

# DATA SHEET

**CR3424**

Video driver hybrid amplifier

Product specification

1995 Apr 05

Supersedes data of November 1992

File under Discrete Semiconductors, SC05

**Philips Semiconductors**



**PHILIPS**

## Video driver hybrid amplifier

CR3424

## FEATURES

- Typical transition times (10 to 90%) with  $C_L = 10$  pF:
  - at 35 V (p-p) swing  
 $t_r = 2.2$  ns;  $t_f = 2.0$  ns
  - at 40 V (p-p) swing  
 $t_r = 2.3$  ns;  $t_f = 2.1$  ns
  - at 50 V (p-p) swing  
 $t_r = 2.5$  ns;  $t_f = 2.2$  ns
- Low power consumption
- Minimum small signal bandwidth 130 MHz
- Very fast slew rate; 15000 V/ $\mu$ s
- Excellent grey-scale linearity
- Unconditional stability
- Gold metallization ensures excellent reliability.

## APPLICATIONS

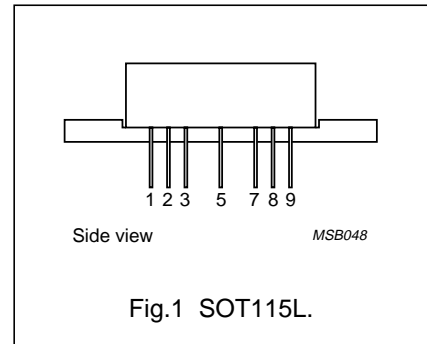
It is designed for application in cathode-ray tube (CRT) drivers in high-resolution colour and monochrome monitors.

## DESCRIPTION

Hybrid amplifier module mounted in a SOT115L package.

## PINNING

PIN	DESCRIPTION
1	input
2	ground
3	ground
5	supply voltage ( $V_S$ )
7	ground
8	ground
9	output



## LIMITING VALUES

In accordance with the Absolute Maximum Rating System (IEC 134).

SYMBOL	PARAMETER	MIN.	MAX.	UNIT
$V_S$	supply voltage (DC)	–	90	V
$T_{mb}$	operating mounting base temperature; note 1	–20	+100	°C
$T_{stg}$	storage temperature	–40	+125	°C

## Note

1. To ensure proper thermal contact, a layer of heatsink compound should be applied between module and heatsink.

## Video driver hybrid amplifier

CR3424

**CHARACTERISTICS**

$V_S = 80\text{ V}$ ;  $T_{mb} = 25\text{ °C}$ ;  $C_L = 10\text{ pF}$ ;  $R_1 = 287\text{ }\Omega$ ;  $C_1 = 60\text{ pF}$ ; 40 V (p-p) output swing with 40 V DC offset (see Fig.6); unless otherwise specified.

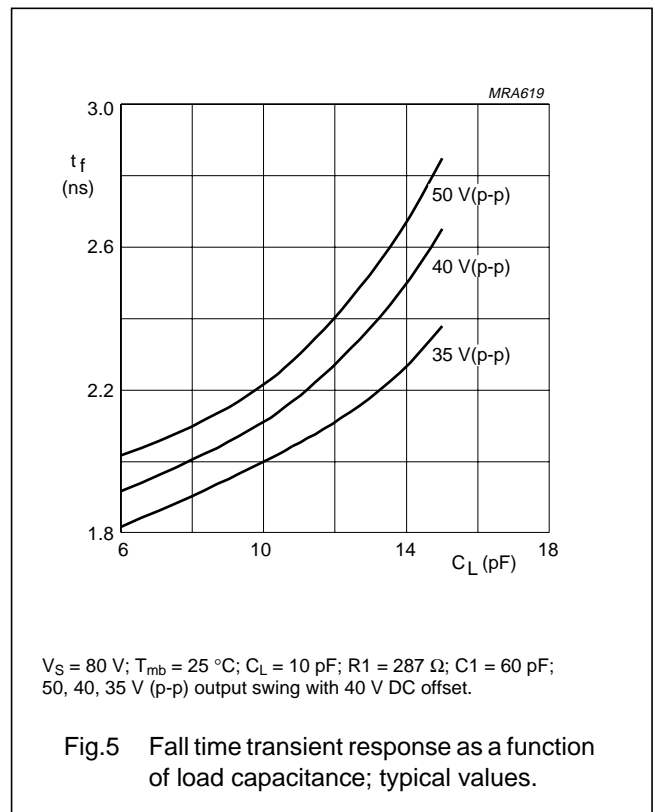
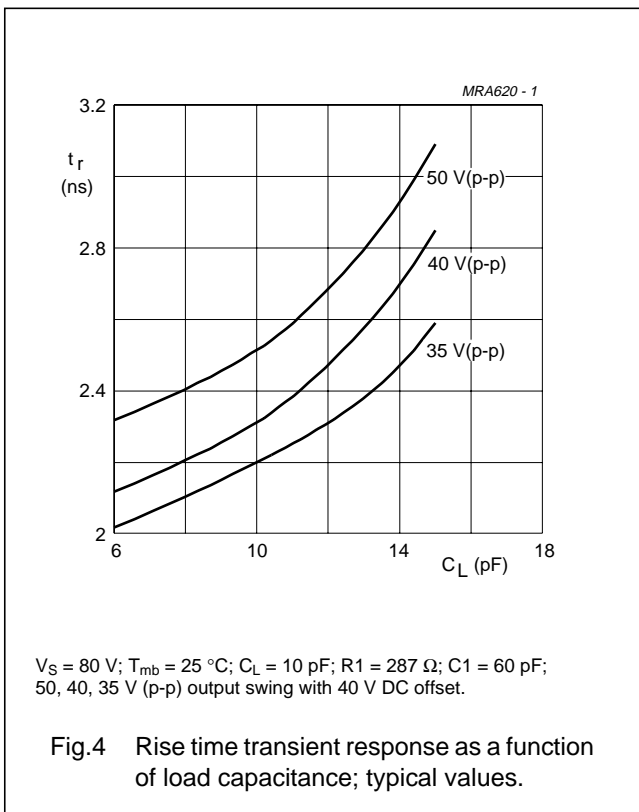
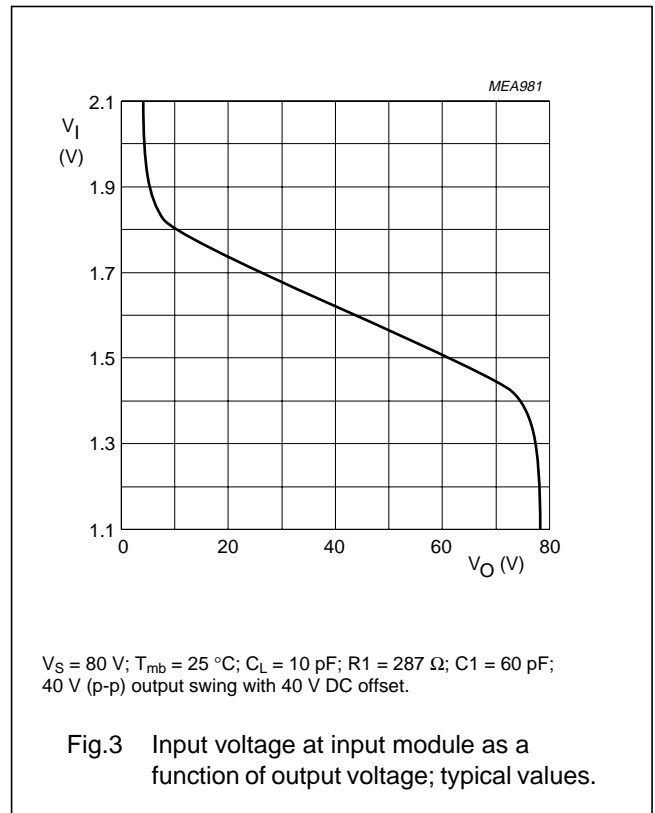
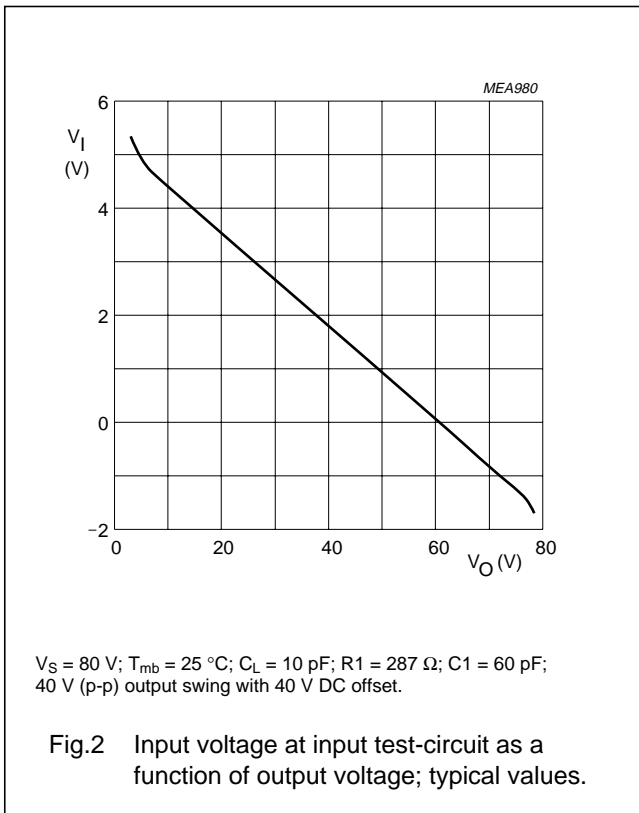
SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$I_S$	supply current	input and output open	41	47	53	mA
$V_I$	input voltage (DC)	input and output open	1.4	1.6	1.9	V
$V_O$	output voltage (DC)	input and output open	37	41	45	V
$P_{tot}$	total power dissipation	50 MHz square wave	–	6.4	8	W
$t_r$	rise time transient response	10 to 90%; note 1	–	2.3	2.9	ns
$t_f$	fall time transient response	10 to 90%; note 1	–	2.1	2.6	ns
BW	small signal bandwidth	between –3 dB points; note 2	130	145	–	MHz
$V_{tilt}$	low frequency tilt voltage	1 kHz square wave	–	1.3	1.5	V
$V_{os}$	overshoot voltage	varied by C1; see Fig.6	–	3	10	%
NLN	non-linearity	$V_O = 5\text{ to }75\text{ V}$	–	2	5	%
$A_V$	DC voltage gain	50 $\Omega$ source; note 3	11.2	12.4	13.2	
$V_G$	insertion gain	50 $\Omega$ source; note 4	160	180	200	

**Notes**

1. Input signal is a 100 kHz square wave of 3.25 V (p-p), with 1.5 V DC offset (50  $\Omega$  source).
2. Sinewave output signal: 1 V (p-p).
3. Measured  $V_O/V_I$  (Fig.2) at input test-circuit (see Fig.6).
4. Measured  $V_O/V_I$  (Fig.3) at input module (see Fig.6).

Video driver hybrid amplifier

CR3424



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CR3424

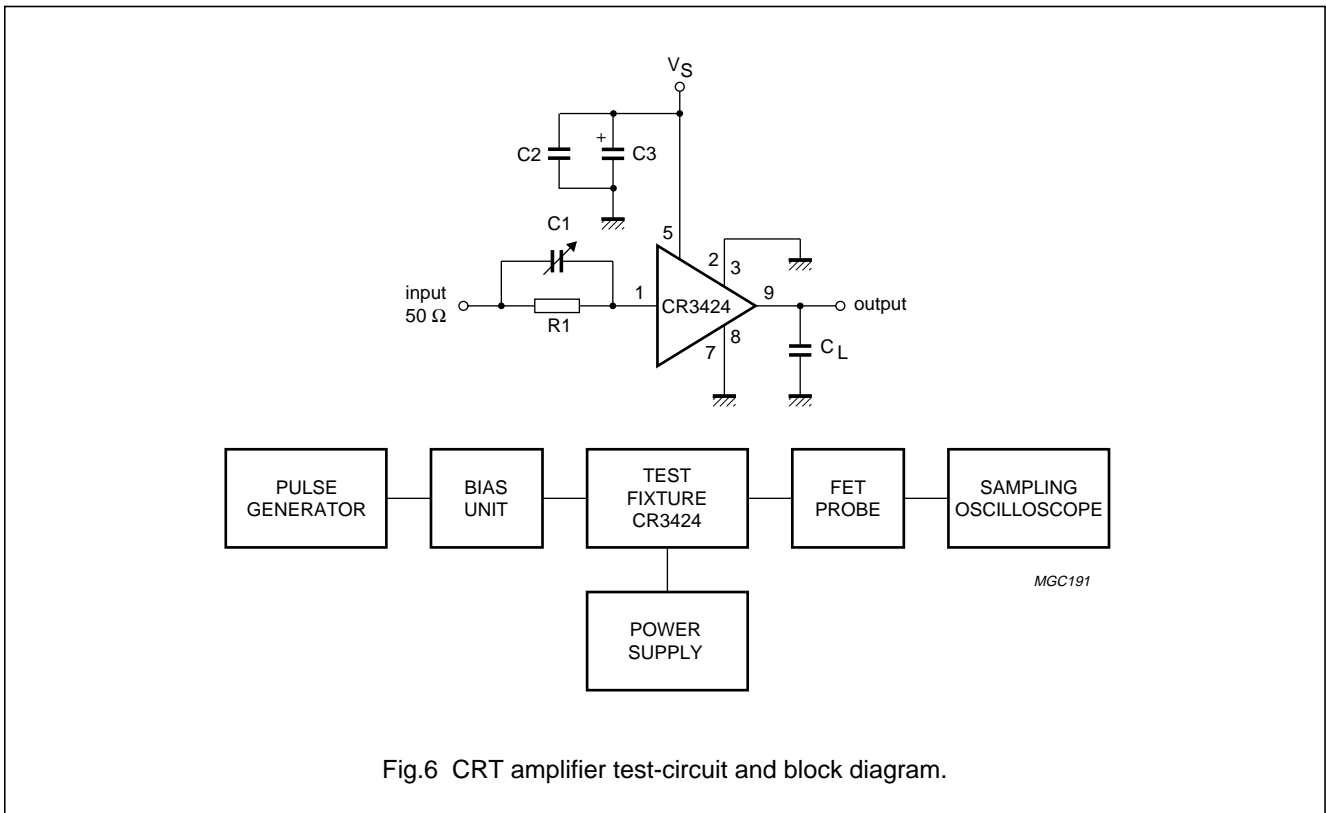


Fig.6 CRT amplifier test-circuit and block diagram.

Components used in test-circuit (see Fig.6)

DESIGNATION	DESCRIPTION	VALUE
C <sub>1</sub>	variable capacitor	10 to 120 pF (typ. 60 pF)
C <sub>2</sub>	chip capacitor	10 nF
C <sub>3</sub>	electrolytic capacitor	4.7 μF; 160 V
R1	resistor	typ. 287 Ω

Equipment used in test-circuit (see Fig.6)

EQUIPMENT	TYPE DESCRIPTION
Pulse generator	Pico Second; Model 2600B
Bias unit	Pico Second; Model 5555
Power supply	Philips; Model PE1541, 80 V
FET probe	Philips; Model PM8943, attenuation 100 : 1
Sampling oscilloscope	Tektronix; Model 11803, sampling head SD24

Video driver hybrid amplifier

CR3424

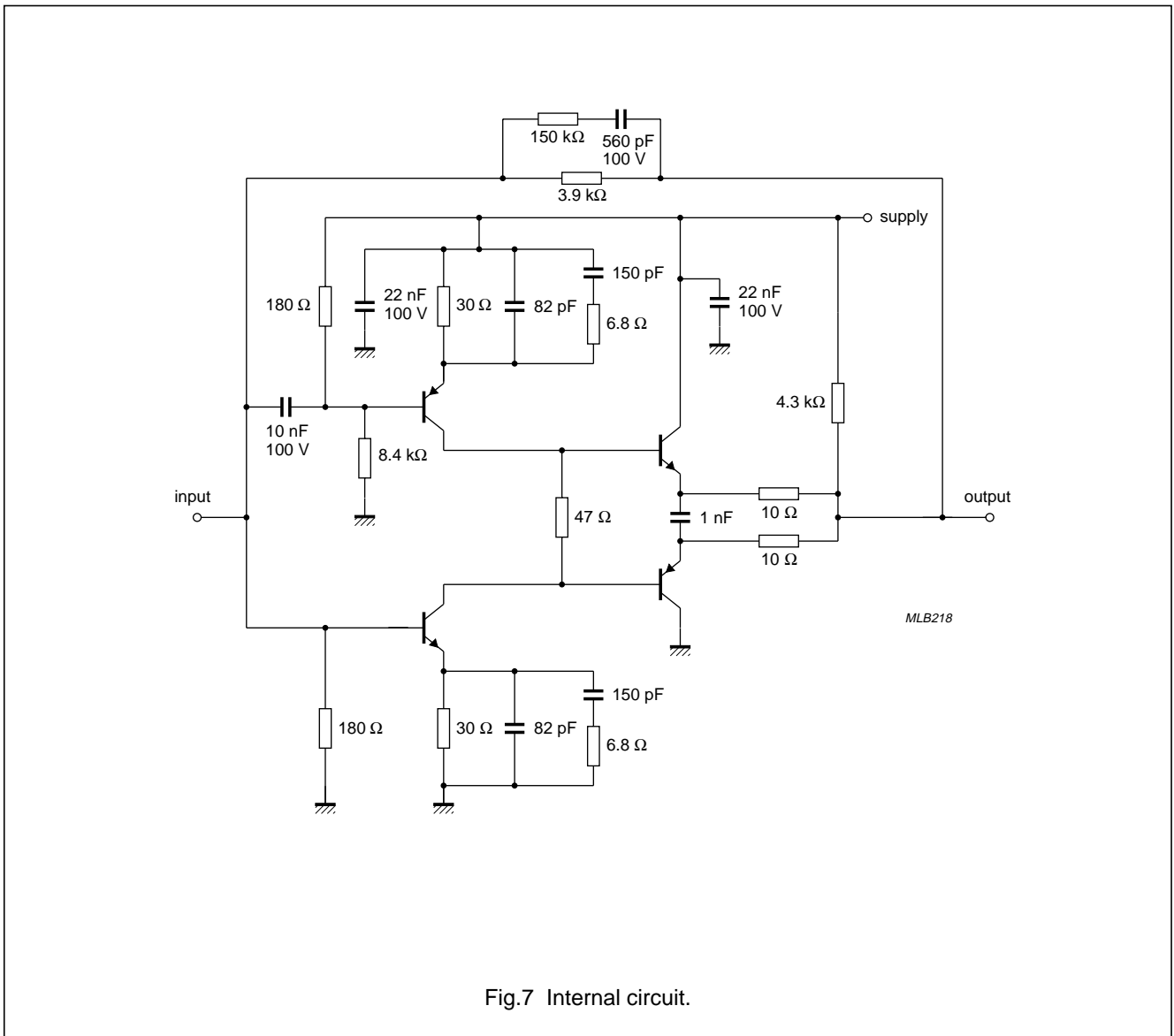
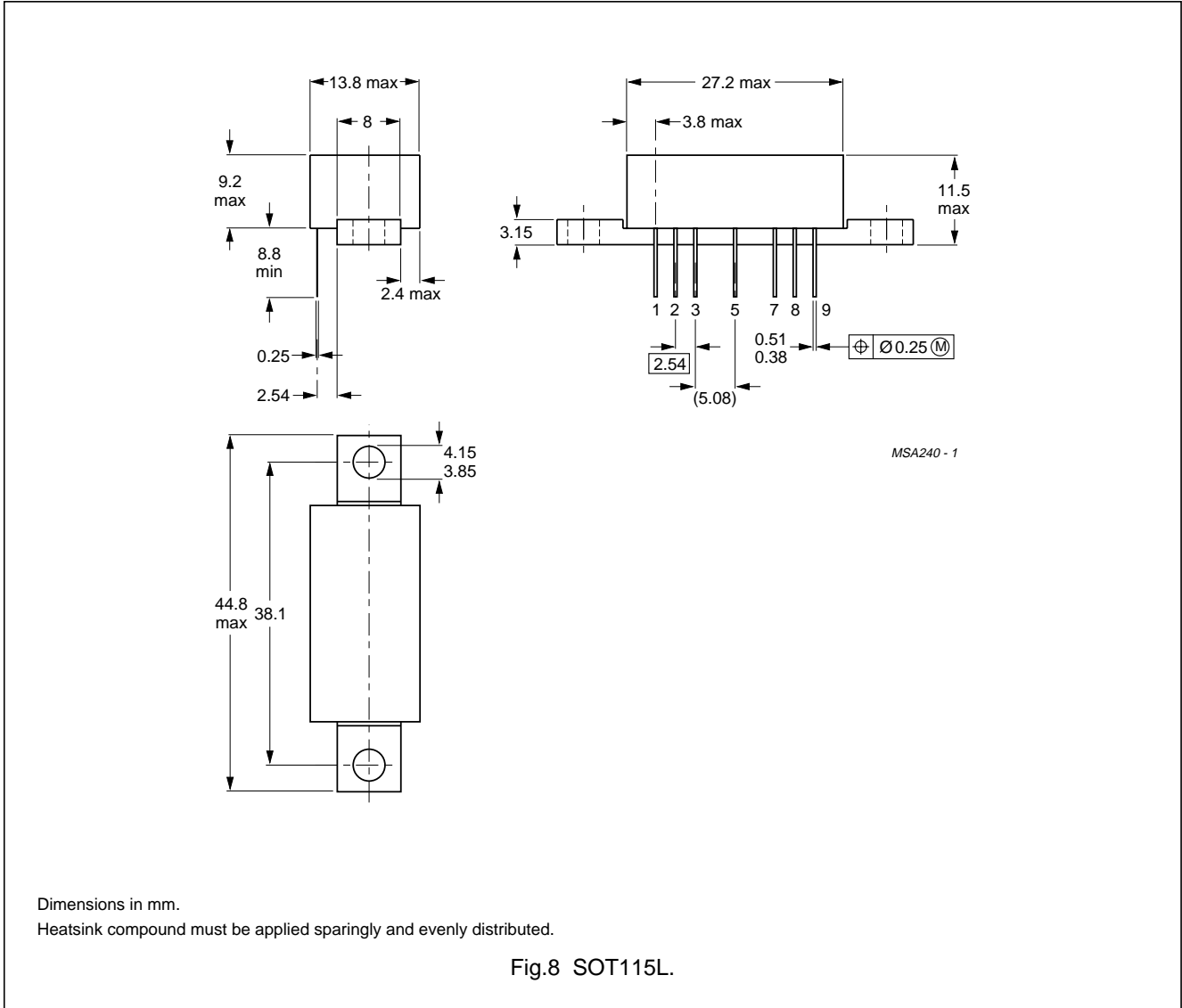


Fig.7 Internal circuit.

Video driver hybrid amplifier

CR3424

PACKAGE OUTLINE



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CR3424

**DEFINITIONS**

<b>Data sheet status</b>	
Objective specification	This data sheet contains target or goal specifications for product development.
Preliminary specification	This data sheet contains preliminary data; supplementary data may be published later.
Product specification	This data sheet contains final product specifications.
<b>Limiting values</b>	
Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 134). Stress above one or more of the limiting values may cause permanent damage to the device. These are stress ratings only and operation of the device at these or at any other conditions above those given in the Characteristics sections of the specification is not implied. Exposure to limiting values for extended periods may affect device reliability.	
<b>Application information</b>	
Where application information is given, it is advisory and does not form part of the specification.	

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Video driver hybrid amplifier

CR3424

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**NOTES**

Video driver hybrid amplifier

CR3424

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Video driver hybrid amplifier

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**NOTES**

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