 V, + 104 V
heater voltage (r.m.s. value)	8,2 V

APPLICATION

This transformer has been designed to provide the required scanning amplitude for 90° and 110° colour picture tubes in transistor equipped television receivers presenting 625 lines at 50 fields per second (CCIR) or 525 lines at 60 fields per second (USA). The transformer may also be used in colour monitors.

It is intended for use in conjunction with:
– linearity corrector AT4042/30;
– bridge coil AT4043/68;
– screened e.h.t. cable, length 1 m; catalogue number 3122 137 63370;
– focus cable, length 31 cm; catalogue number 3122 131 00732.

DESCRIPTION

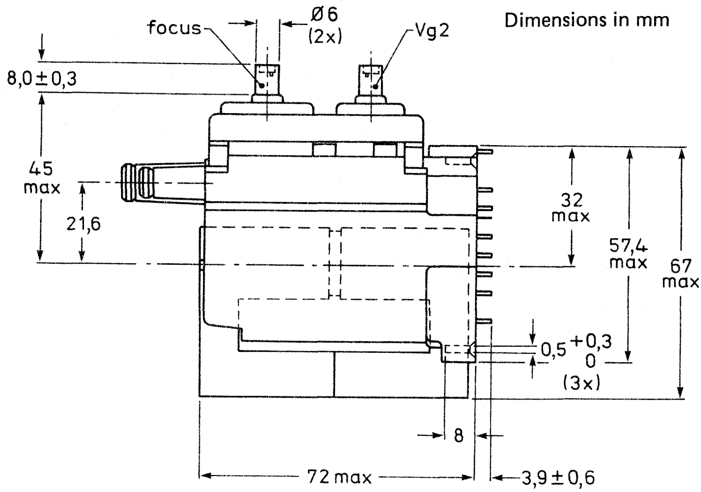
The magnetic circuit of the transformer comprises 2 Ferroxcube cores, glued together. The primary winding of aluminium foil and the secondary windings are situated on one leg of the core. The primary winding together with its e.h.t. winding and e.h.t. diodes are encapsulated with epoxy resin in a premoulded case. The transformer has potentiometers for focusing control and V_{g2} adjustment. The transformer case has 3 holes that enables fixing to a printed-wiring board with self-tapping screws. External circuit connection is made to connecting pins, positioned as indicated in Fig. 1, enabling the unit to be soldered directly into a printed-wiring board (Fig. 4).

* D.C. component on these pulses is V_B' (see Fig. 5).

MECHANICAL DATA

Outlines

Dimensions in mm



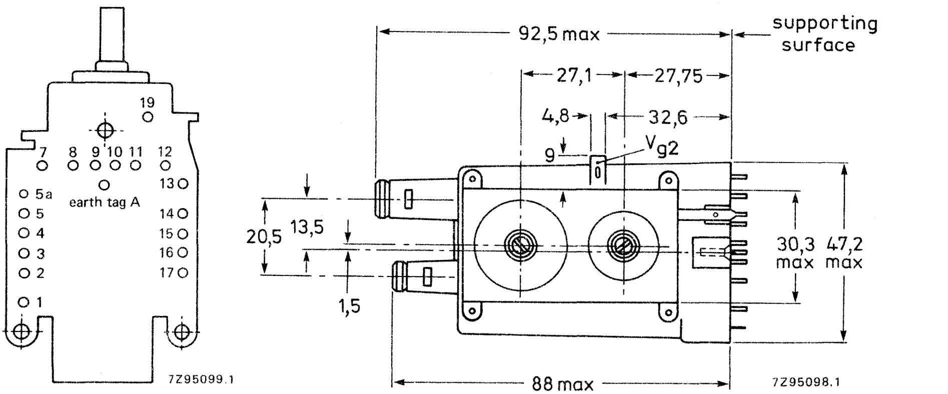


Fig. 1 Line output transformer AT2077/81.

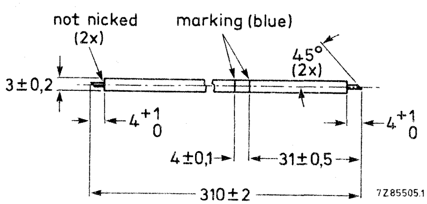


Fig. 2 Focus cable 3122 131 00732.

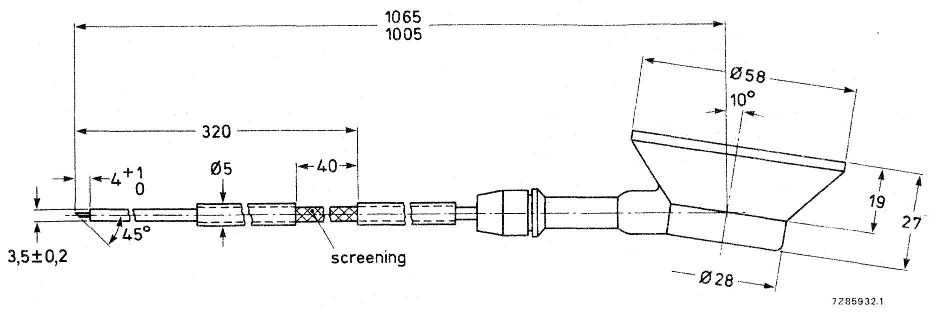


Fig. 3 E.H.T. cable 3122 137 63370.

Mass approx. 375 g

Solderability in accordance with IEC 68, test T

Packing 27 transformers per box

Mounting

The transformer may be mounted on a printed-wiring board. It can be secured with 3 self-tapping screws; the tightening torque on the board is 500 + 300 mNm. The fit of the connecting pins in a printed-wiring grid with a pitch of 2,54 mm is illustrated in Fig. 4. The transformer core must be earthed via the earth pin (see Fig. 1).

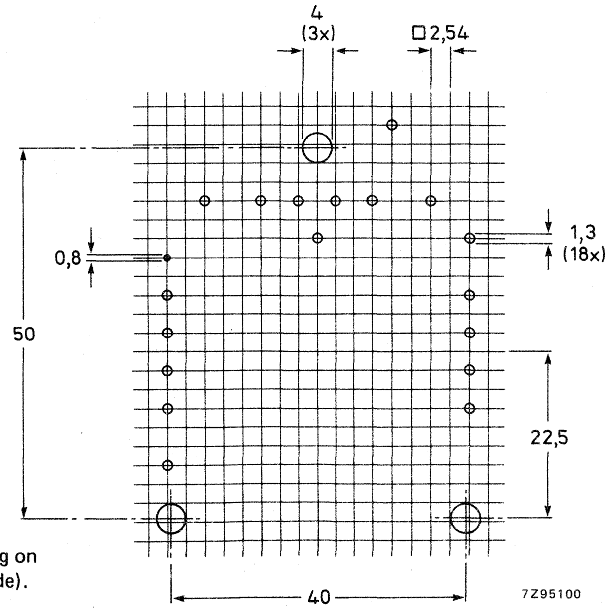


Fig. 4 Hole pattern for mounting on a printed-wiring board (solder side).

Temperature

The operating temperature of the e.h.t. coil should not exceed +60 °C under worst conditions, i.e. taking into account:

— over-voltage on the coils;
— low atmospheric pressure (at high altitudes) implying bad cooling by convection;
— high ambient temperature (up to 45 °C).

To satisfy this requirement it is recommended to provide sufficient flow of cool air around the transformer.

Distances

The following minimum distances between the transformer and **neighbouring conductive flat surfaces** must be maintained:

From the e.h.t. coil radially, 10 mm
From the e.h.t. coil axially, 10 mm

Sharp edges of conductive parts must have greater distances than given above.

The transformer leads and components carrying high-voltage pulses, should be kept free from metal particles, solder drops, etc.

ELECTRICAL DATA

E.H.T. supply	I_{eht}	mA	0	0,5	1	1,5
	e.h.t.	kV	25,5	24,55	23,9	23,25
	$R_{i(eht)}$	MΩ	1,5			
Power supply	V_B	V	155	154,5	154	153,5
	V_B'	V	150	148	146	144
Output transistor	V_{CEM}	V	1230	1215	1205	1200
	$+I_{CEM}$	A	3,65	3,7	3,75	3,8
Deflection	deflection current	$A_{(p-p)}$	5,3	5,2	5,15	5,1
	flyback time	μs	11,6	11,65	11,7	11,75
	overscan	%	6			
Focusing voltage	min.	kV	0,24 x e.h.t.			
	max.	kV	0,36 x e.h.t.			
Grid 2 voltage (V_{g2})	min.	V	0,014 x e.h.t.			
	max.	V	0,04 x e.h.t.			
Primary voltages*	pin 9	$V_{(p-p)}$	+ 110			
	pin 14	$V_{(p-p)}$	+ 524			
	pin 16	$V_{(p-p)}$	+ 1064			
	pin 17	$V_{(p-p)}$	+ 960			
Auxiliary voltages	heater voltage (V_{1-3})	$V_{(r.m.s.)}$	8,2	8,0	7,9	7,8
	pin 1	$V_{(p-p)}$	+ 30			
	pin 2	$V_{(p-p)}$	−283			
	pin 4	$V_{(p-p)}$	+ 59			
	pin 5	$V_{(p-p)}$	−226			
	pin 7	$V_{(d.c.)}$	1265	1240	1215	1200
	pin 8	$V_{(p-p)}$	+ 104			
	pin 12	$V_{(p-p)}$	−149			

* D.C. component on these pulses is V_B'.

DEVELOPMENT SAMPLE DATA

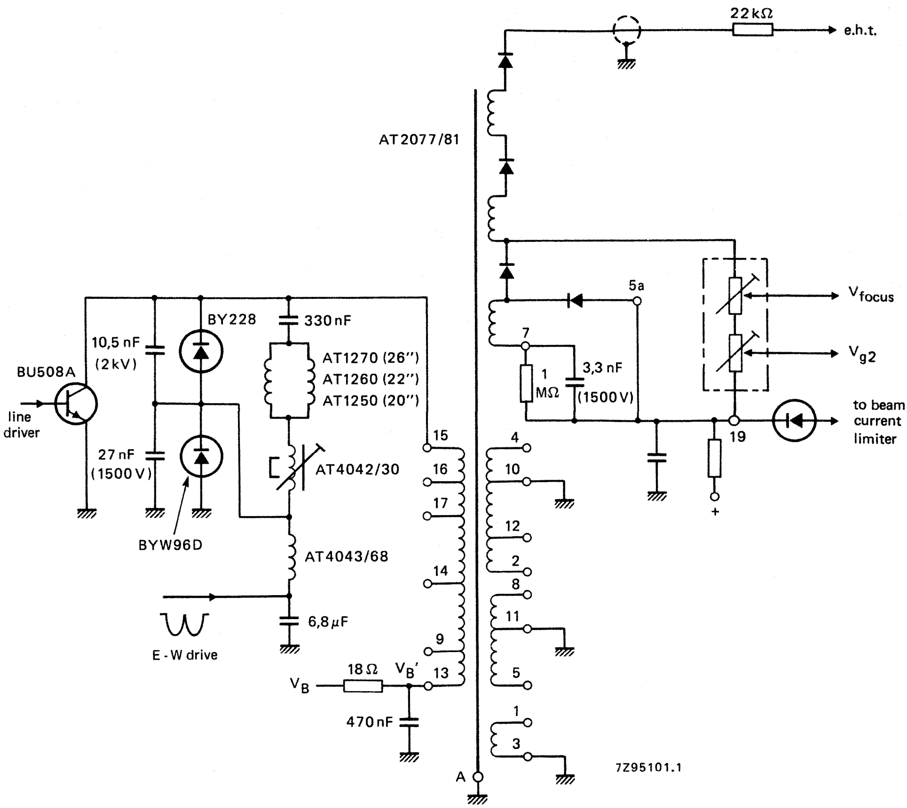


Fig. 5 Application circuit.

DIODE-SPLIT-BOX LINE OUTPUT TRANSFORMER

- For 110° deflection colour TV with twin switch power pack system (TSP²)
- Three-layer e.h.t. coil, with tap for focusing voltage of 26 to 34% of e.h.t. voltage
- Aluminium foil primary winding
- Incorporated focusing potentiometer
- Mains insulation

QUICK REFERENCE DATA

For transistor line output stages; 110° deflection angle

I_{eht}	0 mA
E.H.T.	25 kV
$R_{i(eht)}$	$\leqslant$ 1 MΩ
$I_{p\text{-}p}$ deflection	5,3 A
Supply voltage (V_B)	100 V
Supply current at I_{eht} = 1,1 mA	850 mA ± 10%
Auxiliary voltages	6,3 V (heater supply)
	210 V (video supply)
	26 V (frame)
	16 V (small signal)
	8 V (teletext)
	150 V (scan voltage)

APPLICATION

This transformer has been designed to provide the required scanning amplitude for 110° colour picture tubes in transistor equipped television receivers presenting 625 lines at 50 fields per second (CCIR) or 525 lines at 60 fields per second (USA). The transformer may also be used in colour monitors.

It is intended for use in conjunction with:
- input choke AT4043/16;
- driver transformer AT4043/17;
- sensing transformer AT4043/46;
- mains transformer TS561/2 or TS521B;
- mains filter choke AT4043/55;
- screened e.h.t. cable, length 1 m; catalogue number 3122 137 63370;
- focus cable, length 31 cm; catalogue number 3122 131 00732.

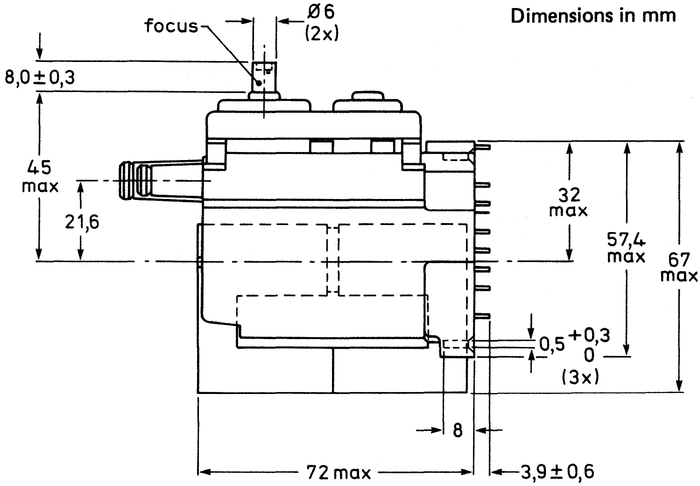
DESCRIPTION

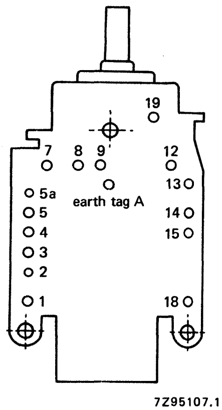
The magnetic circuit of the transformer comprises 2 Ferroxcube cores, glued together. The primary winding of aluminium foil and the secondary windings are situated on one leg of the core. The primary winding together with its e.h.t. winding and e.h.t. diodes are encapsulated with epoxy resin in a pre-moulded case. The transformer is provided with a focusing control potentiometer. The transformer case has 3 holes that enables fixing to a printed-wiring board with self-tapping screws. External circuit connection is made to connecting pins, positioned as indicated in Fig. 1, enabling the unit to be soldered directly into a printed-wiring board (Fig. 2).

MECHANICAL DATA

Outlines

Dimensions in mm





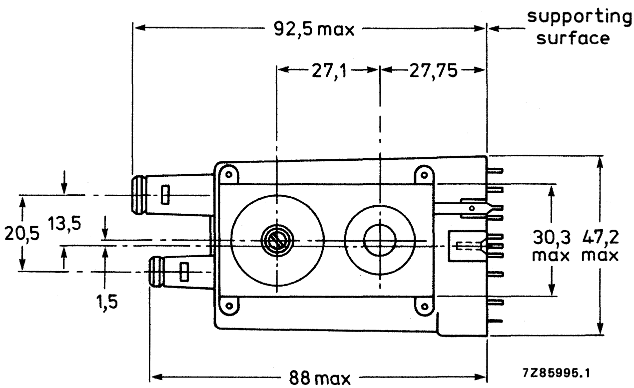


Fig. 1 Line output transformer AT2077/82.

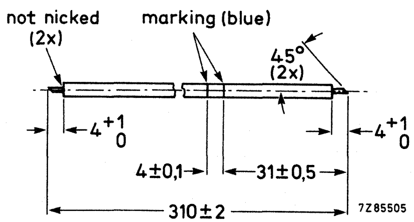


Fig. 2 Focus cable 3122 131 00732.

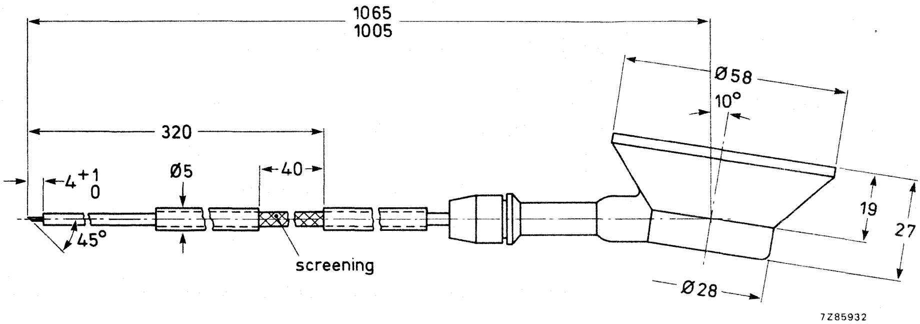


Fig. 3 E.H.T. cable 3122 137 63370.

Mass approx. 325 g

Solderability in accordance with IEC 68, test T

Packing 27 transformers per box

Mounting

The transformer may be mounted on a printed-wiring board. It can be secured with 3 self-tapping screws; the tightening torque on the board is 500 + 300 mNm. The fit of the connecting pins in a printed-wiring grid with a pitch of 2,54 mm is illustrated in Fig. 4. The transformer core must be earthed via the earth pin (see Fig. 1).

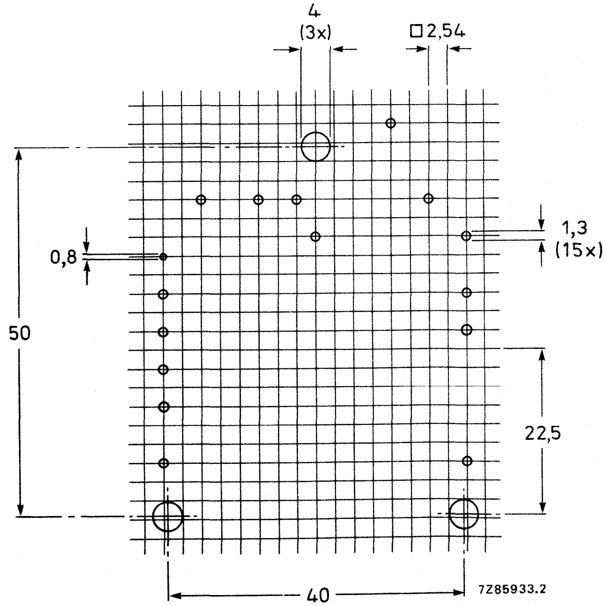


Fig. 4 Hole pattern for mounting on a printed-wiring board (solder side).

DEVELOPMENT SAMPLE DATA

Temperature

The operating temperature of the e.h.t. coil should not exceed + 60 °C under worst conditions, i.e. taking into account:

- over-voltage on the coils;
- low atmospheric pressure (at high altitudes) implying bad cooling by convection;
- high ambient temperature (up to 45 °C).

To satisfy this requirement it is recommended to provide sufficient flow of cool air around the transformer.

Distances

The following minimum distances between the transformer and **neighbouring conductive flat surfaces** must be maintained:

From the e.h.t. coil radially, 10 mm
From the e.h.t. coil axially, 10 mm

Sharp edges of conductive parts must have greater distances than given above.

The transformer leads and components carrying high-voltage pulses, should be kept free from metal particles, solder drops, etc.

ELECTRICAL DATA with 110° colour picture tubes

E.H.T. supply	I_{eht}	mA	0,1	1,1	1,6
	e.h.t.	kV	25,0	24,1	23,65
	$R_{i(eht)}$	MΩ		0,9	
Power supply	V_B	V	100	101	101,5
	V_{CEM}*	V	1260	1270	1290
	I_{CEM}	A	1,7	2,1	2,15
Deflection	Overscan	%	6		6
	V_g	V	150	150	150
	Flyback time	µs	11,5	11,5	11,5
	V_{CEM}	V	1220	1230	1235
	I_{CEM}	A	3,45	3,65	3,8
	Deflection current	A (p-p)	5,3	5,25	5,2
Focusing voltage	min.	kV	5,6		
	max.		9,1		
Auxiliary windings: picture tube heater voltage, V_4		$V_{(r.m.s.)}$	8,2	8,2	8,2
Voltages (peak-to-peak values) ** at					
pin 1	V1	V (d.c.)	+ 1220		
pin 2	V2	V	+ 87 to + 139		
pin 3	V3	V	−218		
pin 4	V4	V	+ 29		
pin 5	V5	V	−129		
pin 7	V7	V	+ 1145		
pin 8	V8	V	−74		
pin 9	V9	V (d.c.)	+ 150		
pin 15	V15	$V_{(p-p)}$	−80 V		

* At mains voltage 220 V. ** Pin 18 connected to earth.

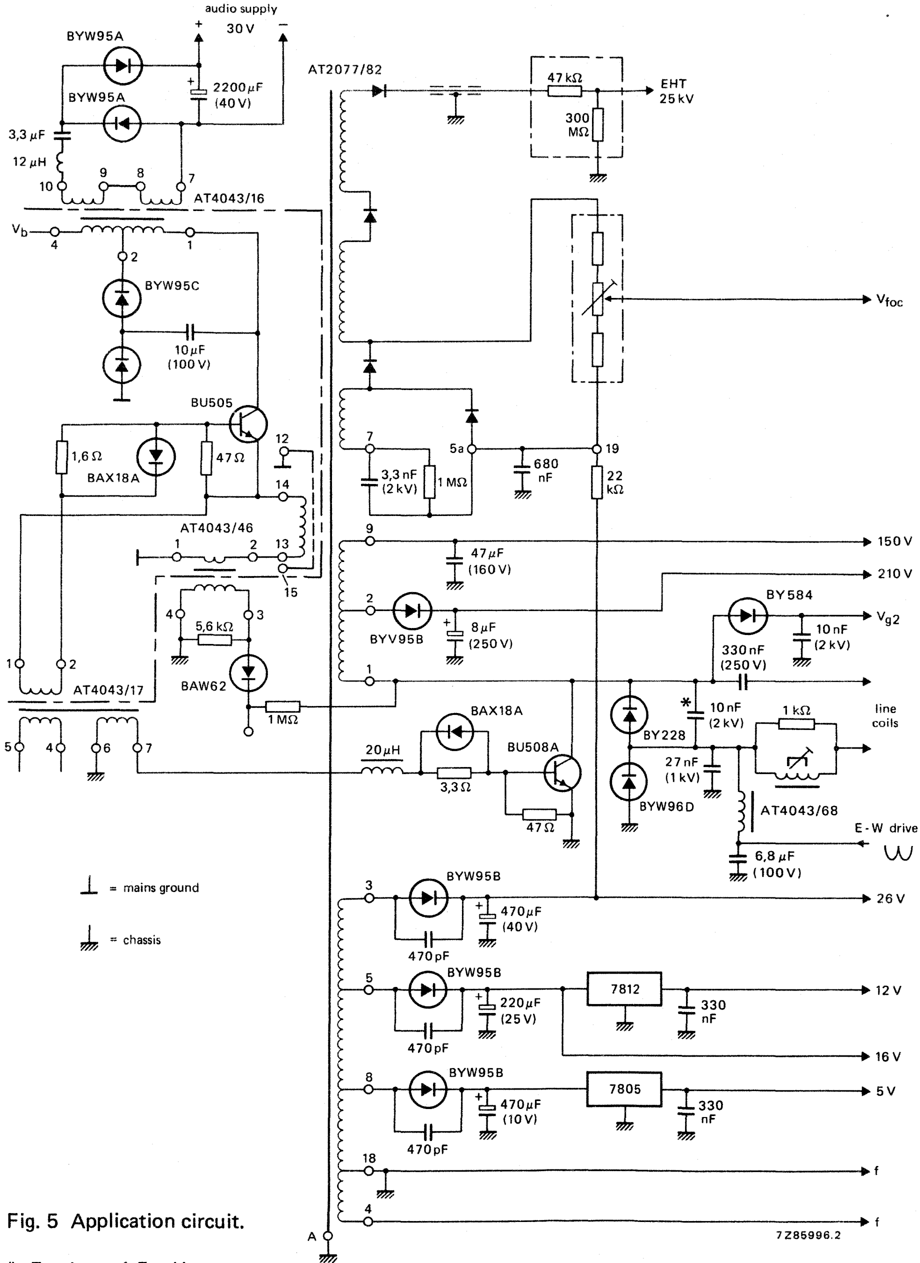


Fig. 5 Application circuit.

* For L_H = 1,5 mH.

DIODE-SPLIT LINE OUTPUT TRANSFORMER

- For 14 inch and 16 inch, 90° colour TV ("two chip concept")
- Sectioned e.h.t. coil
- Incorporated potentiometers for focusing and V_{g2} adjustment.

QUICK REFERENCE DATA

For transistor line output stages; 90° deflection angle

I_{eht}	0 mA
E.H.T.	20 kV
$R_{i(eht)}$	$\leq$ 2,5 MΩ
$I_{p\text{-}p}$ deflection	2,2 A
Supply voltage (V_B)	100 V
Supply current at I_{eht} = 0,6 mA	310 mA
Auxiliary voltages	$-28\ V_{(p\text{-}p)}$, $+208\ V_{(p\text{-}p)}$, $+420\ V_{(p\text{-}p)}$

APPLICATION

This transformer has been designed to provide the required scanning amplitude for 90° colour picture tubes in transistor equipped television receivers presenting 625 lines at 50 fields per second (CCIR) or 525 lines at 60 fields per second (USA).

It is intended for use in conjunction with:
- linearity corrector AT4042/90 (for narrow neck tubes), or AT4042/91 (for mini neck tubes);
- driver transformer AT4043/89;
- supply choke AT4043/97;
- mains transformer TG537 (catalogue number 8212 839 20290);
- degaussing coil 3122 138 99840 (for 14 in tubes) or 3122 138 99850 (for 16 in tubes).

DESCRIPTION

The magnetic circuit of the transformer comprises 2 Ferroxcube cores, clamped together with a bracket. The primary winding and the secondary windings are situated on one leg of the core. The primary winding together with its e.h.t. winding and e.h.t. diodes are encapsulated with epoxy resin in a pre-moulded case. The transformer has potentiometers for focusing control and V_{g2} adjustment. The transformer case has holes that enables fixing to a printed-wiring board with self-tapping screws.

MECHANICAL DATA

Dimensions in mm

Outlines

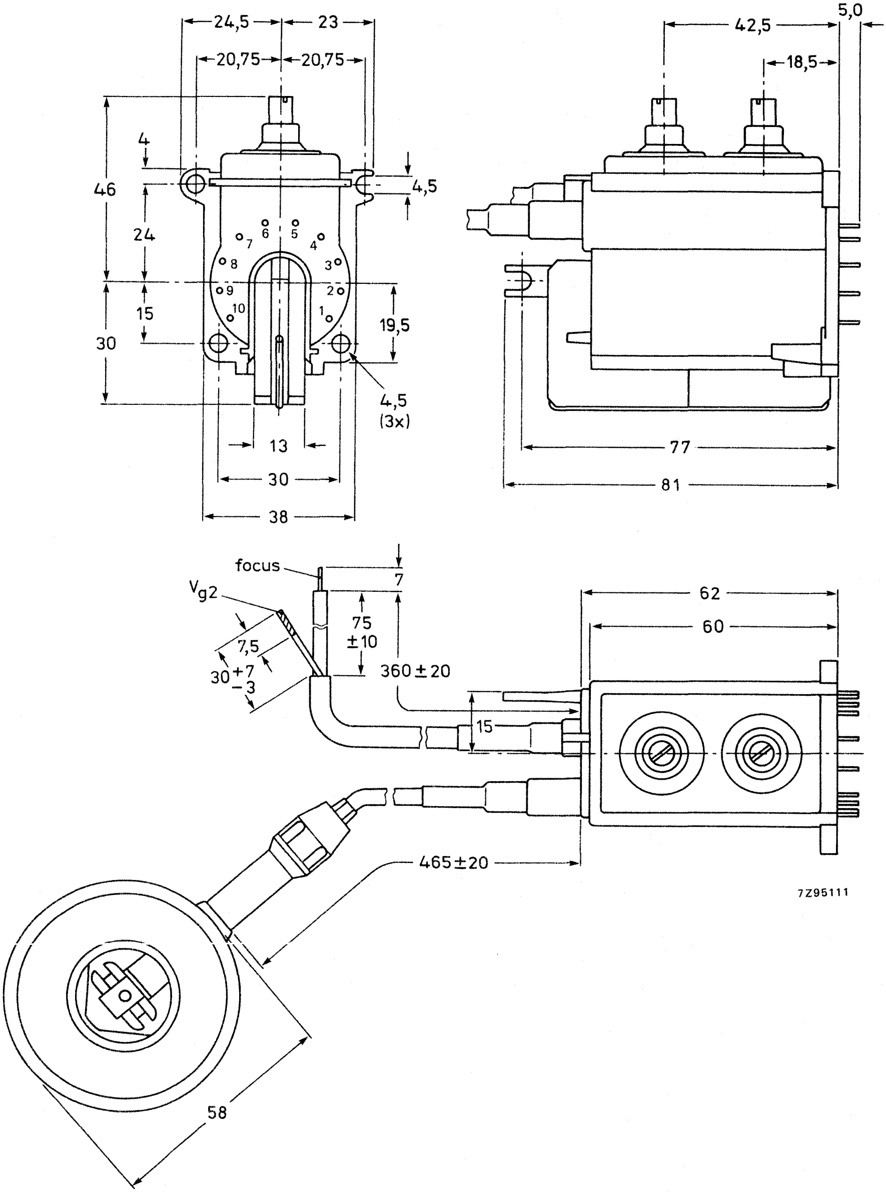


Fig. 1 Line output transformer AT2078/06.

Mass approx. 270 g

Solderability in accordance with IEC 68, test T

Mounting

The transformer may be mounted on a printed-wiring board or a chassis. It can be secured with 4 self-tapping screws. The fit of the connecting pins is illustrated in Fig. 2.
The core of the transformer must be earthed.

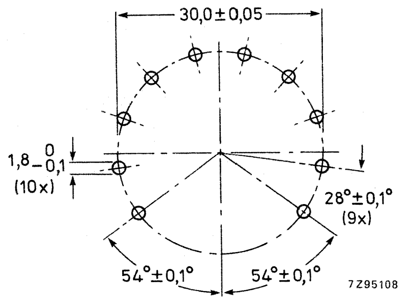


Fig. 2 Hole pattern for mounting.

Temperature

The operating temperature of the e.h.t. coil should not exceed + 60 °C under worst conditions, i.e. taking into account:

- over-voltage on the coils;
- low atmospheric pressure (at high altitudes) implying bad cooling by convection;
- high ambient temperature (up to 45 °C).

To satisfy this requirement it is recommended to provide sufficient flow of cool air around the transformer.

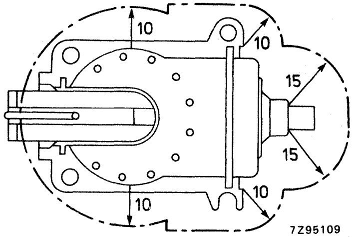
Distances

The minimum distances between the transformer and neighbouring conductive flat surfaces is shown in Figs 3 and 4.

Sharp edges of conductive parts have greater distances than given in the figures mentioned.

The transformer leads and components carrying high-voltage pulses, should be kept free from metal particles, solder drops, etc.

DEVELOPMENT SAMPLE DATA



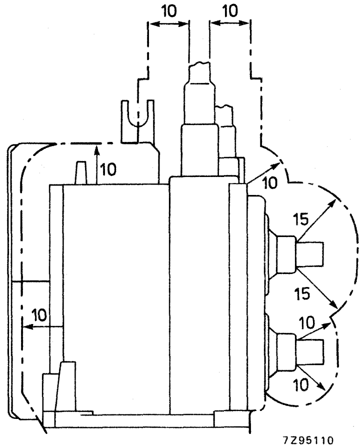


Fig. 3 Minimum distances between transformer and neighbouring surfaces.

ELECTRICAL DATA

E.H.T. supply	I_{eht} e.h.t. $R_{i(eht)}$	mA kV MΩ	0 20	0,5 18,6 2,3	1 17,7
Power supply (pin 6)	V_B	V	99,1	98,3	97,2
Output transistor (pin 10)	V_{CEM} I_{CEM}	V A	850 1,96	840 2,06	830 2,16
Deflection	deflection current flyback time overscan	A μs %	2,18 11,2 6	2,14 11,3	2,10 11,4
Focusing voltage	min max.	kV kV	25,3% of e.h.t. 32% of e.h.t.		
Grid 2 voltage (V_{g2})	min. max.	V V(d.c.)	280 1000		
Auxiliary voltages:	heater supply (V_{1-2}) pin 1 pin 5 pin 7	V(r.m.s) V(p-p) V(p-p) V(p-p)	8,06 −28 +420 +208	7,91	7,69

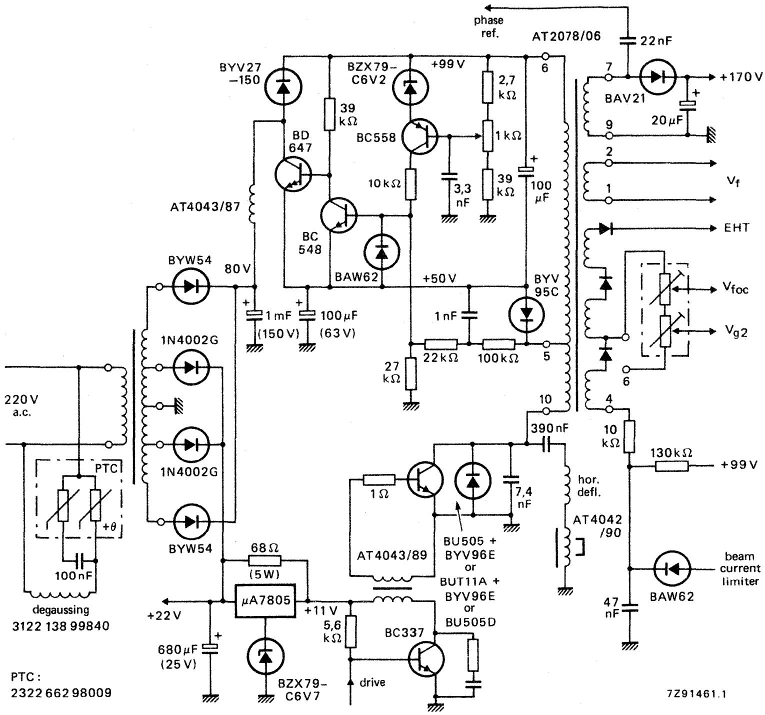


Fig. 4 Application circuit.

LINE OUTPUT TRANSFORMER

- For Monochrome Data Graphic Displays

QUICK REFERENCE DATA

	used in conjunction with AT1071/03		used in conjunction with AT1074/01	
I_{eht}	0 μA	100 μA	0 μA	100 μA
E.H.T.	14,9 kV	13,9 kV	14,7 kV	13,6 kV
$R_{i(eht)}$	10 MΩ		11 MΩ	
Supply voltage (V_B)	12 V	12 V	12 V	12 V
Supply current (I_B)	1725 mA	1825 mA	1700 mA	1800 mA
Deflection current	8,5 A	8,4 A	5,0 A (p-p)	4,95 A (p-p)
Auxiliary voltages	6,3 V (r.m.s.), 11 V (r.m.s.), 66 V (d.c.), 790 V (d.c.)			

APPLICATION

This transformer has been designed to provide the required scanning amplitude for 24 cm (9 in) to 31 cm (12 in) 90° monochrome monitor tubes in video display monitors presenting 625 lines at 50 frames per second (CCIR) or 525 lines at 60 frames per second (USA).

It is intended for use in conjunction with the following packages of components:

deflection unit AT1071/03 or AT1071/07;
adjustable linearity control unit AT4036;
line driver transformer AT4043/64;

deflection unit AT1074/01;
adjustable linearity control unit AT4042/26;
line driver transformer AT4043/56.

DESCRIPTION

The magnetic circuit of the transformer comprises Ferroxcube U and I-cores clamped together with two screws. The primary windings and the auxiliary windings are situated on one leg of the core, the e.h.t. winding and the coupling winding are situated on the other leg. The e.h.t. winding is encapsulated in flame retardent polyester. An e.h.t. rectifier diode is incorporated in the transformer. The whole transformer meets the self-extinguishing and non-dripping properties of the American Underwriters' Laboratories rating mentioned in UL94SE-1.

The transformer is provided with four mounting pins; it can also be screwed to the printed-wiring board. External circuit connection is made to connecting pins, enabling the unit to be soldered directly into a printed-wiring board.

MECHANICAL DATA

Dimensions in mm

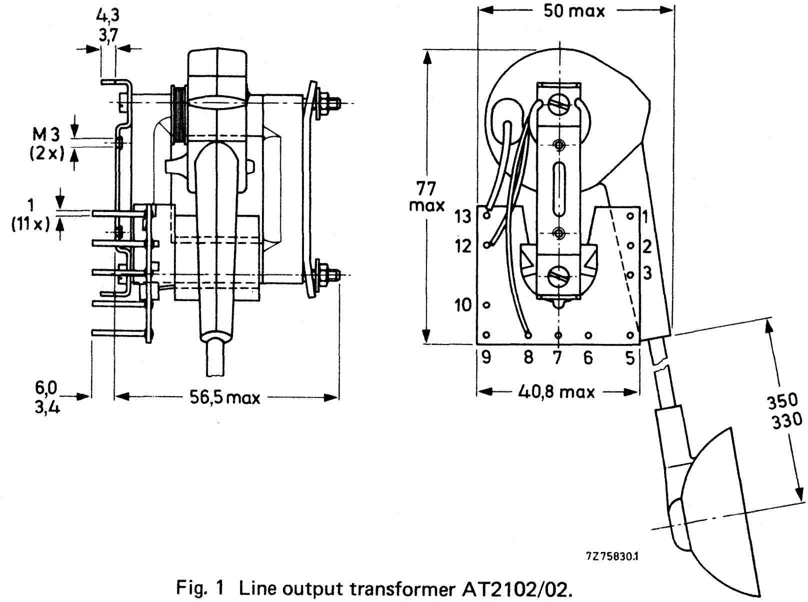


Fig. 1 Line output transformer AT2102/02.

MOUNTING

The transformer may be mounted on a printed-wiring board. The fit of the connecting and mounting pins in a printed-wiring grid with a pitch of 2,54 mm (0,1 in) is illustrated in Fig. 2. The core of the transformer must be earthed.

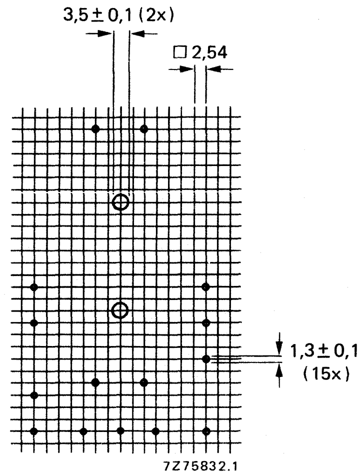


Fig. 2 Hole pattern for mounting on a printed-wiring board (solder side).

Temperature

The operating temperature of the core and the coils should not exceed 90 °C, under worst conditions, i.e. taking into account:

over-voltage on the windings;
low atmospheric pressure (at high altitudes) implying bad cooling by convection;
high room temperature (up to 45 °C).

To satisfy this requirement it may be desired to provide ample cool air circulation around the transformer.

Distances

The following minimum distances between the transformer and neighbouring conductive flat surfaces must be maintained (in proportion to their sharpness protruding parts must have a greater distance):

a. From the e.h.t. winding, radially 15 mm, axially 10 mm.
b. From the e.h.t. lead 25 mm.

The transformer, and the leads and components carrying high-voltage pulses should be kept free from metal particles, solder drops etc.

ELECTRICAL DATA (see also Figs 3 and 4)

		AT2102/02 used in conjunction with AT1071/03		AT2102/02 used in conjunction with AT1074/01	
E.H.T. supply	I_{eht}	0 μA	100 μA	0 μA	100 μA
	E.H.T.	14,9 kV	13,9 kV	14,7 kV	13,6 kV
	$R_{i(eht)}$	10 MΩ		11 MΩ	
Power supply	V_B	12 V	12 V	12 V	12 V
	I_{av}	1725 mA	1825 mA	1700 mA	1800 mA
Output transistor	V_{CEM}	144 V	144 V	142 V	142 V
	I_{CM}	6,4 A	6,4 A	6,2 A	6,2 A
Deflection	Current	8,5 A (p-p)	8,4 A (p-p)	5,0 A (p-p)	4,95 A (p-p)
	Flyback time	9,9 μs	9,9 μs	10 μs	10 μs
	Scan variation	1,5 %		2 %	

Auxiliary windings

connection pins 1 and 2	6,3 V (r.m.s.)
connecting pins 1 and 3	11 V (r.m.s.)
connecting pin 5 (pin 6 connected to earth)	790 V (d.c.)
connecting pin 7 (pin 6 connected to earth)	66 V (d.c.)

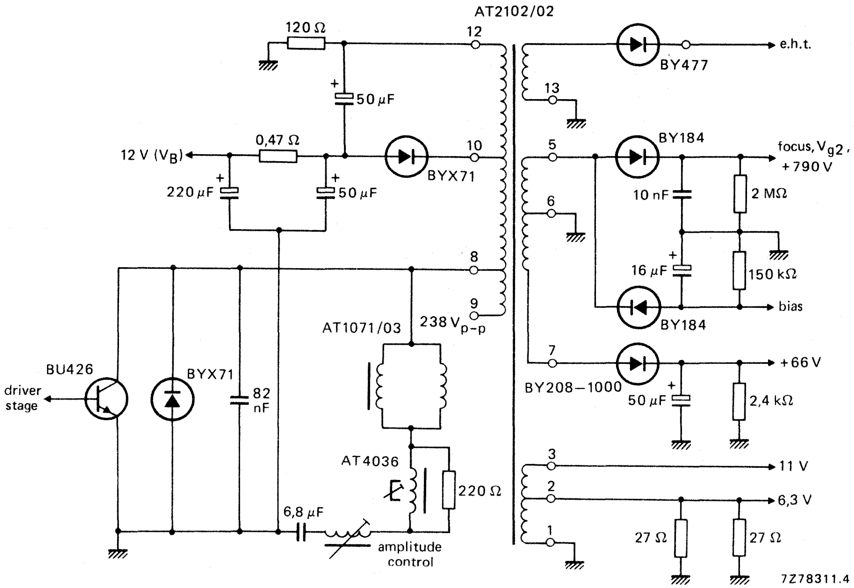


Fig. 3 Application circuit for use with deflection units AT1071/03 and AT1071/07.

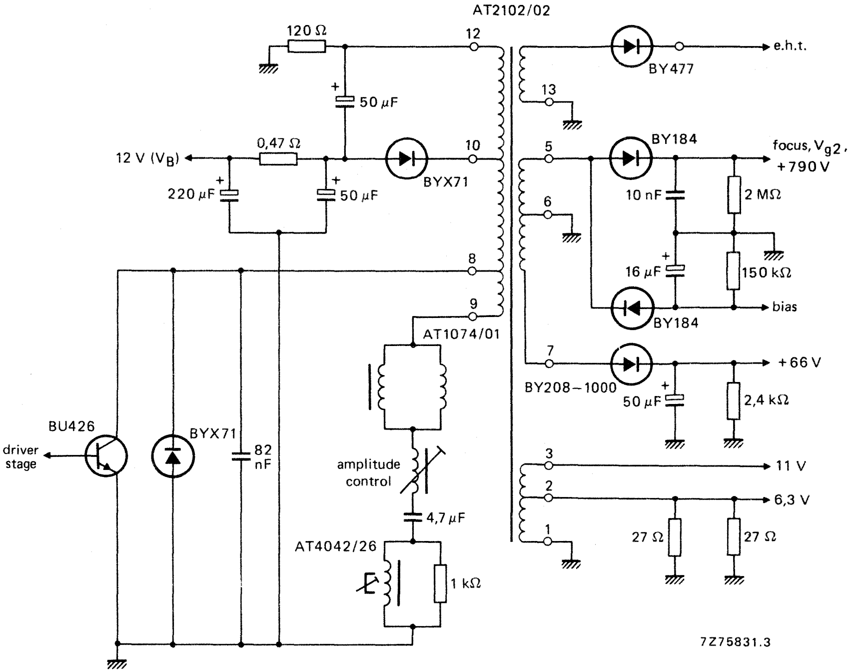


Fig. 4 Application circuit for use with deflection unit AT1074/01.

LINE OUTPUT TRANSFORMER

- For Monochrome Data Graphic Displays

QUICK REFERENCE DATA

I_{eht}	0 μA	100 μA
E.H.T.	17 kV	16,35 kV
$R_{i(eht)}$	6,5 MΩ	
Supply voltage (V_B)	24 V	24 V
Supply current (I_B)	820 mA	910 mA
Deflection current	4,6 A (p-p)	4,6 A (p-p)
Auxiliary voltages	6,3 V (r.m.s.), 25 V (d.c.), 70 V (d.c.), 800 V (d.c.)	

APPLICATION

This transformer has been designed to provide the required scanning amplitude for 31 cm (12 in) to 38 cm (15 in) 110° monochrome monitor tubes with a neck diameter of 28 mm in video display monitors presenting 625 lines at 50 frames per second (CCIR) or 525 lines at 60 frames per second (USA).

It is intended for use in conjunction with:
deflection unit AT1038/40A;
adjustable linearity control unit AT4042/08;
line driver transformer AT4043/59;
e.h.t. cable with a length of 450 mm, catalogue number 3111 108 34160 or UL approved e.h.t. cable, catalogue number 3111 108 34740.

DESCRIPTION

The magnetic circuit of the transformer comprises Ferroxcube U and I-cores, clamped together with two screws. The primary windings, the auxiliary windings and the e.h.t. winding are situated on one leg of the core, and are encapsulated in flame retardent polyester. An e.h.t. rectifier diode is incorporated in the transformer. The whole transformer meets the self-extinguishing and non-dripping properties of the American Underwriters' Laboratories rating mentioned in UL94SE-1.

The transformer is provided with four mounting pins; it can also be screwed to the printed-wiring board. External circuit connection is made to connecting pins, enabling the unit to be soldered directly into a printed-wiring board.

MECHANICAL DATA

Dimensions in mm

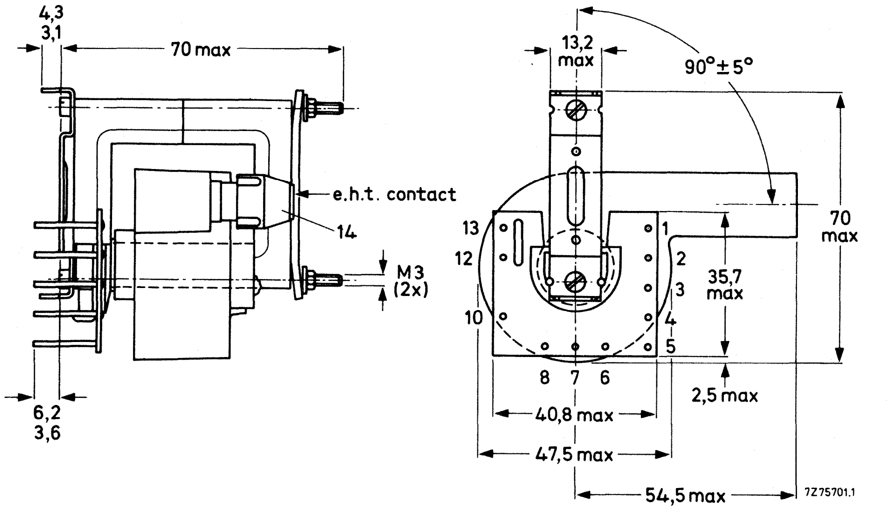


Fig. 1a Line output transformer AT2102/04C.

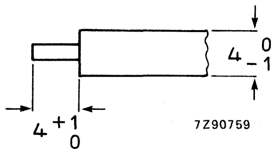


Fig. 1b E.H.T. contact (transformer side).

MOUNTING

The transformer may be mounted on a printed-wiring board. The fit of the connecting and mounting pins in a printed-wiring grid with a pitch of 2,54 mm (0,1 in) is illustrated in Fig. 2. The core of the transformer must be earthed.

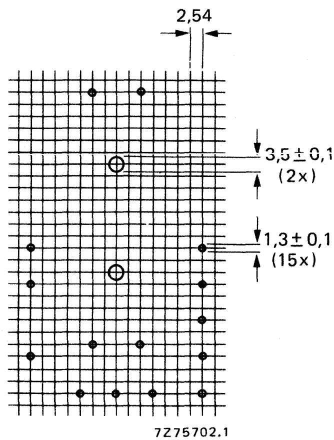


Fig. 2 Hole pattern for mounting on a printed-wiring board (solder side).

Temperature

The operating temperature of the core and the coils should not exceed 90 ^{o}C, under worst conditions, i.e. taking into account:

over-voltage on the windings;
low atmospheric pressure (at high altitudes) implying bad cooling by convection;
high room temperature (up to 45 ^{o}C).

To satisfy this requirement it may be desired to provide ample cool air circulation around the transformer.

Distances

The following minimum distances between the transformer and neighbouring conductive flat surfaces must be maintained (in proportion to their sharpness protruding parts must have a greater distance):

a. From the e.h.t. winding, radially 15 mm, axially 10 mm.
b. From the e.h.t. lead 25 mm.

The transformer, and the leads and components carrying high-voltage pulses should be kept free from metal particles, solder drops etc.

ELECTRICAL DATA (see also Fig. 3)

E.H.T. supply	I_{eht}	0 μA	100 μA
	E.H.T.	17 kV	16,35 kV
	$R_{i(eht)}$	6,5 MΩ	
Power supply	V_B	24 V	24 V
	I_{av}	820 mA	910 mA
Output transistor	V_{CEM}	440 V	440 V
	I_{CM}	3,6 A	3,6 A
Deflection	Current	4,6 A (p-p)	4,6 A (p-p)
	Flyback time	10,5 μs	10,5 μs
	Overscan variation	1,5%	

Auxiliary windings

connecting pins 1 and 2	6,3 V (r.m.s.)
connecting pin 4 (pin 5 connected to earth)	25 V (d.c.)
connecting pin 3 (pin 5 connected to earth)	70 V (d.c.)
connecting pin 7 (pin 6 connected to earth)	800 V (d.c.)

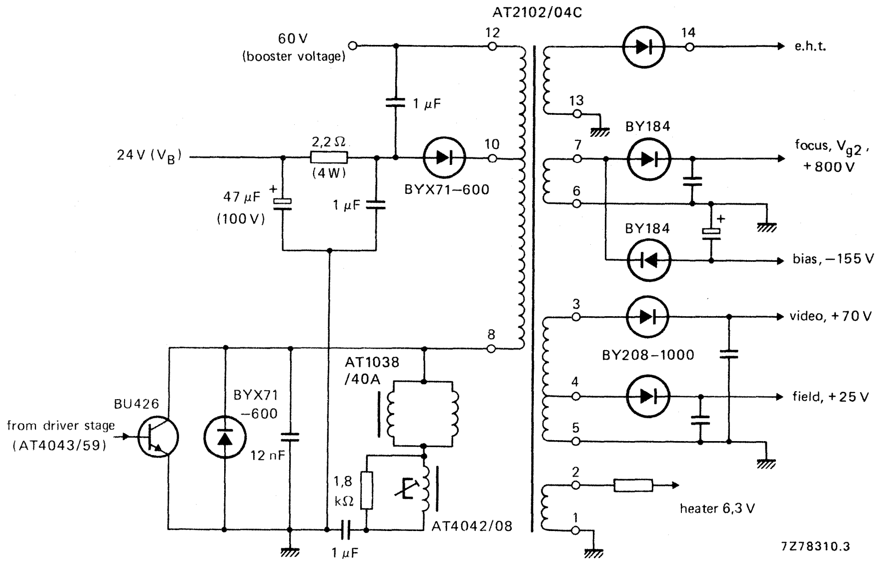


Fig. 3 Application circuit.

LINE OUTPUT TRANSFORMER

- **For Monochrome Data Graphic Displays**

QUICK REFERENCE DATA

I_{eht}	0 μA	100 μA
E.H.T.	17,0 kV	16,2 kV
$R_{i(eht)}$	8 MΩ	
Supply voltage (V_B)	24 V	
Supply current (I_B)	955 mA	
Deflection current	4,4 A (p-p)	4,35 A (p-p)
Auxiliary voltages	6,4 V (r.m.s.), 87,6 V (d.c.), 905 V (d.c.), −144 V (d.c.)	

APPLICATION

This transformer has been designed to provide the required scanning amplitude for 31 cm (12 in) to 38 cm (15 in) 110^o CRTs with a neck diameter of 28 mm in video display monitors.

The line frequency is set to 21,3 kHz at a fly-back time of 8,0 μs. With a small modification the line frequency can be reduced to 19 kHz. A frame frequency of 50 or 60 Hz is possible without modification.

The transformer is intended for use in conjunction with:
deflection unit AT1038/40A;
adjustable linearity control unit AT4042/08;
line driver transformer AT4043/59;
e.h.t. cable with a length of 450 mm (catalogue number 3111 100 34160 or UL approved e.h.t. cable, catalogue number 3111 108 34740.

Note
The transformer was originally developed for data display of 80 characters per row, 28 rows per page, having a 7 x 9 character matrix in a 9 x 14 character cell; dynamic focusing was applied in the line direction to improve picture performance.

DESCRIPTION

The magnetic circuit of the transformer comprises two Ferroxcube U-cores, clamped together with two screws. The primary windings, the auxiliary windings and e.h.t. winding are situated on one leg of the core, and are encapsulated in flame retardent polyester. An e.h.t. rectifier diode is incorporated in the transformer. The whole transformer meets the self-extinguishing and non-dripping properties of the American Underwriters' Laboratories rating mentioned in UL94SE-1.

The transformer is provided with four mounting pins; it can also be screwed to the printed-wiring board. External circuit connection is made to connecting pins, enabling the unit to be soldered directly into a printed-wiring board.

MECHANICAL DATA

Dimensions in mm

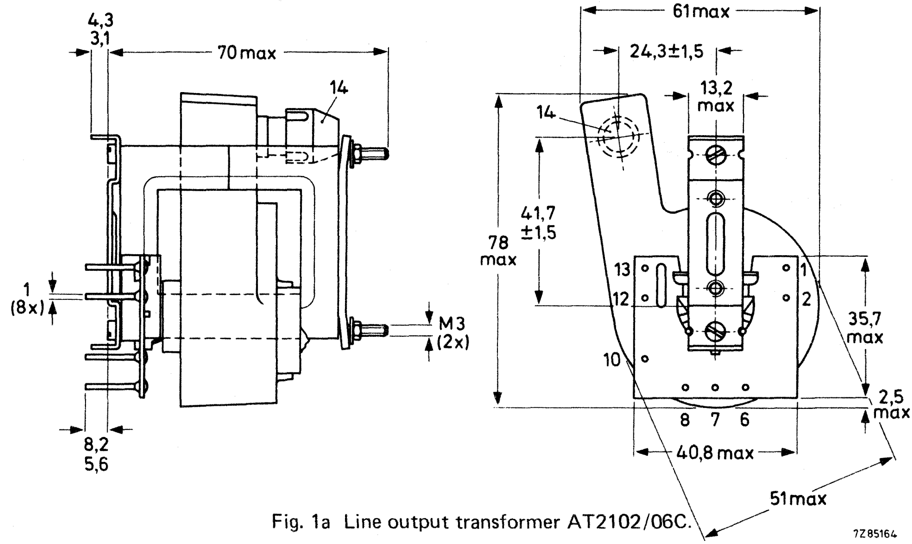


Fig. 1a Line output transformer AT2102/06C.

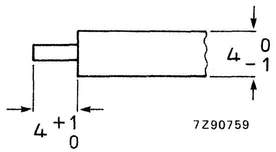


Fig. 1b E.H.T. contact (transformer side).

MOUNTING

The transformer may be mounted on a printed-wiring board. The fit of the connecting and mounting pins in a printed-wiring grid with a pitch of 2,54 mm (0,1 in) is illustrated in Fig. 2. The core of the transformer must be earthed.

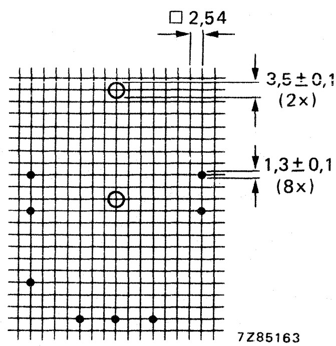


Fig. 2 Hole pattern for mounting on a printed-wiring board (solder side).

Temperature

The operating temperature of the core and the coils should not exceed 90 °C, under worst conditions, i.e. taking into account:

over-voltage on the windings;
low atmospheric pressure (at high altitudes) implying bad cooling by convection;
high room temperature (up to 45 °C).

To satisfy this requirement it may be desired to provide ample cool air circulation around the transformer.

Distances

The following minimum distances between the transformer and neighbouring conductive flat surfaces must be maintained (in proportion to their sharpness protruding parts must have a greater distance):

a. From the e.h.t. winding, radially 15 mm, axially 10 mm.
b. In general such that no corona occurs at 10% over-voltage of e.h.t., at an air pressure of 60 kPa and a relative humidity of 85%.

The transformer, and the leads and components carrying high-voltage pulses should be kept free from metal particles, solder drops etc.

ELECTRICAL DATA (see also Fig. 3)

E.H.T. supply	I_{eht}	0 μA	100 μA
	E.H.T.	17,0 kV	16,2 kV
	$R_{i(eht)}$	8 MΩ	
Power supply	V_B	24 V	
	I_B	955 mA	
Output transistor	V_{CEM}	720 V	
	I_{CM}	3,3 A	
Deflection	Current	4,4 A (p-p)	
	Flyback time	8,0 μs	
	Overscan variation (edge to edge)	0,5 %	

Auxiliary windings

connecting pins 1 and 2; load 300 mA	6,4 V (r.m.s.) ± 5,5%
connecting pin 12; load 40 mA	87,6 V (d.c.)
connecting pin 7 (pin 6 connected to earth); load 0,7 mA	905 V (d.c.) ± 5,5%
load 0,3 mA	−144 V (d.c.) ± 5,5%

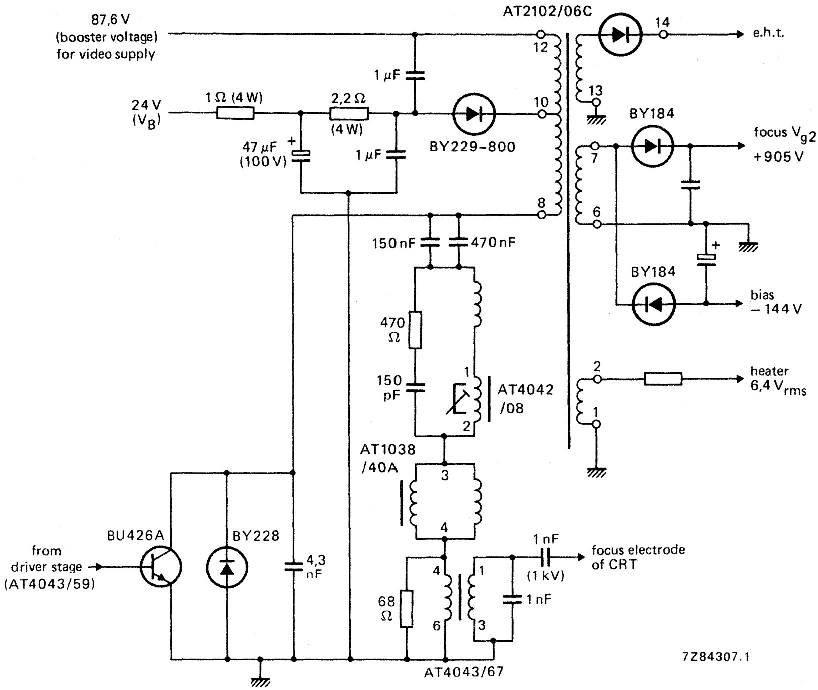


Fig. 3 Application circuit.

TESTS AND REQUIREMENTS

The line output transformer withstands the following tests.

IEC 68–2 test method	name of test	procedure (quick reference)
Ua1	Tensile strength of terminations	
Ub (method 1)	Bending of terminations	
Fc	Vibration	Frequency range 10-55-10 Hz, amplitude 0,35 mm, 3 directions, 30 min per direction
Eb	Bump	250 bumps in 5 directions, acceleration 25 g.
Ea	Shock	Half-sine pulse shape, 11 ms, 490 m/s^2, 6 directions, 3 shocks per direction.
Ta (method 1)	Soldering	Solder temp. 230 $^{\circ}$C, dwell time 2 s.
Bb	Dry heat	96 h at +100 $^{\circ}$C.
Db	Damp heat, cyclic	21 cycles of 24 h at +40 $^{\circ}$C, R.H. 95%.
Ab	Cold	96 h at –25 $^{\circ}$C.
M	Low air pressure	+55 $^{\circ}$C, 60 kPa, 30 min.
Ca	Damp heat, steady state	21 days.
Na	Rapid change of temperature	5 cycles of –25 $^{\circ}$C/+100 $^{\circ}$C.
	Flammability of transformer (IEC65-14.4); power test	10 W, 20 W, 30 W and 40 W successively, for 2 min until encapsulation of e.h.t. coil cracks.
	Flammability of materials (UL94, class V1)	Line output transformer is self-extinguishing.

LINE OUTPUT TRANSFORMER

- **For Monochrome Data Graphic Displays**

QUICK REFERENCE DATA

I_{eht}	0 μA		100 μA
E.H.T	10,8 kV		10,0 kV
$R_{i(eht)}$		8 MΩ	
Supply voltage (V_B)		12 V	
Supply current (I_B)	390 mA		590 mA
Deflection current	2,7 A(p-p)		2,7 A(p-p)
Auxiliary voltages	11 V(r.m.s.), −70 V(d.c.), −165 V(d.c.), + 450 V(d.c.)		

APPLICATION

This transformer has been designed to provide the required scanning amplitude for 24 cm (9 in) to 31 cm (12 in) 90° monochrome monitor tubes in video display monitors presenting 625 lines at 50 frames per second (CCIR) or 525 lines at 60 frames per second (USA).

It is intended for use in conjunction with deflection unit AT1077/.., linearity control unit AT4034/05 or linearity corrector AT4042/46, and an e.h.t. cable, length 260 mm, catalogue number 3111 100 32250, or the UL approved type, catalogue number 3122 137 63920.

DESCRIPTION

The magnetic circuit of the transformer comprises two Ferroxcube U-cores. The primary windings, the auxiliary windings and e.h.t. winding are situated on one leg of the core, and are encapsulated in flame retardent polyester. An e.h.t. rectifier diode is incorporated in the transformer. The whole transformer meets the self-extinguishing and non-dripping properties of the American Underwriters' Laboratories rating mentioned in UL94SE-1.

External circuit connection is made to connecting pins, enabling the unit to be soldered directly into a printed-wiring board.

MECHANICAL DATA

Dimensions in mm

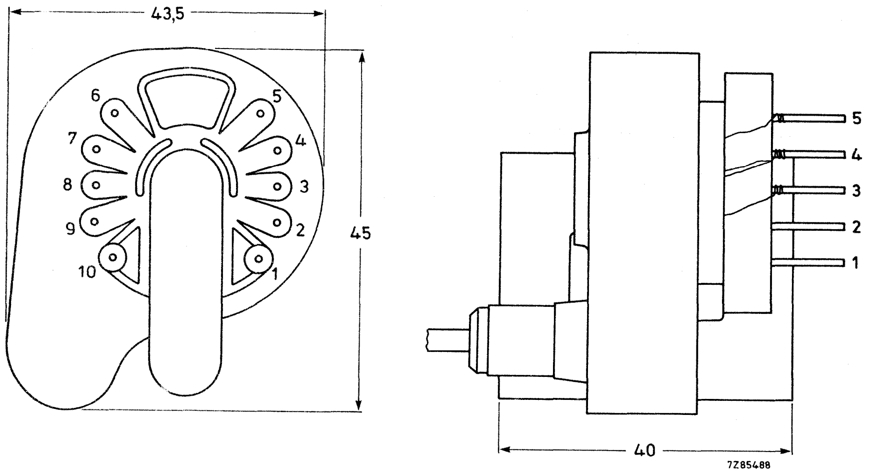


Fig. 1.

MOUNTING

The transformer may be mounted on a printed-wiring wiring board. The fit of the connecting pins in a printed-wiring grid with a pitch of 2,54 mm (0,1 in) is illustrated in Fig. 2.
The core of the transformer must be earthed.

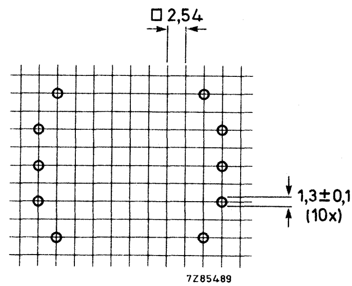


Fig. 2 Hole pattern for mounting on a printed-wiring board (solder side).

Temperature

The operating temperature of the core and the coils should not exceed 90 °C, under worst conditions, i.e. taking into account:

over-voltage on the windings;
low atmospheric pressure (at high altitudes) implying bad cooling by convection;
high room temperature (up to 45 °C).

To satisfy this requirement it may be desired to provide ample cool air circulation around the transformer.

Distances

The following minimum distances between the transformer and neighbouring conductive flat surfaces must be maintained (in proportion to their sharpness protruding parts must have a greater distance):

from the e.h.t. winding, radially 15 mm, axially 10 mm.

The transformer, and the leads and components carrying high-voltage pulses should be kept free from metal particles, solder drops etc.
The bending radius of the e.h.t. cable must be ⩾ 7,5 mm.

ELECTRICAL DATA (see also Fig. 3)

AT2140/16B used in conjunction with AT1077/05 and AT4042/46.

E.H.T. supply	I_{eht}	0 μA	100 μA
	E.H.T.	10,8 kV	10,4 kV
	$R_{i(eht)}$	8 MΩ	
Power supply	V_B	12 V	
	I_B	390 mA	480 mA
Output transistor	V_{CEM}	265 V	
	I_{CM}	2,3 A	
Deflection	Current	2,7 A(p-p)	
	Flyback time	8,5 μs	
Auxiliary windings			
connecting pin 1		−70 V(d.c.)	
connecting pin 4		−165 V(d.c.)	
connecting pins 6/8		11 V(r.m.s.)	
connecting pin 10		+450 V(d.c.)	

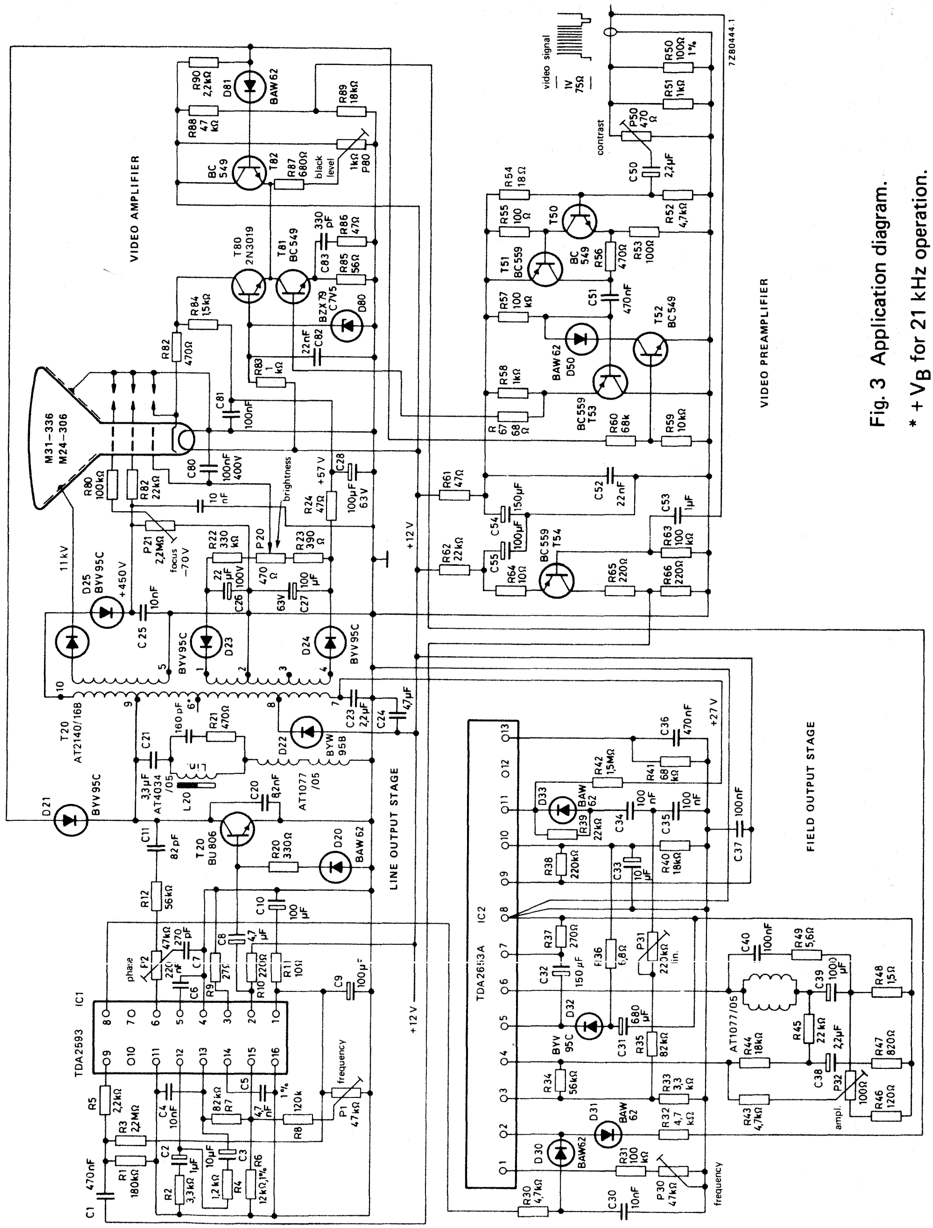


Fig. 3 Application diagram.

* + V_B for 21 kHz operation.

LINE OUTPUT TRANSFORMER

"White box"

- **For Monochrome Data Graphic Displays**

QUICK REFERENCE DATA

I_{eht}	0 μA	100 μA
E.H.T.	13 kV	12 kV
$R_{i(eht)}$	7 MΩ	
Supply voltage (V_B)	12 V	
Supply current (I_B)	600 mA	700 mA
Deflection current	3,2 A (p-p)	
Auxiliary voltages	−54 V, 58 V, 455 V	

APPLICATION

This transformer has been designed to provide the required scanning amplitude for 24 cm (9 in) to 31 cm (12 in) 90° monochrome monitor tubes in video display monitors presenting 625 lines at 50 frames per second (CCIR) or 525 lines at 60 frames per second (USA).

It is intended for use in conjunction with deflection unit AT1077/05, linearity control unit AT4042/08 or linearity corrector AT4042/46, and e.h.t. cable, length 260 mm, catalogue number 3111 100 32250 or UL approved e.h.t. cable, length 250 mm, catalogue number 3122 137 63920.

DESCRIPTION

The magnetic circuit of the transformer comprises two Ferroxcube U-cores. The primary windings, the auxiliary windings and e.h.t. winding are situated on one leg of the core, and are encapsulated in flame retardent epoxy resin. An e.h.t. rectifier diode is incorporated in the transformer. The whole transformer meets the self-extinguishing and non-dripping properties of the American Underwriters' Laboratories rating mentioned in UL94SE-1.

External circuit connection is made to connecting pins, enabling the unit to be soldered directly into a printed-wiring board.

MECHANICAL DATA

Dimensions in mm

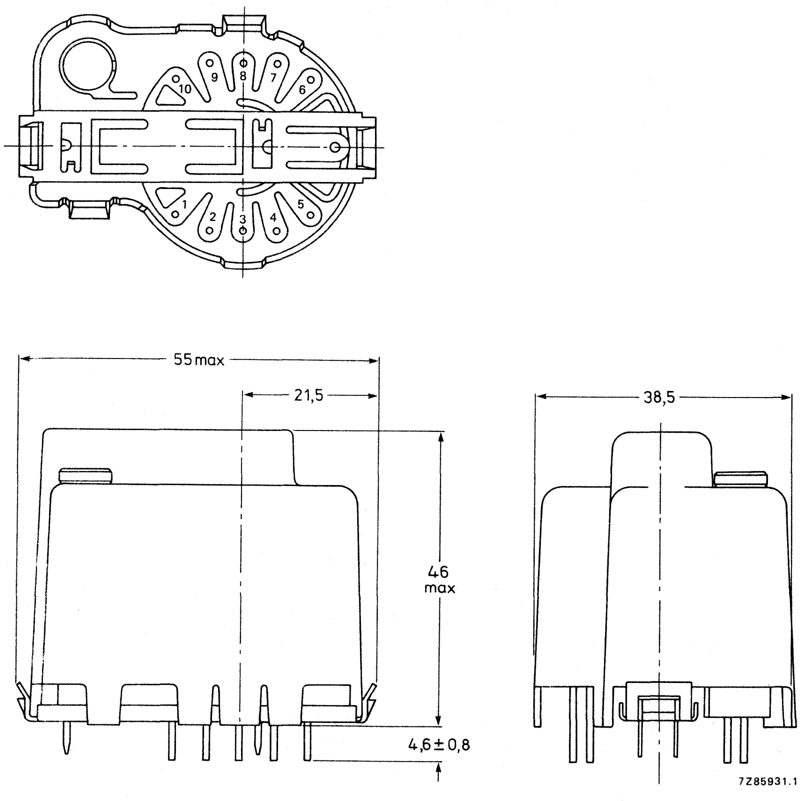


Fig. 1.

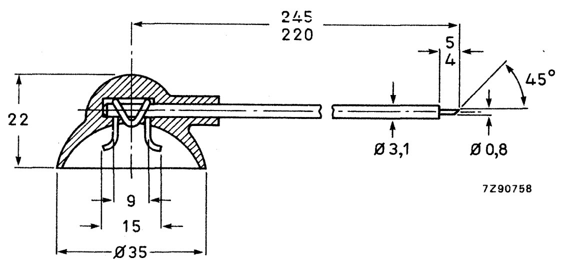


Fig. 2 E.H.T. cable, catalogue number 3122 137 63920.

Mounting

The transformer may be mounted on a printed-wiring board. The fit of the connecting pins in a printed-wiring grid with a pitch of 2,54 mm (0,1 in) is illustrated in Fig. 3.

The core of the transformer must be earthed.

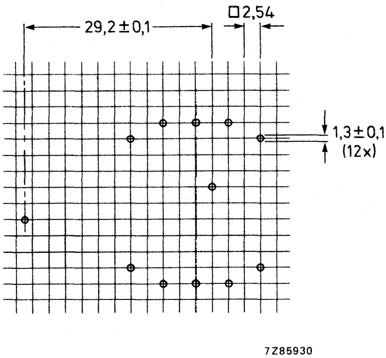


Fig. 3 Hole pattern for mounting on a printed-wiring board (solder side).

Temperature

The operating temperature of the core and the coils should not exceed 90 °C, under worst conditions, i.e. taking into account:

over-voltage on the windings;
low atmospheric pressure (at high altitudes) implying bad cooling by convection;
high room temperature (up to 45 °C).

To satisfy this requirement it may be desired to provide ample cool air circulation around the transformer.

Distances

The following minimum distances between the transformer and neighbouring conductive flat surfaces must be maintained (in proportion to their sharpness protruding parts must have a greater distance):

from the e.h.t. winding, radially 15 mm, axially 10 mm.

The transformer, and the leads and components carrying high-voltage pulses should be kept free from metal particles, solder drops etc.
The bending radius of the e.h.t. cable must be ⩾ 7,5 mm.

ELECTRICAL DATA

AT2240/16 used in conjunction with AT1077/05 and AT4042/08 (see also Fig. 4)

scan frequency	kHz	15,6	20,0	15,6	20,0
E.H.T. supply					
I_{eht}	μA	0	0	100	100
E.H.T.	kV	12,6	12,1	11,66	10,99
$R_{i(eht)}$	MΩ			9,4	11,1
Power supply					
V_B	V	11,2	11,0	11,2	11,0
I_B	A	0,56	0,68	0,66	0,78
Output transistor (BU806)					
V_{CEM}	V	280	280		
I_{CM}	A	2,3	2,3		
Deflection					
Current	A(p-p)	2,8	2,8		
Flyback time	μs	7,95	7,95		
Overscan variation	%	1,5	1,5		
Flyback capacitor	nF	8,2	8,2		
Auxiliary voltages					
Pin 1	V	−51	−49,5		
Pin 4	V	54	52,5		
Pin 10	V	450	445		

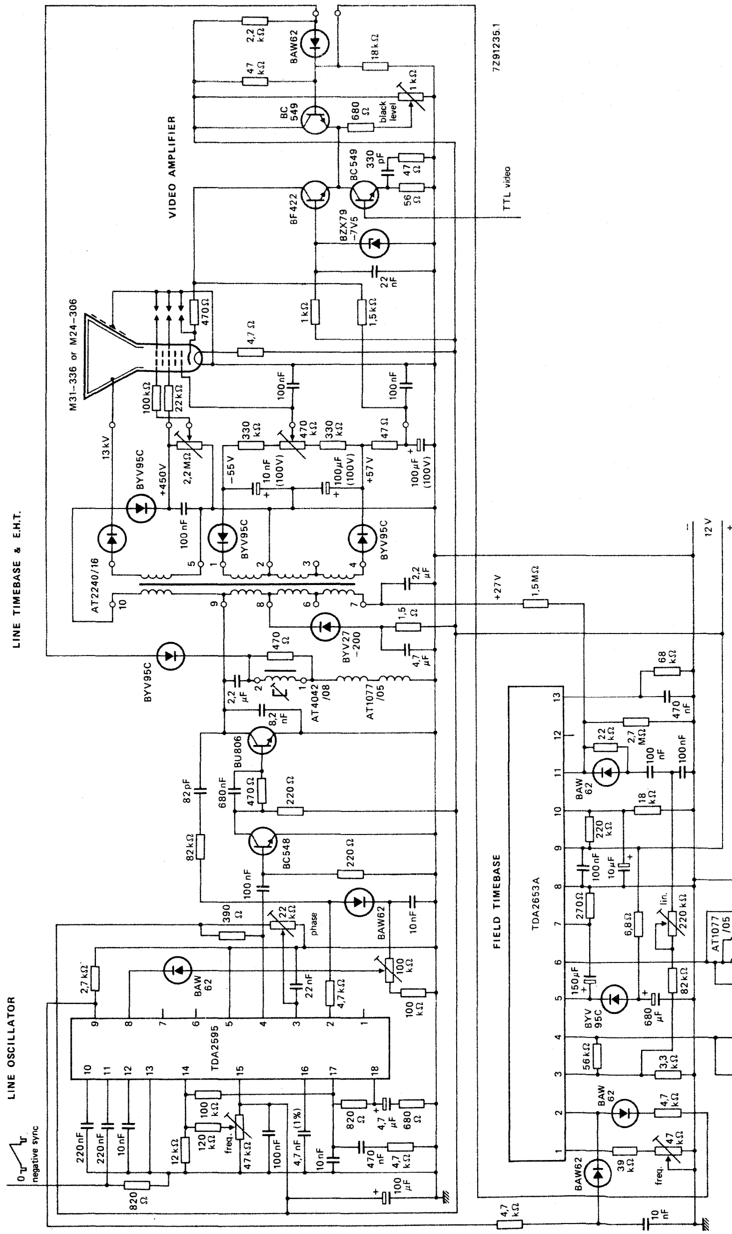


Fig. 4 Application diagram.

LINEARITY CORRECTORS

LINEARITY CORRECTOR

- For colour TV

APPLICATION

This linearity corrector is for the line deflection output stage of the 30AX system. It is compatible with linearity control unit AT4042/42 (connections 1 and 2 of the AT4042/42 on the printed-wiring board to be connected to 3 and 4 respectively).

DESCRIPTION

The linearity corrector consists of a coil, mounted on a Ferroxcube rod and a ring-shaped magnet of plastic-bonded Ferroxdure, which is placed around the rod at the bottom.
The corrector has pins for mounting on a printed-wiring board.

MECHANICAL DATA

Dimensions in mm

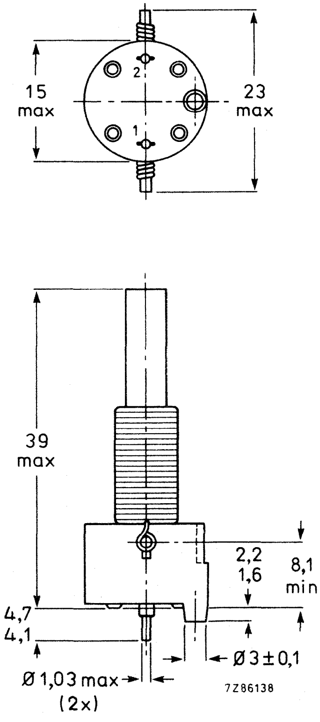


Fig. 1.

The linearity correctors are packed in boxes of 108 pieces.

Mounting

The AT4042/30 can be mounted on printed-wiring boards by means of its two connection pins, see Fig. 2. To prevent distortion of the magnetic field, no magnetic-conductive materials should approach the magnetic parts nearer than 3 mm. The coil should be shunted with a carbon resistor to damp ringing phenomena; the value of the resistor depends on the line output transformer used (typical value 560 Ω).

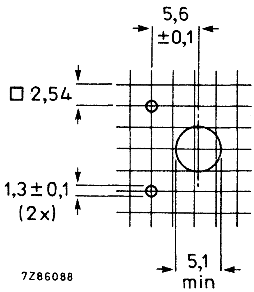


Fig. 2 Hole pattern for mounting on a printed-wiring board.

ELECTRICAL DATA

When a sawtooth current (without S-correction) of 5,1 A (p-p), frequency 15 625 Hz, flyback ratio 18%, flows through the linearity corrector, the correction voltage is 11,8 V ± 5,5%.

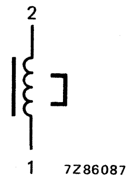


Fig. 3 Circuit diagram.

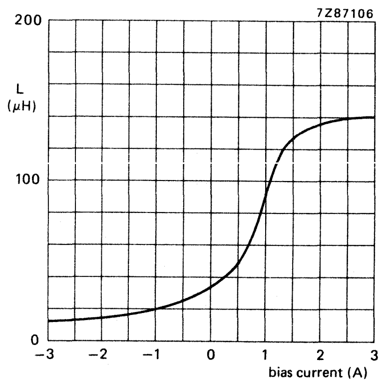


Fig. 4 Inductance as a function of bias current.

ENVIRONMENTAL DATA

Maximum ambient temperature	70 °C
Flammability of assembly	according to IEC 65, clause 14.4
Flammability of materials	according to UL94, category V-1

TESTS

The linearity corrector withstands the following tests:

Vibration	IEC 68-2-6, test Fc, procedure B4; 10-55-10 Hz, amplitude 0,35 mm, 3 x 30 min.
Bump	IEC 68-2-29, test Eb; 40g, 1000 bumps, 3 directions.
Soldering	IEC 68-2-20, test Ta, first part, method 1; 230 ± 10 °C, 2 ± 0,5 s.
Cold	IEC 68-2-1, test Aa; 96 h, −25 °C.
Dry heat	IEC 68-2-2, test Ba; 96 h, + 100 °C.
Damp heat, cyclic	IEC 68-2-30, test Db; 21 days, +40 °C.
Damp heat, steady state	IEC 68-2-3, test Ca, 21 days.
Change of temperature	IEC 68-2-14, test Na; 5 cycles, T_A = −25 °C, T_B = + 100 °C.

LINEARITY CORRECTOR

- For Monochrome Data Graphic Displays.

APPLICATION

This linearity corrector is for the line deflection output stage of 90° monitors for data graphic display in conjunction with line output transformer AT2140/16B or AT2240/16, and deflection unit AT1077/05. ←

DESCRIPTION

The linearity corrector consists of a coil, mounted on a Ferroxcube rod and a ring-shaped magnet of plastic-bonded Ferroxdure, which is placed around the rod at the bottom.

The corrector has pins for mounting on a printed-wiring board.

MECHANICAL DATA

Dimensions in mm

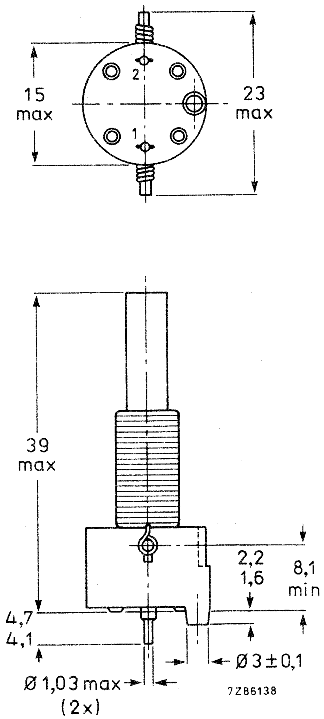


Fig. 1.

Mounting

The AT4042/46 can be mounted on printed-wiring boards by means of its two connection pins, see Fig. 2. To prevent distortion of the magnetic field, no magnetic-conductive materials should approach the magnetic parts nearer than 3 mm. The coil should be shunted with a carbon resistor to damp ringing phenomena; the value of the resistor depends on the line output transformer used (typical value 560 Ω).

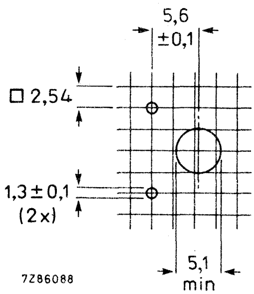


Fig. 2 Hole pattern for mounting on a printed-wiring board.

ELECTRICAL DATA

When a sawtooth current (without S-correction) of 3 A (p-p), frequency 15 625 Hz, flyback ratio 18%, flows through the linearity corrector, the correction voltage is 6 V ± 5,5%.

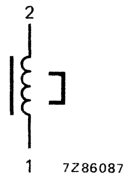


Fig. 3 Circuit diagram.

TESTS

The linearity corrector withstands the following tests:

Vibration	IEC 68-2-6, test Fc, procedure B4; 10-55-10 Hz, amplitude 0,35 mm, 3 x 30 min.
Bump	IEC 68-2-29, test Eb; 40g, 1000 bumps, 3 directions.
Soldering	IEC 68-2-20, test Ta, first part, method 1; 230 ± 10 °C, 2 ± 0,5 s.
Cold	IEC 68-2-1, test Aa; 96 h, −25 °C.
Dry heat	IEC 68-2-2, test Ba; 96 h, + 100 °C.
Damp heat, cyclic	IEC 68-2-30, test Db; 21 days, + 40 °C.
Damp heat, steady state	IEC 68-2-3, test Ca, 21 days.
Change of temperature	IEC 68-2-14, test Na; 5 cycles, T_A = −25 °C, T_B = + 100 °C.
Flammability of assembly	IEC 65, clause 14.4.
Flammability of materials	UL94, category V1.

LINEARITY CORRECTOR

- For colour Data Graphic Displays and Colour TV

APPLICATION

This linearity corrector is for the line deflection output stage of 90° monitors and TV receivers.

DESCRIPTION

The linearity corrector consists of a coil, mounted on a Ferroxcube rod and a ring-shaped magnet of plastic-bonded Ferroxdure, which is placed around the rod at the bottom.
The corrector has pins for mounting on a printed-wiring board.

MECHANICAL DATA

Dimensions in mm

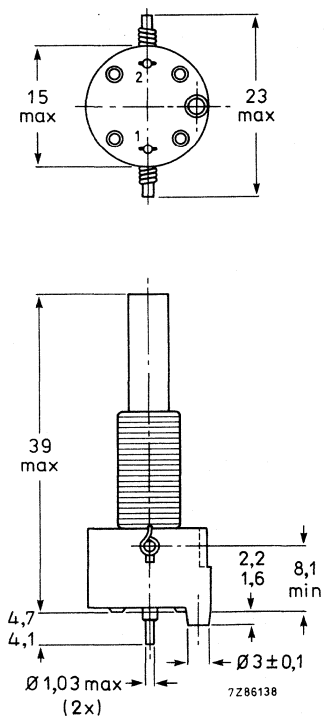


Fig. 1.

The linearity correctors are packed in boxes of 108 pieces.

Mounting

The AT4042/90 can be mounted on printed-wiring boards by means of its two connection pins, see Fig. 2. To prevent distortion of the magnetic field, no magnetic-conductive materials should approach the magnetic parts nearer than 3 mm. The coil should be shunted with a carbon resistor to damp ringing phenomena; the value of the resistor depends on the line output transformer used (typical value 560 Ω).

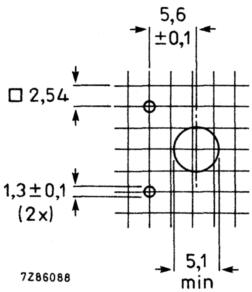


Fig. 2 Hole pattern for mounting on a printed-wiring board.

ELECTRICAL DATA

When a sawtooth current (without S-correction) of 2,9 A (p-p), frequency 15 625 Hz, flyback ratio 18%, flows through the linearity corrector, the correction voltage is 9,8 V ± 5,5%.

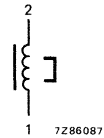


Fig. 3 Circuit diagram.

ENVIRONMENTAL DATA

Maximum ambient temperature	70 °C
Flammability of assembly	according to IEC 65, clause 14.4
Flammability of materials	according to UL94, category V-1

TESTS

The linearity corrector withstands the following tests:

Vibration	IEC 68-2-6, test Fc, procedure B4; 10-55-10 Hz, amplitude 0,35 mm, 3 x 30 min.
Bump	IEC 68-2-29, test Eb; 40g, 1000 bumps, 3 directions.
Soldering	IEC 68-2-20, test Ta, first part, method 1; 230 ± 10 °C, 2 ± 0,5 s.
Cold	IEC 68-2-1, test Aa; 96 h, −25 °C.
Dry heat	IEC 68-2-2, test Ba; 96 h, + 100 °C.
Damp heat, cyclic	IEC 68-2-30, test Db; 21 days, + 40 °C.
Damp heat, steady state	IEC 68-2-3, test Ca, 21 days.
Change of temperature	IEC 68-2-14, test Na; 5 cycles, T_A = −25 °C, T_B = + 100 °C.

LINEARITY CONTROL UNITS

ADJUSTABLE LINEARITY CONTROL UNIT

APPLICATION

This linearity control unit has been designed for use in monochrome monitors with 24 cm (9 in) or 31 cm (12 in) 90° monitor tubes. It can be used in conjunction with deflection unit AT1071/03, line output transformer AT2102/02 and line driver transformer AT4043/56.

DESCRIPTION

The unit consists of a coil wound on a Ferroxcube rod and two Ferroxdure magnets. One of these magnets has the shape of a half ring and is placed around the Ferroxcube rod under the coil. The other magnet is cylindrical; it is placed parallel to and clamped against the Ferroxcube rod opposite the first one. This magnet is provided with a square hole to facilitate turning of it to adjust the biasing field and so the linearity of the line deflection.

MECHANICAL DATA

Dimensions in mm

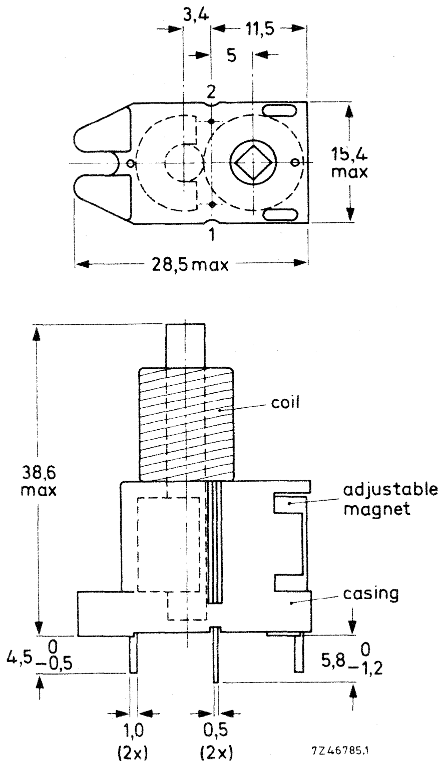


Fig. 1 Adjustable linearity control unit AT4036.

ELECTRICAL DATA

When a sawtooth current (without S-correction) of 6 A (p-p), frequency 15 625 Hz, flyback ratio 18%, flows through the linearity control unit (one connection point to earth), the correction voltage is adjustable between 1,05 and 1,95 V.

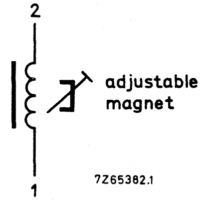


Fig. 2 Circuit diagram.

MOUNTING

The unit can be mounted either on printed-wiring boards by means of its two connection pins and two mounting pins (see Fig. 3), or on metal chassis by bending the two mounting pins and/or by means of a screw through an aperture in the casing (see Fig. 4). To prevent distortion of the magnetic field no iron part should approach the magnetic parts nearer than 3 mm. The coil should be shunted with a 1 W carbon resistor to damp ringing phenomena.

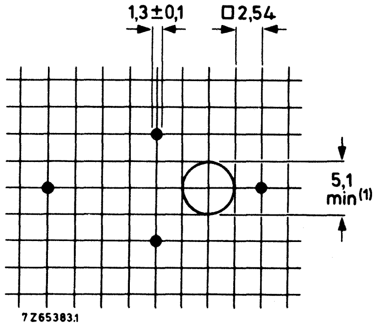


Fig. 3 Hole pattern for mounting on a printed-wiring board.
(1) Hole for bottom adjustment, if required.

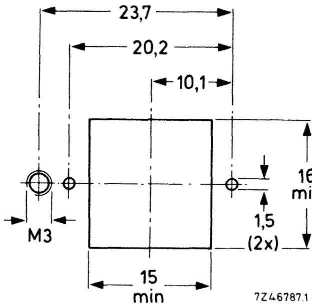


Fig. 4 Hole pattern for mounting on a chassis.

ADJUSTABLE LINEARITY CONTROL UNIT

APPLICATION

This unit has been designed to adjust the linearity of the line deflection in monochrome television sets in conjunction with deflection unit AT1040/15, and in 90° colour television sets in conjunction with deflection unit AT1235/00.

DESCRIPTION

The control unit consists of a coil wound on a Ferroxcube rod, and three Ferroxdure magnets. One magnet is placed around the Ferroxcube rod, above the coil. One of the magnets has the shape of a half ring; it is placed around the Ferroxcube rod under the coil. The third Ferroxdure magnet is cylindrical, it is positioned parallel to and clamped against the Ferroxcube rod opposite the second. It is provided with a square hole to facilitate turning to adjust the biasing field and so the linearity of the line deflection.

MECHANICAL DATA

Dimensions in mm

Outlines

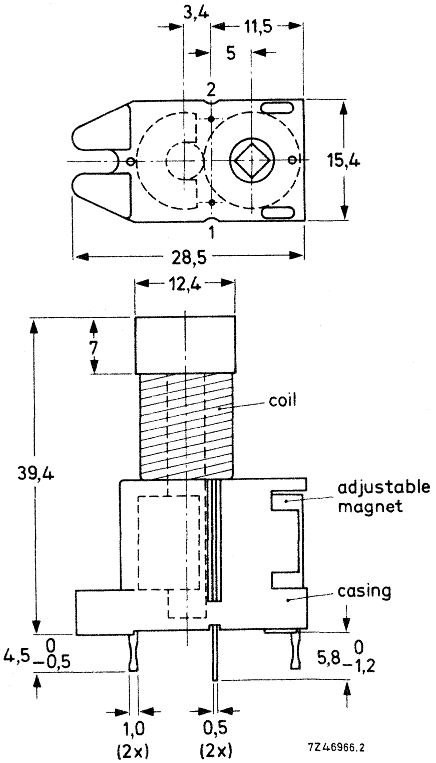
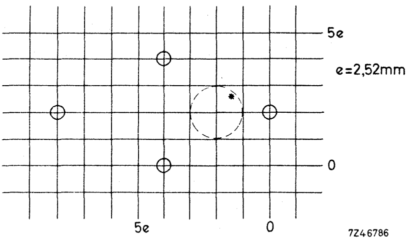


Fig. 1.

Mounting

The unit can be mounted either on printed-wiring boards by means of its two connection pins and two mounting pins (see Fig. 2), or on metal chassis, by bending of the two mounting pins and/or by means of a screw through an aperture in the casing (see Fig. 3). To prevent distortion of the magnetic field no iron part should approach the magnetic parts anywhere nearer than 3 mm. The coil should be shunted with a carbon resistor to damp ringing phenomena (value of resistor depends on line-deflection transformer used).



* Hole only necessary for bottom adjustment.

Fig. 2 Hole pattern for mounting on a printed-wiring board (e = 2,54 mm (0,1 in).

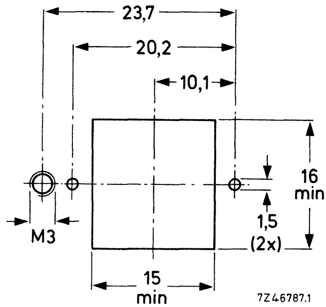


Fig. 3 Hole pattern for mounting on a chassis.

ELECTRICAL DATA

When a sawtooth current (without S-correction) of 2,8 A p-p, frequency 15 625 Hz, flyback ratio 18%, flows through the linearity control unit (one connection point to earth), the correction voltage is adjustable between 15 V and 26 V.

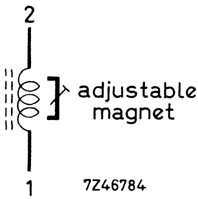


Fig. 4 Circuit diagram.

APPLICATION CIRCUITS

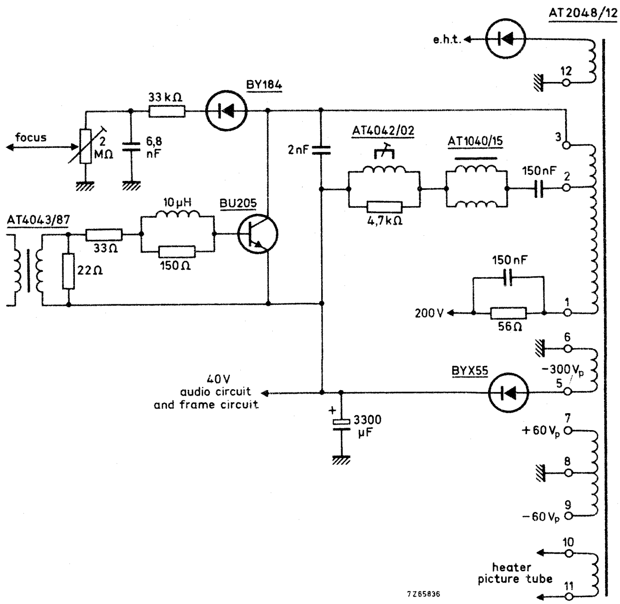


Fig. 5 Line deflection circuit for a monochrome television set.

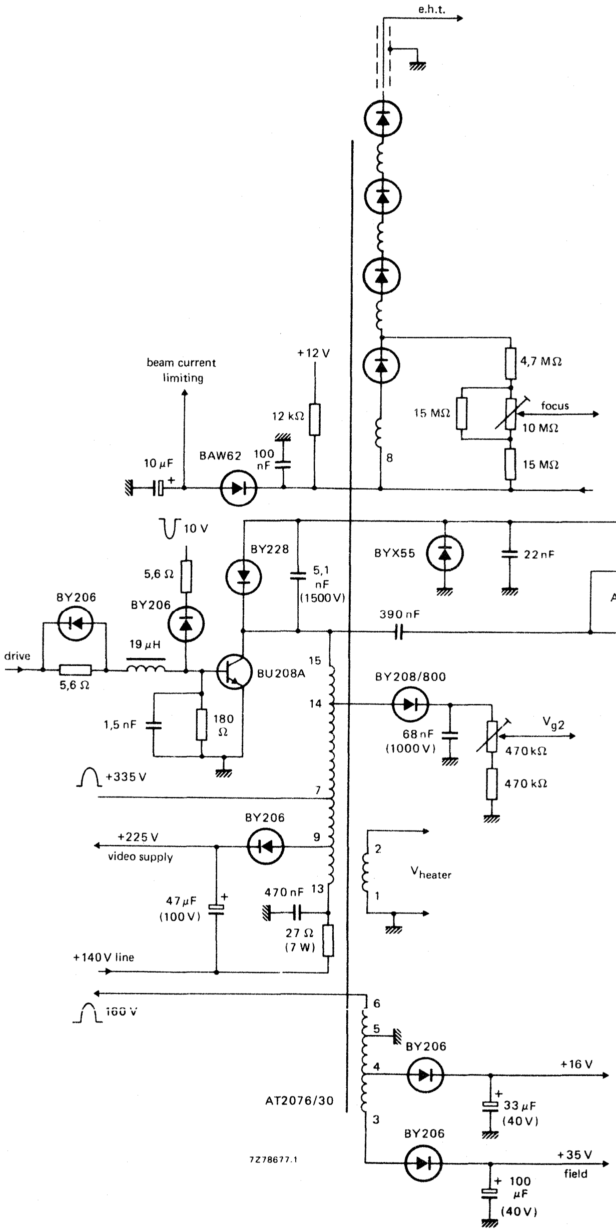


Fig. 6 Line deflection circuit for a 90° colour television set.

ADJUSTABLE LINEARITY CONTROL UNIT

APPLICATION

This linearity control unit has been designed for use in monochrome monitors with 31 cm (12 in) or 38 cm (15 in) 110° monitor tubes. It can be used in conjunction with deflection unit AT1038/40A, line output transformer AT2102/04C and line driver transformer AT4043/59. The unit is also to be used in colour television sets with a 110° colour picture tube.

DESCRIPTION

The unit consists of a coil, mounted on a Ferroxcube rod, two Ferroxdure magnets and one plasto-ferrite magnet. One magnet has the shape of a ring and is placed around the Ferroxcube rod above the coils. One has the shape of a half ring and is placed around the Ferroxcube rod under the coils. The third magnet is cylindrical; it is positioned to and clamped against the Ferroxcube rod opposite the half ring magnet. It is provided with a square hole to facilitate turning to adjust the biasing field and, therefore, the linearity of the line deflection.

MECHANICAL DATA

Dimensions in mm

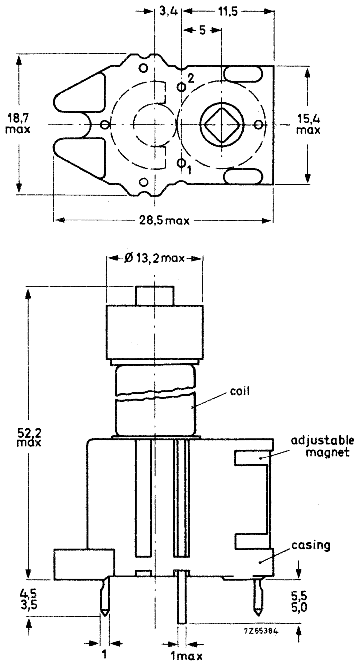


Fig. 1 Adjustable linearity control unit AT4042/08.

ELECTRICAL DATA

When a sawtooth current of 6 A (p-p), frequency 15 625 Hz, fly-back ratio 18% (without S-correction) flows through the linearity control unit (coils connected in parallel, one connection point to earth), the correction voltage is adjustable between 15 and 25 V.
With a sawtooth current of 4,65 A (p-p) the correction voltage is adjustable between 8 and 15 V.

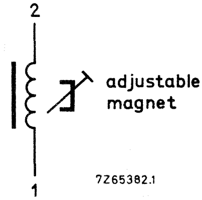


Fig. 2 Circuit diagram.

MOUNTING

The unit can be mounted either on printed-wiring boards by means of its two connection pins and two mounting pins, or on metal chassis by bending the two mounting pins and/or by means of a screw through an aperture in the casing (see Fig. 4). To prevent distortion of the magnetic field, no iron part should approach the magnetic parts nearer than 3 mm. The coils should be shunted with carbon resistors to damp ringing phenomena; the value of resistor depends on applied line output transformer.

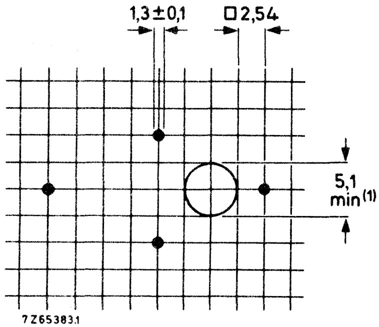


Fig. 3 Hole pattern for mounting on a printed-wiring board.
(1) Hole for bottom adjustment, if required.

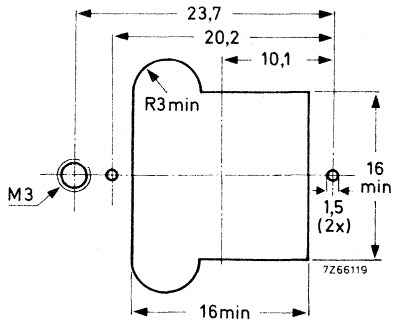


Fig. 4 Hole pattern for mounting on a chassis.

ADJUSTABLE LINEARITY CONTROL UNIT

- For Colour Data Graphic Displays

APPLICATION

This linearity control unit is for use in colour monitors.

DESCRIPTION

The unit consists of a coil, mounted on a Ferroxcube rod, and three Ferroxdure magnets. Two ring-shaped magnets are placed around the Ferroxcube rod, one at the top and one at the bottom. The third magnet is positioned against the Ferroxcube rod opposite the bottom magnet and clamped. It is provided with a square hole to facilitate adjustment of the biasing field and, therefore, the linearity of the line deflection.

MECHANICAL DATA

Outlines; Dimensions in mm

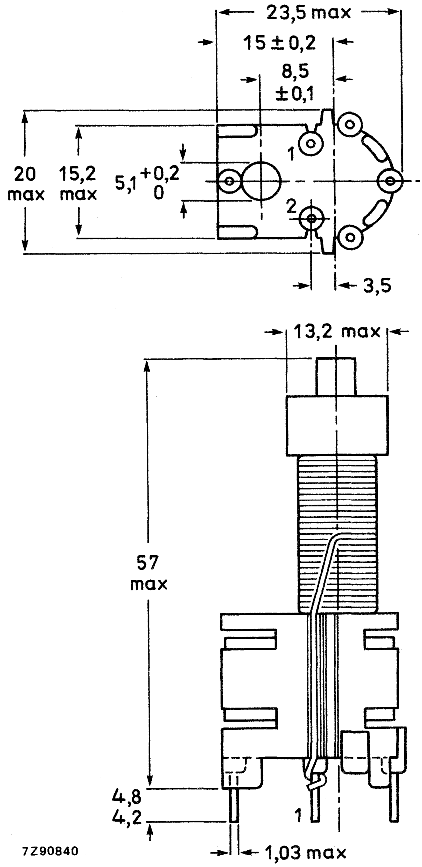


Fig. 1.

The linearity control units are packed in boxes of 280 pieces.

Mounting

The unit can be mounted on printed-wiring boards by means of its two connection pins, see Fig. 2. To prevent distortion of the magnetic field, no magnetic-conductive materials should approach the magnetic parts nearer than 3 mm. The coils should be shunted with a carbon resistor to damp ringing phenomena; the value of the resistor depends on the line output transformer used (typical value 560 Ω).

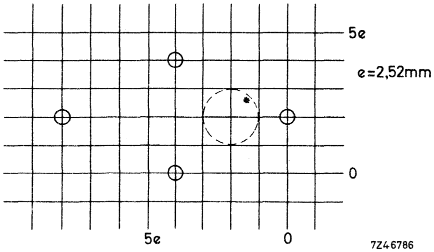


Fig. 2 Hole pattern for mounting on a printed-wiring board (e = 2,54 mm (0,1 in); hole diameter 1,3 ± 0,1 mm.

* Hole for bottom adjustment.

ELECTRICAL DATA

When a sawtooth current (with S-correction) of 4,4 A (p-p), frequency 32 kHz, flyback ratio 18%, flows through the linearity control unit, the correction voltage is adjustable between 0,65 and 3,2 V.

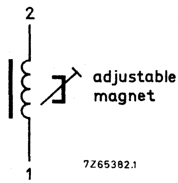


Fig. 3 Circuit diagram.

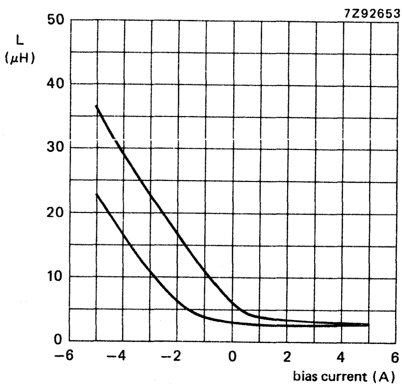


Fig. 4 Inductance as a function of bias current.

ENVIRONMENTAL DATA

Maximum ambient temperature	70 °C
Flammability of assembly	according to IEC 65, clause 14.4
Flammability of materials	according to UL94, category V-1

TESTS

The linearity control unit withstands the following tests:

Vibration	IEC 68-2-6, test Fc, procedure B4; 10-55-10 Hz, amplitude 0,35 mm, 3 x 30 min.
Bump	IEC 68-2-29, test Eb, 40g. 1000 bumps, 3 directions.
Soldering	IEC 68-2-20, test Ta, first part, method 1; 230 ± 10 °C, 2 ± 0,5 s.
Cold	IEC 68-2-1, test Aa; 96 h, −25 °C.
Dry heat	IEC 68-2-2, test Ba; 96 h, + 100 °C.
Damp heat, cyclic	IEC 68-2-30, test Db, test Db; 21 days, + 40 °C.
Damp heat, steady state	IEC 68-2-3, test Ca, 21 days.
Change of temperature	IEC 68-2-14, test Na; 5 cycles, T_A = −25 °C, T_B = + 100 °C.

ADJUSTABLE LINEARITY CONTROL UNIT

- For monochrome Data Graphic Displays

APPLICATION

This linearity control unit is for use in monochrome monitors. It is used in conjunction with a deflection unit of the AT1039 series, and line output transformer AT2076/84.

DESCRIPTION

The unit consists of a coil, mounted on a Ferroxcube rod, and three Ferroxdure magnets. Two ring-shaped magnets are placed around the Ferroxcube rod, one at the top and one at the bottom. The third magnet is positioned against the Ferroxcube rod opposite the bottom magnet and clamped. It is provided with a square hole to facilitate adjustment of the biasing field and, therefore, the linearity of the line deflection.

MECHANICAL DATA; Dimensions in mm

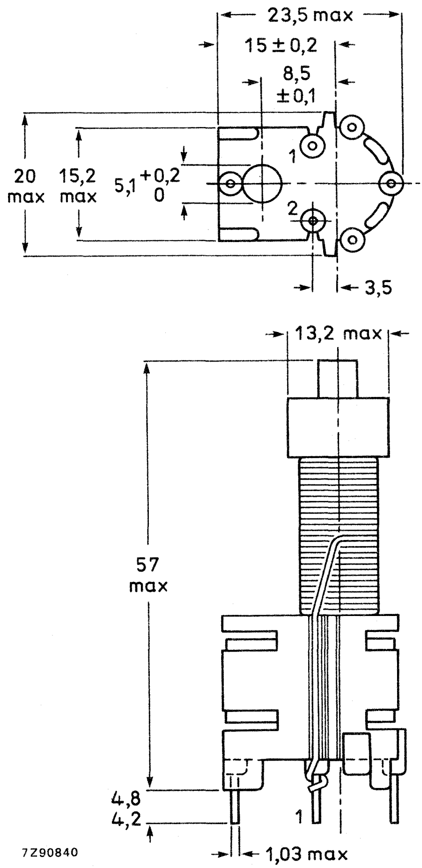


Fig. 1.

The linearity control units are packed in boxes of 280 pieces.

Mounting

The unit can be mounted on printed-wiring boards by means of its two connection pins, see Fig. 2. To prevent distortion of the magnetic field, no magnetic-conductive materials should approach the magnetic parts nearer than 3 mm. The coils should be shunted with a carbon resistor to damp ringing phenomena; the value of the resistor depends on the line output transformer used (typical value 560 Ω).

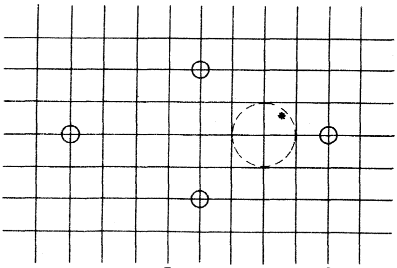


Fig. 2 Hole pattern for mounting on a printed-wiring board.

ELECTRICAL DATA

When a sawtooth current (without S-correction) of 8,8 A (p-p), frequency 32 kHz, flyback ratio 18%, flows through the linearity control unit, the correction voltage is adjustable between 6 and 10 V.

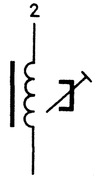


Fig. 3 Circuit diagram.

ENVIRONMENTAL DATA

Maximum ambient temperature	70 °C
Flammability of assembly	according to IEC 65, clause 14.4
Flammability of materials	according to UL94, category V-1

TESTS

The linearity control unit withstands the following tests:

Vibration	IEC 68-2-6, test Fc, procedure B4; 10-55-10 Hz, amplitude 0,35 mm, 3 x 30 min.
Bump	IEC 68-2-29, test Eb; 40g, 1000 bumps, 3 directions.
Soldering	IEC 68-2-20, test Ta, first part, method 1; 230 ± 10 °C, 2 ± 0,5 s.
Cold	IEC 68-2-1, test Aa; 96 h, –25 °C.
Dry heat	IEC 68-2-2, test Ba; 96 h, + 100 °C.
Damp heat, cyclic	IEC 68-2-30, test Db; 21 days, + 40 °C.
Damp heat, steady state	IEC 68-2-3, test Ca, 21 days.
Change of temperature	IEC 68-2-14, test Na; 5 cycles, T_A = –25 °C, T_B = + 100 °C.

LUMINANCE DELAY LINES

3122 138 99420

LUMINANCE DELAY LINE

QUICK REFERENCE DATA

Delay	270 ns
Dimensions	30 x 19 x 14 mm
Self-extinguishing	

APPLICATION

The DL270 is for use in the luminance circuit of colour television receivers.

DESCRIPTION

The delay line consists of two parallel connected coils which are astatically wound to decrease the influence of magnetic fields from other parts of the receiver. The delay line is in a plastic housing. Three pins enable the unit to be soldered directly onto a printed-wiring board.

MECHANICAL DATA

Outlines

Dimensions in mm

e = 2,54 mm

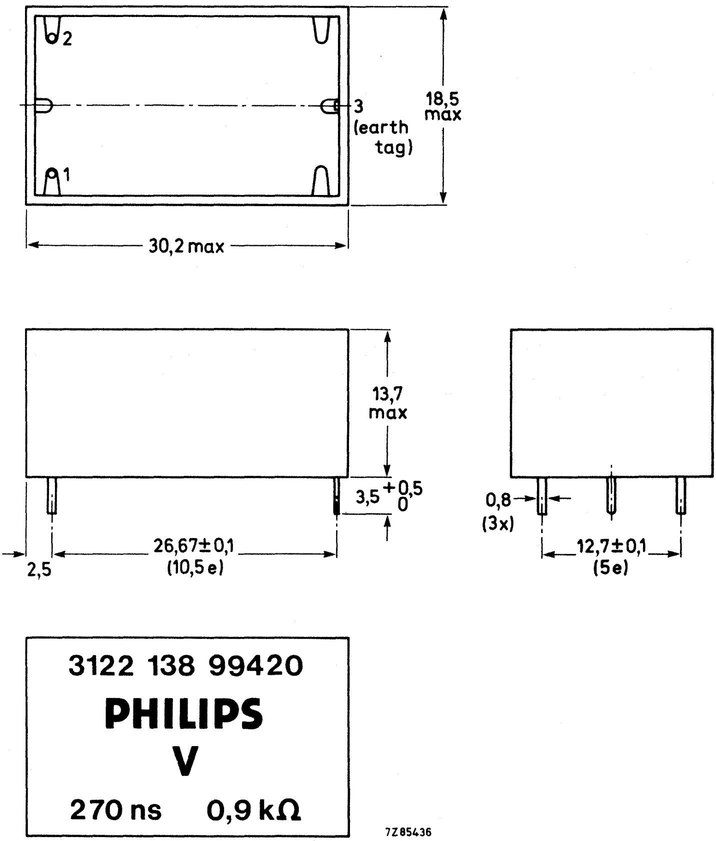


Fig. 1.

Mass 6,5 g

Mounting

The unit can be soldered onto a printed-wiring board pierced with three 1,0 + 0,1 mm diameter holes.

Packaging 108 delay lines per box.

ELECTRICAL DATA (Measured at 25 °C)

Delay	270 ns ± 10%
Characteristic impedance	0,9 kΩ ± 10%
Group delay (with respect to 0,5 MHz)	
at 3,5 MHz	max. 30 ns
at 5,0 MHz	max. 60 ns
Bandwidth at −3 dB	5 MHz
Ripple with 2τ-pulse on pin 2	max. 2,5%
Breakdown voltage between pins 2 and 3	min. 50 V (d.c.)
Permissible temperature range	−25 to + 70 °C

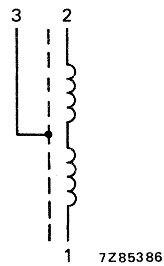


Fig. 2.

The luminance delay line withstands the following tests:

test	according to IEC 68-2 par.		procedure
Climatic			
cold	1	Ab	−25 °C, 96 h
dry heat	2	Bb	+ 70 °C, 96 h
damp heat cyclic	30	Db	+ 40 °C, 21 cycles
damp heat steady state	3	Ca	+ 40 °C, 21 days
change of temperature	14	Na	−25 °C/+ 70 °C, 5 cycles
Mechanical			
vibration sinusoidal	6	Fc	10-55-10 Hz, amplitude 0,35 mm 3 perpendicular directions, 0,5 h each
bump	29	Eb	1000 bumps in 6 directions peak acceleration 245 m/s^2
shock	27	Ea	half-sinewave, 11 ms peak acceleration 490 m/s^2 3 shocks per direction, 6 directions
resistance to soldering heat	20	Tb	method 1A
solderability	20	Ta	first part of method 1 230 ± 10 °C, 2 ± 0,5 s
robustness of terminations	21	Ua Ub	tensile 10 N, thrust 2 N 2 bends, 5 N

3122 138 96042

LUMINANCE DELAY LINE

QUICK REFERENCE DATA

Delay	330 ns
Dimensions	30 x 19 x 14 mm
Self-extinguishing properties	

APPLICATION

The DL330 is for use in the luminance circuit of colour television receivers.

DESCRIPTION

The delay line consists of two parallel connected coils which are astatically wound to decrease the influence of magnetic fields from other parts of the receiver. The delay line is enclosed in a plastic housing. Three pins enable the unit to be soldered directly onto a printed-wiring board.

MECHANICAL DATA

Outlines

Dimensions in mm

e = 2,54 mm

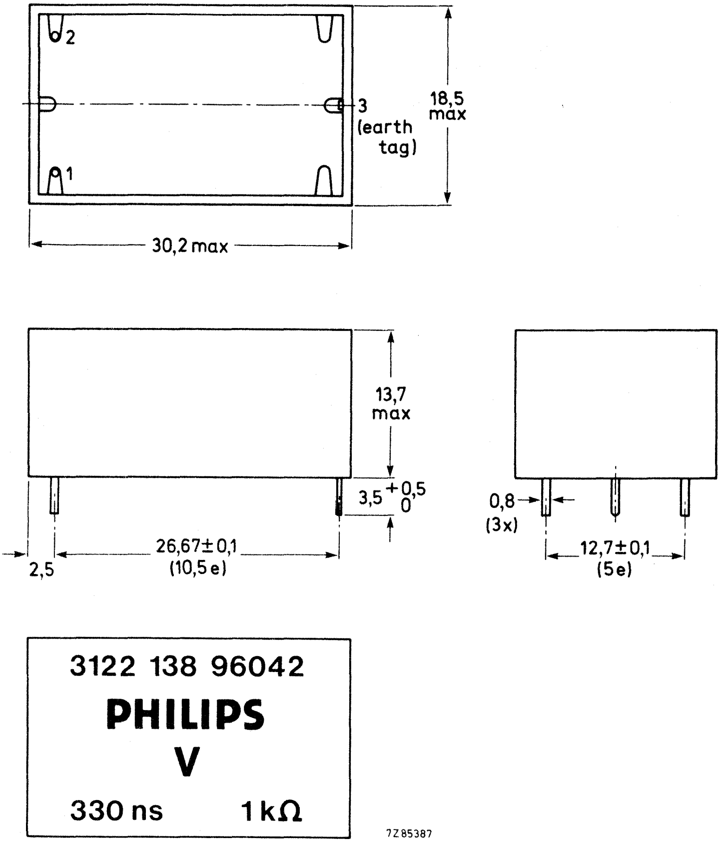


Fig. 1.

Mass 6,5 g

Mounting

The unit can be soldered directly onto a printed-wiring board pierced with three 1,0 + 0,1 mm diameter holes.

Packaging 108 delay lines per box.

ELECTRICAL DATA

Measured at 25 °C

Delay	330 ns ± 10%
Characteristic impedance	1 kΩ ± 10%
Group delay (with respect to 0,5 MHz)	
at 3,5 MHz	max. 30 ns
at 5,0 MHz	max. 60 ns
Bandwidth at −3 dB	5 MHz
Ripple with 2τ-pulse on pin 2	max. 2,5%
Breakdown voltage between pins 2 and 3	min. 50 V (d.c.)
Permissible temperature range	−25 to +70 °C

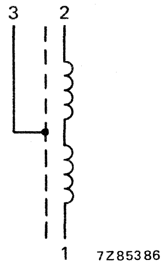


Fig. 2.

The luminance delay line withstands the following tests:

test	according to IEC 68-2 par.		procedure
Climatic			
cold	1	Ab	−25 °C, 96 h
dry heat	2	Bb	+70 °C, 96 h
damp heat cyclic	30	Db	+40 °C, 21 cycles
damp heat steady state	3	Ca	+40 °C, 21 days
change of temperature	14	Na	−25 °C/+70 °C, 5 cycles
Mechanical			
vibration sinusoidal	6	Fc	10-55-10 Hz, amplitude 0,35 mm 3 perpendicular directions, 0,5 h each
bump	29	Eb	1000 bumps in 6 directions peak acceleration 245 m/s^2
shock	27	Ea	half-sinewave, 11 ms peak acceleration 490 m/s^2 3 shocks per direction, 6 directions
resistance to soldering heat	20	Tb	method 1A
solderability	20	Ta	first part of method 1 230 ± 10 °C, 2 ± 0,5 s
robustness of terminations	21	Ua Ub	tensile 10 N, thrust 2 N 2 bends, 5 N

3122 138 50450

LUMINANCE DELAY LINE

QUICK REFERENCE DATA

Delay	390 ns
Dimensions	30 x 19 x 14 mm
Self-extinguishing properties	

APPLICATION

The DL390 is for use in the luminance circuit of colour television receivers.

DESCRIPTION

The delay line consists of two parallel connected coils which are astatically wound to decrease the influence of magnetic fields from other parts of the receiver. The delay line is enclosed in a plastic housing. Three pins enable the unit to be soldered directly onto a printed-wiring board.

MECHANICAL DATA

Dimensions in mm

Outlines

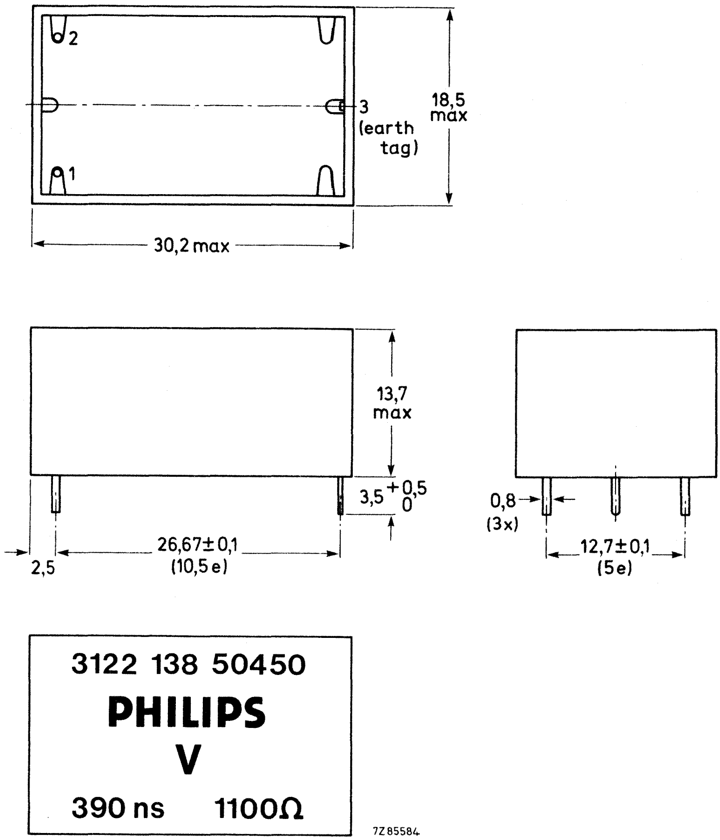


Fig. 1.

Mass 6,5 g

Mounting

The unit can be soldered directly onto a printed-wiring board pierced with three 1,0 + 0,1 mm diameter holes.

Packaging 108 delay lines per box.

ELECTRICAL DATA

Measured at 25 °C

Delay	390 ns ± 10%
Characteristic impedance	1,1 kΩ ± 10%
Group delay (with respect to 0,5 MHz)	
at 3,5 MHz	max. 45 ns
at 5,0 MHz	max. 60 ns
Bandwidth at –3 dB	5 MHz
Ripple with 2τ-pulse on pin 2	max. 3%
Breakdown voltage between pins 2 and 3	min. 50 V (d.c.)
Permissible temperature range	–25 to + 70 °C

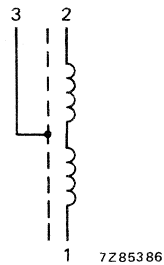


Fig. 2.

The luminance delay line withstands the following tests:

test	according to IEC 68-2 par.		procedure
Climatic			
cold	1	Ab	–25 °C, 96 h
dry heat	2	Bb	+70 °C, 96 h
damp heat cyclic	30	Db	+40 °C, 21 cycles
damp heat steady state	3	Ca	+40 °C, 21 days
change of temperature	14	Na	–25 °C/+ 70 °C, 5 cycles
Mechanical			
vibration sinusoidal	6	Fc	10-55-10 Hz, amplitude 0,35 mm 3 perpendicular directions, 0,5 h each
bump	29	Eb	1000 bumps in 6 directions peak acceleration 245 m/s^2
shock	27	Ea	half-sinewave, 11 ms peak acceleration 490 m/s^2 3 shocks per direction, 6 directions
resistance to soldering heat	20	Tb	method 1A
solderability	20	Ta	first part of method 1 230 ± 10 °C, 2 ± 0,5 s
robustness of terminations	21	Ua Ub	tensile 10 N, thrust 2 N 2 bends, 5 N

3122 138 99471

LUMINANCE DELAY LINE

QUICK REFERENCE DATA

Delay	470 ns
Dimensions	30 x 19 x 14 mm
Self-extinguishing	

APPLICATION

The DL470 is for use in the luminance circuit or transposer circuit of colour television receivers.

DESCRIPTION

The delay line consists of two parallel connected coils which are astatically wound to decrease the influence of magnetic fields from other parts of the receiver. The delay line is in a plastic housing. Three pins enable the unit to be soldered directly onto a printed-wiring board.

MECHANICAL DATA

Dimensions in mm

Outlines

e = 2,54 mm

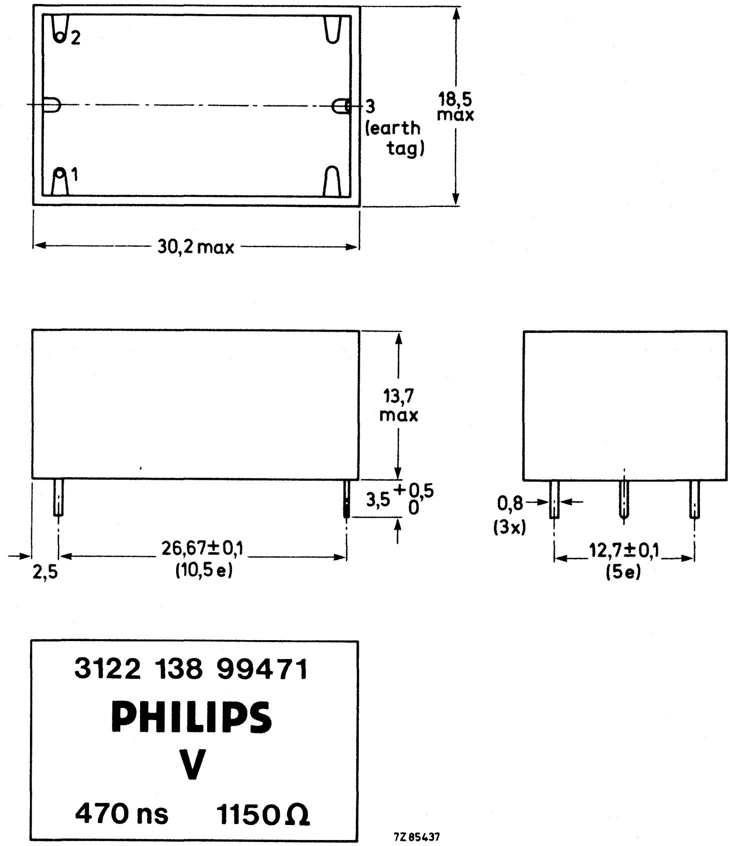


Fig. 1.

Mass 6,5 g

Mounting

The unit can be soldered onto a printed-wiring board pierced with three 1,0 + 0,1 mm diameter holes.

Packaging 108 delay lines per box.

ELECTRICAL DATA (Measured at 25 °C)

Delay	470 ns ± 10%
Characteristic impedance	1150 Ω ± 10%
Group delay (with respect to 1,0 MHz)	
at 3,5 MHz	max. 45 ns
at 5,0 MHz	max. 60 ns
Bandwidth at −3 dB	5 MHz
Ripple with 2τ-pulse on pin 2	max. 3%
Breakdown voltage between pins 2 and 3	min. 50 V (d.c.)
Permissible temperature range	−25 to + 70 °C

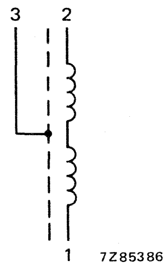


Fig. 2.

The luminance delay line withstands the following tests:

test	according to IEC 68-2 par.		procedure
Climatic			
cold	1	Ab	−25 °C, 96 h
dry heat	2	Bb	+ 70 °C, 96 h
damp heat cyclic	30	Db	+ 40 °C, 21 cycles
damp heat steady state	3	Ca	+ 40 °C, 21 days
change of temperature	14	Na	−25 °C/+ 70 °C, 5 cycles
Mechanical			
vibration sinusoidal	6	Fc	10-55-10 Hz, amplitude 0,35 mm 3 perpendicular directions, 0,5 h each
bump	29	Eb	1000 bumps in 6 directions peak acceleration 245 m/s²
shock	27	Ea	half-sinewave, 11 ms peak acceleration 490 m/s² 3 shocks per direction, 6 directions
resistance to soldering heat	20	Tb	method 1A
solderability	20	Ta	first part of method 1 230 ± 10 °C, 2 ± 0,5 s
robustness of terminations	21	Ua Ub	tensile 10 N, thrust 2 N 2 bends, 5 N

GLASS DELAY LINES

DELAY LINE

QUICK REFERENCE DATA

Nominal frequency	7,5 MHz
Phase delay time	64,0 μs
Dimensions	37 x 7,5 x 28,5 mm
Self-extinguishing properties	

APPLICATION

The DL680 is for use in video long play equipment.

DESCRIPTION

A very thin slab of zero TC glass provided with two transducers is shock-proof mounted in a housing with self-extinguishing properties. Four pins enable the unit to be soldered directly onto a printed-wiring board.

MECHANICAL DATA

Dimensions in mm

Outlines

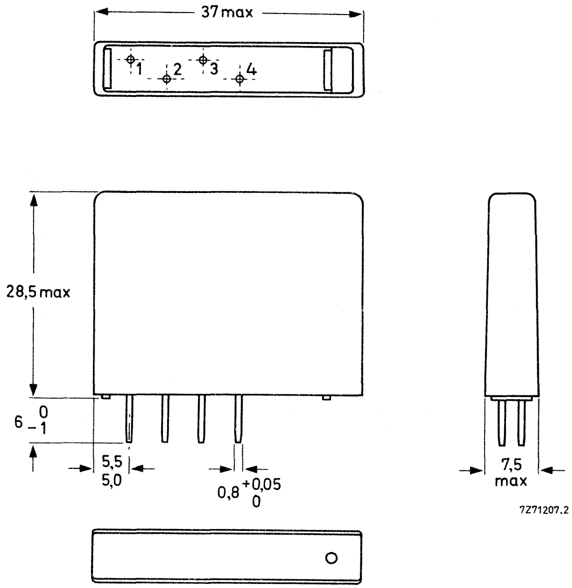


Fig. 1.

Mass 7 g

Mounting

The unit can be soldered directly onto a printed-wiring board.

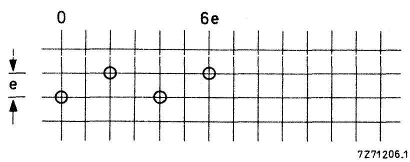


Fig. 2 Recommended hole pattern for mounting on a printed-wiring board: e = 2,54 mm. The tolerance on the distances of the different holes to the 0-line is ± 0,1 mm. Hole diameter is 1,0 + 0,1 mm.

ELECTRICAL DATA

Measured with the circuit of Fig. 3 at 25 ^{o}C and f_o (unless otherwise specified)

Nominal frequency (f_o)	7,5 MHz
Phase delay time (τ)	$64{,}0^{+0{,}40}_{-0{,}05}$ μs
Bandwidth at −3 dB	from ⩽ 5,5 to ⩾ 8,5 MHz
Insertion loss	⩽ 17 dB
Drift of phase delay from + 10 to + 60 ^{o}C (relative to + 25 ^{o}C)	⩽ 10 ns
Maximum input voltage (p-p)	5 V
Spurious signals	
3 τ signals	⩽ −20 dB with respect to 1 τ signal
other signals	⩽ −30 dB with respect to 1 τ signal
Storage temperature range	−40 to + 70 ^{o}C

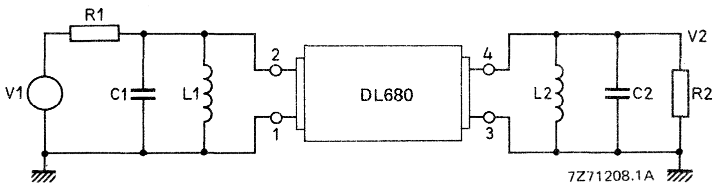


Fig. 3.

Terminations

R1 = R2 = 150 Ω

C1 = 20 pF } total capacitance of test jig without delay-line i.e. wiring capacitance, capacitance of coil
C2 = 20 pF } and extra trimming capacitor.

L1 = 2,0 μH

L2 = 2,0 μH

DELAY LINE

QUICK REFERENCE DATA

For receivers up to European PAL standard	
Nominal frequency	4,433619 MHz
Phase delay time	63,943 μs
Dimensions	37 x 7,5 x 28,5 mm
Self-extinguishing properties	

APPLICATION

The DL701 is intended for use in decoder circuits of colour television receivers.

DESCRIPTION

A very thin slab of zero TC glass provided with two transducers is shock-proof mounted in a housing with self-extinguishing properties. Four pins enable the unit to be soldered directly onto a printed-wiring board.

MECHANICAL DATA

Dimensions in mm

Outlines

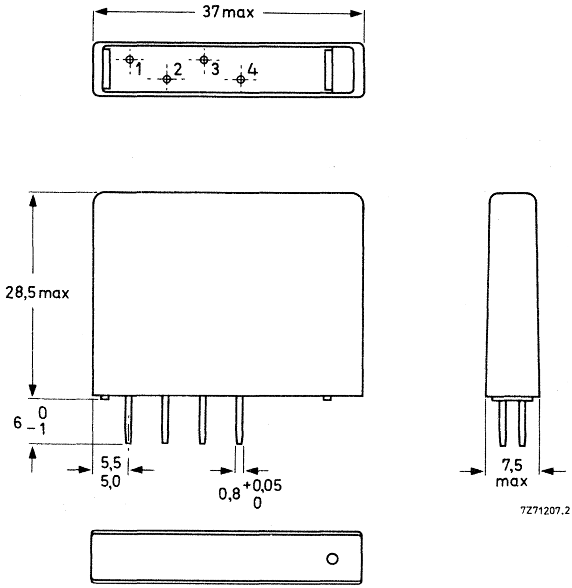


Fig. 1.

Mass 7 g

Mounting

The unit can be soldered directly onto a printed-wiring board.

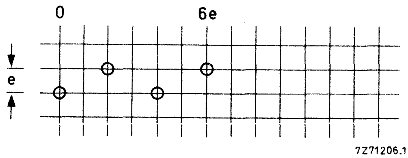


Fig. 2 Recommended hole pattern for mounting on a printed-wiring board: e = 2,54 mm. The tolerance on the distances of the different holes to the 0-line is ± 0,1 mm. Hole diameter is 1,0 + 0,1 mm.

ELECTRICAL DATA

Measured with the circuit of Fig. 3 at 25 °C and f_o (unless otherwise specified)

Nominal frequency (f_o)	4,433619 MHz
Phase delay time (τ)	63,943 ± 0,005 μs
Bandwidth at –3 dB	from ⩽ 3,43 to ⩾ 5,23 MHz
Insertion loss	9 ± 3 dB
Drift of phase delay from + 10 to + 60 °C (relative to + 25 °C)	max. 5 ns, typ. 3 ns
Maximum input voltage (p-p)	10 V
Spurious signals	
3 τ signals	⩽ –25 dB with respect to 1 τ signal
other signals	⩽ –33 dB with respect to 1 τ signal
Phase relation $\varphi_{4\text{-}3} - \varphi_{2\text{-}1}$	180°
Storage temperature range	–40 to + 70 °C

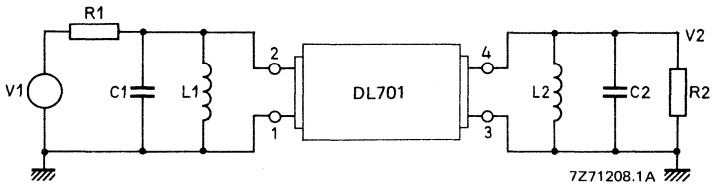


Fig. 3.

Terminations

R1 = R2 = 390 Ω

C1 = 20 pF
C2 = 30 pF } total capacitance of test jig without delay-line i.e. wiring capacitance, capacitance of coil and extra trimming capacitor.

L1 = 8,64 μH

L2 = 8,10 μH

Application circuit

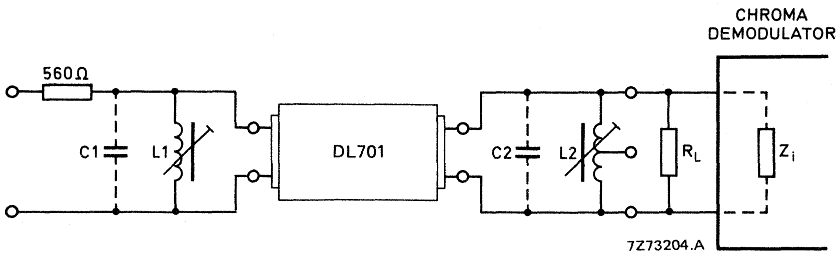


Fig. 4.

$(R_L // Z_i) = 390\ \Omega$

C1, C2 < 30 pF (wiring capacitance and capacitance of the coil)

L1, L2 nominal values depend on values of C1 and C2 to produce the reactances:

$$X1 = \frac{\omega_o L1}{1 - \omega_o^2 L1C1} = 278\ \Omega$$

$$X2 = \frac{\omega_o L2}{1 - \omega_o^2 L2C2} = 278\ \Omega$$

$f_o = 4{,}433619\text{MHz}$

Maximum bandwidth is obtained at minimum C1 and C2.

Recommended adjustment range of the coils -19 to $+36\%$.

DELAY LINE

QUICK REFERENCE DATA

For receivers up to European PAL and SECAM standard	
Nominal frequency	4,433619 MHz
Phase delay time	63,943 μs
Dimensions	37 x 7,5 x 28,5 mm
Self-extinguishing properties	

APPLICATION

The DL711 is intended for use in decoder circuits of colour television receivers.

DESCRIPTION

A very thin slab of zero TC glass provided with two transducers is shock-proof mounted in a housing with self-extinguishing properties. Four pins enable the unit to be soldered directly onto a printed-wiring board.

MECHANICAL DATA

Dimensions in mm

Outlines

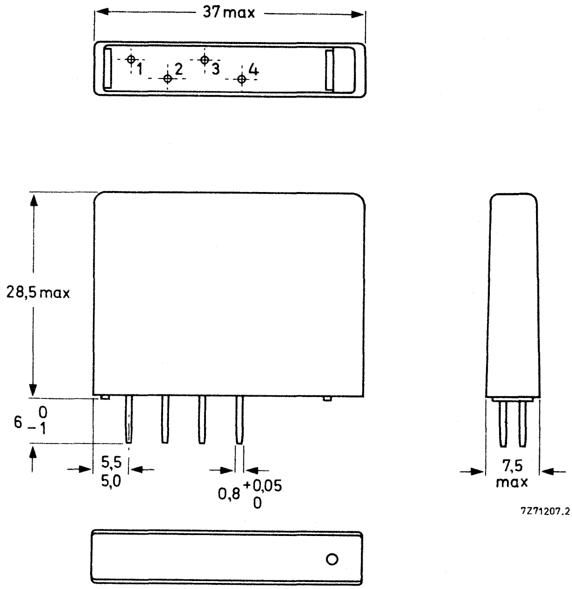


Fig. 1.

Mass 7 g

Mounting

The unit can be soldered directly onto a printed-wiring board.

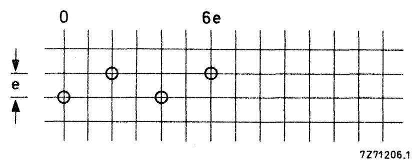


Fig. 2 Recommended hole pattern for mounting on a printed-wiring board: e = 2,54 mm. The tolerance on the distances of the different holes to the 0-line is ± 0,1 mm. Hole diameter is 1,0 + 0,1 mm.

ELECTRICAL DATA

Measured with the circuit of Fig. 3 at 25 °C and f_o (unless otherwise specified)

Nominal frequency (f_o)	4,433619 MHz
Phase delay time (τ)	63,943 ± 0,005 μs
Bandwidth at −3 dB	from ≤ 3,43 to ≥ 5,23 MHz
Insertion loss	9 ± 3 dB
Drift of phase delay from + 10 to + 60 °C (relative to + 25 °C)	max. 5 ns, typ. 3 ns
Maximum input voltage (p-p)	10 V
Spurious signals*	
3 τ signals	≤ −33 dB with respect to 1 τ signal
other signals	≤ −33 dB with respect to 1 τ signal
Phase relation $\varphi_{4\text{-}3} - \varphi_{2\text{-}1}$	180°
Storage temperature range	−40 to + 70 °C

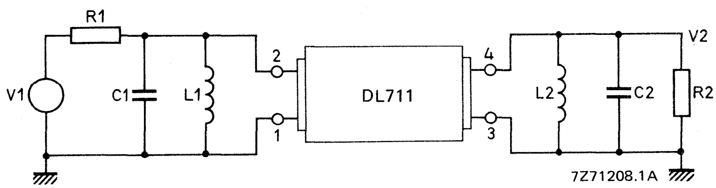


Fig. 3.

Terminations
R1 = R2 = 390 Ω
C1 = 20 pF — total capacitance of test jig without delay-line i.e. wiring capacitance,
C2 = 30 pF — capacitance of coil and extra trimming capacitor.
L1 = 8,64 μH
L2 = 8,10 μH

* Measured in frequency range 3,9 to 4,75 MHz.

Application circuit

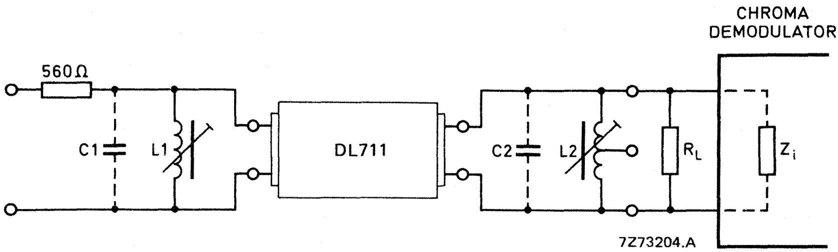


Fig. 4.

$(R_L // Z_i) = 390\ \Omega$

C1, C2 < 30 pF (wiring capacitance and capacitance of the coil)

L1, L2 nominal values depend on values of C1 and C2 to produce the reactances:

$$X1 = \frac{\omega_0 L1}{1 - \omega_0{}^2 L1C1} = 278\ \Omega$$

$$X2 = \frac{\omega_0 L2}{1 - \omega_0{}^2 L2C2} = 278\ \Omega$$

$$f_0 = 4{,}433619\ \text{MHz}$$

Maximum bandwidth is obtained at minimum C1 and C2.

Recommended adjustment range of the coils −19 to + 36%.

DELAY LINE

QUICK REFERENCE DATA

For receivers up to Argentine PAL-N standard	
Nominal frequency	3,582056 MHz
Phase delay time	63,929 μs
Dimensions	37 x 7,5 x 28,5 mm
Self-extinguishing properties	

APPLICATION

The DL720 is intended for use in decoder circuits of colour television receivers.

DESCRIPTION

A very thin slab of zero TC glass provided with two transducers is shock-proof mounted in a housing with self-extinguishing properties. Four pins enable the unit to be soldered directly onto a printed-wiring board.

MECHANICAL DATA Dimensions in mm

Outlines

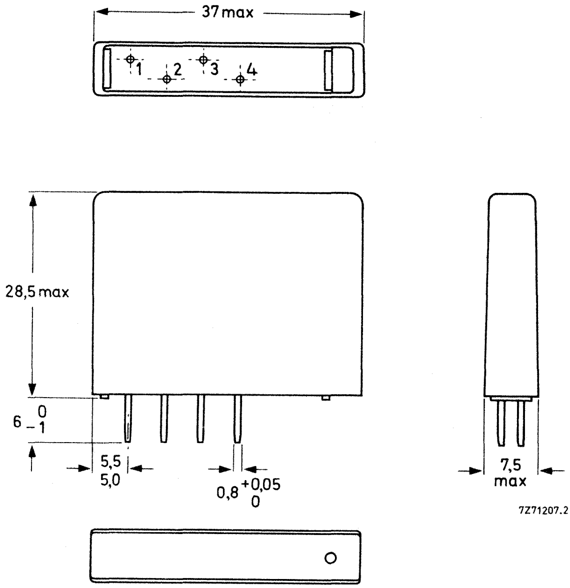


Fig. 1.

Mass 7 g

Mounting

The unit can be soldered directly onto a printed-wiring board.

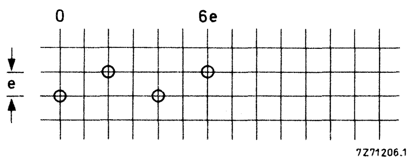


Fig. 2 Recommended hole pattern for mounting on a printed-wiring board: e = 2,54 mm. The tolerance on the distances of the different holes to the 0-line is ± 0,1 mm. Hole diameter is 1,0 + 0,1 mm.

ELECTRICAL DATA

Measured with the circuit of Fig. 3 at 25 °C and f_o (unless otherwise specified)

Nominal frequency (f_o)	3,582056 MHz
Phase delay time (τ)	63,929 ± 0,004 μs
Bandwidth at −3 dB	from ≤ 2,8 to ≥ 4,5 MHz
Insertion loss	9 ± 3 dB
Drift of phase delay from +10 to +60 °C (relative to +25 °C)	max. 5 ns, typ. 3 ns
Maximum input voltage (p-p)	10 V
Spurious signals	
3 τ signals	≤ −22 dB with respect to 1 τ signal
other signals	≤ −28 dB with respect to 1 τ signal
Phase relation $\varphi_{4\text{-}3} - \varphi_{2\text{-}1}$	0°
Storage temperature range	−40 to +70 °C

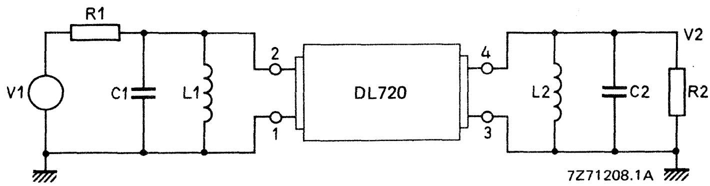


Fig. 3.

Terminations

R1 = R2 = 560 Ω

C1 = 20 pF } total capacitance of test jig without delay-line i.e. wiring capacitance,

C2 = 30 pF } capacitance of coil and extra trimming capacitor.

L1 = 15,2 μH

L2 = 14,1 μH

Application circuit

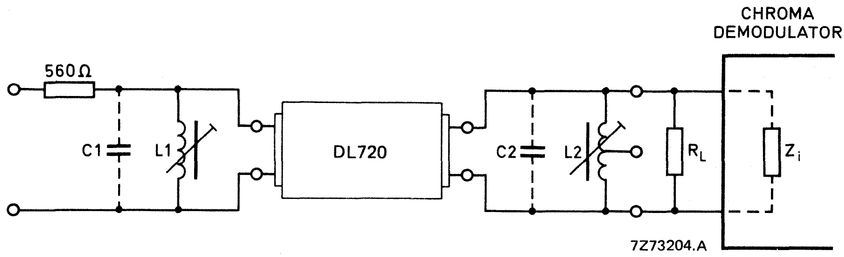


Fig. 4.

$(R_L//Z_i) = 560\ \Omega$

C1, C2 < 30 pF (wiring capacitance and capacitance of the coil)

L1, L2 nominal valyes depend on values of C1 and C2 to produce the reactances:

$$X1 = \frac{\omega_o L1}{1 - \omega_o^2 L1C1} = 405\ \Omega$$

$$X2 = \frac{\omega_o L2}{1 - \omega_o^2 L2C2} = 405\ \Omega$$

$$f_o = 3{,}582056\ \text{MHz}.$$

Maximum bandwidth is obtained at minimum C1 and C2.

Recommended adjustment range of the coils -19 to $+36\%$.

DELAY LINE

QUICK REFERENCE DATA

Nominal frequency	3,579545 MHz
Phase delay time	63,555 μs
Dimensions	37 x 7,5 x 28,5 mm
Self-extinguishing properties	

APPLICATION

The DL750 is intended for use as a comb filter in colour television receivers to NTSC standard.

DESCRIPTION

A very thin slab of zero TC glass provided with two transducers is shock-proof mounted in a housing with self-extinguishing properties. Four pins enable the unit to be soldered directly onto a printed-wiring board.

MECHANICAL DATA

Dimensions in mm

Outlines

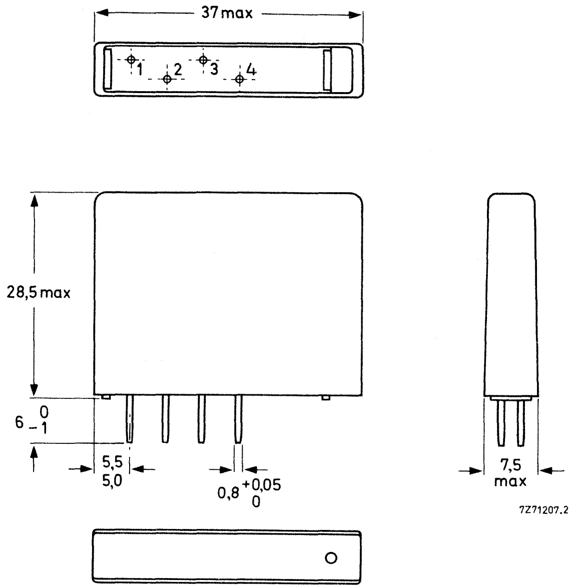


Fig. 1.

Mass 7 g

Mounting

The unit can be soldered directly onto a printed-wiring board.

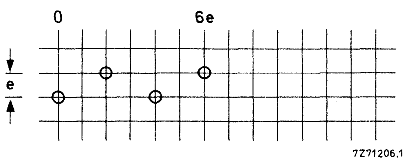


Fig. 2 Recommended hole pattern for mounting on a printed-wiring board: e = 2,54 mm. The tolerance on the distances of the different holes to the 0-line is ± 0,1 mm. Hole diameter is 1,0 + 0,1 mm.

ELECTRICAL DATA

Measured with the circuit of Fig. 3 at 25 °C and f_o (unless otherwise specified)

Nominal frequency (f_o)	3,579545 MHz
Phase delay time (τ)	63,555 ± 0,004 μs
Bandwidth at −3 dB	from ⩽ 2,8 to ⩾ 4,5 MHz
Insertion loss	9 ± 3 dB
Drift of phase delay from +10 to +60 °C (relative to +25 °C)	max. 5 ns, typ. 3 ns
Maximum input voltage (p-p)	10 V
Spurious signals	
3 τ signals	⩽ −30 dB with respect to 1 τ signal
other signals	⩽ −28 dB with respect to 1 τ signal
Phase relation $\varphi_{4\text{-}3} - \varphi_{2\text{-}1}$	180°
Storage temperature range	−40 to +70 °C

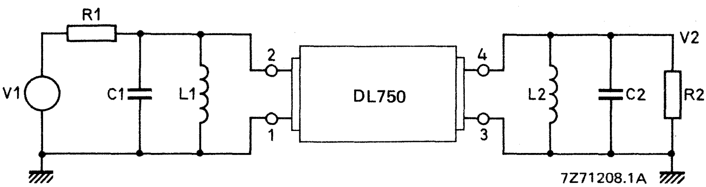


Fig. 3.

Terminations

R1 = R2 = 560 Ω
C1 = 20 pF } total capacitance of test jig without delay-line i.e. wiring capacitance,
C2 = 30 pF } capacitance of coil and extra trimming capacitor.
L1 = 15,2 μH
L2 = 14,1 μH

Application circuit

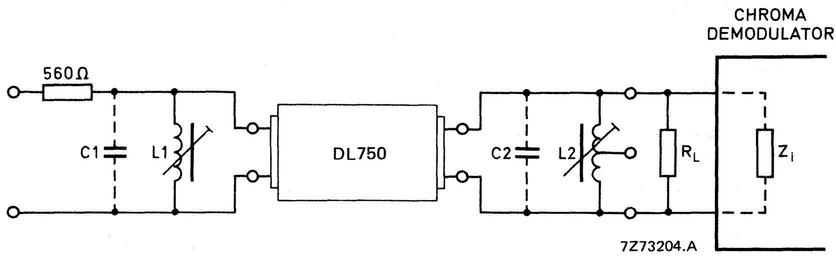


Fig. 4.

$(R_L//Z_i) = 560\ \Omega$

C1, C2 < 30 pF (wiring capacitance and capacitance of the coil)

L1, L2 nominal values depend on values of C1 and C2 to produce the reactances:

$$X1 = \frac{\omega_o L1}{1 - \omega_o^2 L1C1} = 405\ \Omega$$

$$X2 = \frac{\omega_o L2}{1 - \omega_o^2 L2C2} = 405\ \Omega$$

$$f_o = 3{,}579545\ \text{MHz.}$$

Maximum bandwidth is obtained at minimum C1 and C2.

Recommended adjustment range of the coils −19 to +36%.

DELAY LINE

QUICK REFERENCE DATA

For equipment up to European PAL standard	
Nominal frequency	4,433619 MHz
Phase delay time	128 μs
Dimensions	36 mm x 7 mm x 30 mm
Self-extinguishing properties	

APPLICATION

The DL800 is for use in a comb filter in VCR equipment.

DESCRIPTION

Very thin slabs of zero TC glass, each provided with two transducers, are shock-proof mounted in a housing with self-extinguishing properties. Six pins enable the unit to be soldered directly onto a printed-wiring board.

MECHANICAL DATA

Dimensions in mm

Outlines

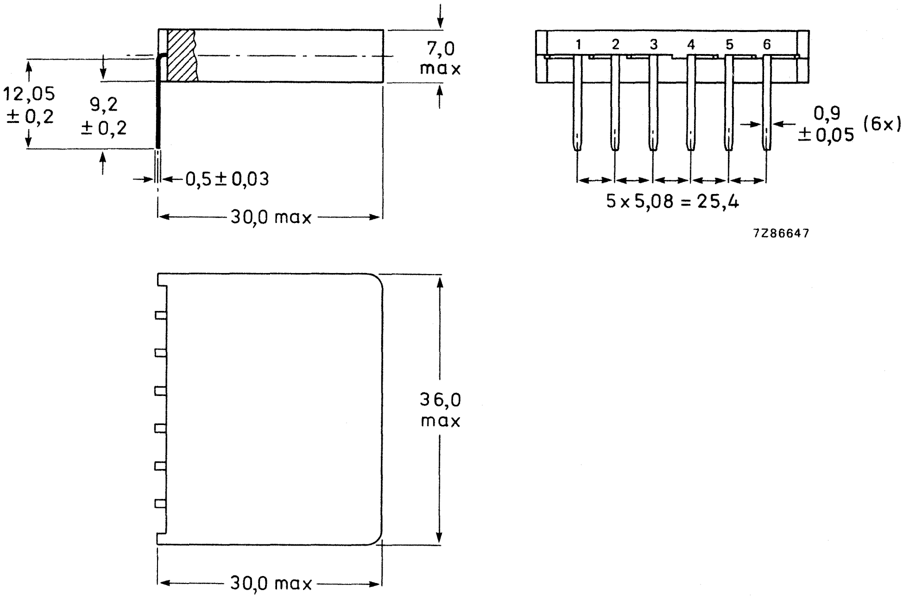


Fig. 1.

Mass 7,2 g

Mounting

The unit can be soldered directly onto a printed-wiring board. It is recommended that a space of 5,25 mm be maintained between the unit and the printed-wiring board.

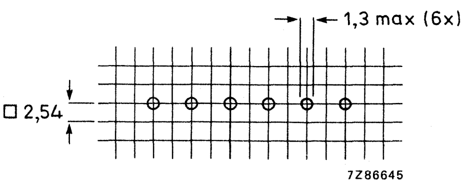


Fig. 2 Hole pattern for mounting on a printed-wiring board.

ELECTRICAL DATA

Measured with the circuit of Fig. 3 at 25 °C and f_o (unless otherwise specified)

Nominal frequency (f_o)	4,433619 MHz
Phase delay time (τ)	128,0 ± 0,01 μs
Bandwidth at –3 dB	from ≤ 3,83 to ≥ 5,23 MHz
Insertion loss	18 ± 3 dB
Drift of phase delay from + 10 to + 60 °C* (relative to + 25 °C)	max. 10 ns
Maximum input voltage (p-p)	10 V
Spurious signals at f_o	≤ –28 dB with respect to 1 τ signal
Phase relation $\varphi_{6\text{-}5} - \varphi_{1-2}$	180°
Operating temperature range	–20 to + 70 °C
Storage temperature range	–40 to + 70 °C

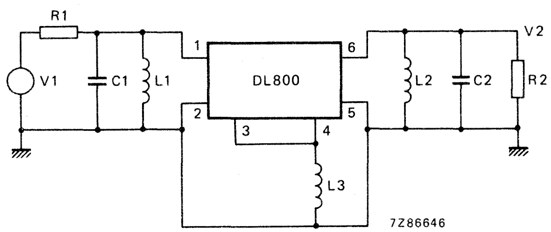


Fig. 3 Test circuit.

Terminations

R1 = R2 = 390 Ω
C1 = 20 pF } total capacitance of test jig without delay-line i.e. wiring capacitance, capacitance of
C2 = 30 pF } coil and extra trimming capacitor.
L1 = 8,64 μH
L2 = 8,10 μH
L3 = 4,70 μH

* Measured with a 10 μs pulse with 1 μs rise and fall time.

DELAY LINE

QUICK REFERENCE DATA

Nominal frequency	4,433619 MHz
Phase delay time	128 μs
Dimensions	37 x 7,5 x 28,5 mm
Self-extinguishing properties	

APPLICATION

The DL872 is for use in comb filter circuits in VCR equipment.

DESCRIPTION

A very thin slab of zero TC glass provided with two transducers is shock-proof mounted in a housing with self-extinguishing properties. Four pins enable the unit to be soldered directly onto a printed-wiring board.

MECHANICAL DATA

Dimensions in mm

Outlines

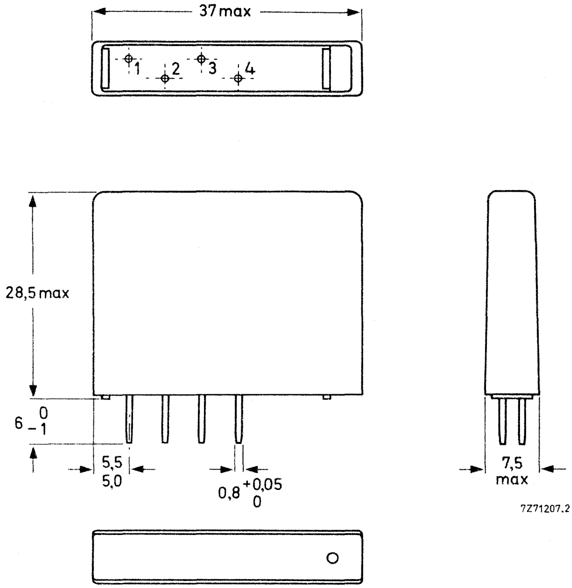


Fig. 1.

Mass 7 g

Mounting

The unit can be soldered directly onto a printed-wiring board.

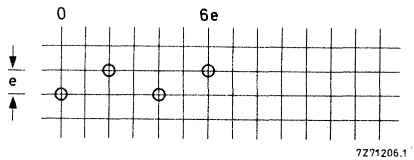


Fig. 2 Recommended hole pattern for mounting on a printed-wiring board; e = 2,54 mm. The tolerance on the distances of the different holes to the 0-line is ± 0,1 mm. Hole diameter is 1,0 + 0,1 mm.

DEGAUSSING COILS

DEGAUSSING COILS

- For 220/240 V mains voltage
- Single insulation

APPLICATION

For 14 in and 16 in, 90^{o} colour picture tubes and high resolution data graphic display tubes. One coil asymmetrically mounted on the top and bottom of the cone of the tube, in conjunction with PTC thermistor 2322 662 98009, produces a decaying alternating field.

Degaussing coil 3122 138 50560 to be used with 14 in tubes, degaussing coil 3122 138 50290 to be used with 16 in tubes.

MECHANICAL DATA

The coils of aluminium wire are completely sleeved with a flame-retardent foil; the coil ends are connected to pins in a holder. For connecting the coils to the circuit, a plug has to be used (see Figs 2 and 3).

Outlines

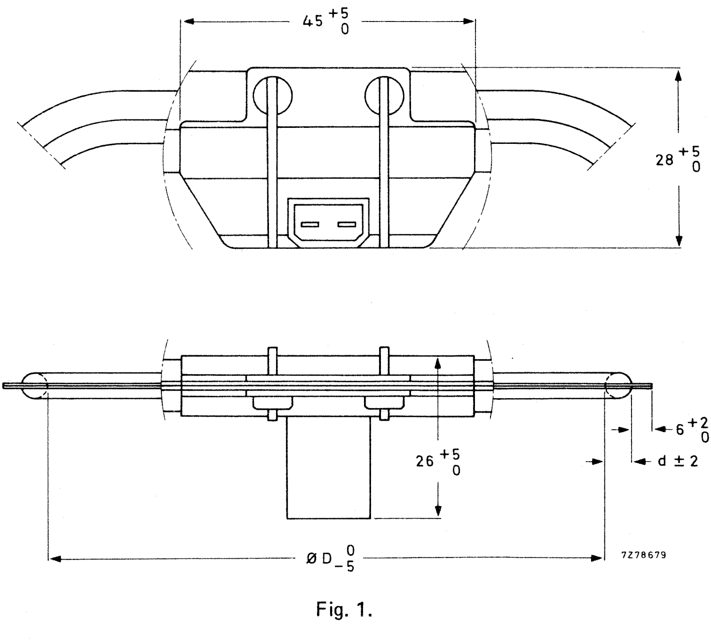


Fig. 1.

degaussing coil catalogue no.	D mm	d mm
3122 138 50560 for 14 in tube	300	8
3122 138 50290 for 16 in tube	330	8

Dimensions of plug

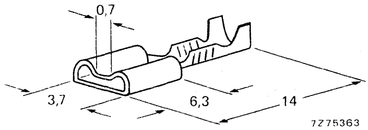


Fig. 2 Receptacle (3122 128 70931).

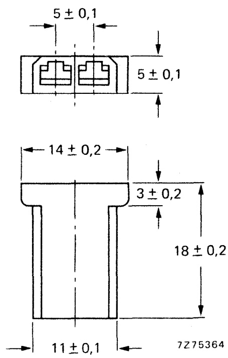


Fig. 3 Housing (3122 128 70921) for two receptacles.

Insertion force	max.	50 N
Withdrawal force	min.	10 N

ELECTRICAL DATA

Coil resistance	
coil 3122 138 50560 (14 in)	22 Ω ± 10%
coil 3122 138 50290 (16 in)	23 Ω ± 10%
Number of turns	120
Test voltage (d.c.)	
between interconnected pins and insulation foil	6000 V
between interconnected pins and holder	6000 V
Maximum working temperature	70 °C

DEGAUSSING COILS
for 110° picture tubes
with mains isolation

APPLICATION

Two coils mounted on the top and bottom of the cone of the picture tube produce in conjunction with PTC thermistor 2322 662 98009 a decaying alternating field. The coils have to be connected in such a way that they operate magnetically in series, producing flux lines which flow from the top coil through the picture tube into the bottom coil or vice versa.

MECHANICAL DATA

The coils are completely sleeved with a flame-retardent foil; to guarantee mains isolation the coil ends are connected to a holder. For connecting the coils to the circuit a special plug has to be used.

Outlines Dimensions in mm

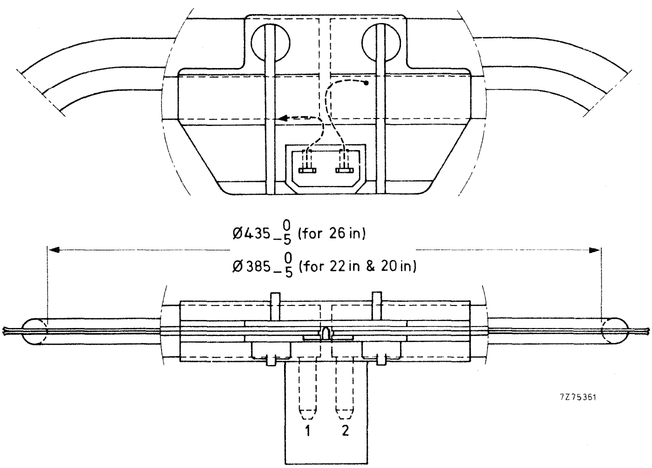


Fig. 1.

Dimensions of plug
Housing 3122 128 70921
Receptacle 3122 128 70931

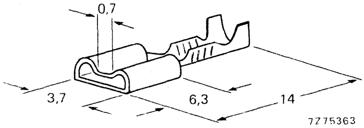
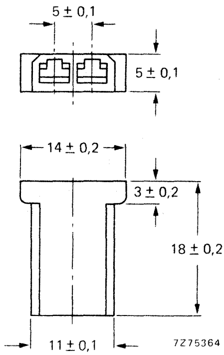


Fig.2



ELECTRICAL DATA

Coil resistance		
26 inch	catalogue no. 3122 138 75581	8,6 Ω ± 10%
22 and 20 inch	catalogue no. 3122 138 75941	11,5 Ω ± 10%
Number of turns		
26 inch		52
22 and 20 inch		49
Mains isolation		acc. to IEC 65
Maximum working temperature		70 °C

DEGAUSSING CIOLS
with double insulation

APPLICATION
For 26 in, 22 in and 20 in , 110° colour picture tubes. Two coils mounted on the top and bottom of the cone of the picture tube produce in conjunction with PTC thermistor 2322 662 98009 a decaying alternating field. The coils have to be connected in such a way that they operate magnetically in series, producing flux lines which flow from the top coil through the picture tube into the bottom coil or vice versa.

MECHANICAL DATA
The coils are completely double sleeved with a flame-retardent foil; to guarantee mains isolation the coil ends are connected to a holder. For connecting the coils to the circuit a special plug has to be used (see Figs 2 and 3).

Outlines Dimensions in mm

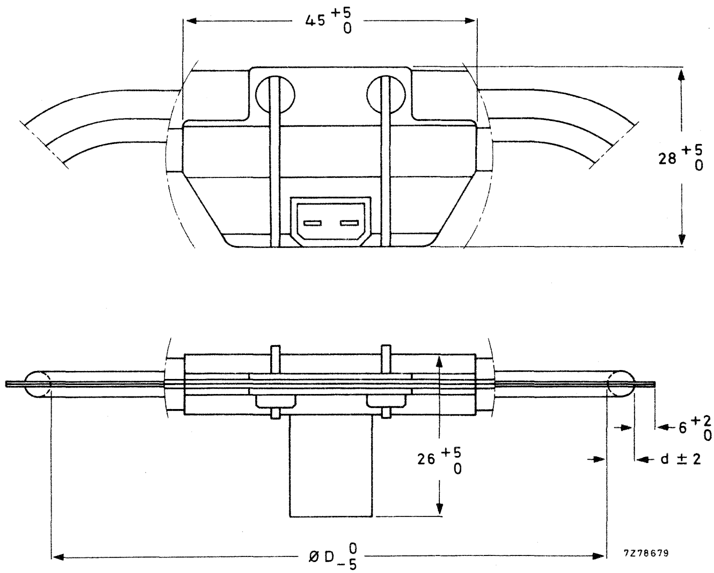


Fig. 1.

degaussing coil catalogue no.	D mm	d mm
3122 138 94350 for 26 in tube	435	8
3122 138 94380 for 22 in and 20 in tube	385	5

Dimensions of plug

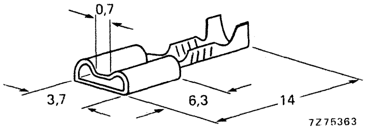


Fig. 2 Receptacle (3122 128 70931).

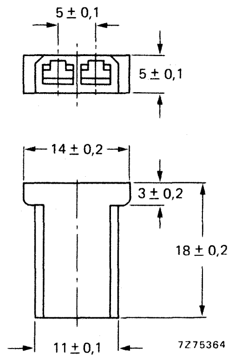


Fig. 3 Housing (3122 128 70921) for two receptacles.

Insertion force	max.	50 N
Withdrawal force	min.	10 N

ELECTRICAL DATA

Coil resistance		
26 inch type	(catalogue no. 3122 138 94350)	8,6 Ω ± 10%
22 and 20 inch type	(catalogue no. 3122 138 94380)	11,5 Ω ± 10%
Number of turns		
26 inch type		52
22 and 20 inch type		49
Safety		acc. to IEC 65.10 and UL1410
Maximum working temperature		70 °C

DEGAUSSING COILS

- For 220/240 V mains voltage
- Single insulation

APPLICATION

For 14 in and 16 in, 90° colour picture tubes and high resolution data graphic display tubes. One coil asymmetrically mounted on the top and bottom of the cone of the tube, in conjunction with PTC thermistor 2322 662 98009, produces a decaying alternating field.

Degaussing coil 3122 138 99840 to be used with 14 in tubes, degaussing coil 3122 138 99850, to be used with 16 in tubes.

MECHANICAL DATA

Dimensions in mm

The coils of aluminium wire are completely sleeved with a flame-retardent foil; the coil ends are connected to pins in a holder. For connecting the coils to the circuit, plug 3122 124 17903* has to be used.

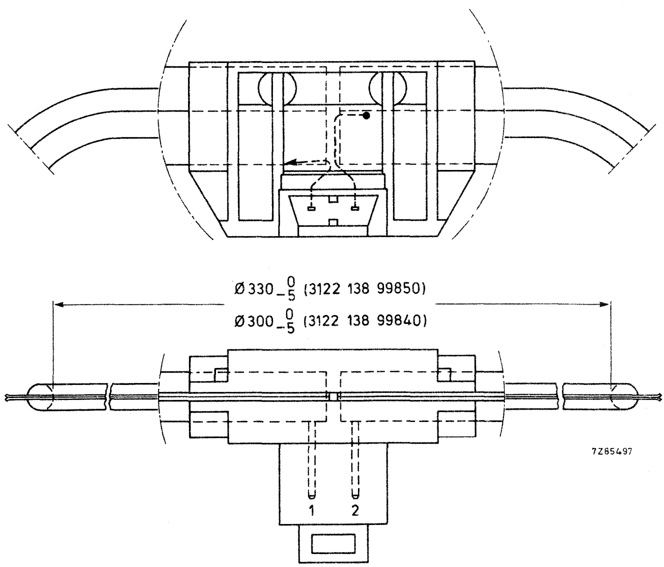


Fig. 1.

* To be ordered separately.

ELECTRICAL DATA

Coil resistance	
coil 3122 138 99840 (14 in)	22 Ω ± 10%
coil 3122 138 99850 (16 in)	23 Ω ± 10%
Number of turns	120
Test voltage (d.c.)	
between interconnected pins and insulation foil	6000 V
between interconnected pins and holder	6000 V
Maximum working temperature	70 °C

TRANSFORMERS, CHOKES AND COILS

SWITCHED-MODE TRANSFORMER

- without mains isolation

APPLICATION

The AT2097/01 has been designed for use as a switched-mode transformer for 90° colour television receivers without mains isolation, in conjunction with the switched-mode driver transformer AT4043/58.

MECHANICAL DATA

The magnetic circuit of the transformer comprises two Ferroxcube U25-cores. The item is provided with eight pins for mounting on a printed-wiring board.

Outlines Dimensions in mm

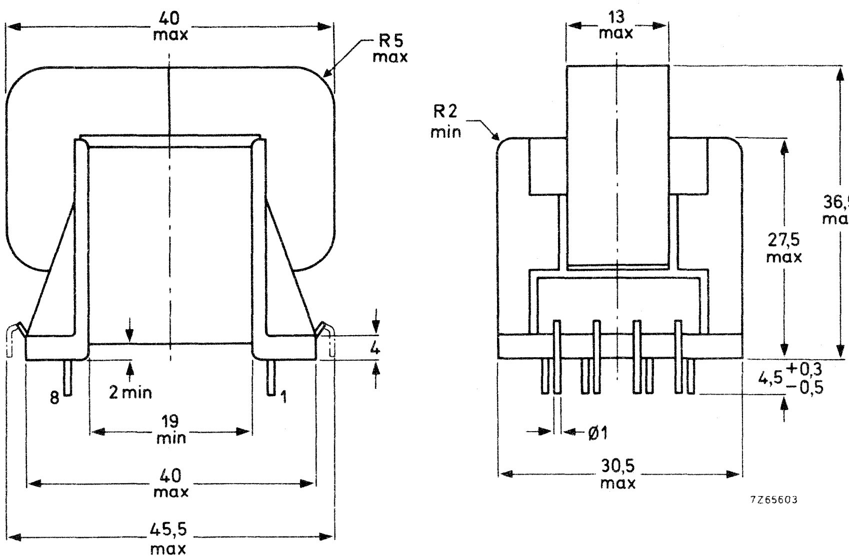


Fig. 1.

Mounting

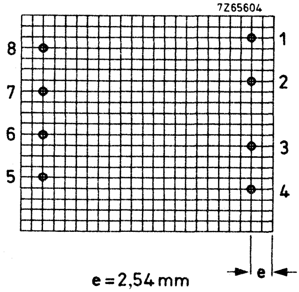


Fig. 2 Hole pattern (viewed from solder side) for mounting on a printed-wiring board, hole diameter 1,3 + 0,1 mm.

ELECTRICAL DATA

Inductance primary (8-6) *	16 mH ± 10%
Resistance primary (8-6) at 25 °C	3,2 Ω ± 12%
Resistance secondary at 25 °C	
(7-5)	0,14 Ω ± 12%
(4-3)	0,57 Ω ± 12%
Leakage inductance (7-5) **	≤ 1,5 μH
Transformation ratio	
8-6/7-5	36,5
8-6/4-3	6,5
Maximum working temperature	115 °C

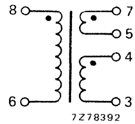


Fig. 3.

* Measuring conditions: E = 1,6 V; f = 1000 Hz.
** Measuring conditions: primary (8-6) short-circuited; E = 250 mV; 1,7 MHz ≤ f ≤ 2,2 MHz.

Application circuit

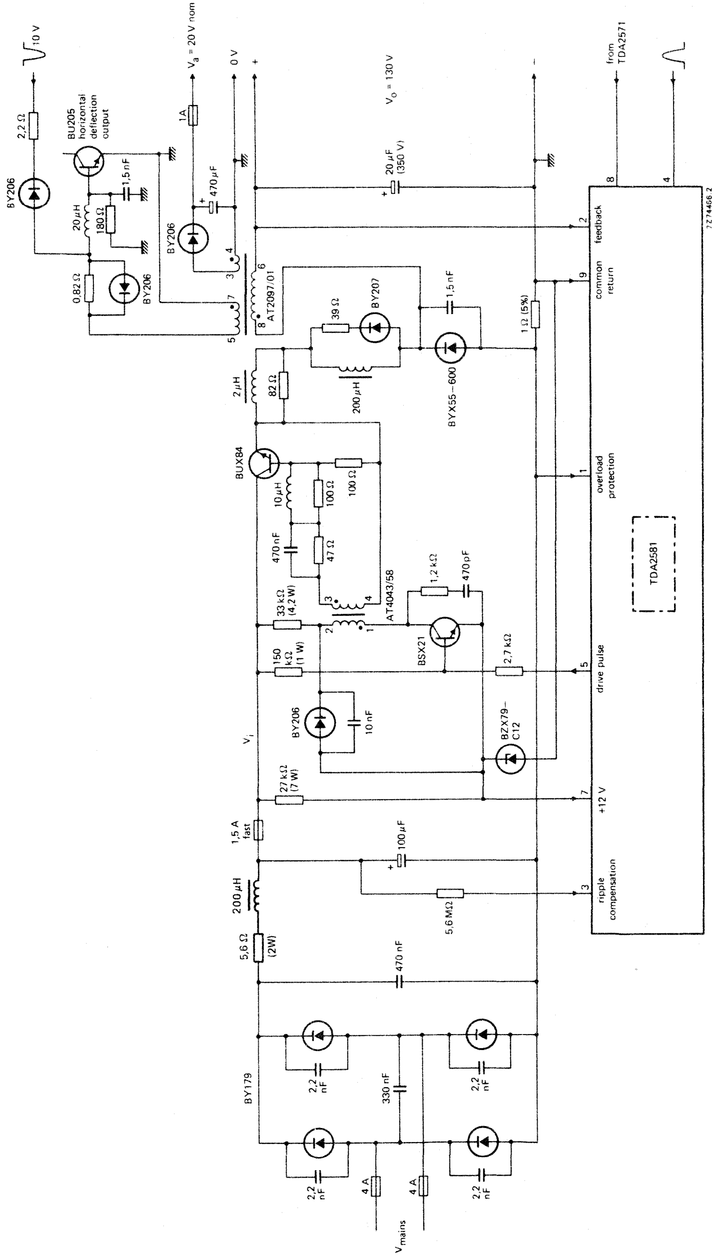


Fig. 4 Circuit of an SMPS using a forward converter for providing the power supplies and the horizontal drive for a television receiver.

SWITCHED-MODE TRANSFORMER

- Without mains isolation

APPLICATION

The DT2097/02 is for use as a series switched-mode transformer for colour television receivers without mains isolation.

MECHANICAL DATA

This transformer comprises two Ferroxcube U25 cores and a standard U25 coil former with 10 pins for mounting on a printed-wiring board.

Dimensions of the transformer

length	max. 42,5 mm
width	max. 34,5 mm
height	max. 36 mm
length of connecting pins	4,5 ± 0,5 mm

Note: This transformer is not pin-compatible with the AT2097/01.

Mounting

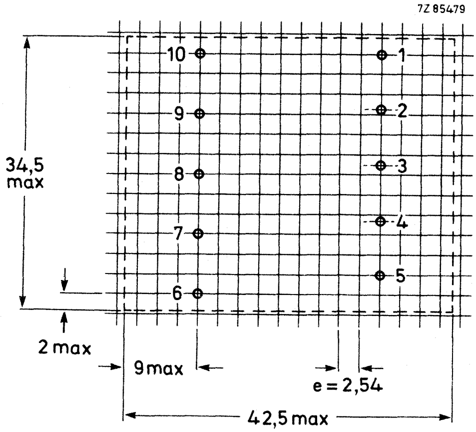


Fig. 1 Hole pattern (viewed from solder side) for mounting on a printed-wiring board, hole diameter 1,3 + 0,1 mm.

ELECTRICAL DATA

Inductance primary (9-7)*	16 mH ± 10%
Resistance primary (9-7) at 25 °C	3,2 Ω ± 12%
Resistance secondary at 25 °C	
(8-6)	0,14 Ω ± 12%
(4-3)	0,57 Ω ± 12%
Leakage inductance (8-6)**	≤ 1,5 μH
Transformation ratio	
9-7/8-6	36,5
9-7/4-3	6,5
Maximum working temperature	115 °C

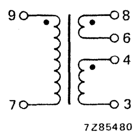


Fig. 2.

* Measuring conditions: E = 1,6 V; f = 1000 Hz.
** Measuring conditions: primary (9-7) short-circuited; E = 250 mV; 1,7 MHz ≤ f ≤ 2,2 MHz.

LINE DRIVER TRANSFORMER

- For Colour Data Graphic Displays

APPLICATION

For drive of 1500 V transistors in line deflection and power supply circuits.

MECHANICAL DATA

Dimensions in mm

The magnetic circuit comprises two Ferroxcube U15 cores, grade 3C8. The transformer has four pins for mounting on a printed-wiring board, and a reference pin.

Outlines

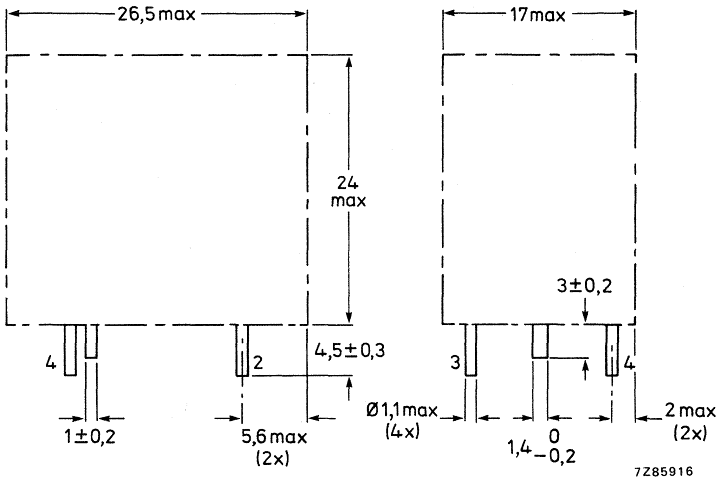


Fig. 1.

Mounting

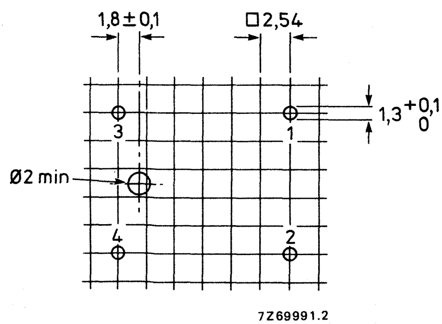


Fig. 2 Hole pattern for mounting on a printed-wiring board (component side).

ELECTRICAL DATA

Inductance, $L_{2\text{-}1}$	140 mH ± 15%*
Resistance, $R_{2\text{-}1}$, at 25 °C	26,5 Ω ± 12%
Leakage inductance, $L_{3\text{-}4}$	7,8 μH**
Maximum permissible current, $I_{2\text{-}1}$ (peak value)	40 mA
Resistance, $R_{4\text{-}3}$, at 25 °C	0,29 Ω ± 12%
Voltage ratio, $V_{2\text{-}1}/V_{4\text{-}3}$, at $V_{2\text{-}1}$ = 1 V, 1 kHz	15 ± 5%
Test voltage (d.c.) between the windings, and between windings and core	2000 V
Ambient temperature range	
operating	−25 to + 100 °C
storage	−40 to + 115 °C
Inflammability	according to UL94 V-1

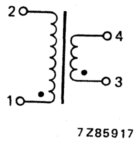


Fig. 3.

The transformer withstands the following tests:

test	IEC 68 test method	procedure
bump	Eb	1000 bumps, acceleration 245 m/s², 6 directions
vibration	Fc	10-55-10 Hz, ampl. 0,35 mm, 3 directions, 30 min/direction
damp heat, steady state	Ca	21 days, 40 °C, 93% R.H.
damp heat, cyclic	Db	21 days, 40 °C
change of temperature	Na	−25 °C, + 100 °C; 5 cycles
dry heat	Bb	96 h, + 100 °C
solderability	Ta	230 ± 10 °C, 2 ± 0,5 s

Reliability

Maximum cumulative percentage catastrophic failures

after 300 h	⩽ 0,01%
after 10 000 h	⩽ 0,02%
after 30 000 h	⩽ 1%

* Measured at 9 V, 1 kHz.
** Primary 2-1 short-circuited.

EAST/WEST CHOKE

- For Colour Data Graphic Displays

APPLICATION

The DT4043/08A is for use as an east/west choke in colour monitors.

MECHANICAL DATA

The magnetic circuit of the choke comprises two Ferroxcube U20 cores. The choke has four pins for mounting on a printed-wiring board.

Outlines

Dimensions in mm

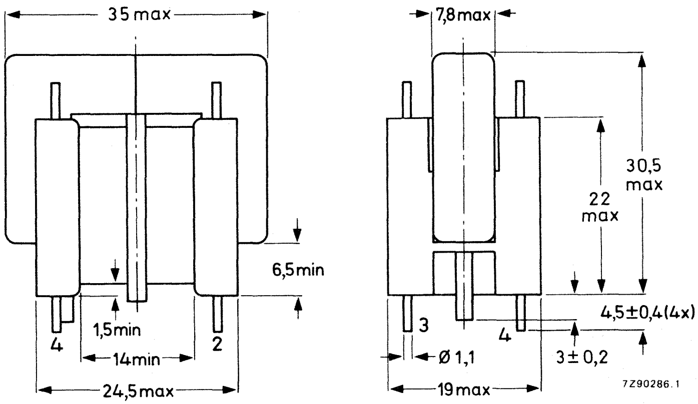


Fig. 1.

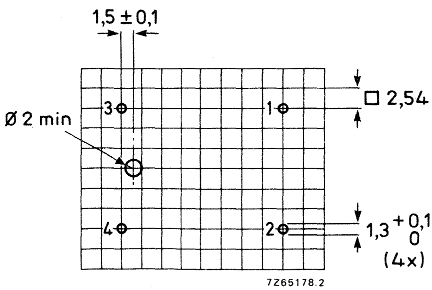


Fig. 2 Hole pattern for mounting on a printed-wiring board (component side).

ELECTRICAL DATA

Inductance, $L_{2\text{-}3}$*	$\geqslant$ 2 mH; typ. 2,6 mH
Resistance, $R_{2\text{-}3}$*, at 25 °C	0,5 Ω
Maximum current (peak value)	0,7 A
Maximum working temperature	115 °C

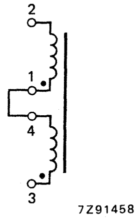


Fig. 3.

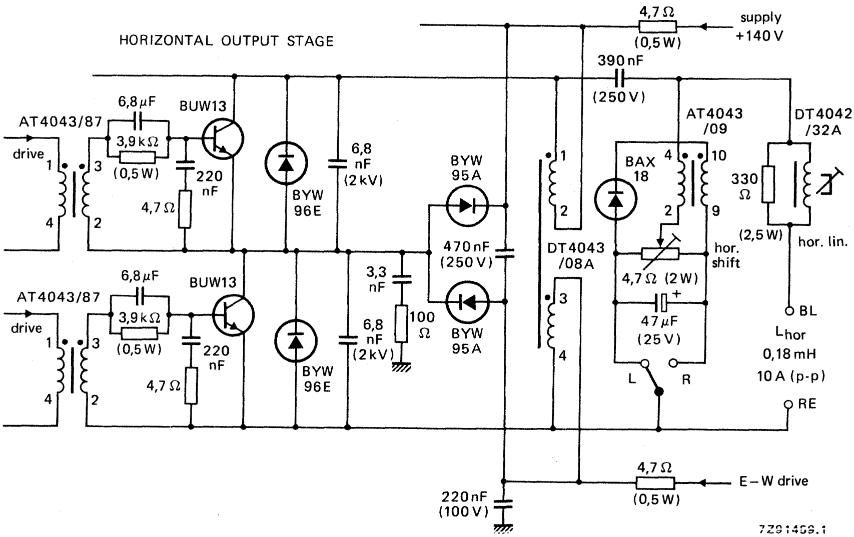


Fig. 4 Application circuit.

* Terminals 1 and 4 interconnected.

The choke withstands the following tests:

test	IEC 68 test method	procedure
bump	Eb	1000 bumps, acceleration 245 m/s^2, 6 directions
vibration	Fc	10-55-10 Hz, ampl. 0,35 mm, 3 directions, 30 min/direction
damp heat, steady state	Ca	21 days, 40 ^{o}C; 93% R.H.
damp heat, cyclic	Db	21 days, 40 ^{o}C
change of temperature	Na	−25 ^{o}C, + 100 ^{o}C; 5 cycles
dry heat	Bb	96 h, + 100 ^{o}C
solderability	Ta	230 ± 10 ^{o}C, 2 ± 0,5 s

Reliability

Maximum cumulative percentage catastrophic failures

after 300 h	$\leqslant$ 0,01%
after 10 000 h	$\leqslant$ 0,02%
after 30 000 h	$\leqslant$ 1%

UNIVERSAL HORIZONTAL SHIFT TRANSFORMER

- For Colour Data Graphic Displays

APPLICATION

This shift transformer is for use in colour data graphic display monitors.

MECHANICAL DATA

Dimensions in mm

The magnetic circuit comprises two Ferroxcube U25 cores, grade 3C8. The transformer has 10 pins for mounting on a printed-wiring board.

Outlines

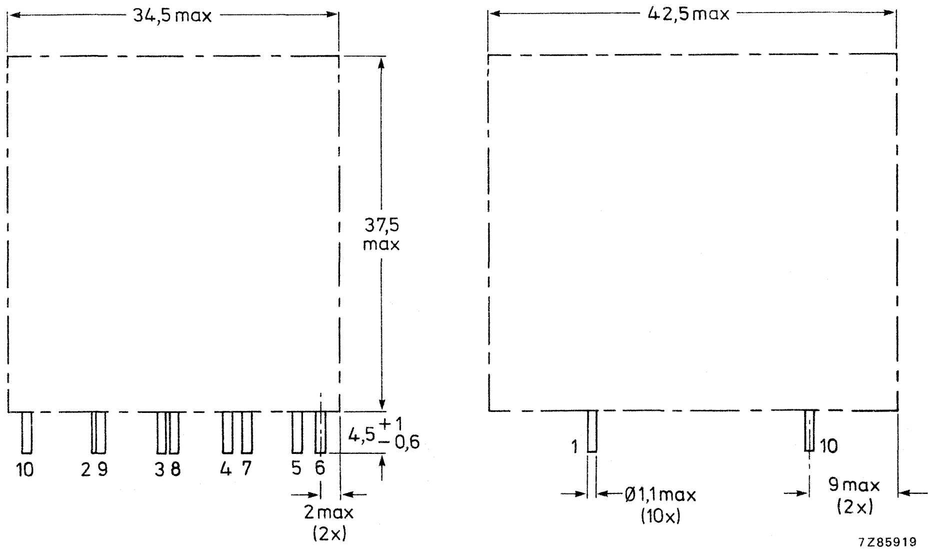
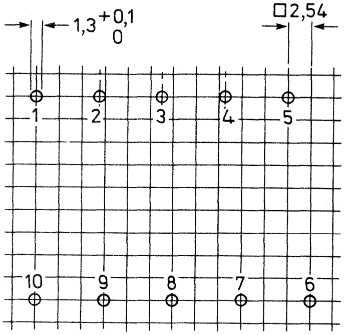


Fig. 1.

Mounting

Fig. 2 Hole pattern for mounting on a printed-wiring board (component side).



ELECTRICAL DATA

Inductance, $L_{5\text{-}1}$*	150 mH ± 15%
Resistance, $R_{5\text{-}1}$, at 25 °C	7,8 Ω ± 10%
Resistance, $R_{10\text{-}6}$, at 25 °C	0,23 Ω ± 10%
Voltage ratio*	
$V_{5\text{-}1}/V_{2\text{-}1}$	3,2 ± 5%
$V_{5\text{-}1}/V_{3\text{-}1}$	2,1 ± 5%
$V_{5\text{-}1}/V_{4\text{-}1}$	1,5 ± 5%
$V_{5\text{-}1}/V_{7\text{-}6}$	515 ± 5%
$V_{5\text{-}1}/V_{8\text{-}6}$	128,8 ± 5%
$V_{5\text{-}1}/V_{9\text{-}6}$	73,6 ± 5%
$V_{5\text{-}1}/V_{10\text{-}6}$	57,2 ± 5%
Test voltage (d.c.) of winding 1-5 to winding 6-10 and core, for 1 min	2000 V
Test voltage (d.c.) between winding 6-10 and core, for 1 min	2000 V
Ambient temperature range	
operating	−25 to + 100 °C
storage	−40 to + 115 °C
Inflammability	according to UL94 V-1

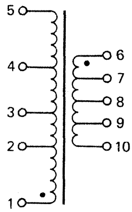


Fig. 3.

The transformer withstands the following tests:

test	IEC 68 test method	procedure
bump	Eb	1000 bumps, acceleration 245 m/s², 6 directions
vibration	Fc	10-55-10 Hz, ampl. 0,35 mm, 3 directions, 30 min/direction
damp heat, steady state	Ca	21 days, 40 °C, 93% R.H.
damp heat, cyclic	Db	21 days, 40 °C
change of temperature	Na	−25 °C, + 100 °C; 5 cycles
dry heat	Bb	96 h, + 100 °C
solderability	Ta	230 ± 10 °C, 2 ± 0,5 s

Reliability

Maximum cumulative percentage catastrophic failures

after 300 h	⩽ 0,01%
after 10 000 h	⩽ 0,02%
after 30 000 h	⩽ 1%

* Measured at $V_{5\text{-}1}$ = 5 V, 1 kHz.

INPUT CHOKE

- For 110 ° deflection colour TV in twin switch power pack system
- For 30 V/2 A audio power
- Mains insulation

APPLICATION

The AT4043/16 is for use as a supply choke in the twin switch power pack system (TSP²) for 110° colour TV receivers and colour monitors. It is used in conjunction with mains transformer TS561/2 or TS521B, mains filter choke AT4043/55, current sensing transformer AT4043/46, driver transformer AT4043/17 and diode-split line output transformer AT2077/82.

The secondary winding of the choke can be used for generating the stereo audio power in 110° colour TV receivers, up to 2 x 15 W.

MECHANICAL DATA

Dimensions in mm

The magnetic circuit comprises two Ferroxcube E42 cores, grade 3C8. The choke has 11 pins for mounting on a printed-wiring board.

Outlines

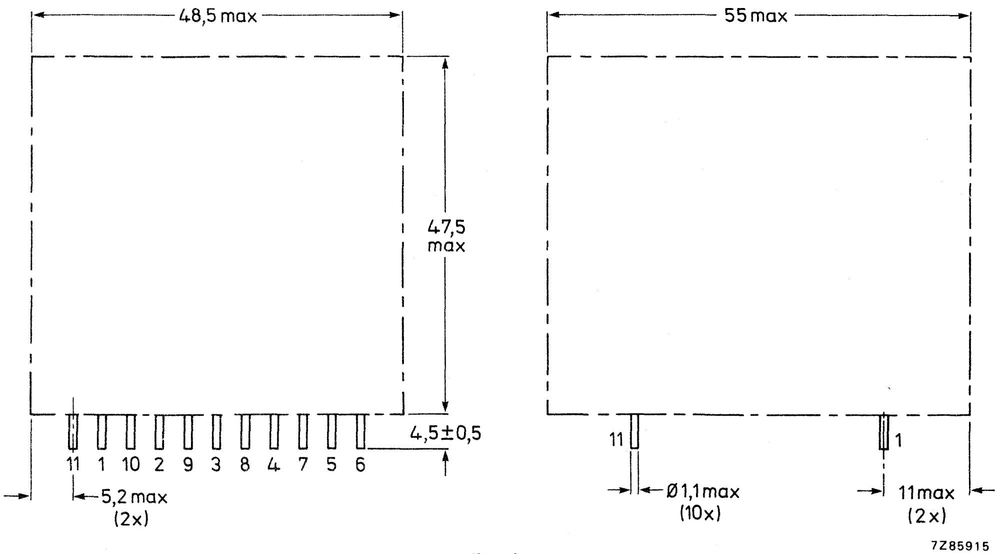


Fig. 1.

Mounting

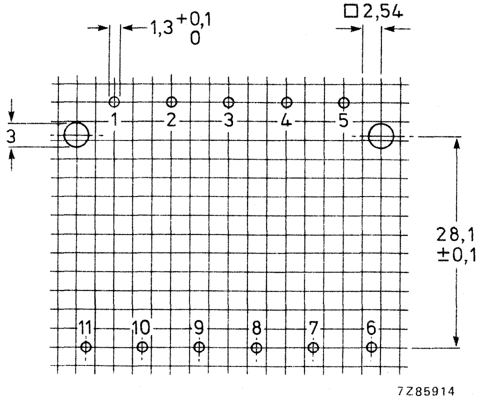


Fig. 2 Hole pattern for mounting on a printed-wiring board (solder side).

ELECTRICAL DATA

Inductance, $L_{1\text{-}4}$*	14 mH ± 10%
Resistance, $R_{1\text{-}2}$	0,44 Ω ± 12%
Resistance, $R_{2\text{-}4}$	0,98 Ω ± 12%
Resistance, $R_{7\text{-}8}$	68 mΩ ± 12%
Resistance, R9-10	68 mΩ ± 12%
Turns ratio 1-4/7-8	27,7 ± 5%
Turns ratio 1-4/9-10	27,7 ± 5%
Test voltage (d.c.) of winding 1-4 to winding 7-10 and core for 1 min	5600 V
Test voltage (d.c.) of winding 7-10 to core for 1 min	500 V
Maximum operating temperature	115 °C
Inflammability	according to UL94 V-1

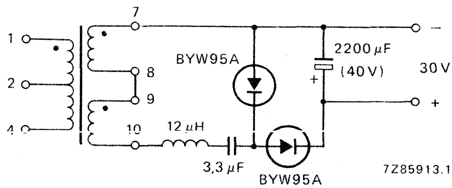


Fig. 3.

* Measured at 17,2 V, 1 kHz.

The choke withstands the following tests:

test	IEC 68 test method	procedure
bump	Eb	1000 bumps, acceleration 245 m/s^2, 6 directions
vibration	Fc	10-55-10 Hz, ampl. 0,35 mm, 3 directions, 30 min/direction
damp heat, steady state	Ca	21 days, 40 ^oC, 93% R.H.
damp heat, cyclic	Db	21 days, 40 ^oC
change of temperature	Na	-25 ^oC, + 100 ^oC; 5 cycles
dry heat	Bb	96 h, + 100 ^oC
solderability	Ta	230 ± 10 ^oC, 2 ± 0,5 s

Reliability

Maximum cumulative percentage catastrophic failures

after 300 h	$\leqslant$ 0,01%
after 10 000 h	$\leqslant$ 0,02%
after 30 000 h	$\leqslant$ 1%

DEVELOPMENT SAMPLE DATA

DRIVER TRANSFORMER

- For 110° deflection colour TV in twin single switch power pack system
- Mains insulation

APPLICATION

The AT4043/17 is for use as a power supply and line driver transformer in the twin switch power pack system (TSP^2) for 110° colour TV receivers and colour monitors. It is used in conjunction with mains transformer TS561/2 or TS5621B, mains filter choke AT4043/55, current sensing transformer AT4043/46, input choke AT4043/16 and diode-split line output transformer AT2077/82.

MECHANICAL DATA

Dimensions in mm

The magnetic circuit comprises two Ferroxcube U20 cores, grade 3C8. The primary and secondary windings are wound in a two-part coil former with large creepage distances and clearances, which ensure safe insulation between the mains and control circuits. The transformer has six pins for mounting on a printed-wiring board, and one lead (connecting point 7).

Outlines

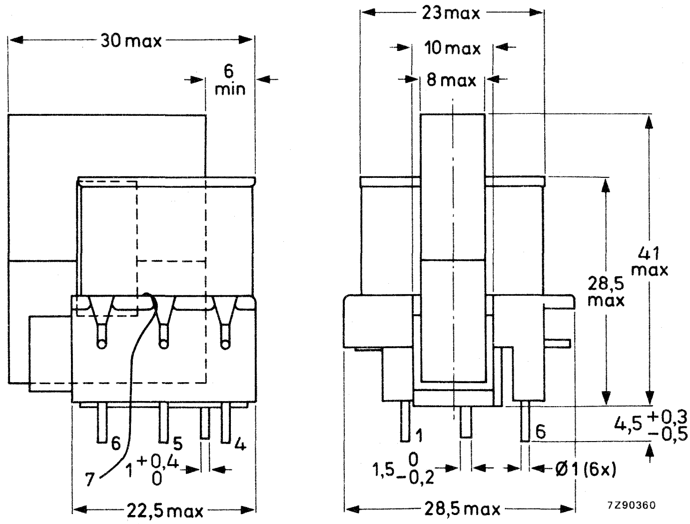
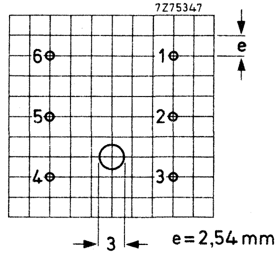


Fig. 1.

Mounting

Fig. 2 Hole pattern for mounting on a printed-wiring board (component side); hole diameter is 1,3 + 0,1 mm.



ELECTRICAL DATA

Inductance, $L_{5\text{-}4}$	⩾ 11 mH*
Resistance, $R_{5\text{-}4}$, at 25 °C	0,21 Ω ± 12%
Resistance, $R_{1\text{-}2}$, at 25 °C	0,17 Ω ± 12%
Resistance, $R_{6\text{-}7}$, at 25 °C	7,0 Ω ± 12%
Turns ratio 1-2/5-4	0,17
Turns ratio 1-2/6-7	1,0
Maximum primary current (peak value)	240 mA
Test voltage (d.c.) of winding 1-2 to winding 5-4 and core for 1 min	5600 V
Test voltage (d.c.) of winding 5-4 to core for 1 min	500 V
Ambient temperature range	
operating	−25 to +80 °C
storage	−40 to +100 °C
Inflammability	according to UL94 V-1

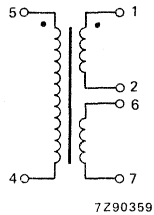


Fig. 3.

The transformer withstands the following tests:

test	IEC 68 test method	procedure
bump	Eb	1000 bumps, acceleration 400 m/s^2, 6 directions
vibration	Fc	10-55-10 Hz, ampl. 0,35 mm 3 directions, 30 min/direction
damp heat, steady state	Ca	21 days, 40 °C, 93%, R.H.
damp heat, cyclic	Db	21 days, 40 °C
change of temperature	Na	−25 °C, +85 °C; 5 cycles
dry heat	Bb	96 h, +100 °C
Solderability	Ta	230 ± 10 °C, 2 ± 0,5 s

Reliability

Maximum cumulative percentage catastrophic failures

after 300 h	⩽ 0,01%
after 10 000 h	⩽ 0,02%
after 30 000 h	⩽ 1%

* Measured at 4,4 V, 1 kHz.

LINE DRIVER/D.C. SHIFT TRANSFORMER

APPLICATION

This line driver, or d.c. shift, transformer, is for all transistor colour television receivers and monochrome data graphic display monitors.

MECHANICAL DATA

Dimensions in mm

The magnetic circuit comprises two Ferroxcube U20 cores, grade 3C8. The transformer has four connecting pins and a location pin for mounting on a printed-wiring board.

Outlines

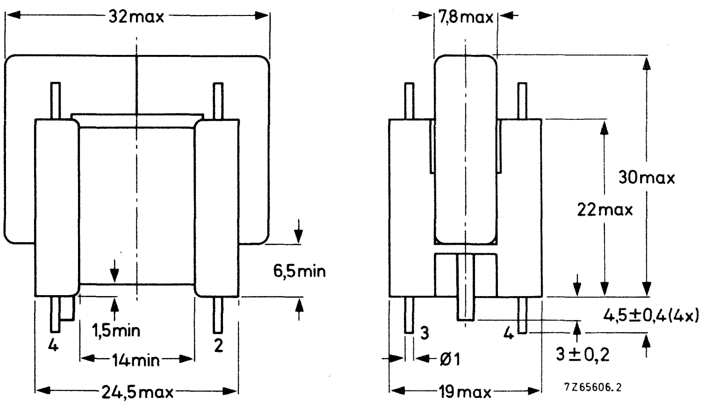


Fig. 1.

Mounting

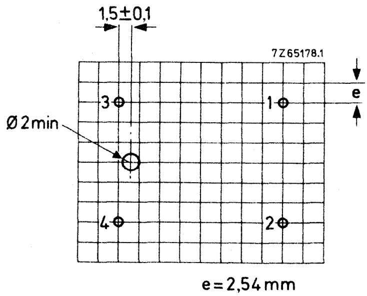
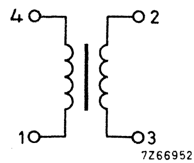


Fig. 2 Hole pattern for mounting on a printed-wiring board, hole diameter 1,3 + 0,1 mm.

ELECTRICAL DATA

Inductance primary (1-4)	370 mH ± 12%
Leakage inductance secondary (2-3)*	14 μH ± 20%
Resistance secondary (2-3) at 25 °C	0,35 Ω
Transformation ratio 4-1/2-3	31 : 1
Maximum working temperature	100 °C



* Primary short circuited.

SWITCHED-MODE DRIVER TRANSFORMER
with mains isolation

APPLICATION

The transformer AT4043/45 has been designed for use as a driver transformer in the synchronous power pack system for colour tv receivers with mains isolation. It is used in conjunction with current sensing transformer AT4043/46 and mains transformer TS561/2.

MECHANICAL DATA

Dimensions in mm

The magnetic circuit of the transformer comprises two Ferroxcube U20-cores. Two separate coil formers guarantee the required isolation between primary and secondary. The transformer is provided with 6 pins for mounting on a printed-wiring board.

Outlines

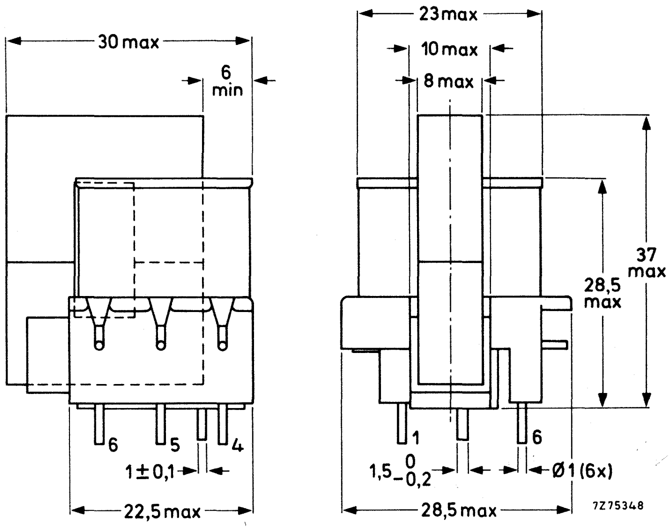


Fig. 1.

Mounting

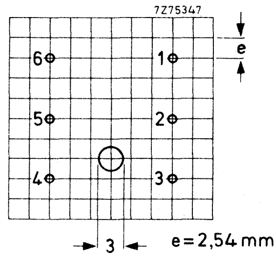


Fig.2 Hole pattern for mounting on a printed-wiring board; hole diameter 1,3 + 0,1 mm. Viewed from the component side.

ELECTRICAL DATA

Inductance, primary	(4 – 6)	⩾ 16 mH *
Resistance at 25 °C	(4 – 6)	2 Ω ± 12%
Leakage inductance, secondary	(1 – 3)	⩽ 6 μH **
Resistance at 25 °C	(1 – 3)	0,05 Ω ± 12%
Turns ratio		5 : 1
Mains isolation		acc. to IEC 65
Maximum working temperature		115 °C

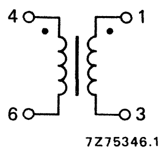


Fig. 3.

* Measuring condition: E = 8 V, f = 1 kHz.
** Measuring condition (primary short-circuited): E ⩽ 250 mV, 0,9 MHz ⩽ f ⩽ 1,1 MHz.

CURRENT SENSING TRANSFORMER
with mains isolation

APPLICATION

The transformer AT4043/46 has been designed for use as a sensing transformer in switched-mode power supply circuits.

MECHANICAL DATA

The magnetic circuit of the transformer comprises two Ferroxcube U15-cores. The primary turn is potted in the coil former to guarantee the required isolation. The transformer is provided with 4 pins for mounting on a printed-wiring board.

Outlines

Dimensions in mm

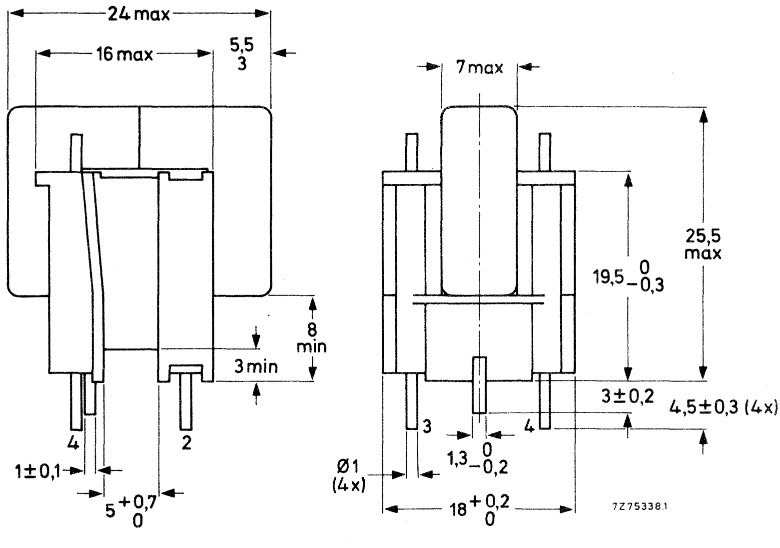


Fig. 1

Mounting

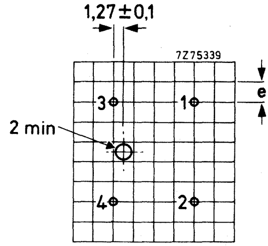


Fig.2 Hole pattern for mounting on a printed-wiring board; hole diameter 1,3 + 0,1 mm. Viewed from the component side.

e = 2,54 mm

ELECTRICAL DATA

Inductance, secondary	(3 – 4)	⩾ 700 mH *
Resistance, secondary, at 25 °C	(3 – 4)	65 Ω ± 12%
Turns ratio		1 : 800
Mains isolation		acc. to IEC 65
Maximum working temperature		115 °C

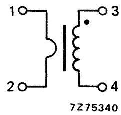


Fig.3

APPLICATION CIRCUIT

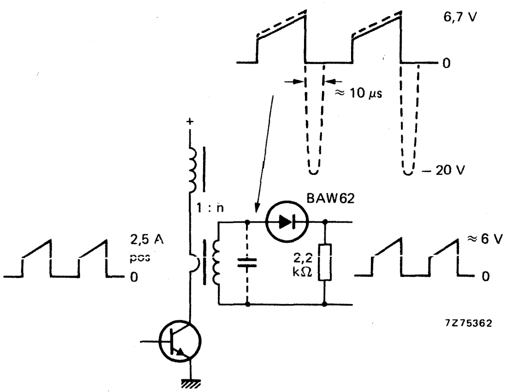


Fig. 4.

* Measuring condition: E = 10 V, f = 1 kHz.

CURRENT SENSING TRANSFORMER

with mains isolation

APPLICATION

The AT4043/47 is a current sensing transformer in professional switched-mode power supply circuits. It can also be used as a measuring device in many applications.

MECHANICAL DATA

Dimensions in mm

The ungapped magnetic circuit of the transformer comprises two Ferroxcube U15-cores in grade 3C8. The primary turn is potted in the coil former to guarantee the required isolation. The transformer is provided with 4 pins for mounting on a printed-wiring board.

Outlines

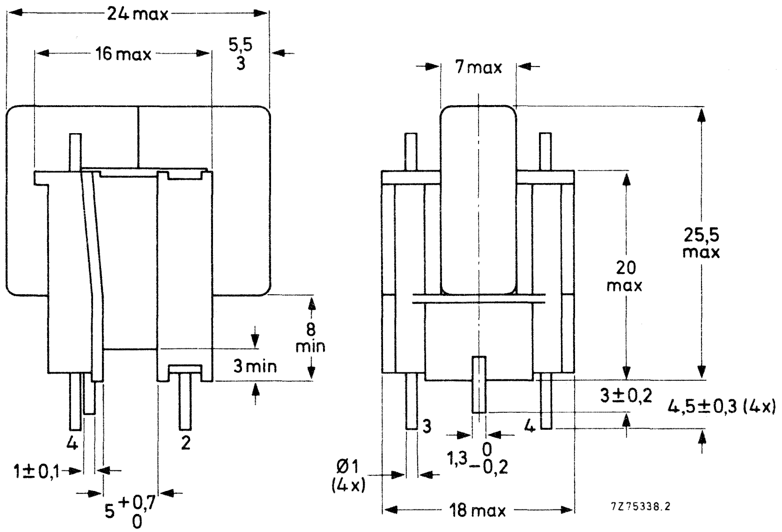


Fig. 1.

Mounting

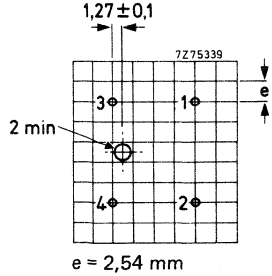


Fig. 2 Hole pattern for mounting on a printed-wiring board; hole diameter 1,3 + 0,1 mm. Viewed from the component side.

ELECTRICAL DATA

→ Inductance, secondary	(4 – 3)	⩾ 12,5 mH*
Resistance, secondary, at 25 °C	(4 – 3)	1 Ω ± 12%
Number of turns		1 prim., 100 sec.
Mains isolation at 5600 V d.c.		acc. to IEC 435
Maximum working temperature		115 °C
Inflammability		acc. to UL94V–1

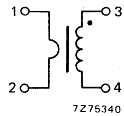
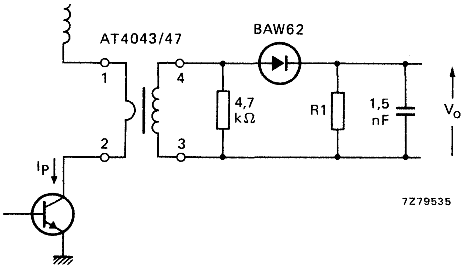


Fig. 3.

APPLICATION CIRCUIT



typical values

I_P A	V_o V	R1 Ω	t_p μs	droop %
10	1	10	20	3
5	1	22	20	5
2,5	1	39	20	10
2,5	1	39	10	5

Fig. 4.

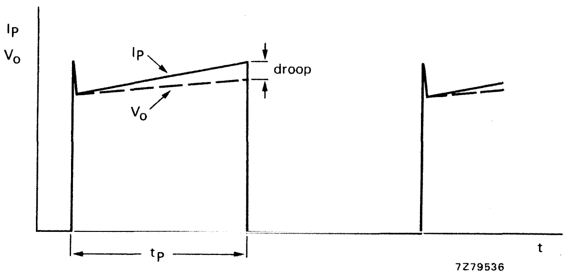


Fig. 5.

* Measuring condition: E = 1,3 V; f = 1 kHz.

The transformer withstands the following tests:

test	IEC68 test method	procedure
bump	Eb	1000 bumps, acceleration 40g, 6 directions
vibration	Fc	freq. 10-55-10 Hz, ampl. 0,75 mm, 6 directions, 30 min/direction
damp heat, steady state	Ca	21 days 40 °C; 93% R.H.
damp heat, cyclic	Db	21 days 40 °C
change of temperature	Na	−25 °C, +125 °C; 5 cycles
dry heat	Bb	16 h + 125 °C
solderability	T	230 ± 10 °C, 2 ± 0,5 s

THYRISTOR TRIGGER AND TRANSISTOR DRIVER TRANSFORMERS

- Mains isolation

APPLICATION

These transformers have been designed for use as thyristor and triac trigger transformers in professional applications where highly reliable primary to secondary voltage isolation is required, and as transistor driver transformers typically for use in switched-mode power supplies.

MECHANICAL DATA

Dimensions in mm

The magnetic circuits of the transformers comprise two Ferroxcube U20 cores in grade 3C8. Type AT4043/48 is ungapped, type AT4043/63 has two 60 μm gap spacers. The primary and secondary windings are wound on a two-part coil former with large creepage and clearance distances which ensure very safe isolation between mains and control circuits. The transformers are provided with pins for mounting on a printed-wiring board.

Outlines

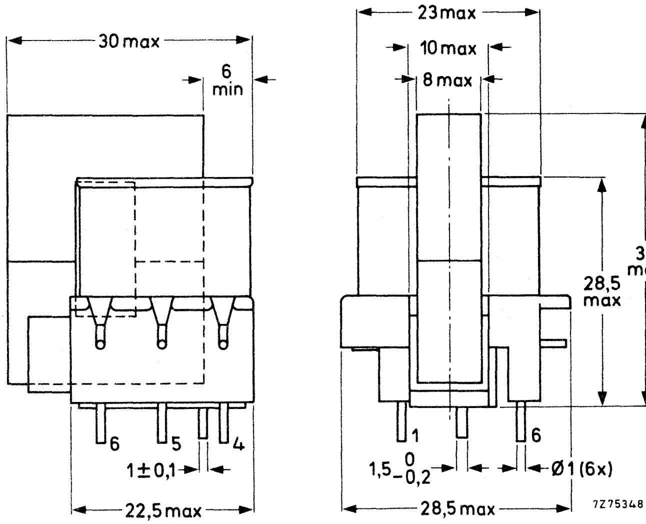


Fig. 1.

Mounting

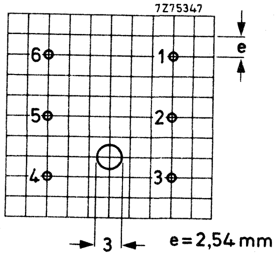


Fig. 2 Hole pattern for mounting on a printed-wiring board; hole diameter 1,3 + 0,1 mm. Viewed from the component side.

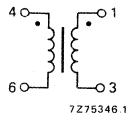


Fig. 3.

ELECTRICAL DATA (see Fig. 3)

		AT4043/48	AT4043/63
Inductance primary *	(4 – 6)	⩾ 6 mH	⩾ 1,9 mH
→ Resistance at 25 °C	(4 – 6)	0,9 Ω ± 12%	0,9 Ω ± 12%
Inductance, secondary	(1 – 3)	0,66 mH	0,22 mH
→ Resistance at 25 °C	(1 – 3)	0,05 Ω ± 12%	0,05 Ω ± 12%

Leakage inductance primary, secondary short-circuited **	⩽ 60 μH
Leakage inductance secondary, primary short-circuited **	⩽ 6 μH
Turns ratio 4-6/3-1	3/1
Maximum Et product	1 mWb
Maximum primary current (r.m.s.) for non-simultaneous switching	1 A
Test voltage (d.c.) of winding 1-3 to winding 4-6 and core for 1 min	5600 V
Test voltage (d.c.) of winding 4-6 to core for 1 mm	500 V
Ambient temperature range	
operating	–25 to +80 °C
storage	–40 to +100 °C
Inflammability	acc. to UL94 V-1

* Measuring condition: E = 1,5 V, f = 1 kHz.
** Measuring condition: E ⩽ 250 mV; 0,8 MHz ⩽ f ⩽ 1 MHz.

Environmental tests

The transformers withstand the following tests:

test	IEC68 test method	procedure
bump	Eb	1000 bumps, acceleration 40g, 6 directions
vibration	Fc	freq. 10-55-10 Hz, ampl. 0,75 mm 3 directions, 30 min/direction
damp heat, steady state	Ca	21 days, 40 °C, 93% R.H.
damp heat, cyclic	Db	21 days, 40 °C
change of temperature	Na	−25 °C, +125 °C, 5 cycles
dry heat	Bb	16 h, +125 °C
solderability	T	230 ± 10 °C, 2 ± 0,5 s

APPLICATION CIRCUITS

Type AT4043/48 used as a thyristor trigger transformer. This transformer is suitable for triggering all our thyristors and triacs.

Typical operating conditions:

Rise time	⩽ 0,5 μs
Pulse duration	15 μs
Duty factor	0,25
Trigger peak current	750 mA

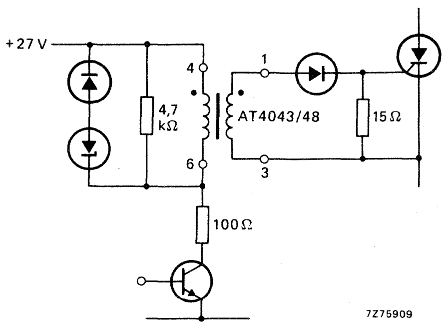


Fig. 4 Typical circuit.

Type AT4043/48 or type AT4043/63 as a transistor driver transformer.

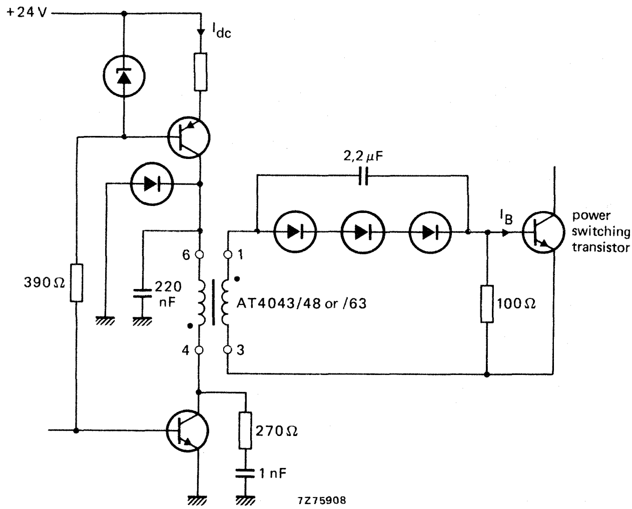


Fig. 5 Typical circuit.

Typical operating conditions:

AT4043/48			
frequency kHz	I_{dc} mA	I_{B1} A	I_{B2} A
20	160	0,9	0,4
50	230	1,0	0,7
AT4043/63			
frequency kHz	I_{dc} mA	I_{B1} A	I_{B2} A
20	310	1,5	1,0
50	290	1,2	1,0

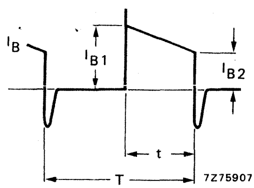


Fig. 6 $\frac{t}{T} = 0,4$.

POWER PACK SYSTEM SUPPLY CHOKE

for colour television

APPLICATION

The AT4043/52 has been designed to be used as a choke in a power pack system in conjunction with mains transformer TS561/2, mains filter choke AT4043/55, current sensing transformer AT4043/46, line choke AT4043/53 and power pack transformer AT2076/70A.

MECHANICAL DATA

Dimensions in mm

The magnetic circuit of the choke comprises two Ferroxcube U-cores. The coil is provided with pins for mounting on a printed-wiring board.

Outlines

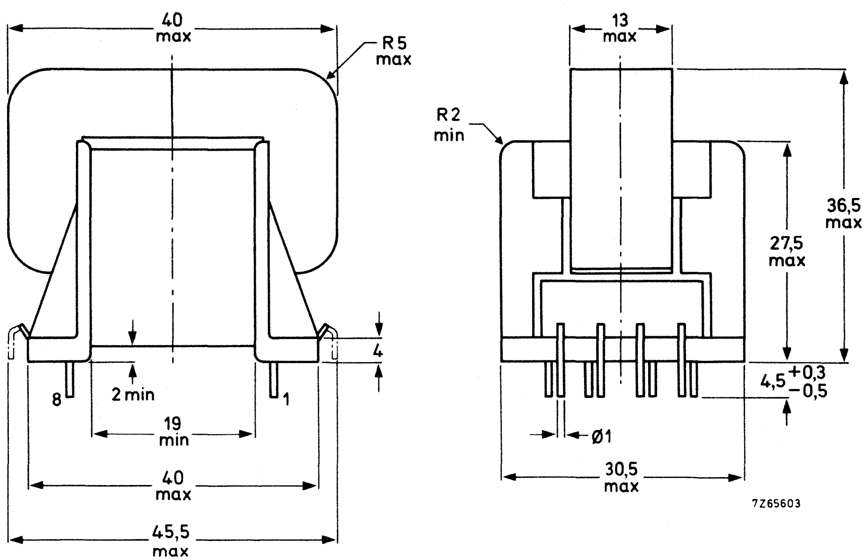


Fig. 1.

Mounting

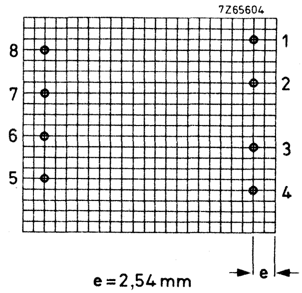


Fig. 2 Hole pattern (viewed from printed-wiring side) for mounting on a printed-wiring board, hole diameter 1,3 + 0,1 mm.

ELECTRICAL DATA

Inductance (2 – 5)*	9 mH ± 10%
Resistance (2 – 5)	2,2 Ω ± 10%
Maximum peak current	1,4 A
Maximum working temperature	115 °C
Inflammability	UL94V–1

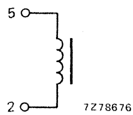


Fig. 3.

* Measuring condition: E = 1,5 V, f = 1 kHz.

8212 839 71820

POWER PACK SYSTEM SUPPLY CHOKE

- For Colour Television

APPLICATION

The DT4043/52A is for use as a supply choke in a power pack system for colour TV receivers. It is used in conjunction with mains transformer TS61/2, mains filter choke AT4043/55, current sensing transformer AT4043/46, line choke AT4043/53 and synchronous power pack transformer AT2076/70A.

MECHANICAL DATA

Dimensions in mm

The magnetic circuit comprises two Ferroxcube U25 cores, grade 3C8. The choke has 10 pins (ϕ1 + 0,1 mm, length 4,5 ± 0,5 mm) for mounting on a printed-wiring board. The maximum height of the choke is 36 mm.

Mounting

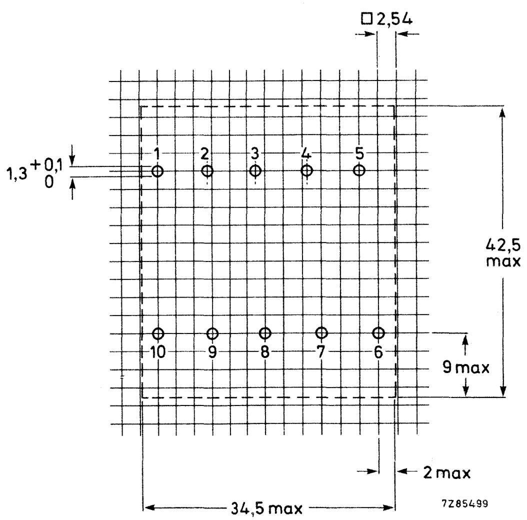


Fig. 1 Hole pattern for mounting on a printed-wiring board, viewed from the solder side.

ELECTRICAL DATA

Inductance, $L_{8\text{-}2}$	9 mH ± 10%
Resistance, $R_{8\text{-}2}$	2,3 Ω ± 12%
Maximum peak current	1,4 A
Maximum working temperature	115 °C
Flammability	according to UL94, category V-1

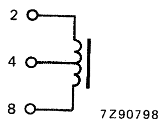


Fig. 2.

POWER PACK SYSTEM LINE CHOKE

for colour television

APPLICATION

The AT4043/53 has been designed for use as a line choke in a power pack system in conjunction with mains transformer TS561/2, power pack transformer AT2076/70A, etc. (see data on relevant transformer).

MECHANICAL DATA

Dimensions in mm

The magnetic circuit of the line choke comprises two Ferroxcube U-cores. The unit is provided with pins for mounting on a printed-wiring board.

Outlines

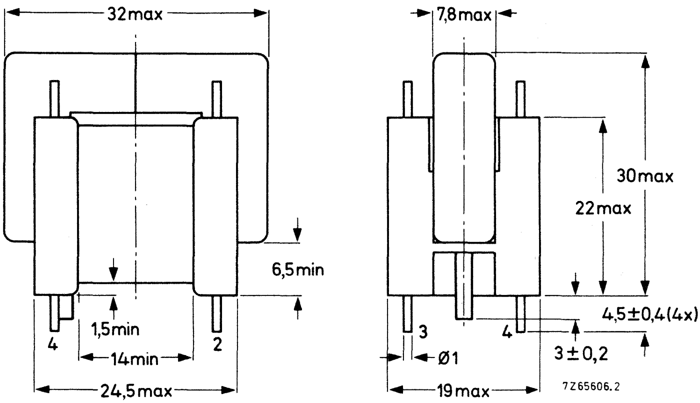


Fig. 1.

Mounting

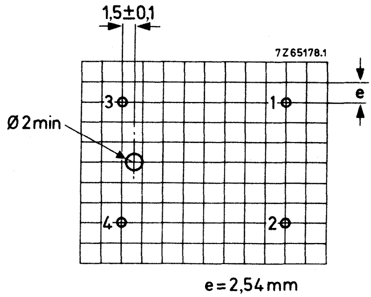


Fig. 2 Hole pattern for mounting on a printed-wiring board, viewed from component side. Hole diameter 1,3 + 0,1 mm.

ELECTRICAL DATA

Inductance (1-2)*	12 mH ± 10%
Resistance (1-2)	9,2 Ω ± 10%
Maximum peak current (1-2)	525 mA
Turns ratio 1-3/1-2	0,32
Maximum working temperature	115 °C
Inflammability	UL94V-1
Corona test voltage at 70 kHz	1700 V peak

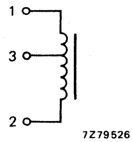


Fig. 3.

With the choke connected in the line timebase circuit with deflection unit AT1270, AT1260 or AT1250:

Deflection current p-p	5,35 A
Flyback time	11,5 μs
BU208A	
V_{CEM}	1150 V
I_C	3,1 A

With deflection unit AT1035/00:

Deflection current p-p	2,85 A
Flyback time	11,6 μs
BU205 or BU208A	
V_{CEM}	1000 V
I_C	1,7 A

* Measuring condition: E = 1 V, f = 1 kHz.

APPLICATION CIRCUITS

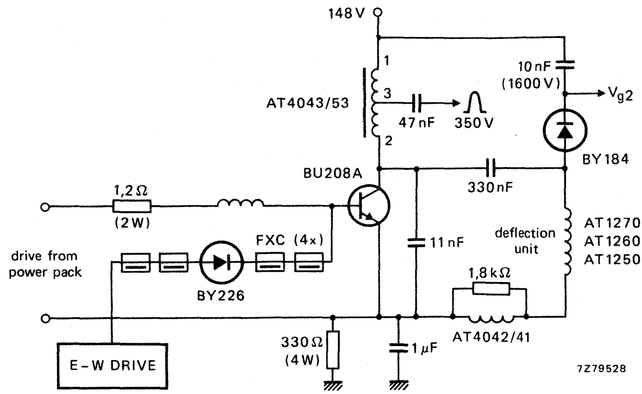


Fig. 4 Circuit for 110° deflection.

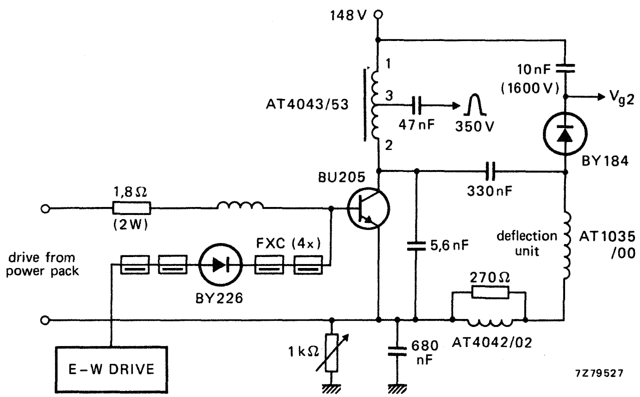


Fig. 5 Circuit for 90° deflection.

MAINS FILTER CHOKE FOR 1,5 A rms

APPLICATION

The AT4043/55 has been designed for use in consumer and professional equipment as part of the filter network in the power supply.

MECHANICAL DATA

The magnetic circuit of the filter choke comprises two Ferroxcube U25 cores. The unit is provided with four pins for mounting on a printed-wiring board.

Outlines

Dimensions in mm

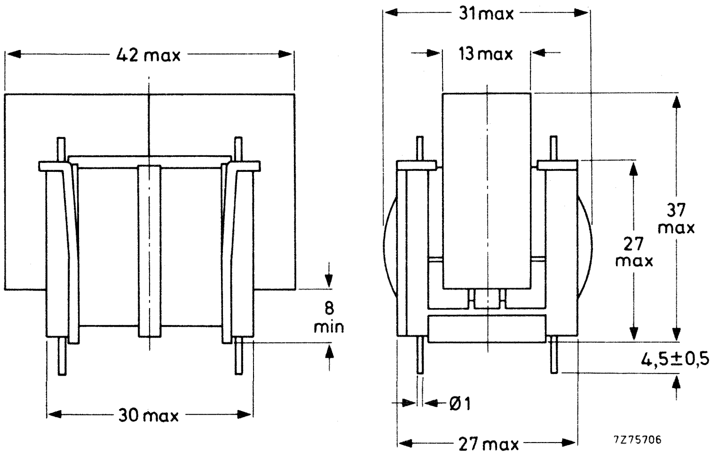


Fig. 1.

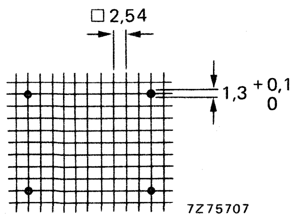


Fig. 2 Hole pattern for mounting on a printed-wiring board. Viewed from the solder side. The windings may be interchanged because the coil is symmetrical.

Marking

The catalogue number is printed on the Ferroxcube core.

ELECTRICAL DATA

Inductance, $L_{1\text{-}2} = L_{3\text{-}4}$	$\geqslant$ 25 mH
Resistance, $R_{1\text{-}2} = R_{3\text{-}4}$, at 25 °C	0,5 Ω
Leakage inductance	
$L_{s(1\text{-}2)}$, $L_{3\text{-}4}$ short-circuited	0,65 mH
$L_{s(3\text{-}4)}$, $L_{1\text{-}2}$ short-circuited	0,65 mH
Capacitance	37 pF
Maximum current (r.m.s.)	2 A
Maximum working temperature	115 °C

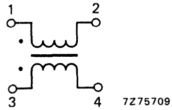


Fig. 3.

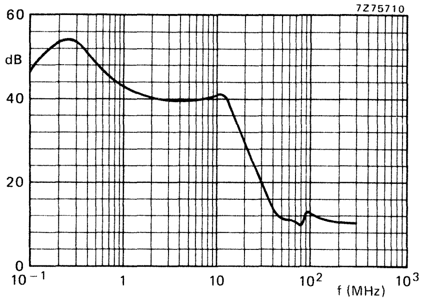


Fig. 4 Insertion loss measured in the 60 Ω circuit of Fig. 5.

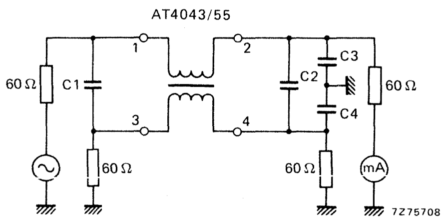


Fig. 5
C1 = C3 = C4 = 2200 pF, 250 V.
C2 = 0,47 μF, 250 V.

LINE DRIVER TRANSFORMER

- For Monochrome Data Graphic Displays

APPLICATION

This transformer has been designed for use in monochrome monitors. The required supply voltage is 12 V. The transformer is used in conjunction with deflection unit AT1071/03 or AT1074, line-output transformer AT2102/02, and linearity control unit AT4036.

MECHANICAL DATA

Dimensions in mm

The magnetic circuit of the transformer comprises two Ferroxcube U-cores. The unit is provided with pins for mounting on a printed-wiring board.

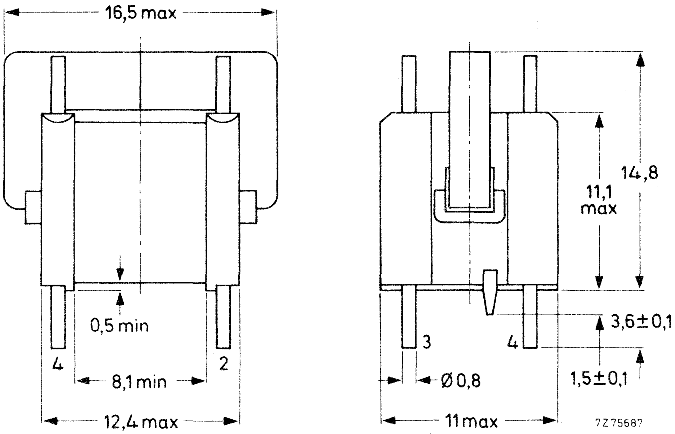
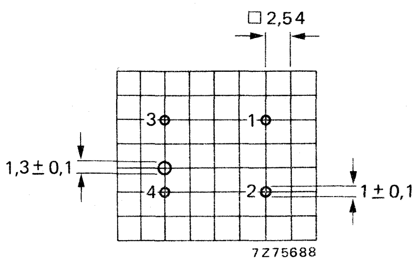


Fig. 1 Line driver transformer AT4043/56.

Fig. 2 Hole pattern for mounting on a printed-wiring board (component side).



ELECTRICAL DATA

Inductance (primary, 1-2)	5,8 mH ± 15%
Inductance (secondary)	⩽ 10 μH
Transformation ratio	4 : 1
Maximum operating temperature	95 ^{o}C

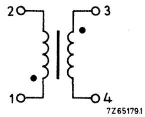


Fig. 3 Circuit diagram.

Application circuit

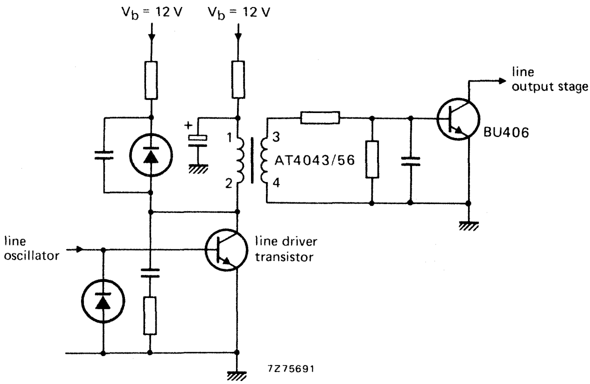


Fig. 4.

SWITCHED-MODE DRIVER TRANSFORMER

APPLICATION

The AT4043/58 driver transformer has been designed for use in switched-mode power supply circuits for 90° colour television receivers, in conjunction with the switched-mode transformer AT2097/01 or DT2097/02.

MECHANICAL DATA

The magnetic circuit of the transformer comprises two Ferroxcube U15-cores. The item is provided with four pins for mounting on a printed-wiring board.

Outlines

Dimensions in mm

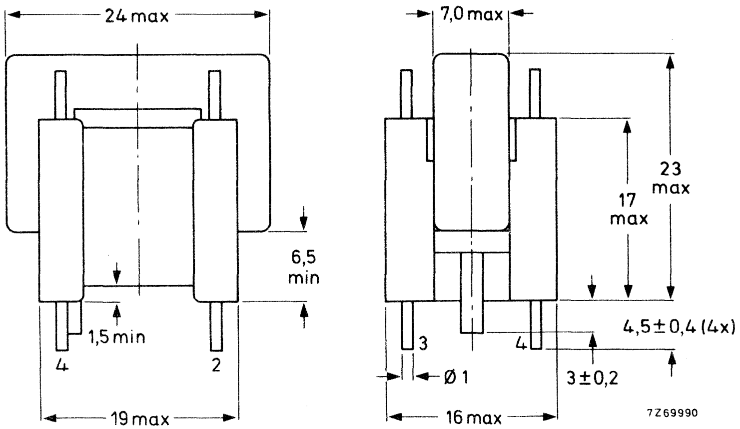


Fig. 1.

Mounting

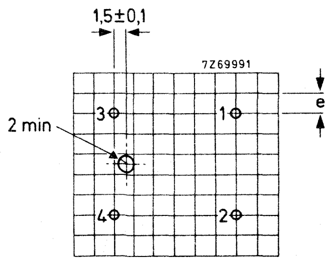


Fig. 2 Hole pattern for mounting on a printed-wiring board (component side). Hole diameter 1,3 + 0,1 mm. e = 2,54 mm (0,1 in).

ELECTRICAL DATA

Inductance primary (1-2) *	$\geqslant$ 220 mH
Resistance primary (1-2)	17,5 Ω
Resistance secondary (3-4)	0,27 Ω
Leakage inductance secondary (3-4)**	$\leqslant$ 5 μH
Transformation ratio 1-2/3-4	10
Maximum working temperature	115 °C

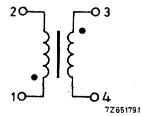


Fig. 3.

* Measuring conditions: E = 6 V; f = 1000 Hz.
** Measuring conditions: primary short-circuited; E = 250 mV; 1,1 $\geqslant$ f $\geqslant$ 0,9 MHz.

LINE DRIVER TRANSFORMER

- For Monochrome Data Graphic Displays

APPLICATION

This transformer has been designed for use in monochrome monitors. The required supply voltage is 24 V. The transformer is used in conjunction with deflection unit AT1038/40A, line-output transformer AT2102/04C and linearity control unit AT4042/08.

MECHANICAL DATA

Dimensions in mm

The magnetic circuit of the transformer comprises two Ferroxcube U-cores. The unit is provided with pins for mounting on a printed-wiring board.

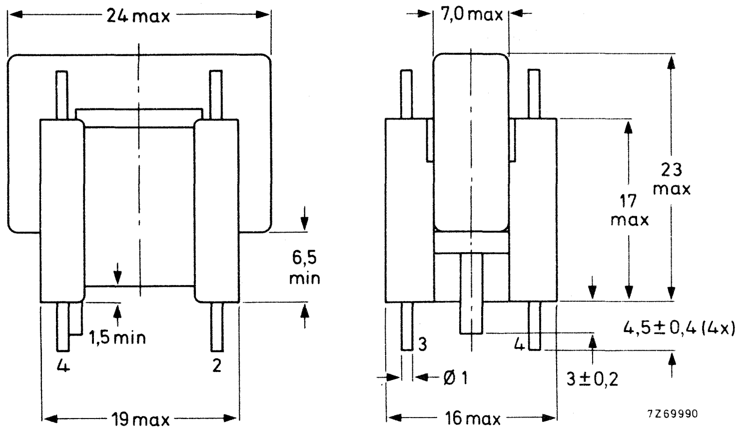


Fig. 1 Line driver transformer AT4043/59.

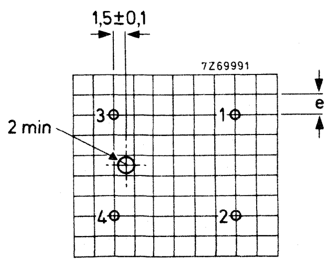


Fig. 2 Hole pattern for mounting on a printed-wiring board (component side). Hole diameter 1,3 + 0,1 mm. e = 2,54 mm (0,1 in).

ELECTRICAL DATA

Inductance (primary, 1-2)	6,1 mH
Leakage inductance (secondary)	12 μH ± 15%
Transformation ratio	4,18 : 1
Maximum operating temperature	95 ^{o}C

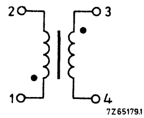


Fig. 3 Circuit diagram.

Application circuit

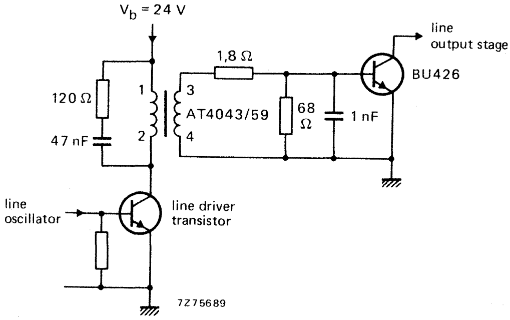


Fig. 4.

LINE DRIVER TRANSFORMER

- For Monochrome Data Graphic Displays

APPLICATION

This transformer has been designed for use in monochrome monitors. The required supply voltage is 12 V. The transformer is used in conjunction with deflection unit AT1071/03, line-output transformer AT2102/02, and linearity control unit AT4036.

MECHANICAL DATA

Dimensions in mm

The magnetic circuit of the transformer comprises two Ferroxcube U-cores. The unit is provided with pins for mounting on a printed-wiring board.

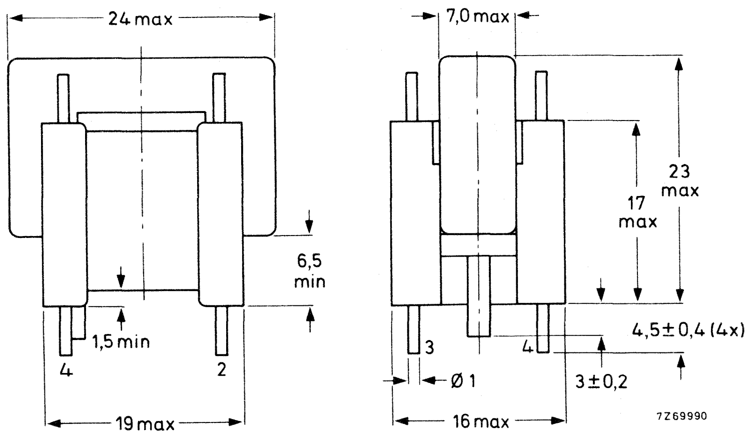


Fig. 1 Line driver transformer AT4043/64.

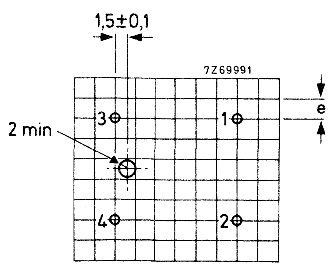


Fig. 2 Hole pattern for mounting on a printed-wiring board (component side). Hole diameter 1,3 + 0,1 mm. e = 2,54 mm (0,1 in).

ELECTRICAL DATA

Inductance (primary, 1-2)	1,2 mH
Leakage inductance (secondary)	5 μH ± 10%
Transformation ratio	2 : 1
Maximum operating temperature	95 ^{o}C

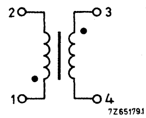


Fig. 3 Circuit diagram.

Application circuit

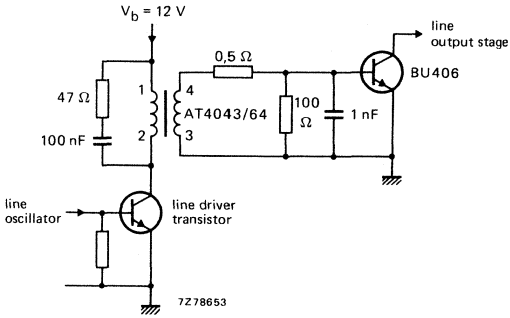


Fig. 4.

DYNAMIC FOCUSING TRANSFORMER

- For Monochrome Data Graphic Displays

APPLICATION

This transformer has been designed to improve the overall picture sharpness of the CRT. It is applied in series with the line coils of the deflection unit to generate a voltage which is fed to the focus electrode.

MECHANICAL DATA

Dimensions in mm

The magnetic circuit of the transformer comprises two Ferroxcube U20-cores, grade 3C8. The primary and secondary windings are wound on a two-part coil former.

The transformer is provided with 6 pins for mounting on a printed-wiring board.

Outlines

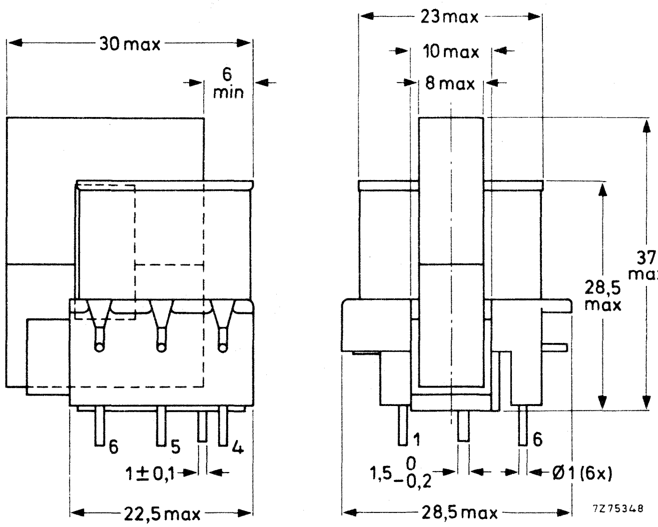


Fig. 1.

Mounting

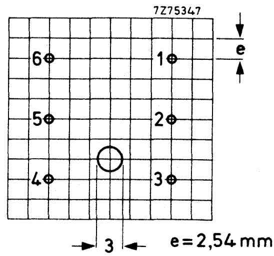


Fig. 2 Hole pattern for mounting on a printed-wiring board; hole diameter 1,3 + 0,1 mm. Viewed from the component side.

ELECTRICAL DATA

Inductance, secondary (1-3)*	⩾ 1 H
Resistance, primary (4-6), at 23 °C	⩽ 0,05 Ω
Resistance, secondary (1-3), at 23 °C	⩽ 44 Ω
Voltage ratio $E_{1\text{-}3}/E_{4\text{-}6}$**	60,75 ± 5%
Maximum permissible current (r.m.s. value)	
primary (4-6)	3 A
secondary (1-3)	0,125 A
Mains isolation	according to IEC 65
Breakdown voltage	
between winding 1-3 and winding 4-6 or core	⩾ 5600 V (d.c.)
between winding 4-6 and core	⩾ 500 V (d.c.)
Maximum working temperature	115 °C

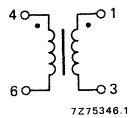


Fig. 3.

Application circuit

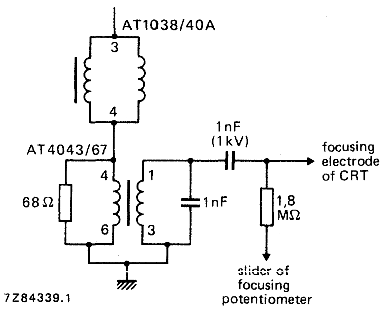


Fig. 4 Application circuit for use with deflection unit AT1038/40A.

* Measuring condition: E = 20 V, f = 1 kHz.
** Measuring condition: $E_{1\text{-}3}$ = 5 V, f = 1 kHz.

TESTS AND REQUIREMENTS

The dynamic focusing transformer withstands the following tests.

IEC 68–2 test method	name of test	procedure (quick reference)
Ua1	Tensile strength of terminations	
Ub (method 1)	Bending of terminations	
Fc	Vibration	Frequency range 10-55-10 Hz, amplitude 0,35 mm, 3 directions, 30 min per direction.
Eb	Bump	1000 bumps in 6 directions, acceleration 25 g.
Ea	Shock	Half-sine pulse shape, 11 ms, 50g, 6 directions, 3 shocks per direction.
Ta (method 1)	Soldering	Solder temp. 230 °C, dwell time 2 s.
Tb (method 1A)	Resistance to soldering heat	
Bb	Dry heat	96 h at + 100 °C.
Db	Damp heat, cyclic	21 cycles of 24 h at + 40 °C, R.H. 95%.
Ab	Cold	96 h at –40 °C.
Ca	Damp heat, steady state	21 days.
Na	Rapid change of temperature	5 cycles of –25 °C/+ 100 °C.
	Flammability	UAN–L1082, class b.

BRIDGE COIL

APPLICATION

The AT4043/68 is designed for the horizontal deflection output stage of 110° and 90° colour deflection systems. It is used in conjunction with the three-layer diode-split line output transformer AT2076/51, AT2076/81 or AT2077/81.

MECHANICAL DATA (Dimensions in mm)

The coil is wound on a combination of two Ferroxcube U15-cores. It has four termination pins for mounting through a printed-wiring board.

Outlines

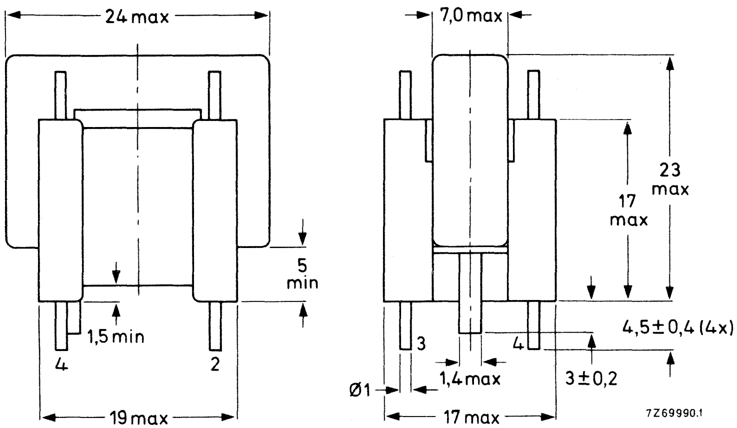


Fig. 1.

Mounting

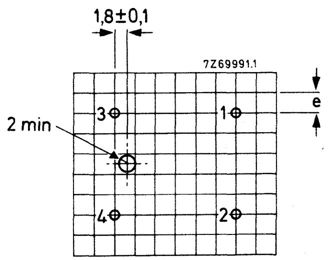


Fig. 2 Hole pattern for mounting on a printed-wiring board (component side). Hole diameter 1,3 + 0,1 mm. e = 2,54 mm (0,1 in).

ELECTRICAL DATA

Inductance*	0,52 mH ± 10%
Resistance	max. 0,6 Ω
Maximum peak-to-peak voltage	800 V
Maximum peak-to-peak current	2,9 A
Maximum working temperature	100 °C

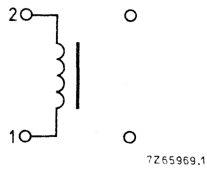


Fig. 3.

* Measuring conditions: E = 0,3 V; f = 1000 Hz.

BRIDGE COIL

- For Colour Data Graphic Displays

APPLICATION

The AT4043/69 is for the horizontal deflection output stage of 90° colour deflection systems. It is used in conjunction with the three-layer diode-split line output transformer AT2076/81 or AT2076/51, driver transformer AT4043/01, shift transformer AT4043/09 and dynamic focusing transformer AT4043/67.

MECHANICAL DATA

The coil is wound on a Ferroxcube I-15 core. It has four termination pins for mounting on a printed-wiring board.

Outlines

Dimensions in mm

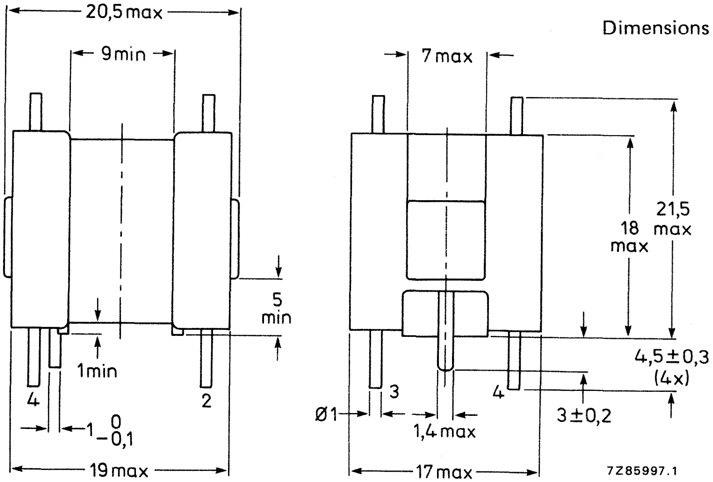


Fig. 1.

Mounting

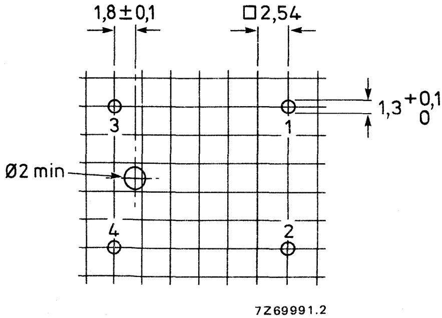


Fig. 2 Hole pattern for mounting on a printed-wiring board (component side).

ELECTRICAL DATA

Inductance *	1,0 mH ± 10%
Resistance	max. 1,07 Ω
Maximum working temperature	100 °C

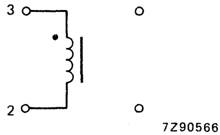


Fig. 3.

* Measuring conditions: E = 2,7 V; f = 1000 Hz.

3122 138 50000

INPUT CHOKE

- For single switch power pack system

APPLICATION

The AT4043/81 is for use as a supply choke in the single switch power pack system (S^2P^2) for colour TV receivers. It is used in conjunction with mains transformer TS561/2 or TS521B, mains filter choke AT4043/55, current sensing transformer AT4043/46, driver transformer AT4043/82 and diode-split line output transformer AT2076/80.

MECHANICAL DATA

Dimensions in mm

The magnetic circuit comprises two Ferroxcube U25 cores, grade 3C8. The choke has 10 pins (ϕ1 + 0,1 mm, length 4,5 ± 0,5 mm) for mounting on a printed-wiring board. The maximum height of the choke is 36 mm.

Mounting

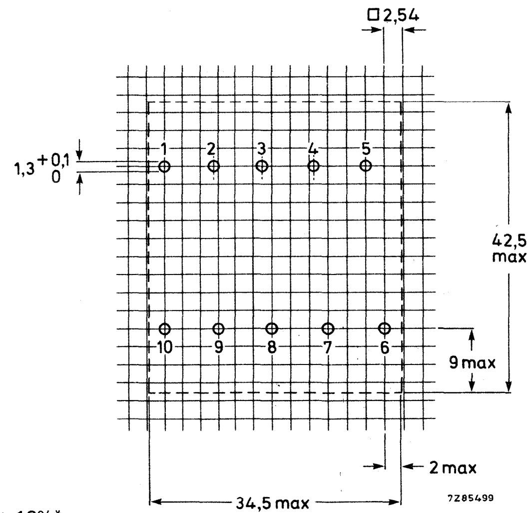


Fig. 1 Hole pattern for mounting on a printed-wiring board, viewed from the solder side.

ELECTRICAL DATA

Inductance (1-7)	25 mH ± 10%*
Resistance (1-4)	1,45 Ω ± 10%
Resistance (4-7)	1,85 Ω ± 10%
Resistance (10-3)	28 Ω ± 10%
Maximum peak current (1-7)	0,55 A
Maximum peak current (1-4)	1,1 A
Maximum working temperature	115 °C
Flammability	according to UL94, category V1.

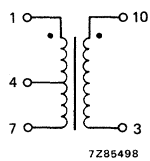


Fig. 2.

* Measuring conditions: E = 20 V, f = 1 kHz.

DRIVER TRANSFORMER

- For single switch power pack system
- Mains insulation

APPLICATION

The AT4043/82 is for use as a transistor driver transformer in the single switch power pack system (S^2P^2) for colour TV receivers. It is used in conjunction with mains transformer TS561/2 or TS521B, mains filter choke AT4043/90, current sensing transformer AT4043/46, input choke AT4043/81 and diode-split line output transformer AT2076/80 or AT2077/80.

MECHANICAL DATA

Dimensions in mm

The magnetic circuit comprises two Ferroxcube U20 cores, grade 3C8. The primary and secondary windings are wound on a two-part coil former with large creepage distances and clearances, which ensure safe insulation between the mains and control circuits. The transformer has six pins for mounting on a printed-wiring board.

Outlines

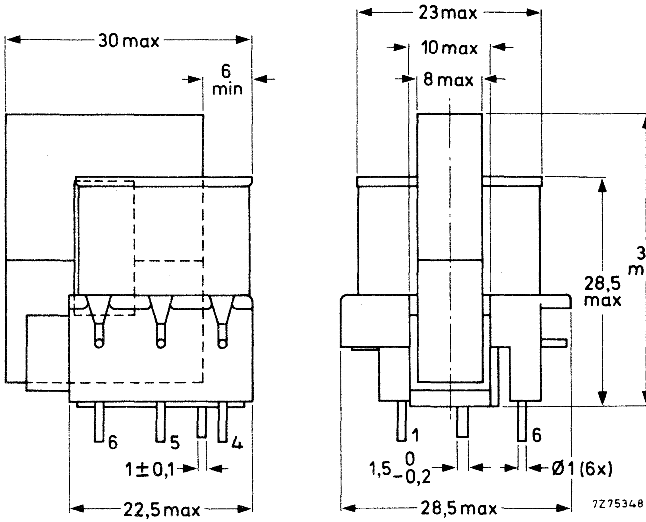


Fig. 1.

Mounting

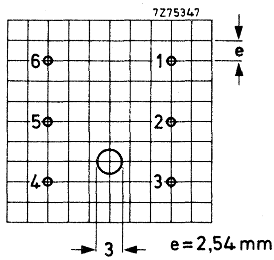


Fig. 2 Hole pattern for mounting on a printed-wiring board; hole diameter 1,3 + 0,1 mm. Viewed from the component side.

ELECTRICAL DATA

Inductance, primary (4-6)	$\geqslant$ 6,8 mH*
Resistance, primary (4-6), at 25 °C	2,6 Ω ± 10%
Leakage inductance, secondary (1-3)	17 μH ± 10%**
Resistance, secondary (1-3)	0,11 Ω ± 10%
Transformation ratio	3,24
Permissible current (r.m.s. value)	
primary (4-6)	200 mA
secondary (1-3)	500 mA
Mains isolation	according to IEC65
Breakdown voltage (d.c.)	
between secondary (1-3) and primary (4-6) or core	$\geqslant$ 5600 V
between primary (4-6) and core	$\geqslant$ 500 V
Maximum working temperature	115 °C

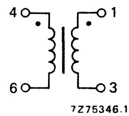


Fig. 3.

* Measuring condition: E = 3 V, f = 1 kHz.
** Measuring condition (primary short-circuited): E $\leqslant$ 250 mV, 500 kHz $\leqslant$ f $\leqslant$ 600 kHz.

LINE DRIVER TRANSFORMER

- For Monochrome Data Graphic Displays

APPLICATION

This transformer is for use in monochrome monitors. The required supply voltage is 70 V. The transformer is used in conjunction with deflection unit AT1039/01, line-output transformer AT2076/53 and linearity control unit AT4036.

MECHANICAL DATA

Dimensions in mm

The magnetic circuit of the transformer comprises two Ferroxcube U20-cores. The unit has pins for mounting on a printed-wiring board.

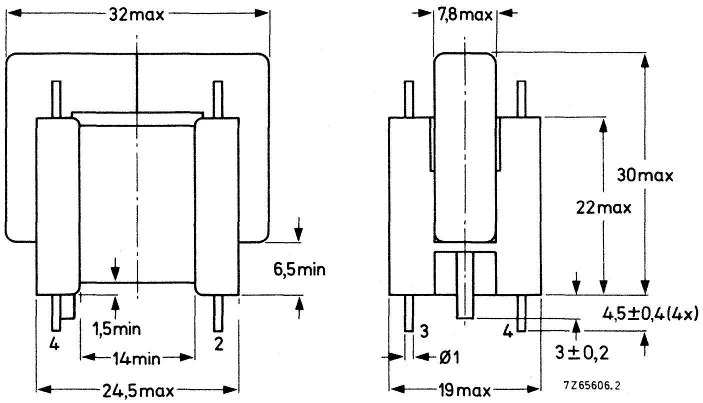


Fig. 1 Line driver transformer AT4043/83.

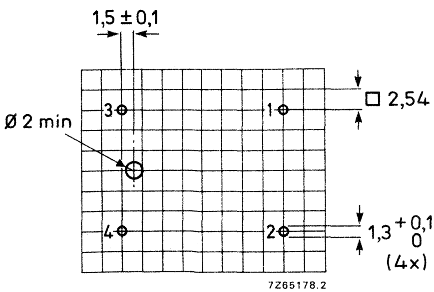


Fig. 2 Hole pattern for mounting on a printed-wiring board (component side). Hole diameter 1,3 + 0,1 mm; e = 2,54 mm (0,1 in).

ELECTRICAL DATA

Inductance (primary, 1 - 4)	80 mH ± 12%
Leakage inductance (secondary)	6 μH ± 15%
Transformation ratio	12,1 : 1
Maximum operating temperature	95 °C

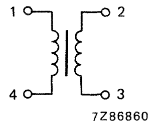


Fig. 3 Circuit diagram.

Application circuit

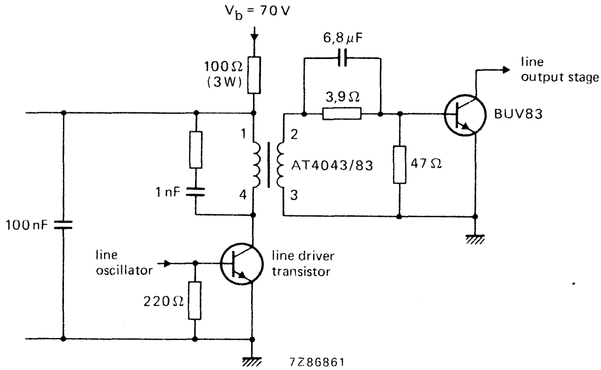


Fig. 4.

Note: Complete description is given in Technical Publication 058: "A full-page data graphic display unit (C62) operating at a line frequency of 32 kHz".

LINE DRIVER TRANSFORMER

APPLICATION

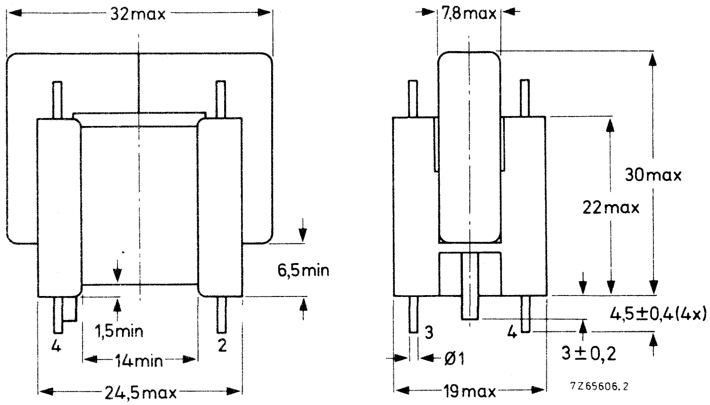
The transformer AT4043/87 has been designed for all-transistor black/white and colour television sets. In black and white television sets it can be used in the single-transistor (BU205) line-output circuit in conjunction with the line-output transformer AT2048/12; in colour television sets it can be used in the single-transistor (BU208A) line-output circuit in conjunction with the line-output transformer AT2076/30.

MECHANICAL DATA

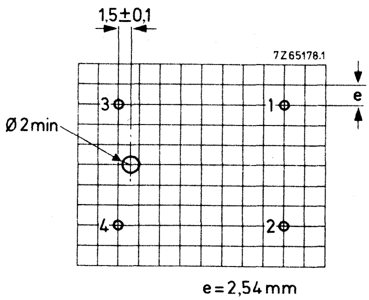
Dimensions in mm

The magnetic circuit of the transformer comprises two Ferroxcube U-cores.
The unit is provided with pins for mounting on a printed-wiring board.

Outlines

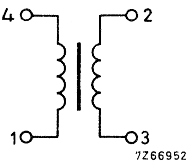


Mounting



Hole pattern for mounting on a printed-wiring board; hole diameter 1,3 + 0,1 mm.

ELECTRICAL DATA



Inductance (primary, 1-4)	76 mH ± 12%
Leakage inductance (secondary)*	⩽ 2,0 μH
Transformation ratio 4-1/2-3	29 : 1
Maximum working temperature	100 °C

* Primary short circuited.

LINE DRIVER TRANSFORMER

- For colour TV ("Two Chip Design")

APPLICATION

This transformer is for use in economic colour TV receivers with 14 or 16 in 90° picture tubes, in conjunction with line-output transformer AT2078/06 and linearity corrector AT4042/90 or AT4042/91.

MECHANICAL DATA

Dimensions in mm

The magnetic circuit of the transformer comprises two Ferroxcube U10-cores. The unit has pins for mounting on a printed-wiring board.

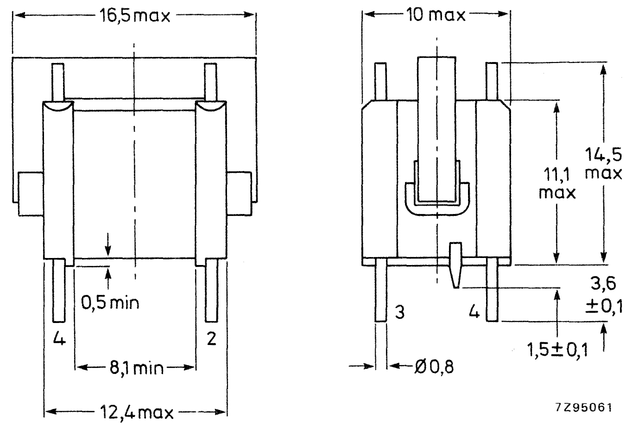


Fig. 1 Line driver transformer AT4043/89.

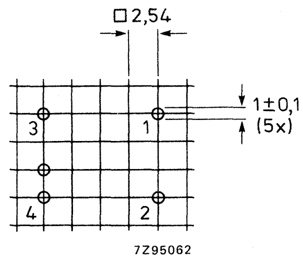


Fig. 2 Hole pattern for mounting on a printed-wiring board (component side).

ELECTRICAL DATA

Inductance (primary, 1 – 2)	3,85 mH ± 15%
Transformation ratio	5 : 1
Maximum operating temperature	95 °C

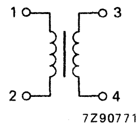


Fig. 3 Circuit diagram.

MAINS FILTER CHOKE FOR 1,0 A rms

APPLICATION

The AT4043/90 is for use in consumer and professional equipment as a part of the filter network in the power supply.

MECHANICAL DATA

The magnetic circuit of the filter choke comprises two Ferroxcube U20 cores. The choke has four pins for mounting on a printed-wiring board.

Outlines

Dimensions in mm

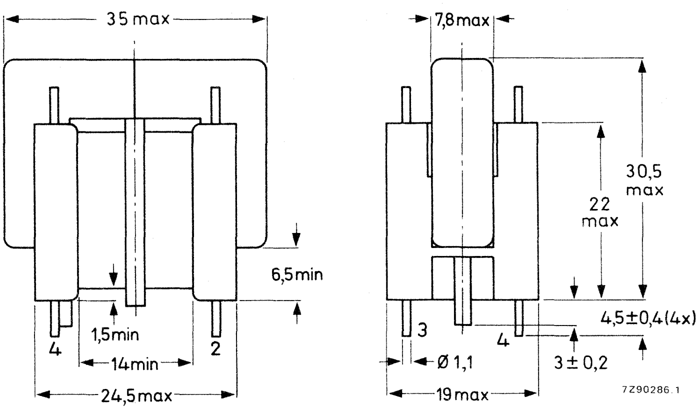


Fig. 1.

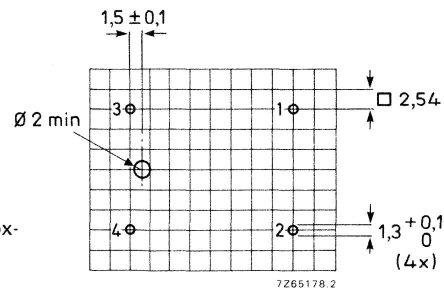


Fig. 2 Hole pattern for mounting on a printed-wiring board (component side). The windings may be interchanged because the coil is symmetrical.

Marking

The 12-digit catalogue number is printed on the Ferroxcube cores.

ELECTRICAL DATA

Inductance, $L_{1\text{-}2} = L_{3\text{-}4}$	$\geqslant$ 28 mH*
Resistance, $R_{1\text{-}2} = R_{3\text{-}4}$, at 25 °C	1,0 Ω
Leakage inductance	
$L_{s(1\text{-}2)}$, $L_{3\text{-}4}$ short-circuited	0,75 mH
$L_{s(3\text{-}4)}$, $L_{1\text{-}2}$ short-circuited	0,75 mH
Maximum current (r.m.s.)	1,0 A
Maximum working temperature	115 °C

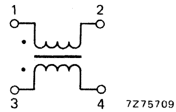


Fig. 3.

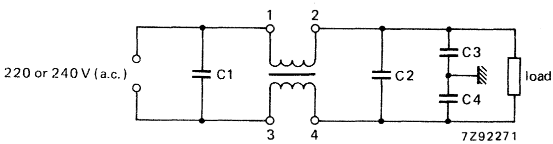


Fig. 4 Application circuit.
C1 = C3 = C4 = 3300 pF, 250 V;
C2 = 0,47 μF, 250 V.

The choke withstands the following tests:

test	IEC 68 test method	procedure
bump	Eb	1000 bumps, acceleration 245 m/s², 6 directions
vibration	Fc	10-55-10 Hz, ampl. 0,35 mm, 3 directions, 30 min/direction
damp heat, steady state	Ca	21 days, 40 °C; 93% R.H.
damp heat, cyclic	Db	21 days, 40 °C
change of temperature	Na	−25 °C, + 100 °C; 5 cycles
dry heat	Bb	96 h, + 100 °C
solderability	Ta	230 ± 10 °C, 2 ± 0,5 s

Reliability

Maximum cumulative percentage catastrophic failures

after 300 h	$\leqslant$ 0,01%
after 10 000 h	$\leqslant$ 0,02%
after 30 000 h	$\leqslant$ 1%

* Measured at 1 V, 1 kHz.

MAINS FILTER CHOKE FOR 0,25 A rms

APPLICATION

The AT4043/91 is for use in consumer and professional equipment as a part of the filter network in the power supply.

MECHANICAL DATA

The magnetic circuit of the filter choke comprises two Ferroxcube U15 cores. The choke has four pins for mounting on a printed-wiring board.

Outlines Dimensions in mm

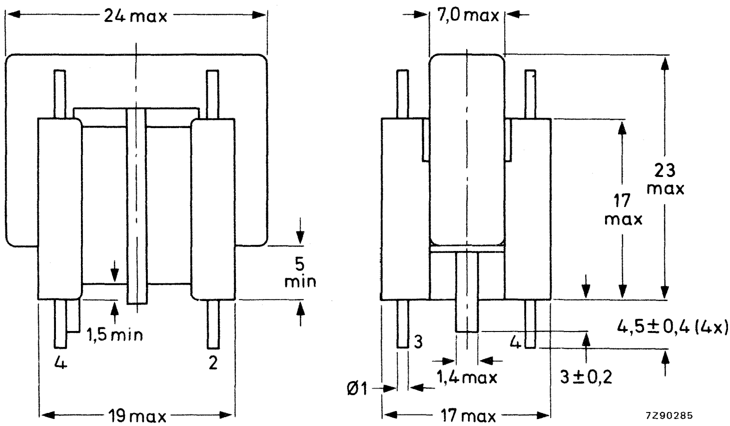
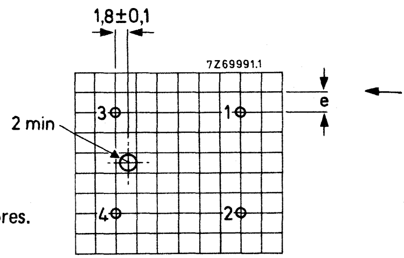


Fig. 1.

Fig. 2 Hole pattern for mounting on a printed-wiring board (component side); e = 2,54 mm; hole diameter is 1,3 + 0,1 mm. The windings may be interchanged because the coil is symmetrical.



Marking

The 12-digit catalogue number is printed on the Ferroxcube cores.

ELECTRICAL DATA

Inductance, $L_{1\text{-}2} = L_{3\text{-}4}$	$\geqslant$ 40 mH*
Resistance, $R_{1\text{-}2} = R_{3\text{-}4}$, at 25 °C	5,2 Ω
Leakage inductance	
$L_{s(1\text{-}2)}$, $L_{3\text{-}4}$ short-circuited	1,5 mH
$L_{s(3\text{-}4)}$, $L_{1\text{-}2}$ short-circuited	1,5 mH
Maximum current (r.m.s.)	0,25 A
Maximum working temperature	115 °C

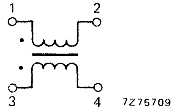


Fig. 3.

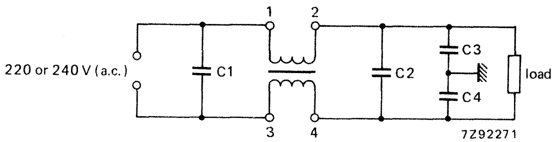


Fig. 4 Application circuit.
C1 = C3 = C4 = 3300 pF; 250 V;
C2 = 0,47 μF, 250 V.

The choke withstands the following tests:

test	IEC 68 test method	procedure
bump	Eb	1000 bumps, acceleration 245 m/s², 6 directions
vibration	Fc	10-55-10 Hz, ampl. 0,35 mm, 3 directions, 30 min/direction
damp, heat, steady state	Ca	21 days, 40 °C; 93% R.H.
damp heat, cyclic	Db	21 days, 40 °C
change of temperature	Na	−25 °C, + 100 °C; 5 cycles
dry heat	Bb	96 h, + 100 °C
solderability	Ta	230 ± 10 °C; 2 ± 0,5 s

Reliability

Maximum cumulative percentage catastrophic failures

after 300 h	$\leqslant$ 0,01%
after 10 000 h	$\leqslant$ 0,02%
after 30 000 h	$\leqslant$ 1%

* Measured at 1 V, 1 kHz.

MAINS FILTER CHOKE FOR 0,5 A rms

APPLICATION

The AT4043/92 is for use in consumer and professional equipment as a part of the filter network in the power supply.

MECHANICAL DATA

The magnetic circuit of the filter choke comprises two Ferroxcube U15 cores. The choke has four pins for mounting on a printed-wiring board.

Outlines Dimensions in mm

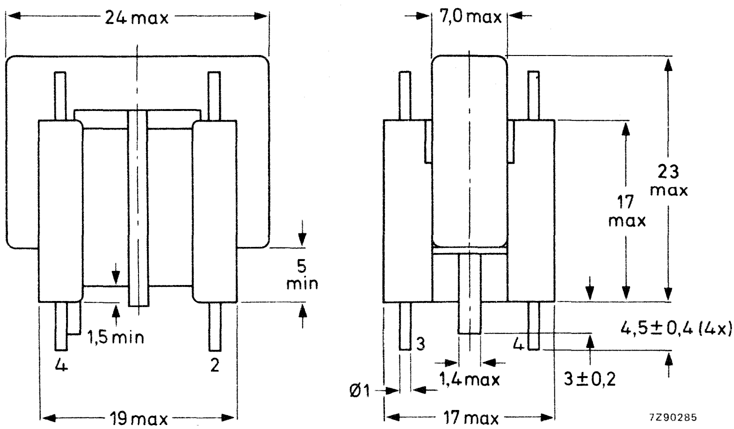


Fig. 1.

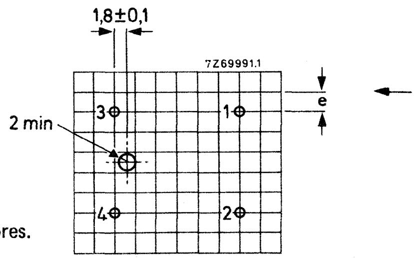


Fig. 2 Hole pattern for mounting on a printed-wiring board (component side); e = 2,54 mm; hole diameter is 1,3 + 0,1 mm. The windings may be interchanged because the coil is symmetrical.

Marking

The 12-digit catalogue number is printed on the Ferroxcube cores.

ELECTRICAL DATA

Inductance, $L_{1\text{-}2} = L_{3\text{-}4}$	$\geqslant$ 15 mH*
Resistance, $R_{1\text{-}2} = R_{3\text{-}4}$, at 25 °C	2,0 Ω
Leakage inductance	
$L_{s(1\text{-}2)}$, $L_{3\text{-}4}$ short-circuited	0,7 mH
$L_{s(3\text{-}4)}$, $L_{1\text{-}2}$ short-circuited	0,7 mH
Maximum current (r.m.s.)	0,5 A
Maximum working temperature	115 °C

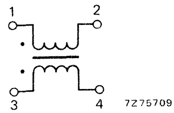


Fig. 3.

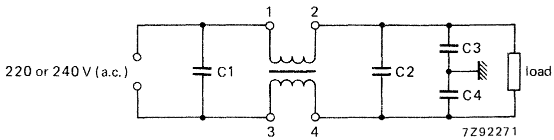


Fig. 4 Application circuit.
C1 = C3 = C4 = 3300 pF, 250 V;
C2 = 0,47 μF, 250 V.

The choke withstands the following tests:

test	IEC 68 test method	procedure
bump	Eb	1000 bumps, acceleration 245 m/s^2, 6 directions
vibration	Fc	10-55-10 Hz, ampl. 0,35 mm, 3 directions, 30 min/direction
damp heat, steady state	Ca	21 days, 40 °C; 93% R.H.
damp heat, cyclic	Db	21 days, 40 °C
change of temperature	Na	−25 °C, + 100 °C; 5 cycles
dry heat	Bb	96 h, + 100 °C
solderability	Ta	230 ± 10 °C, 2 ± 0,5 s

Reliability

Maximum cumulative percentage catastrophic failures

after 300 h	$\leqslant$ 0,01%
after 10 000 h	$\leqslant$ 0,02%
after 30 000 h	$\leqslant$ 1%

* Measured at 1,6 V, 1 kHz.

MAINS FILTER CHOKE FOR 1,5 A rms

APPLICATION

The AT4043/93 is for use in consumer and professional equipment as a part of the filter network in the power supply.

MECHANICAL DATA

The magnetic circuit of the filter choke comprises two Ferroxcube U20 cores. The choke has four pins for mounting on a printed-wiring board.

Outlines Dimensions in mm

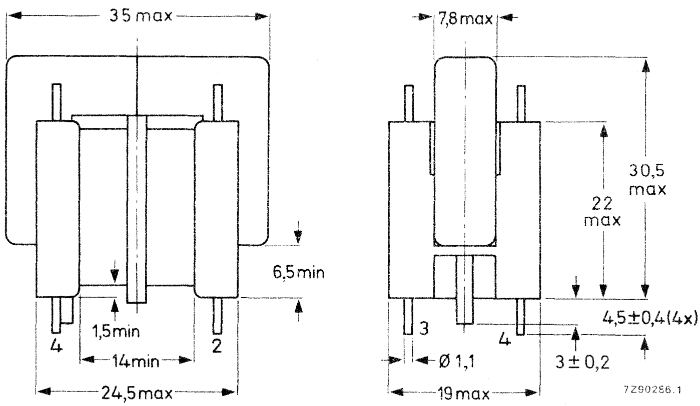
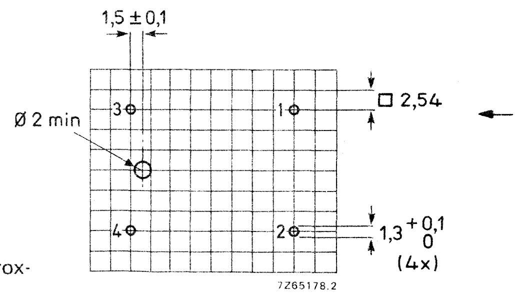


Fig. 1.

Fig. 2 Hole pattern for mounting on a printed-wiring board (component side). The windings may be interchanged because the coil is symmetrical.



Marking

The 12-digit catalogue number is printed on the Ferroxcube cores.

ELECTRICAL DATA

Inductance, $L_{1\text{-}2} = L_{3\text{-}4}$	$\geqslant$ 12 mH*
Resistance, $R_{1\text{-}2} = R_{3\text{-}4}$, at 25 °C	0,4 Ω ± 10%
Leakage inductance	
$L_{s(1\text{-}2)}$, $L_{3\text{-}4}$ short-circuited	0,5 mH
$L_{s(3\text{-}4)}$, $L_{1\text{-}2}$ short-circuited	0,5 mH
Maximum current (r.m.s.)	1,5 A
Test voltage (d.c.) between the windings, and between windings and core	2000 V
Maximum working tepmerature	115 °C

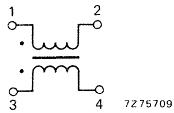


Fig. 3.

The choke withstands the following tests:

test	IEC 68 test method	procedure
bump	Eb	1000 bumps, acceleration 245 m/s^2, 6 directions
vibration	Fc	10-55-10 Hz, ampl. 0,35 mm, 3 directions, 30 min/direction
damp heat, steady state	Ca	21 days, 40 °C, 93% R.H.
damp heat, cyclic	Db	21 days, 40 °C
change of temperature	Na	−25 °C, + 100 °C; 5 cycles
dry heat	Bb	96 h, + 100 °C
solderability	Ta	230 ± 10 °C, 2 ± 0,5 s

Reliability

Maximum cumulative percentage catastrophic failures

after 300 h	$\leqslant$ 0,01%
after 10 000 h	$\leqslant$ 0,02%
after 30 000 h	$\leqslant$ 1%

* Measured at 2,2 V, 1 kHz.

MAINS TRANSFORMERS

MAINS TRANSFORMER

- For single switch power pack system
- 8 VA output power

APPLICATION

The TS521B is a supply transformer for colour television receivers with the single switch power pack (S^2P^2) system. It is also suitable in many semi-professional applications.

MECHANICAL DATA

Dimensions in mm

The transformer has a laminated iron core with a stacking height of max. 18,7 mm. It has 3 primary pins and 4 secondary pins for mounting on a printed-wiring board. Mounting facility with 4 self-tapping screws is provided.

Outlines

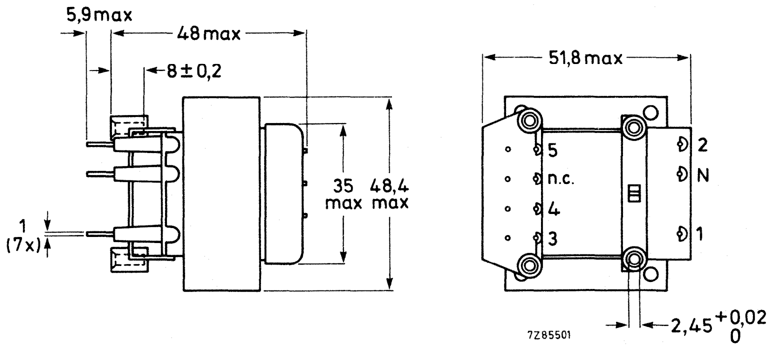


Fig. 1.

Mass 285 g

Mounting

The transformer is secured by means of four self-tapping screws 4N x 5/16.

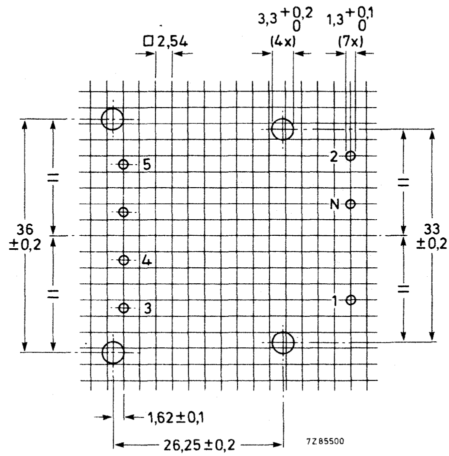


Fig. 2 Hole pattern for mounting on a printed-wiring board, viewed from solder side.

ELECTRICAL DATA

Input power at T = 115 °C (T_{amb} = 60 °C)		12 VA
Output power at T = 115 °C (T_{amb} = 60 °C)		8 VA

Note: for over-temperature protection a built-in temperature fuse (123 °C) is used; connection N (Fig. 1).

Primary voltage	(N-2)	220/240 V
Primary resistance at T_{amb} = 25 °C	(N-2)	400 Ω
Secondary voltage	(3-4 = 4-5)	25,2 V
Secondary resistance at T_{amb} = 25 °C	(3-5)	28 Ω
Test voltage (d.c.)		
between primary and secondary		5600 V
between primary and core		5600 V
between secondary and core		500 V
Insulation resistance		
between primary and secondary		> 60 MΩ
between primary and core		> 60 MΩ
Mains insulation		according to IEC 65, class 2, and VDE 0860

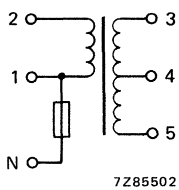


Fig. 3 Diagram.

TESTS

The mains transformer withstands the following tests:

Vibration	IEC 68-2-6, test Fc, procedure B4; 10-55-10 Hz, amplitude 0,35 mm, 3 x 30 min.
Bump	IEC 68-2-29, test Eb; 40g, 4000 bumps, 3 directions.
Dry heat	IEC 68-2-2, test Ba; 16 h, + 125 ^{o}C.
Damp heat, steady state	IEC 68-2-3, test Ca, 21 days, R.H. 95%.
Damp heat, accelerated	IEC 68-2-4, test D, + 55 ^{o}C, R.H. 95 to 100%.
Change of temperature	IEC 68-2-14, test Na; 5 cycles, T_A = −25 ^{o}C, T_B = + 125 ^{o}C.
Flammability	UL94, category V2.

MAINS TRANSFORMER

APPLICATION

The TS561/2 is a supply transformer for colour television receivers with the power pack system. It is also suitable in many semi-professional and professional applications.

MECHANICAL DATA

The transformer has a laminated iron core with a stacking height of max. 19,5 mm. The item is provided with 4 primary pins and 3 secondary pins for mounting on a printed-wiring board. Mounting facility with 4 self-tapping screws is provided.

Outlines

Dimensions in mm

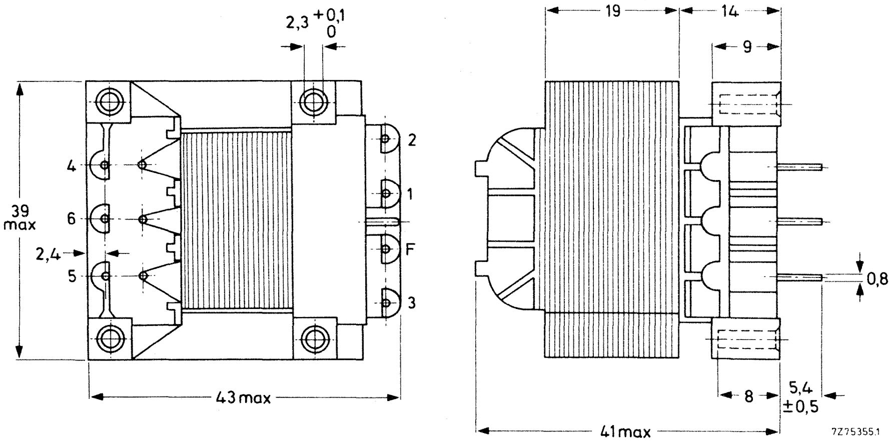


Fig. 1.

Mass 160 g

Mounting

The transformer is secured by means of four self-tapping screws of 3 mm.

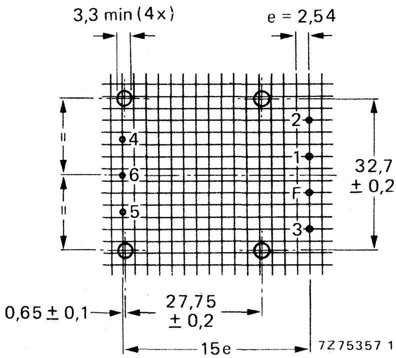


Fig. 2 Hole pattern for mounting on a printed-wiring board; hole diameter 1 + 0,1 mm. Viewed from the solder side.

ELECTRICAL DATA

Input power at T = 115 °C (T_{amb} = 60 °C)		6,5 VA
Output power at T = 115 °C (T_{amb} = 60 °C)		3,22 W

Note: for over-temperature protection a built-in temperature fuse (123 °C) is used; connection F.

Primary voltage,	(2 – F)	110 V
	(3 – F)	220 V
Primary resistance at T_{amb} = 25 °C	(3 – F)	1140 Ω
Secondary voltage V_o at I_o = 80 mA	(4 – 6 = 6 – 5)	17,4 V, see Fig. 4
Secondary resistance at T_{amb} = 25 °C		19 Ω
Test voltage between primary and case (d.c.)		5600 V
Test voltage between secondary and case (d.c.)		500 V
Mains isolation		acc. to IEC 65

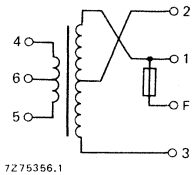
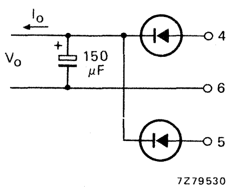


Fig. 3 Diagram and connections.



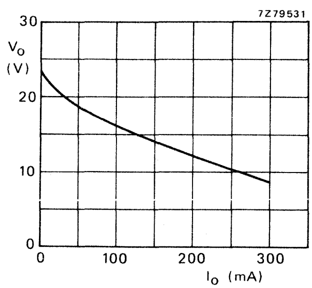


Fig. 4 Output voltage V_o as a function of the load current I_o.

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