

Service
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PRODUCT FAMILY EXPANIUM 8cm

Service Manual



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PHILIPS

TECHNICAL SPECIFICATION

General

Dimensions (W x H x D) : 93.0 x 22.5 x 97.5mm
 Weight without batteries : 140g

Power supply modes

DC-in socket : 2.9..6.5V
 Primary batteries (2 x LR03) : 1.7..3.6V
 Rechargeable batteries (AY3363) : 1.7..3.6V
 Voltage protection DC-in socket : -14.0..+14.0V

Battery lifetime

BATTERY LIFETIME	CDDA ESP=ON/OFF	CDDA ESP=LP	MP3 ESP=ON	MP3 ESP=LP
Primary batteries 2 x LR03	≥2.8h (3.5h typ.)	≥3.8h (5.3h typ.)	≥2.5h (3.5h typ.)	≥4.9h (7h typ.)
Rechargeable batteries AY3363 (700mAh)	≥2h (2.8h typ.)	≥3h (4h typ.)	≥2h (2.8h typ.)	≥3.8h (5.5h typ.)

Battery level detection

DETECTION LEVEL	Primary batteries	Rechargeable batteries
Battery empty	1.8V +100/-50mV	1.8V +100/-50mV
Battery weak 1	battery empty level + 0.9V ±100mV	battery empty level + 0.7V ±100mV
Battery weak 2	battery empty level + 0.6V ±100mV	battery empty level + 0.5V ±100mV
Battery weak 3	battery empty level + 0.3V ±100mV	battery empty level + 0.3V ±100mV

Charge section (not on all versions)

Charge current : 250mA ±10%
 Charge time for 80% AY3363 : 3.0h nom.
 Charge time for 100% AY3363 : 4.0h nom.
 Max. charge time (µP controlled) : 4.75h
 Temperature protection : 50°C ±5°C

Current consumption CDDA-playback

CURRENT CONSUMPTION	DC-IN SUPPLY (4.5V)		BATT. SUPPLY (2.25V)	
	ESP=ON/OFF	ESP=LP	ESP=ON/OFF	ESP=LP
Play-mode	140mA typ.	115mA typ.	170mA typ.	138mA typ.
Jump-mode	220mA typ.		300mA typ.	
Charge-mode	300mA typ.		n/a	
Stand-by (excl. recharge)	30mA typ.		45µA typ.	

Current consumption MP3-playback

CURRENT CONSUMPTION	DC-IN SUPPLY (4.5V)		BATT. SUPPLY (2.25V)	
	ESP=ON/OFF	ESP=LP	ESP=ON/OFF	ESP=LP
Play-mode	140mA typ.	100mA typ.	170mA typ.	120mA typ.
Jump-mode	320mA typ.		400mA typ.	
Charge-mode	300mA typ.		n/a	
Stand-by (excl. recharge)	30mA typ.		45µA typ.	

Shock resistance (ESP=off)

+X/-X direction : ≥1.0g
 +Y/-Y direction : ≥1.0g
 +Z/-Z direction : ≥1.0g

Headphone out (measured with 16Ω load, DBB/ESP=off)

Output power (THD=10%)
 /17 version only : 2x10mW (+1/-3dB)
 all other versions : 2x3mW (+1/-3dB)
 Frequency response (1mW) : 100Hz-20kHz within 6dB
 S/N ratio (unwght) : ≥80dB (83dB typ.)
 S/N ratio (A-wght) : ≥82dB (85dB typ.)
 THD+N (1kHz, 1mW) : ≤1% (0.2% typ.)
 Channel crosstalk (1kHz, no load) : ≤-24dB (-44dB typ.)
 Channel unbalance (-40dB) : ≤5dB
 Volume attenuation (1kHz) : ≥60dB

Sound presets

SOUND PRESET	Frequency response		
	63kHz	1kHz	10kHz
TREBLE ON	0dB ±2dB	0dB ±2dB	5dB ±2dB
BASS 1	+5dB ±2dB	0dB ±2dB	0dB ±2dB
BASS 2	+9dB ±2dB	0dB ±2dB	0dB ±2dB

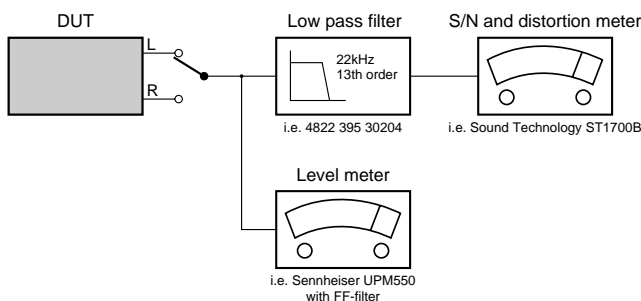
Laser

Output power : <5mW (3mW typ.)
 Wavelength : 780nm

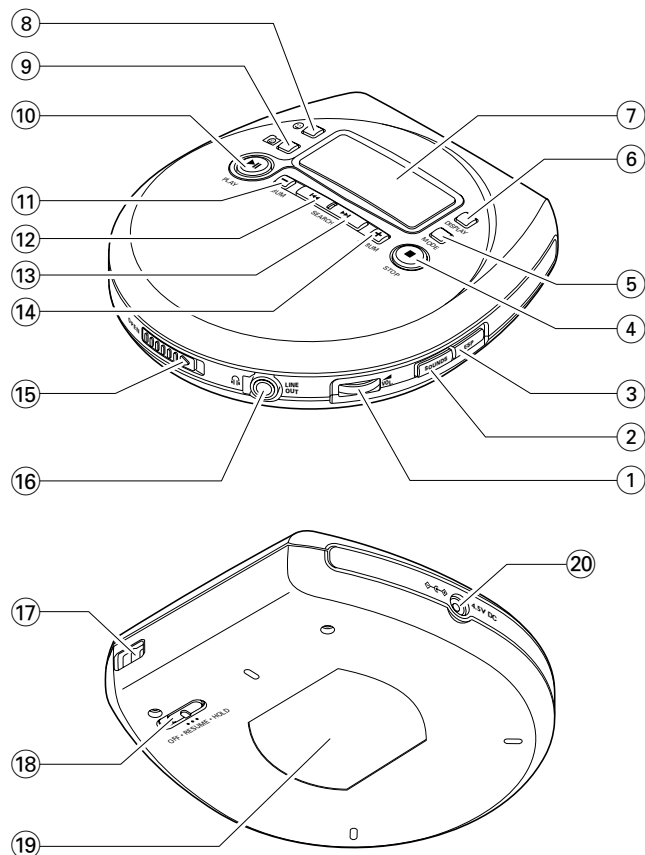
Measurement setup

Use Audio Signal disc SBC429

4822 397 30184



CONNECTIONS AND CONTROLS



- ① VOLadjusts the volume
- ② SOUNDS.....selects the bass and treble adjustment
- ③ ESP.....Electronic **Skip Protection** prevents music interruptions caused by shocks
- ④stops playback and switches the set off
- ⑤ MODEselects playback options such as **SHUFFLE** and **REPEAT**
- ⑥ DISPLAYselects the track and album information
- ⑦display
- ⑧marks and unmarks a favourite
- ⑨selects playback of favourites
- ⑩switches the set on, starts playback and interrupts playback
- ⑪ -MP3-CD only: selects the previous album or skips backward
- ⑫skips backward and searches backward
- ⑬skips forward and searches forward
- ⑭ +MP3-CD only: selects the next album or skips forward
- ⑮ OPENopens the CD lid
- ⑯ LINE OUT/3.5mm line out to connect
 - the headphones
 - the remote control
 - this set to the audio input of your stereo equipment
- ⑰eyelet for the carrying strap
- ⑱ OFF•RESUME•HOLD
 - OFF.....switches RESUME and HOLD off
 - RESUME.....stores the last position played
 - HOLD.....locks all buttons
- ⑲type plate
- ⑳ 4.5V DCto connect the external power supply

FIRMWARE UPDATE

Occasionally, Philips releases new software (“firmware”) for your set.

- 1 Connect the mains adapter to 4.5V DC on the set and to the wall socket.
- 2 Keep MODE pressed for 3 seconds.
→ The type of your set and the current version of the firmware are displayed. **Upgrade?** is displayed.
- 3 Press .
- 4 Visit the Philips Audio homepage www.audio.philips.com. Check if there is a firmware file for your set and if the firmware version is higher than the current version of your set. Download the file and burn it on an 8 cm CD-ROM.
- 5 Insert the CD-ROM into the set and keep MODE pressed for 3 seconds.
→ **Upgrade?** is displayed.
- 6 Press :
 - **Upgrading** is displayed and upgrading starts. This may take some minutes. After upgrading is finished, **Upgrade complete** is scrolled.
 - **Wrong upgrade file** is scrolled: Your set already has the latest firmware or the downloaded file does not correspond to your set.
 - **Upgrade file defect** is scrolled: The upgrade file has been damaged during the download or when burning the CD-ROM. Download the file again, burn a new CD-ROM and try again.
 - **No upgrade file** is scrolled: No upgrade file was found on the inserted CD-ROM.

Note: If upgrading is interrupted accidentally, repeat steps 5 and 6 until upgrading is completed successfully.

FEATURES

FEATURES OF CD-PORTABLE PRODUCT FAMILY "EXPANIUM 8cm"	EXP431		
	/00c	/01	/17
AAC / MP3 / WMA PLAYBACK	- / ● / -	- / ● / -	- / ● / -
CD-REWRITABLE COMPATIBILITY	●	●	●
ELECTRONIC SKIP PROTECTION CDDA	180s	180s	180s
ELECTRONIC SKIP PROTECTION MP3	495s	495s	495s
ESP DRAM SIZE	64Mbit	64Mbit	64Mbit
LONG PLAY MODE	●	●	●
HOLD / RESUME FUNCTION	● / ●	● / ●	● / ●
DBB / TREBLE STAGES	2 / 1	2 / 1	2 / 1
ACOUSTIC FEEDBACK	●	●	●
PROGRAM MEMORY	99	99	99
RECHARGE FUNCTION NiCd / NiMH	● / ●	● / ●	- / -
BELT CLIP	-	-	-
CORD LCD REMOTE CONTROL	●	●	●
DISPLAY BACKLIGHT	-	-	-
LINE / DIGITAL OUTPUT	- / -	- / -	- / -

ACCESSORIES

ACCESSORIES FOR CD-PORTABLE PRODUCT FAMILY "EXPANIUM 8cm"		EXP431		
		/00c	/01	/17
AY3170/00 AC/DC Adaptor	4822 219 10617	X		
AY3170/02 AC/DC Adaptor	4822 219 10676		X	
AY3170/17 AC/DC Adaptor	4822 219 10616			X
AY3291 Handstrap	3103 308 13610	X	X	X
AY3363 Rechargeable battery NiMH	3103 308 84540	X	X	
AY3464 HIFI CORD (3.5mm → cinch, L-plug)	4822 320 11881	O	O	O
AY3501/00 Car Adaptor Cassette	4822 397 10059	O	O	O
AY3545/00 Car DC/DC Converter	4822 219 10033	O	O	O
AY3769/00 Cord LCD Remote Control	3140 118 51080	X	X	X
SBC HE545/77s Earphone (S-plug)	9082 100 00269	X	X	X

X...supplied with the set, O...optional available

SAFETY & WARNINGS

ⓐ WARNING

All ICs and many other semiconductors are susceptible to electrostatic discharges (ESD). Careless handling during repair can reduce life drastically.

When repairing, make sure that you are connected with the same potential as the mass of the set via a wristband with resistance. Keep components and tools at this potential.

ⓕ ATTENTION

Tous les IC et beaucoup d'autres semi-conducteurs sont sensibles aux décharges statiques (ESD). Leur longévité pourrait être considérablement écourtée par le fait qu'aucune précaution n'est prise à leur manipulation.

Lors de réparations, s'assurer de bien être relié au même potentiel que la masse de l'appareil et enfilez le braceleterti d'une résistance de sécurité.

Veiller à ce que les composants ainsi que les outils que l'on utilise soient également à ce potentiel.

ⓓ WARNUNG

Alle ICs und viele andere Halbleiter sind empfindlich gegenüber elektrostatischen Entladungen (ESD).

Unvorsichtige Behandlung im Reparaturfall kann die Lebensdauer drastisch reduzieren.

Sorgen Sie dafür, daß Sie im Reparaturfall über ein Pulsarmband mit Widerstand mit dem Massepotential des Gerätes verbunden sind.

Halten Sie Bauteile und Hilfsmittel ebenfalls auf diesem Potential.



Ⓝ WAARSCHUWING

Alle IC's en vele andere halfgeleiders zijn gevoelig voor electrostatische ontladingen (ESD).

Onzorgvuldig behandelen tijdens reparatie kan de levensduur drastisch doen verminderen. Zorg ervoor dat u tijdens reparatie via een polsband met weerstand verbonden bent met hetzelfde potentiaal als de massa van het apparaat.

Houd componenten en hulpmiddelen ook op ditzelfde potentiaal.

ⓖ AVVERTIMENTO

Tutti IC e parecchi semi-conduttori sono sensibili alle scariche statiche (ESD).

La loro longevità potrebbe essere fortemente ridatta in caso di non osservazione della più grande cauzione alla loro manipolazione. Durante le riparazioni occorre quindi essere collegato allo stesso potenziale che quello della massa del apparecchio tramite un braccialetto a resistenza.

Assicurarsi che i componenti e anche gli utensili con quali si lavora siano anche a questo potenziale.

ⓐ AVAILABLE ESD PROTECTION EQUIPMENT :

anti-static table mat large 1200x650x1.25mm
small 600x650x1.25mm

anti-static wristband

connection box (3 press stud connections, 1M Ω)

extendible cable (2m, 2M Ω , to connect wristband to connection box)

connecting cable (3m, 2M Ω , to connect table mat to connection box)

earth cable (1M Ω , to connect any product to mat or to connection box)

KIT ESD3 (combining all 6 prior products - small table mat)

wristband tester

4822 466 10953

4822 466 10958

4822 395 10223

4822 320 11307

4822 320 11305

4822 320 11306

4822 320 11308

4822 310 10671

4822 344 13999

ⓐ

Safety regulations require that the set be restored to its original condition and that parts which are identical with those specified be used.

Safety components are marked by the symbol

ⓕ

Les normes de sécurité exigent que l'appareil soit remis à l'état d'origine et que soient utilisées les pièces de rechange identiques à celles spécifiées.

Les composants de sécurité sont marqués

ⓓ

Bei jeder Reparatur sind die geltenden Sicherheitsvorschriften zu beachten. Der Originalzustand des Gerätes darf nicht verändert werden. Für Reparaturen sind Originalersatzteile zu verwenden.

Sicherheitsbauteile sind durch das Symbol

SAFETY



Ⓝ

Veiligheidsbepalingen vereisen, dat het apparaat in zijn oorspronkelijke toestand wordt teruggebracht en dat onderdelen, identiek aan de gespecificeerde, worden toegepast. De Veiligheidsonderdelen zijn aangeduid met het symbool

ⓖ

Le norme di sicurezza estigono che l'apparecchio venga rimesso nelle condizioni originali e che siano utilizzati i pezzi di ricambio identici a quelli specificati.

Componenti di sicurezza sono marcati con

ⓐ **DANGER:** Invisible laser radiation when open.
AVOID DIRECT EXPOSURE TO BEAM.



Ⓢ Varning !

Osynlig laserstrålning när apparaten är öppnad och spårren är urkopplad. Betrakta ej strålen.

ⓓK Advarsel !

Usynlig laserstrålning ved åbning når sikkerhedsafbrydere er ude af funktion. Undgå udsættelse for strålning.

ⓕIN Varoitus !

Avatussa laitteessa ja suojalukituksen ohitettaessa olet alltiina näkymättömälle laserisäteilylle. Älä katso säteeseen !

ⓐ

After servicing and before returning the set to customer perform a leakage current measurement test from all exposed metal parts to earth ground, to assure no shock hazard exists.

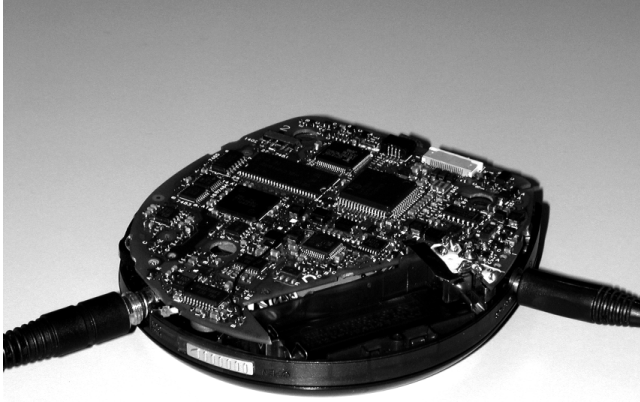
The leakage current must not exceed 0.5mA.

ⓕ

"Pour votre sécurité, ces documents doivent être utilisés par des spécialistes agréés, seuls habilités à réparer votre appareil en panne".

SERVICE HINTS

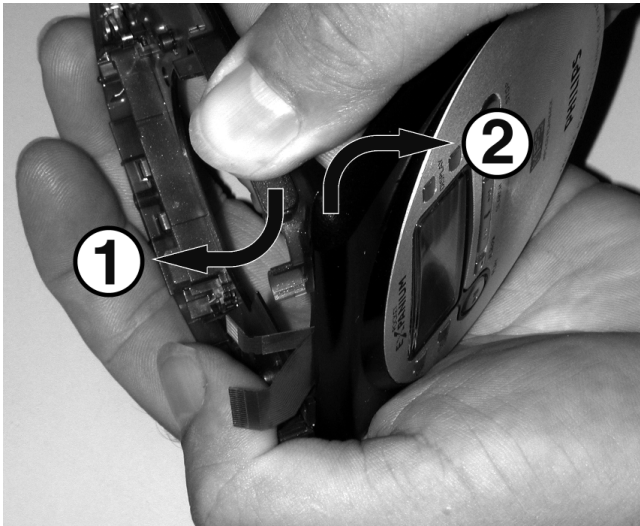
REPAIR POSITION COPPERSIDE



To get access to the copperside of the printed board assembly proceed as follows:

1. Remove the two screws on the bottom
2. Open the CD-door and remove the screw on the right side of the cabinet
3. Open the battery-door and remove the screw inside the battery compartment
4. Lift the bottom (take care of battery springs)
5. Supply the unit via external DC-socket
6. Ensure that the door switch is closed during measurements

DISMANTLING THE CD-DOOR

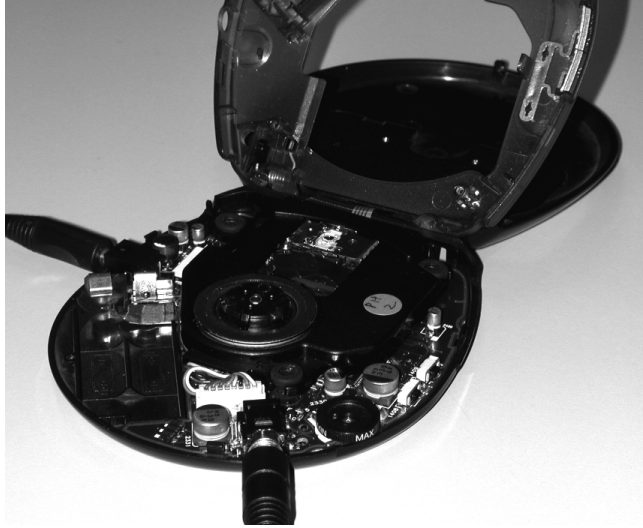


To dismantle the CD-door proceed as follows:

1. Dismantle the bottom as described above
2. Remove the printed board/drive assembly
2. Disconnect the membrane keyboard (flex-foil connector on copperside of printed board)
3. Bend the cabinet leftwards downwards ①, while bending the CD-door rightwards upwards ②

The procedure appears to be tricky at first, but force needs to be applied with thumb and middle finger only. It's just like snapping one's fingers.

REPAIR POSITION COMPONENTSIDE



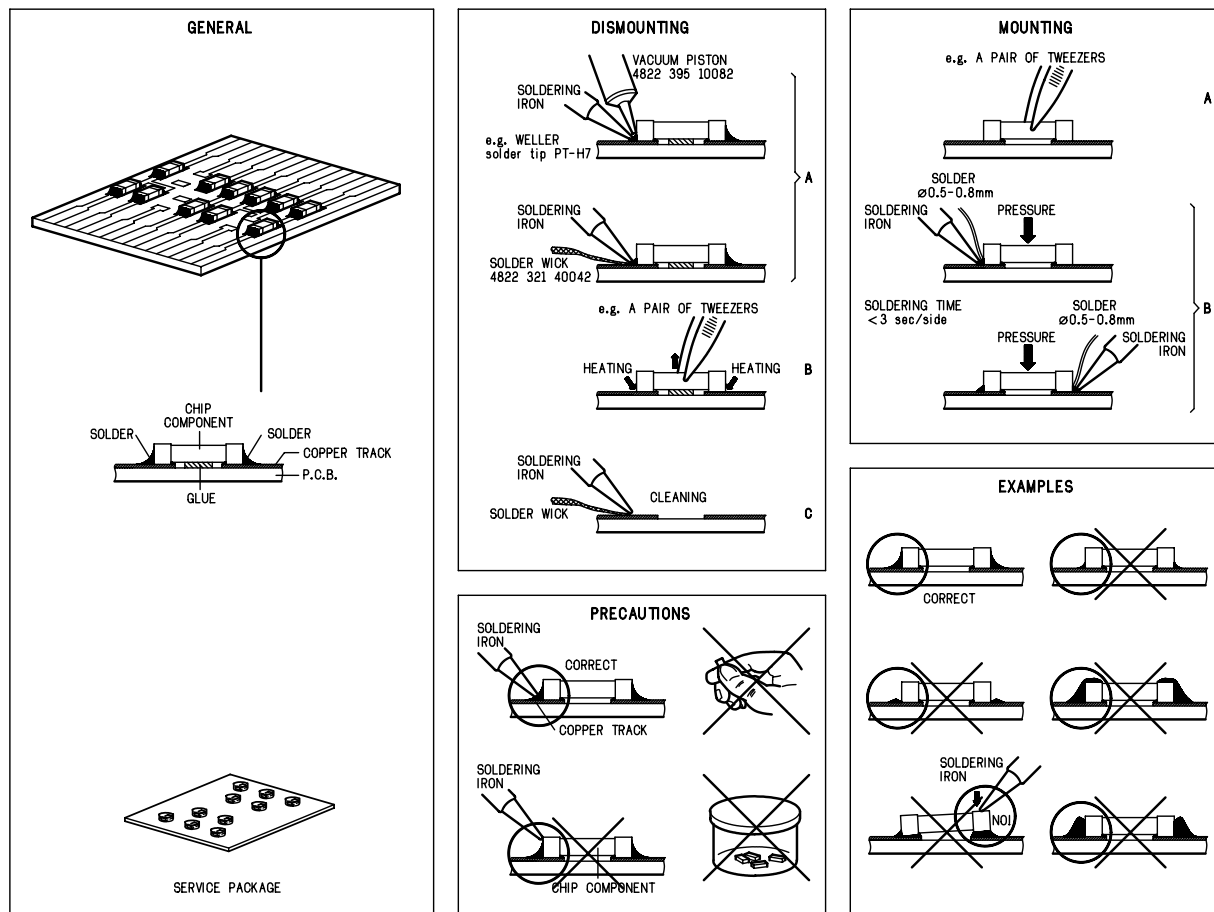
To get access to the componentside of the printed board assembly proceed as follows:

1. Remove the two screws on the bottom
2. Open the CD-door and remove the screw on the right side of the cabinet
3. Open the battery-door and remove the screw inside the battery compartment
4. Lift the cabinet part
5. Supply the unit via the external DC-socket
6. Ensure that the door switch is closed during measurements



Remark: Don't worry about applied force - both parts have a solid design. However, do not use screwdrivers or tools like that. Sharp edges might damage hinge or cabinet part.

HANDLING CHIP COMPONENTS



ESD PROTECTION EQUIPMENT

Anti-static table mat large 1200x650x1.25mm
 small 600x650x1.25mm

Anti-static wristband

Connection box (3 press stud connections, 1M Ω)

Extendible cable (2m, 2M Ω , to connect wristband to connection box)

Connecting cable (3m, 2M Ω , to connect table mat to connection box)

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4822 310 10671

4822 344 13999

PIN DESCRIPTION OF INTEGRATED CIRCUITS

TZA1024 – HF-PREAMPLIFIER AND LASER SUPPLY CIRCUIT

<i>Pin</i>	<i>Name</i>	<i>Direction</i>	<i>Description</i>
1	LD	HF-preamp → CD-drive	current output to laser diode
2	VCCL	+2.6V	laser supply voltage
3	CFIL	→ HF-preamp	external filter capacitor
4	MON	CD-drive → HF-preamp	laser monitor diode input
5	DIN	CD-drive → HF-preamp	central diode input
6	GND	GND	ground
7	PWRON	CD10 → HF-preamp	power-on select input
8	CMFB	+2.6V / 2	common mode feedback voltage input
9	RFFB	→ HF-preamp	external RF feedback resistor
10	RFEQO	HF-preamp →	RF amplifier output
11	CDRW	CD10 → HF-preamp	gain select input for CDDA/CDRW
12	EQSEL	CD10 → HF-preamp	equalizer/speed select input
13	VCC2	+2.6V	supply voltage
14	RGADJ	GND	external laser supply gain adjust resistor

BD6609FV – DISCMOTOR DRIVER

<i>Pin</i>	<i>Name</i>	<i>Direction</i>	<i>Description</i>
1	UOUT	discmotor driver → CD-drive	U-phase coil output
2	RF	GND	output current detection (power part GND)
3	UIN	→ discmotor driver	BEMF comparator input
4	VIN	→ discmotor driver	BEMF comparator input
5	WIN	→ discmotor driver	BEMF comparator input
6	COM	discmotor driver → CD-drive	center tap of motor coil
7	CST	→ discmotor driver	capacitor connector for oscillation
8	CSL1	→ discmotor driver	capacitor connector for slope
9	CSL2	→ discmotor driver	capacitor connector for slope
10	GND	GND	GND for signal
11	FG	discmotor driver →	FG output
12	BRK-	DSP → discmotor driver	brake comparator input
13	BRK+	+1.3V	brake comparator input
14	STBY	+2.6V	stand by
15	RIB	→ discmotor driver	resistor connection for output transistor base current setting
16	VCC	+2.6V	power supply for signal
17	VM	servo driver → discmotor driver	power supply for motor
18	GSUB	GND	substrate
19	WOUT	discmotor driver → CD-drive	W-phase coil output
20	VOUT	discmotor driver → CD-drive	V-phase coil output

SC111259AFTA – SERVO DRIVER & POWER MANAGEMENT IC

<i>Pin</i>	<i>Name</i>	<i>Direction</i>	<i>Description</i>
1	SLEEP	μP → servo driver	sleep input
2	WAKE	μP → servo driver	wake input
3	VR	+VR	reference voltage input (motor driver)
4	ERR4	CD10 → servo driver	control signal input (slide error signal)
5	CF4	→ servo driver	phase correction capacitor connect (CH4)
6	CF3	→ servo driver	phase correction capacitor connect (CH3)
7	ERR3	CD10 → servo driver	control signal input (radial error signal)
8	ERR2	DM driver circuit → servo driver	control signal input (disc speed error signal)
9	CF2	→ servo driver	phase correction capacitor connect (CH2)
10	CF1	→ servo driver	phase correction capacitor connect (CH1)
11	ERR1	CD10 → servo driver	control signal input (focus error signal)
12	OUT1A	servo driver → CD-drive	positive drive output (CH1)
13	PGND1	GND	H-bridge driver ground
14	OUT1B	servo driver → CD-drive	negative drive output (CH1)
15	VIN12	+A	CH1 and CH2 H-bridge driver supply voltage
16	OUT2B	servo driver → discmotor driver	negative drive output (CH2)
17	PGND2	GND	H-bridge driver ground
18	OUT2A	servo driver → CD-drive	positive drive output (CH2)
19	OUT3A	servo driver → CD-drive	positive drive output (CH3)
20	PGND2	GND	H-bridge driver ground
21	OUT3B	servo driver → CD-drive	negative drive output (CH3)
22	VIN34	+A	CH3 and CH4 H-bridge driver supply voltage
23	OUT4B	servo driver → CD-drive	negative drive output (CH4)
24	PGND4	GND	H-bridge driver ground
25	OUT4A	servo driver → CD-drive	positive drive output (CH4)
26	VG	servo driver →	charge pump output
27	C2H	→ servo driver	charge pump capacitor connect
28	C1H	→ servo driver	charge pump capacitor connect
29	C1L	→ servo driver	charge pump capacitor connect
30	C2L	→ servo driver	charge pump capacitor connect
31	VIN	battery → servo driver	battery supply voltage
32	RSTB	servo driver →	reset block output
33	CHGSW	servo driver → charge circuit	transistor drive output for battery charger
34	RS	charge circuit → servo driver	OpAmp non-inverting input for battery charger
35	INM2	→ servo driver	error amplifier inverting input
36	RF2	→ servo driver	error amplifier output
37	DCIN	+DC	DC power supply from AC/DC adaptor
38	VDET	servo driver →	DCIN over voltage and VIN low voltage detect output
39	VREF	servo driver →	Voltage reference circuit output
40	DTC	→ servo driver	max. duty control voltage input for power management
41	VOUT	servo driver → DC/DC converter	PWM output for power management
42	VC	→ servo driver	power management power supply
43	CGND	GND	internal ground
44	RF1	servo driver →	OpAmp output for power management
45	INM1	→ servo driver	OpAmp inverting input for power management
46	CLK	→ servo driver	clock input
47	OE	DSP → servo driver	output enable for motor drivers
48	CHGON	μP → servo driver	charge enable for battery charger

SAA7324 – DECODER, DIGITAL SERVO IC AND D/A-CONVERTER CD10 (low voltage version)

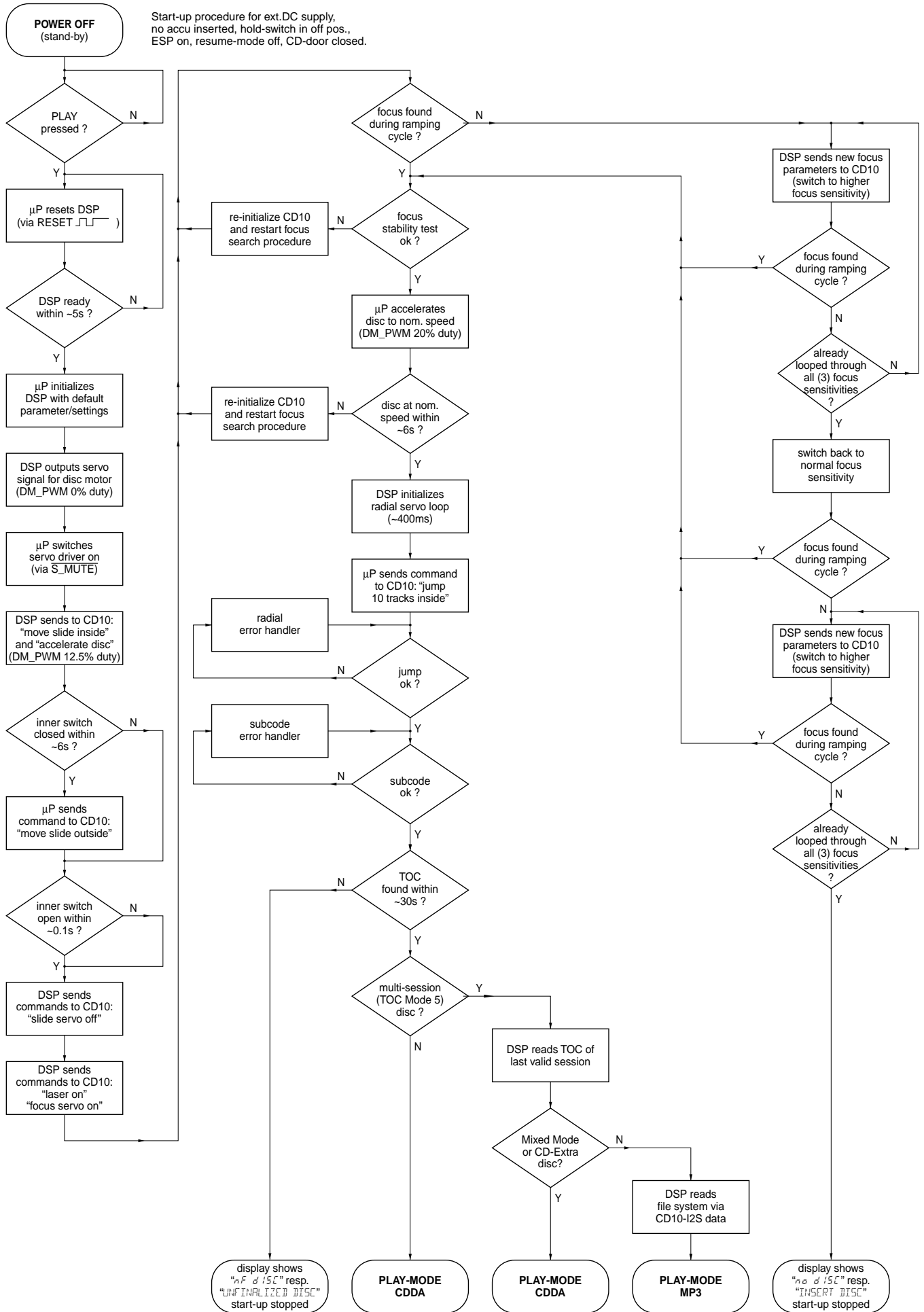
<i>Pin</i>	<i>Name</i>	<i>Direction</i>	<i>Description</i>
1	HFREF	→ CD10	comparator common mode input
2	HFIN	→ CD10	comparator signal input
3	ISLICE	CD10 →	current feedback from data slicer
4	VSSA1	GND	analog ground 1
5	VDDA1	+2.6V	analog supply voltage 1
6	IREF	CD10 →	reference current output pin
7	VRIN	CD10 →	reference voltage for servo ADC's
8	D1	CD-drive → CD10	unipolar current input (central diode signal input)
9	D2	CD-drive → CD10	unipolar current input (central diode signal input)
10	D3	CD-drive → CD10	unipolar current input (central diode signal input)
11	D4	CD-drive → CD10	unipolar current input (central diode signal input)
12	R1	CD-drive → CD10	unipolar current input (satellite diode signal input)
13	R2	CD-drive → CD10	unipolar current input (satellite diode signal input)
14	VSSA2	GND	analog ground 2
15	CROUT	CD10 → X-TAL	crystal/resonator output
16	CRIN	X-TAL → CD10	crystal/resonator input
17	VDDA2	+2.6V	analog supply voltage 2
18	LN	CD10 →	DAC left channel differential output - negative
19	LP	CD10 →	DAC left channel differential output - positive
20	VNEG	GND	DAC negative reference input
21	VPOS	+2.6V	DAC positive reference input
22	RN	CD10 →	DAC right channel differential output - negative
23	RP	CD10 →	DAC right channel differential output - positive
24	SELPLL	CD10 →	selects whether internal clock multiplier PLL is used
25	TEST1	GND	test control input 1; this pin should be tied low
26	CL16	CD10 →	16.9344 MHz system clock output
27	DATA	CD10 → DSP	serial data output (3-state)
28	WCLK	CD10 → DSP	word clock output (3-state)
29	SCLK	CD10 → DSP	serial bit clock output (3-state)
30	EF	CD10 → DSP	C2 error flag output (3-state)
31	TEST2	GND	test control input 2; this pin should be tied low
32	KILL	CD10 →	kill output (programmable; open-drain)
33	VSSD1	GND	digital ground 2
34	V2/V3	CD10 →	versatile I/O: input versatile pin 2 or output versatile pin 3 (open-drain)
35	WCLI	DSP → CD10	word clock input (for data loopback to DAC)
36	SDI	DSP → CD10	serial data input (for data loopback to DAC)
37	SCLI	DSP → CD10	serial bit clock input (for data loopback to DAC)
38	RESETn	µP → CD10	power-on reset input (active low)
39	SDA	µP ↔ CD10	microcontroller interface data I/O line (open-drain output)
40	SCL	µP → CD10	microcontroller interface clock line input
41	RAB	µP → CD10	microcontroller interface R/W and load control line input (4-wire bus mode)
42	SILD	µP → CD10	microcontroller interface R/W and load control line input (4-wire bus mode)
43	STATUS	CD10 →	servo interrupt request line/decoder status register output (open-drain)
44	TEST3	GND	test control input 3; this pin should be tied low
45	RCK	DSP → CD10	subcode clock input
46	SUB	CD10 → DSP	P-to-W subcode bits output (3-state)
47	SFSY	CD10 → DSP	subcode frame sync output (3-state)
48	SBSY	CD10 → DSP	subcode block sync output (3-state)
49	CL11/4	CD10 →	11.2896 MHz or 4.2336 MHz (for microcontroller) clock output
50	VSSD2	GND	digital ground 3
51	DOBM	CD10 →	bi-phase mark output (externally buffered; 3-state)
52	VDDD1P	+2.6V (+VR)	digital supply voltage 2 for periphery
53	CFLG	CD10 →	correction flag output (open-drain)
54	RA	CD10 → servo driver	radial actuator output
55	FO	CD10 → servo driver	focus actuator output
56	SL	CD10 → servo driver	slide control output
57	VDDD2C	+2.6V	digital supply voltage 3 for core
58	VSSD3	GND	digital ground 4
59	MOTO1	CD10 → servo driver	motor output 1; versatile (3-state)
60	MOTO2	CD10 →	motor output 2; versatile (3-state)
61	V4	CD10 → HF-preamp	versatile output pin 4
62	V5	CD10 → HF-preamp	versatile output pin 5
63	V1	innerswitch → CD10	versatile input pin 1
64	LDON	CD10 → HF-preamp	laser drive on output (open-drain)

TMS320DA150GGU160 – DIGITAL SIGNAL PROCESSOR DSP

<i>Pin</i>	<i>Name</i>	<i>Direction</i>	<i>Description</i>
1	CVSS1	GND	ground for core CPU
2	A22	DSP ↔	parallel address bus
3	CVSS2	GND	ground for core CPU
4	DVDD1	+3.3V	power supply for I/O pins
5	A10	DSP ↔	parallel address bus
6	HD7	CD10 → MUTE	reference current output pin
7	A11	DSP ↔	parallel address bus
8	A12	DSP ↔	parallel address bus
9	A13	DSP ↔	parallel address bus
10	A14	DSP ↔	parallel address bus
11	A15	DSP ↔	parallel address bus
12	CVDD1	+core	power supply for core CPU
13	HAS	→ DSP	address strobe input
14	DVSS1	GND	ground for I/O pins
15	CVSS3	GND	ground for core CPU
16	CVDD2	+core	power supply for core CPU
17	HCS	→ DSP	chip select input
18	HR/W	→ DSP	read/write input
19	READY	→ DSP	data ready input, indicates that an external device is prepared for a bus transaction to be completed
20	PS	DSP → EPROM	program space select output, always high unless driven low for communicating to a particular external space
21	DS	DSP →	data space select output, always high unless driven low for communicating to a particular external space
22	IS	DSP →	I/O space select output, always high unless driven low for communicating to a particular external space
23	R/W	DSP → DRAM	read/write signal output, indicates transfer direction during communication to an external device
24	MSTRB	DSP →	memory strobe signal output
25	IOSTRB	DSP →	I/O strobe signal output
26	MSC	DSP →	microstate complete output, indicates completion of all software wait states
27	XF	DSP → CD10	external flag output, latched software programmable signal
28	HOLDA	DSP →	Hold acknowledge, indicates that the processor is in a hold state
29	IAQ	DSP →	instruction acquisition signal output
30	HOLD	→ DSP	hold input, asserted to request control of address, data and control lines
31	BIO	→ DSP	branch control input
32	MP/MC	→ DSP	microprocessor/microcomputer mode select
33	DVDD2	+3.3V	power supply for I/O pins
34	CVSS4	GND	ground for core CPU
35	BDR1	CD10 →	serial data receive input
36	BFSR1	CD10 → DSP	frame synchronization pulse for receive input
37	CVSS5	GND	ground for core CPU
38	BCLKR1	→ DSP	serial shift clock
39	HCNTL0	→ DSP	control input
40	DVSS2	GND	ground for I/O pins
41	BCLKR0	CD10 → DSP	serial shift clock
42	BCLKR2	μP → DSP	serial shift clock
43	BFSR0	CD10 → DSP	frame synchronization pulse for receive input
44	BFSR2	CD10 → DSP	frame synchronization pulse for receive input
45	BDR0	CD10 → DSP	serial data receive input
46	HCNTL1	→ DSP	control input
47	BDR2	μP → DSP	serial data receive input
48	BCLKX0	DSP → CD10	transmit clock
49	BCLKX2	μP → CD10	transmit clock
50	CVSS6	GND	ground for core CPU
51	HINT	DSP →	interrupt output, used to interrupt the host
52	CVDD3	+core	power supply for core CPU
53	BFSX0	DSP → CD10	frame synchronization pulse for transmit input/output
54	BFSX2	μP → DSP	frame synchronization pulse for transmit input/output
55	HRDY	DSP →	ready output, informs the host when the HPI is ready for the next transfer
56	DVDD3	+3.3V	power supply for I/O pins
57	DVSS3	GND	ground for I/O pins
58	HD0	DSP ↔ CD10	parallel bidirectional data bus
59	BDX0	DSP → CD10	serial data transmit output
60	BDX2	DSP → μP	serial data transmit output
61	IACK	DSP →	interrupt acknowledge signal output
62	HBIL	→ DSP	byte identification, identifies the first or second byte of transfer
63	NMI	→ DSP	nonmaskable interrupt input
64	INT0	CD10 → DSP	external user interrupt input
65	INT1	CD10 → DSP	external user interrupt input
66	INT2	CD10 → DSP	external user interrupt input
67	INT3	μP → DSP	external user interrupt input
68	CVDD4	+core	power supply for core CPU
69	HD1	DSP ↔ CD10	parallel bidirectional data bus

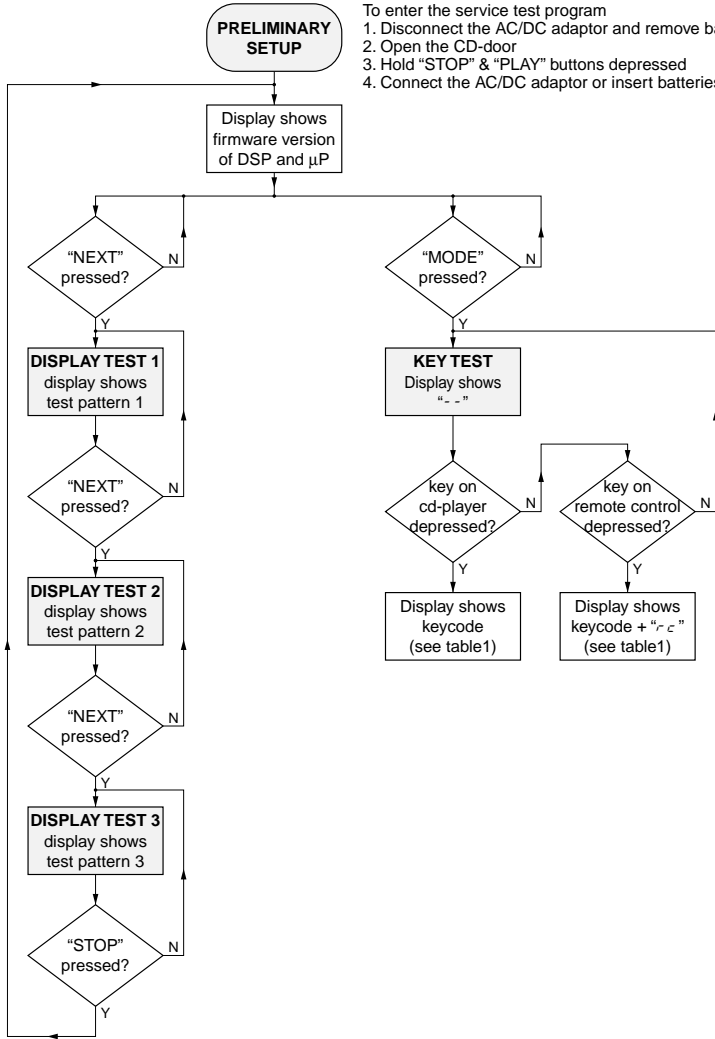
70	CVSS7	GND	ground for core CPU
71	BCLKX1	DSP ↔	transmit clock
72	DVSS4	GND	ground for I/O pins
73	BFSX1	DSP →	frame synchronization pulse for transmit input/output
74	BDX1	DSP → servo driver	serial data transmit output
75	DVDD4	+3.3V	power supply for I/O pins
76	DVSS5	GND	ground for I/O pins
77	CLKMD1	→ DSP	clock mode select signal input, allow selection of different clock modes
78	CLKMD2	→ DSP	clock mode select signal input, allow selection of different clock modes
79	CLKMD3	→ DSP	clock mode select signal input, allow selection of different clock modes
80	HPI16	→ DSP	HPI16 mode selection
81	HD2	DSP ↔ CD10	parallel bidirectional data bus
82	TOUT	DSP →	timer output, signals a pulse when the on-chip timer counts down past zero
83	EMU0	DSP ↔	emulator 0 pin
84	EMU1/OFF	DSP ↔	emulator 1 pin / disable all outputs, used as an interrupt to or from the emulator system
85	TDO	DSP →	IEEE standard 1149.1 test data output
86	TDI	→ DSP	IEEE standard 1149.1 test data input
87	TRST	→ DSP	IEEE standard 1149.1 test reset
88	TCK	→ DSP	IEEE standard 1149.1 test clock
89	TMS	→ DSP	IEEE standard 1149.1 test mode select
90	CVSS8	GND	ground for core CPU
91	CVDD5	+core	power supply for core CPU
92	HPIENA	→ DSP	HPI module select
93	DVSS6	GND	ground for I/O pins
94	CLKOUT	DSP → DRAM/FLASH	clock output signal
95	HD3	DSP ↔ CD10	parallel bidirectional data bus
96	X1	DSP →	output pin from an internal oscillator for the crystal
97	X2/CLKIN	CD10 → DSP	clock/oscillator input
98	RS	μP → DSP	reset input
99	D0	DSP ↔ DRAM/FLASH	parallel data bus
100	D1	DSP ↔ DRAM/FLASH	parallel data bus
101	D2	DSP ↔ DRAM/FLASH	parallel data bus
102	D3	DSP ↔ DRAM/FLASH	parallel data bus
103	D4	DSP ↔ DRAM/FLASH	parallel data bus
104	D5	DSP ↔ DRAM/FLASH	parallel data bus
105	A16	DSP ↔ DRAM/FLASH	parallel address bus
106	DVSS7	GND	ground for I/O pins
107	A17	DSP ↔ DRAM/FLASH	parallel address bus
108	A18	DSP ↔ DRAM/FLASH	parallel address bus
109	A19	DSP ↔ DRAM/FLASH	parallel address bus
110	A20	DSP ↔ DRAM/FLASH	parallel address bus
111	CVSS9	GND	ground for core CPU
112	DVDD5	+3.3V	power supply for I/O pins
113	D6	DSP ↔ DRAM/FLASH	parallel data bus
114	D7	DSP ↔ DRAM/FLASH	parallel data bus
115	D8	DSP ↔ DRAM/FLASH	parallel data bus
116	D9	DSP ↔ DRAM/FLASH	parallel data bus
117	D10	DSP ↔ DRAM/FLASH	parallel data bus
118	D11	DSP ↔ DRAM/FLASH	parallel data bus
119	D12	DSP ↔ DRAM/FLASH	parallel data bus
120	HD4	DSP → servo driver	parallel bidirectional data bus
121	D13	DSP ↔ DRAM/FLASH	parallel data bus
122	D14	DSP ↔ DRAM/FLASH	parallel data bus
123	D15	DSP ↔ DRAM/FLASH	parallel data bus
124	HD5	DSP ↔	parallel bidirectional data bus
125	CVDD6	+core	power supply for core CPU
126	CVSS10	GND	ground for I/O pins
127	HDS1	→ DSP	data strobe input
128	DVSS8	GND	ground for I/O pins
129	HDS1	→ DSP	data strobe input
130	DVDD6	+3.3V	power supply for I/O pins
131	A0	DSP ↔ DRAM/FLASH	parallel address bus
132	A1	DSP ↔ DRAM/FLASH	parallel address bus
133	A2	DSP ↔ DRAM/FLASH	parallel address bus
134	A3	DSP ↔ DRAM/FLASH	parallel address bus
135	HD6	DSP ↔	parallel bidirectional data bus
136	A4	DSP ↔ DRAM/FLASH	parallel address bus
137	A5	DSP ↔ DRAM/FLASH	parallel address bus
138	A6	DSP ↔ DRAM/FLASH	parallel address bus
139	A7	DSP ↔ DRAM/FLASH	parallel address bus
140	A8	DSP ↔ DRAM/FLASH	parallel address bus
141	A9	DSP ↔ DRAM/FLASH	parallel address bus
142	CVDD7	+core	power supply for core CPU
143	A21	DSP ↔ DRAM/FLASH	parallel address bus
144	DVSS9	GND	ground for I/O pins

START-UP PROCEDURE



SERVICE TEST PROGRAM

To enter the service test program
 1. Disconnect the AC/DC adaptor and remove batteries
 2. Open the CD-door
 3. Hold "STOP" & "PLAY" buttons depressed
 4. Connect the AC/DC adaptor or insert batteries



Test patterns

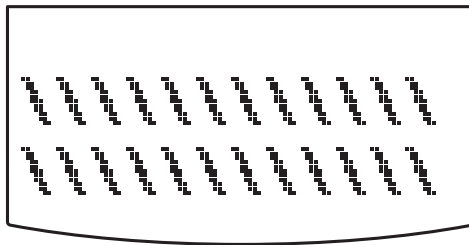
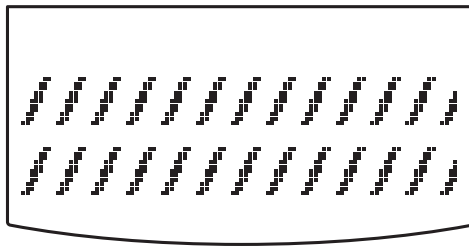
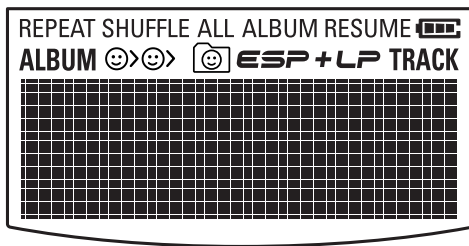
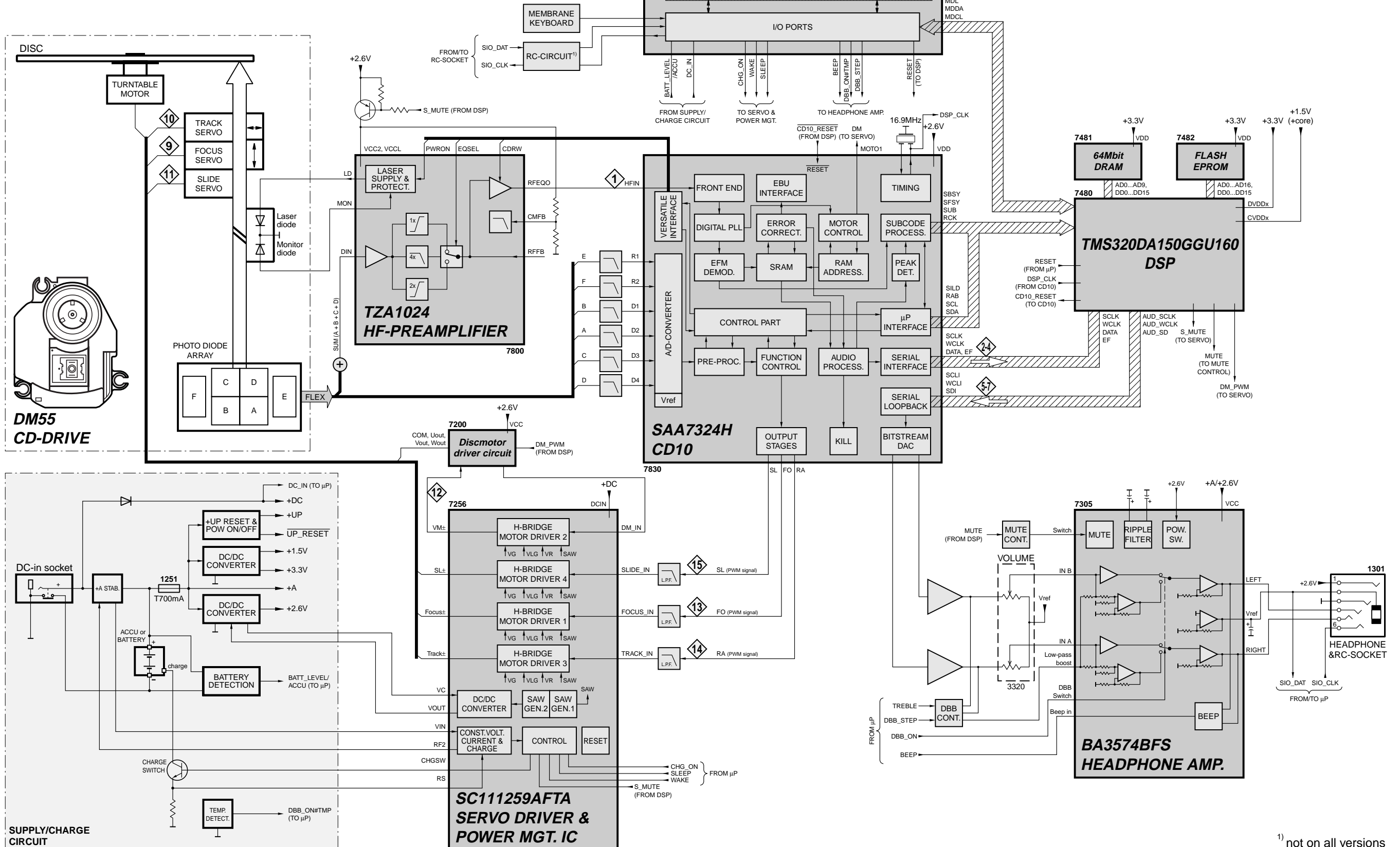
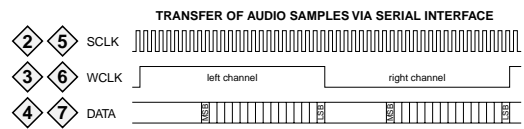
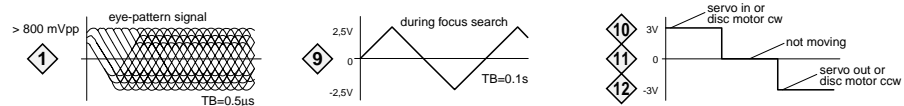


Table1 – key test

KEY	DISPLAY
PLAY	00
ALBUM +	02
ALBUM -	03
NEXT	04
PREVIOUS	05
MODE	06
DISPLAY	07
PLAY FAVOURITES	08
SOUNDS	09
ESP	10
MARK FAVOURITES	11

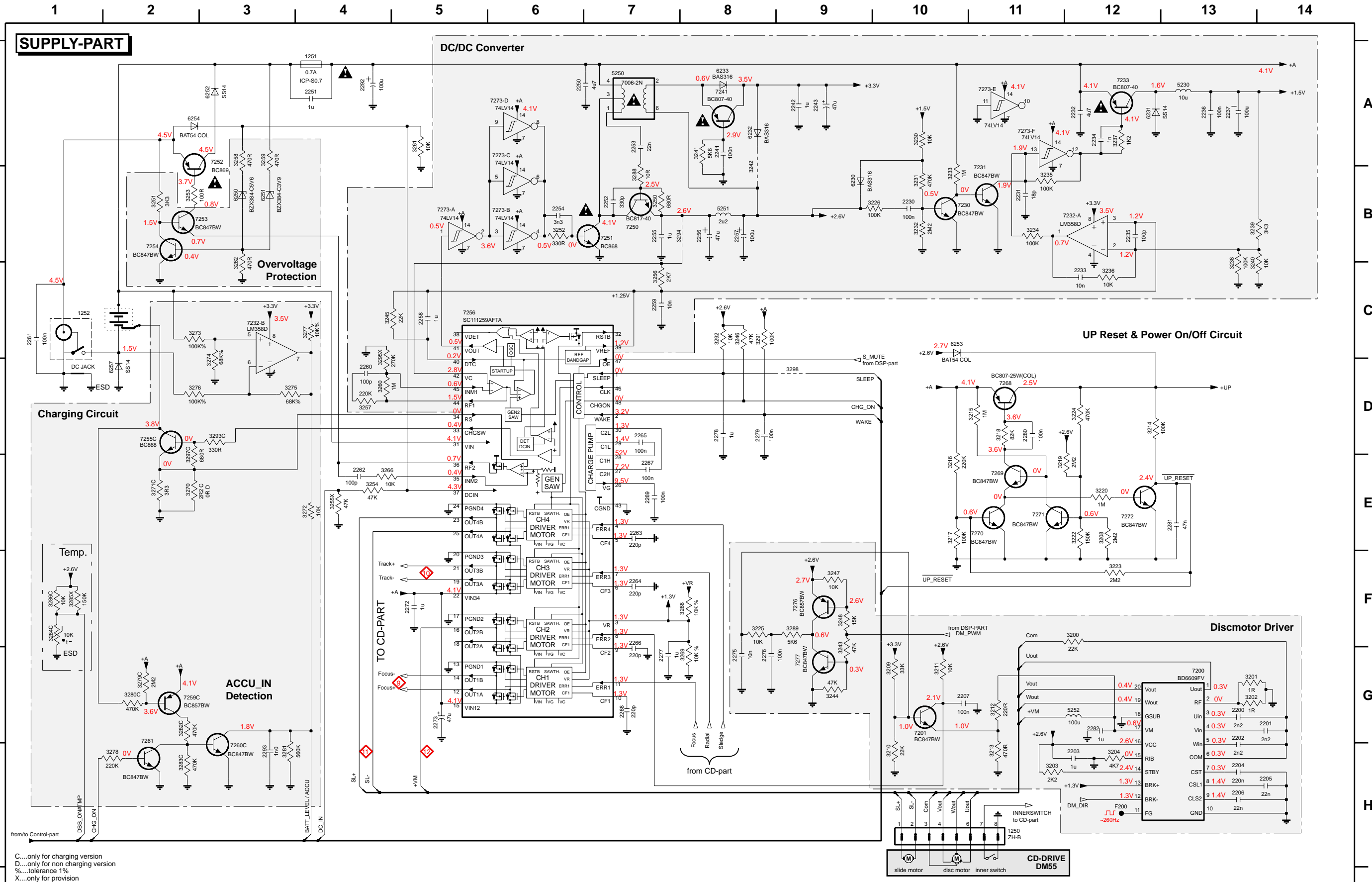
Press "STOP" to exit key test.

BLOCKDIAGRAM

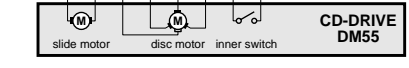


1) not on all versions

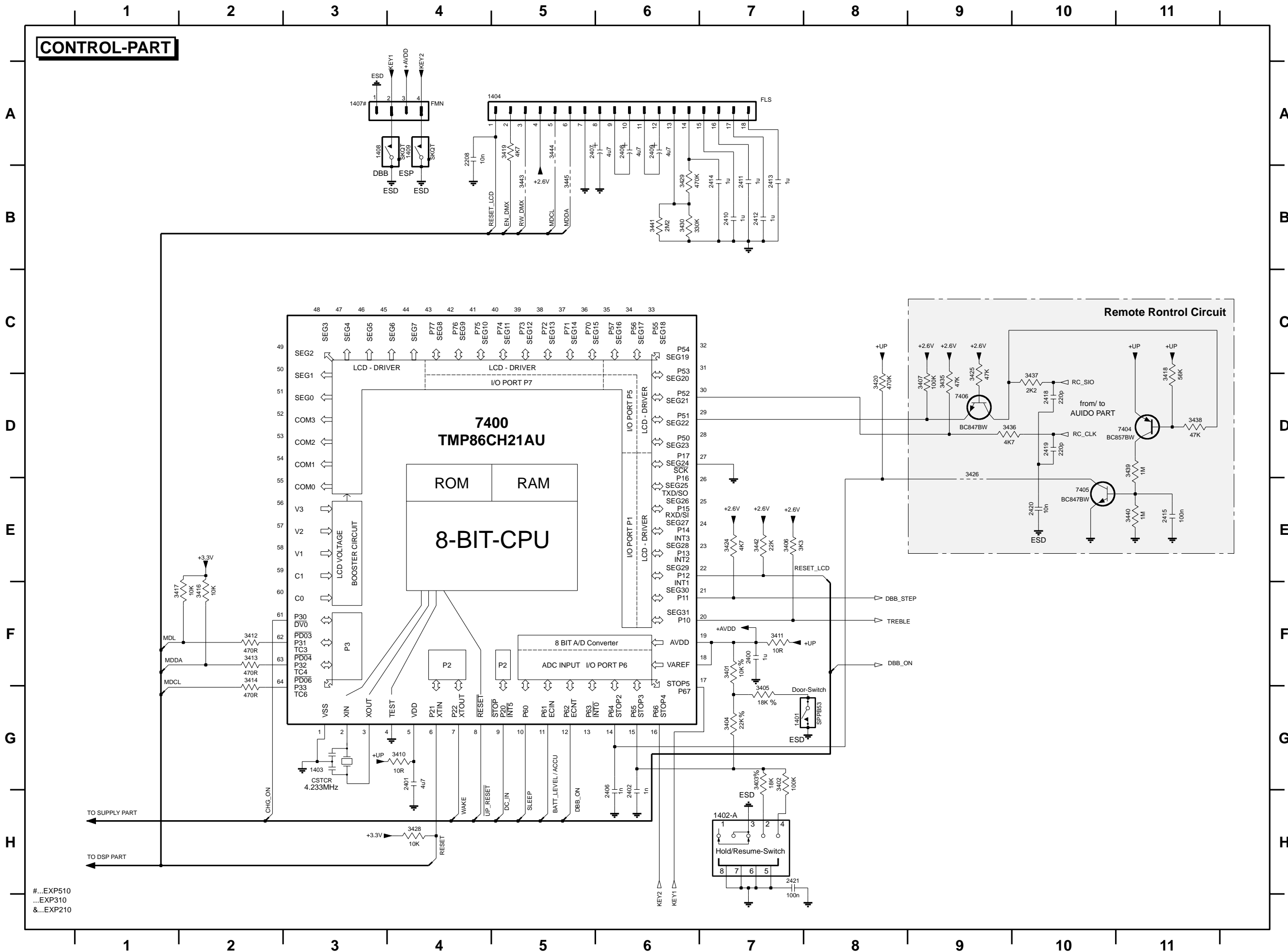
1250 H10	2206 H13	2237 A13	2255 B7	2264 F7	2276 G8	3200 F12	3212 G11	3222 E12	3234 B11	3243 G9	3253 B2	3262 C3	3275 D3	3284 F1	3295 D4	6232 A8	7201 G10	7252 A3	7269 E11	7273-F A11
1251 A4	2207 G10	2241 A8	2256 B8	2265 D7	2277 G7	3201 G13	3213 H11	3223 F12	3235 B11	3244 G9	3254 E4	3266 E4	3276 D2	3285 F1	3297 E2	6233 A8	7230 B10	7253 B2	7270 E11	7276 F9
1252 C1	2230 B10	2242 A9	2257 B8	2266 F7	2278 D8	3202 G13	3214 D12	3224 D12	3236 C12	3245 C4	3255 E4	3268 F8	3277 C4	3286 F1	3298 D9	6250 B3	7231 B11	7254 B2	7271 E11	7277 G9
2200 G13	2231 B11	2243 A9	2258 C5	2267 E7	2279 D8	3203 H11	3215 D11	3225 F8	3237 A12	3246 C8	3256 C7	3269 G8	3278 H2	3288 B7	3299 A13	6251 B3	7232-A B12	7255 D2	7272 E12	
2201 G14	2232 A12	2250 A6	2259 C7	2268 G7	2280 D11	3204 H12	3216 E10	3226 B10	3238 C13	3247 F9	3257 D4	3270 E2	3279 G2	3289 F9	5250 A7	6252 A3	7232-B C3	7256 C5	7273-A B5	
2202 G13	2233 C12	2251 A4	2260 D4	2269 E7	2281 E13	3205 H12	3217 E10	3230 A10	3239 B13	3248 F9	3258 A3	3271 E2	3280 G2	3291 C8	5251 B8	6253 C10	7233 A12	7259 G2	7273-B B6	
2203 H12	2234 A12	2252 B7	2261 C1	2272 F5	2282 G12	3206 G10	3218 D11	3231 A10	3240 C13	3250 B7	3259 A3	3272 E4	3281 H3	3292 C8	5252 G12	6254 A2	7241 A8	7260 H3	7273-C A6	
2204 H13	2235 B12	2253 A7	2262 E4	2273 G5	2292 A4	3210 H10	3219 E11	3232 B10	3241 A8	3251 B2	3260 D4	3273 C2	3282 G2	3293 D3	6230 B9	6257 D2	7250 B7	7261 G2	7273-D A6	
2205 H14	2236 A13	2254 B6	2263 E7	2275 G8	2293 H3	3211 G10	3220 E12	3233 B10	3242 B8	3252 B6	3261 A5	3274 D3	3283 H2	3294 B8	6231 A12	7200 G13	7251 B7	7268 D11	7273-E A11	



C....only for charging version
D....only for non charging version
%....tolerance 1%
X....only for provision



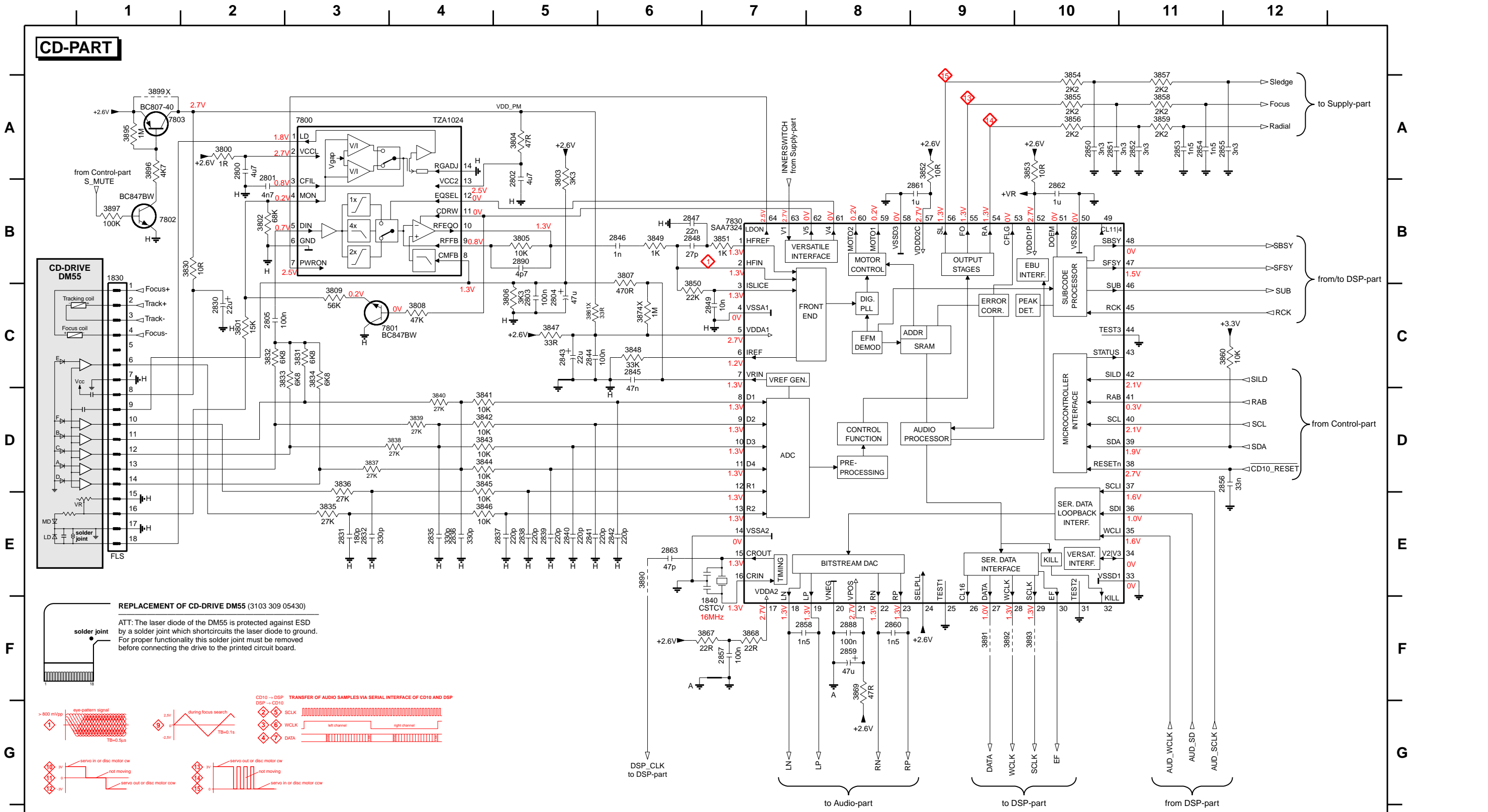
CONTROL-PART



- 1401 G7
- 1402-A H7
- 1403 G3
- 1404 A5
- 1407 A3
- 1408 A4
- 1409 A4
- 2208 A4
- 2400 F7
- 2401 G4
- 2402 H6
- 2406 H6
- 2407 A5
- 2408 A6
- 2409 A6
- 2410 B7
- 2411 B7
- 2412 B7
- 2413 B7
- 2414 B7
- 2415 E11
- 2418 D10
- 2419 D10
- 2420 E10
- 2421 H7
- 3401 F7
- 3402 G7
- 3403 G7
- 3404 G7
- 3405 G7
- 3406 E7
- 3407 D9
- 3410 G4
- 3411 F7
- 3412 F2
- 3413 F2
- 3414 F2
- 3416 F2
- 3417 F1
- 3418 D11
- 3419 A5
- 3420 D8
- 3424 E7
- 3425 D9
- 3426 D9
- 3428 H4
- 3429 B6
- 3430 B6
- 3435 D9
- 3436 D9
- 3437 D10
- 3438 D11
- 3439 D11
- 3440 E11
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- 3444 A5
- 3445 B5
- 7400 C2
- 7404 D11
- 7405 E10
- 7406 D9

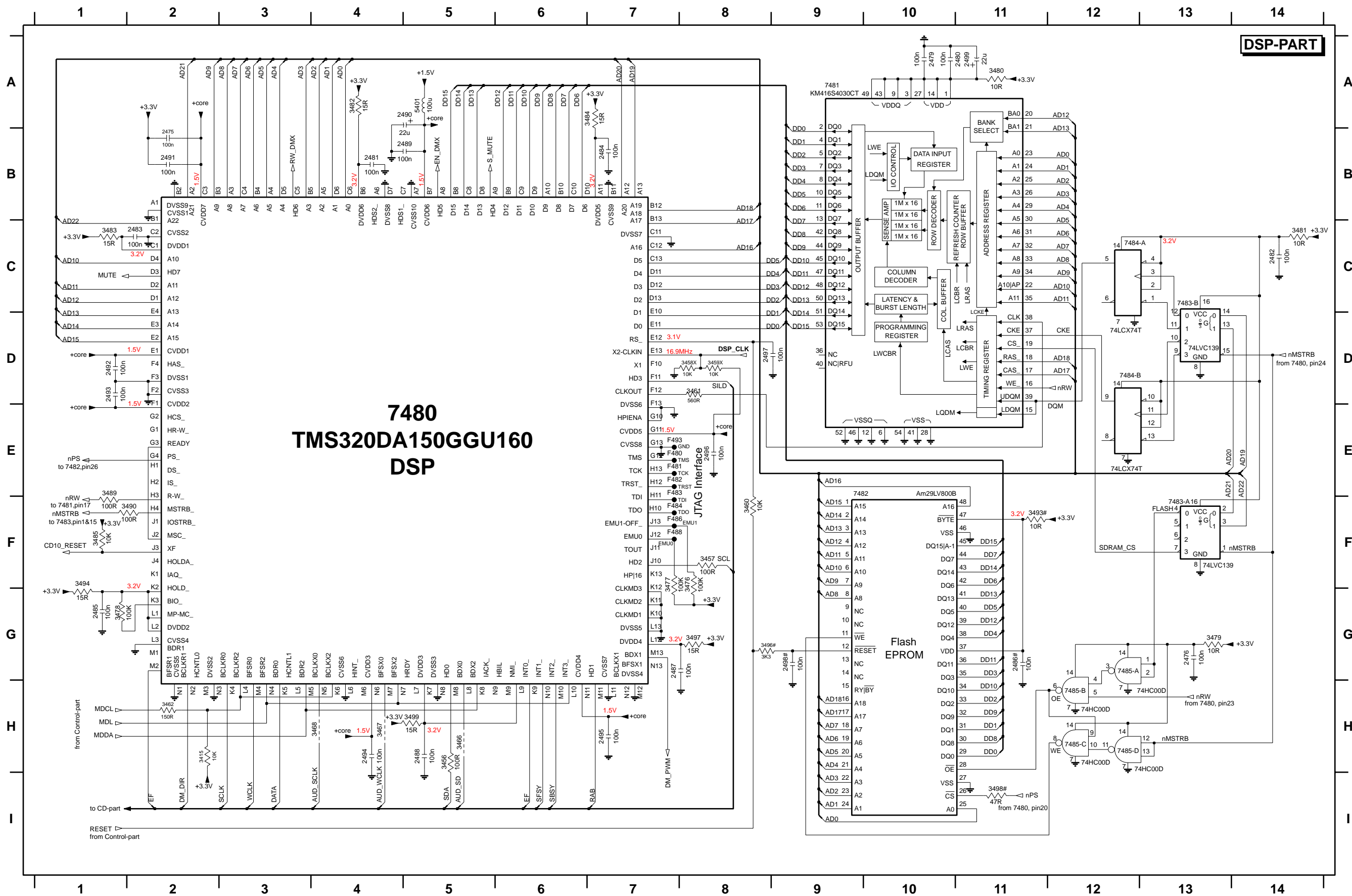
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 ...EXP310
 &...EXP210

1830 E1	2802 A5	2830 C2	2836 E4	2840 E5	2844 C5	2848 B6	2852 A11	2856 D12	2860 F8	2888 F8	3802 B2	3806 C5	3830 B2	3834 C3	3838 D4	3842 D4	3846 E4	3850 C6	3854 A10	3858 A11	3867 F7	3890 E6	3895 A1	7800 A3	7830 B7
1840 F7	2803 C5	2831 E3	2837 E5	2841 E5	2845 C6	2849 C7	2853 A11	2857 F7	2861 B9	2890 B5	3803 A5	3807 B6	3831 C3	3835 E3	3839 D4	3843 D4	3847 C5	3851 B7	3855 A10	3859 A11	3868 F7	3891 F9	3896 A1	7801 C4	
2800 A2	2804 C5	2832 E3	2838 E5	2842 E6	2846 B6	2850 A10	2854 A11	2858 F7	2862 B10	3800 A2	3804 A5	3808 C4	3832 C2	3836 D3	3840 D4	3844 D4	3848 C6	3852 A9	3856 A10	3860 C12	3869 F8	3892 F9	3897 B1	7802 B1	
2801 B2	2805 C2	2835 E4	2839 E5	2843 C5	2847 B6	2851 A10	2855 A12	2859 F8	2863 E6	3801 C2	3805 B5	3809 C3	3833 C3	3837 D3	3841 D4	3845 D4	3849 B6	3853 A10	3857 A11	3861 C5	3874 C6	3893 F10	3899 A1	7803 A2	



X ... component only provided (not in use)

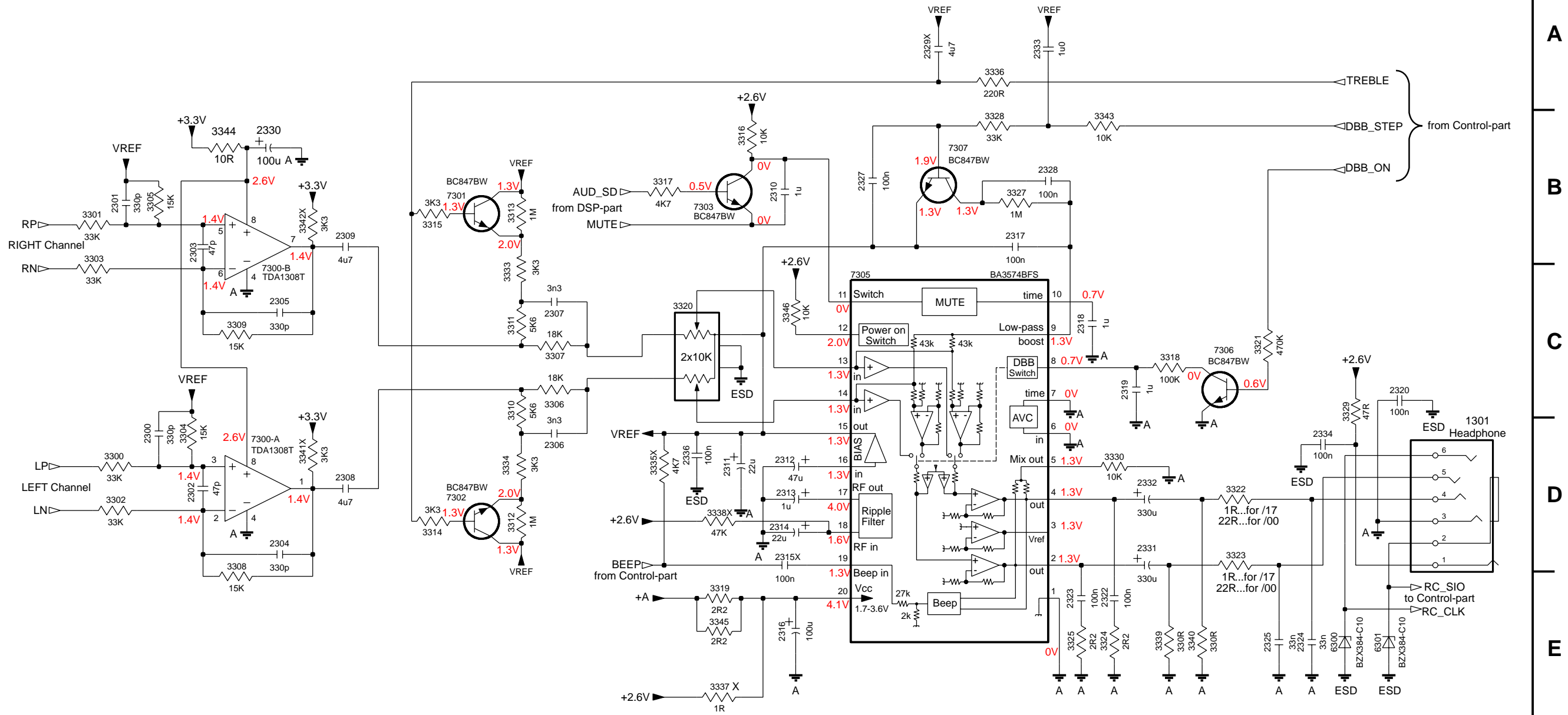
DSP-PART



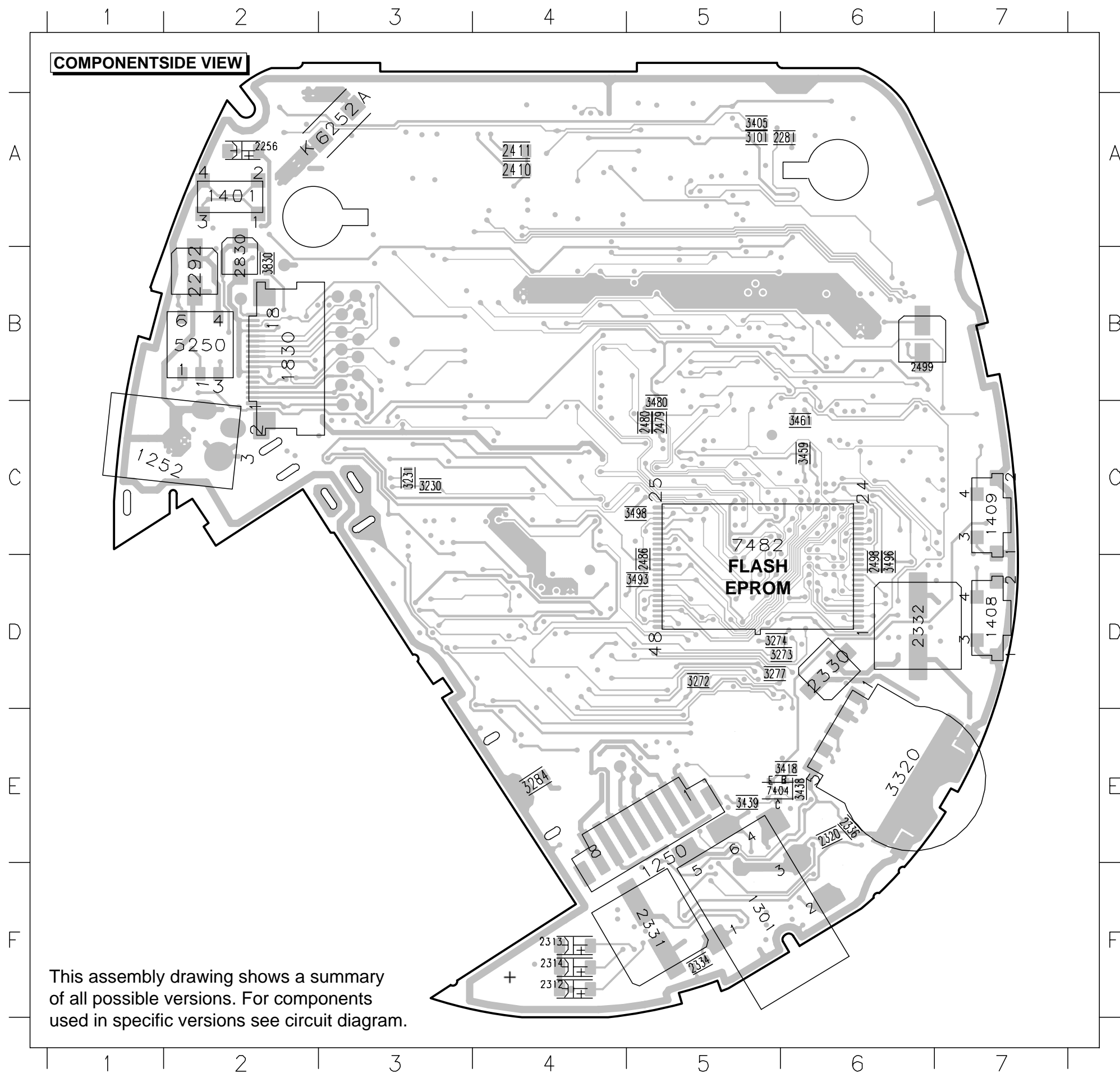
- 2475 B2
- 2476 G10
- 2479 A10
- 2480 A10
- 2481 B4
- 2482 C14
- 2483 C2
- 2484 B7
- 2485 G1
- 2486 G11
- 2487 G7
- 2488 H5
- 2489 B5
- 2490 A5
- 2491 B2
- 2492 D1
- 2493 D1
- 2494 H4
- 2495 H7
- 2496 E8
- 2497 D8
- 2498 G9
- 2499 A11
- 3415 H2
- 3416 H5
- 3417 F8
- 3418 D8
- 3419 H5
- 3420 F8
- 3421 H2
- 3422 H2
- 3423 H5
- 3424 H4
- 3425 H4
- 3426 F8
- 3427 F7
- 3428 G1
- 3429 G13
- 3430 A11
- 3431 C14
- 3432 A4
- 3433 C1
- 3434 A6
- 3435 F1
- 3436 E1
- 3437 E10
- 3438 A F13
- 3439 A C13
- 3440 A D13
- 3441 A G12
- 3442 B H12
- 3443 C H12
- 3444 D H12

1301 D10	2305 C3	2311 D5	2317 B7	2324 E9	2331 D8	3301 B1	3307 C4	3313 B4	3319 E5	3325 E8	3334 D4	3340 E8	3346 C6	7302 D4
2300 D2	2306 D4	2312 D6	2318 C8	2325 E9	2332 D8	3302 D1	3308 D2	3314 D4	3320 C5	3327 B7	3335 D5	3341 D3	6300 E9	7303 B5
2301 B1	2307 C4	2313 D6	2319 C8	2327 B6	2333 A7	3303 B1	3309 C2	3315 B4	3321 C9	3328 B7	3336 A7	3342 B3	6301 E10	7305 C6
2302 D2	2308 D3	2314 D6	2320 C10	2328 B8	2334 D9	3304 D2	3310 C4	3316 B6	3322 D9	3329 C9	3337 E5	3343 B8	7300-A D2	7306 C9
2303 B2	2309 B3	2315 D6	2322 E8	2329 A7	2336 D5	3305 B2	3311 C4	3317 B5	3323 D9	3330 D8	3338 D5	3344 B2	7300-B C2	7307 B7
2304 D3	2310 B6	2316 E6	2323 E8	2330 B2	3300 D1	3306 C4	3312 D4	3318 C8	3324 E8	3333 C4	3339 E8	3345 E5	7301 B4	

AUDIO-PART

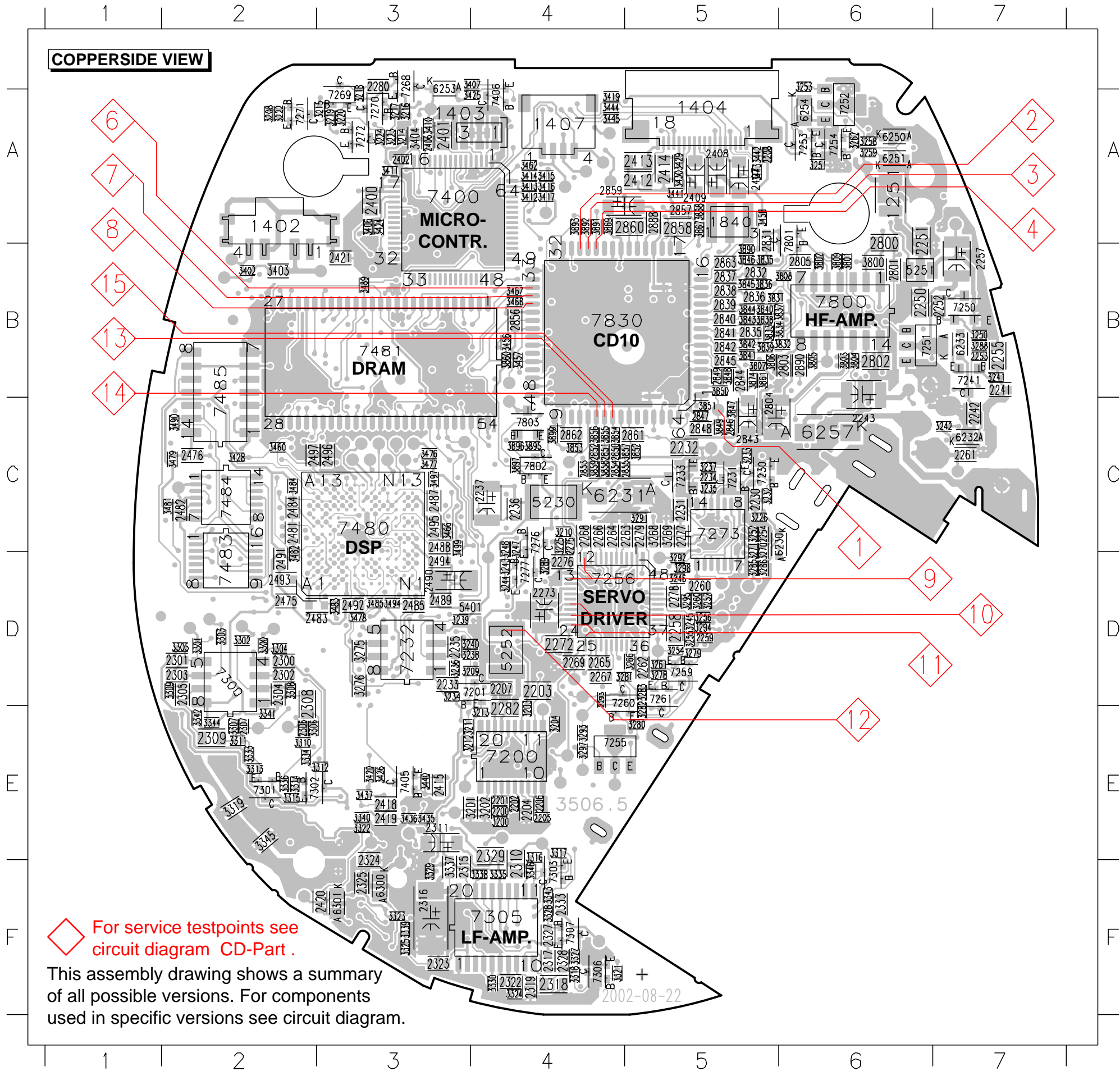


X...component only provided (not in use)



- 1250 E5
- 1252 C1
- 1301 F5
- 1401 A2
- 1408 D7
- 1409 C7
- 1830 B2
- 2256 A2
- 2281 A6
- 2292 B2
- 2312 F4
- 2313 F4
- 2314 F4
- 2320 E6
- 2330 D6
- 2331 F5
- 2332 D6
- 2334 F5
- 2336 E6
- 2410 A4
- 2411 A4
- 2479 C5
- 2480 C5
- 2486 D5
- 2498 D6
- 2499 B6
- 2830 B2
- 3230 C3
- 3231 C3
- 3272 D5
- 3273 D6
- 3274 D5
- 3277 D5
- 3284 E4
- 3320 E6
- 3401 A5
- 3405 A5
- 3418 E6
- 3438 E6
- 3439 E5
- 3459 C6
- 3461 C6
- 3480 C5
- 3493 D5
- 3496 D6
- 3498 C5
- 3830 B2
- 5250 B2
- 6252 A3
- 7404 E5
- 7482 D5

COPPERSIDE VIEW

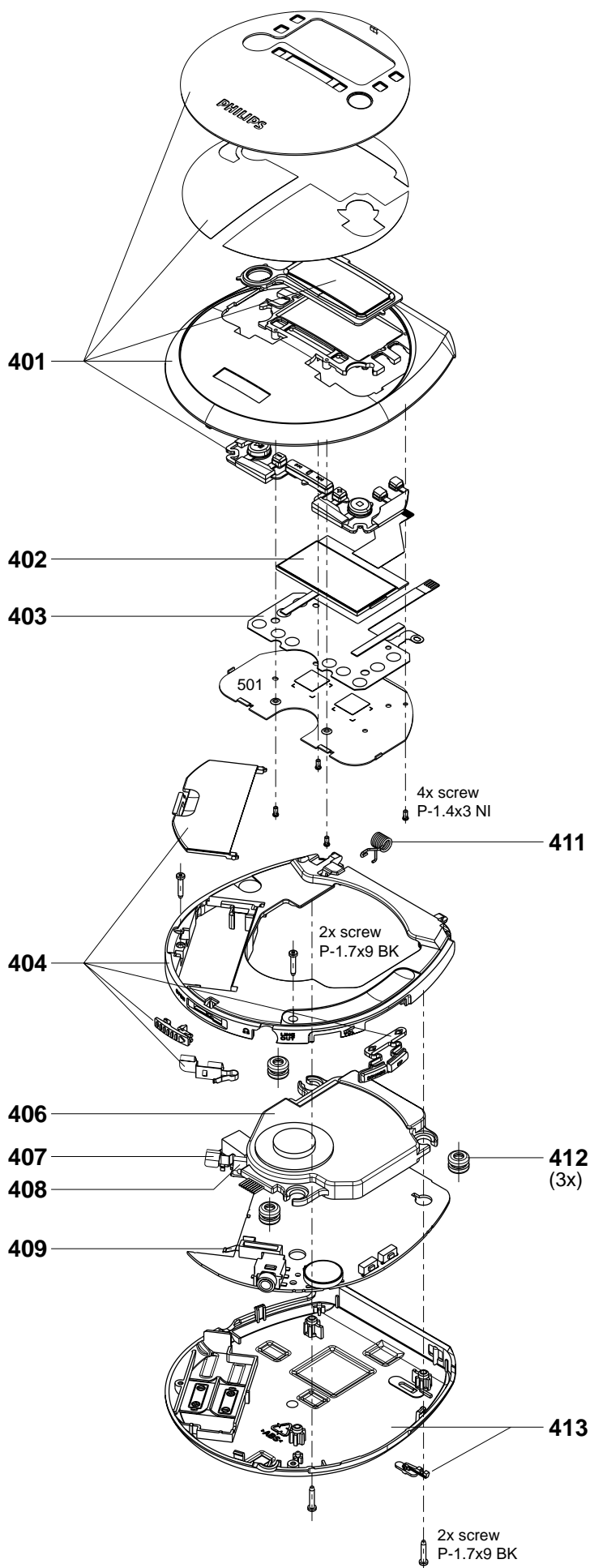


◇ For service testpoints see circuit diagram CD-Part .

This assembly drawing shows a summary of all possible versions. For components used in specific versions see circuit diagram.

1251 A6	2323 F3	2860 A5	3286 D5	3430 A5	3867 A5
1402 B2	2324 E3	2861 C5	3288 B7	3435 E3	3868 A5
1403 A3	2325 F3	2862 C4	3289 D4	3436 E3	3869 A4
1404 A5	2327 F4	2863 B5	3291 C5	3437 E3	3874 B5
1407 A4	2328 F4	2888 A5	3292 D5	3440 E3	3890 B5
1840 A5	2329 E4	2890 B6	3293 E4	3441 A5	3891 A4
2200 E4	2333 F4	3200 E4	3294 D5	3442 A5	3892 A4
2201 E4	2400 A3	3201 E4	3295 D5	3443 A5	3893 A4
2202 E4	2401 A3	3202 E4	3297 E4	3444 A4	3895 C4
2203 D4	2402 A3	3203 E4	3298 D5	3445 A4	3896 C4
2204 E4	2406 A3	3204 E4	3300 D2	3456 B4	3897 C4
2205 E4	2407 A5	3208 A2	3301 D2	3457 B4	3899 C4
2206 E4	2408 A5	3209 D4	3302 D2	3458 A5	5230 C4
2207 D4	2409 A5	3210 C4	3303 D2	3460 C2	5251 B6
2208 A5	2412 A5	3211 E3	3304 D2	3462 A4	5252 D4
2230 C5	2413 A5	3212 E3	3305 D2	3466 C3	5401 D3
2231 C5	2414 A5	3213 E4	3306 E2	3467 B4	6230 C6
2232 C5	2415 E3	3214 A3	3307 E2	3468 B4	6231 C4
2233 D3	2418 E3	3215 A3	3308 D2	3476 C3	6232 C7
2234 C5	2419 E3	3216 A3	3309 D2	3477 C3	6233 B7
2235 D3	2420 F3	3217 A3	3310 E2	3478 D3	6250 A6
2236 C4	2421 B3	3218 A3	3311 E2	3479 C2	6251 A6
2237 C4	2475 D2	3219 A3	3312 E3	3481 C2	6253 A3
2241 B7	2476 C2	3220 A3	3313 E2	3482 D2	6254 A6
2242 C7	2481 C2	3222 A2	3314 E2	3483 D3	6257 C6
2243 C6	2482 C2	3223 A3	3315 E2	3484 C2	6300 F3
2250 B6	2483 D3	3224 A3	3316 E4	3485 D3	6301 F3
2251 A6	2484 C2	3225 C4	3317 E4	3489 B3	7200 E4
2252 B7	2485 D3	3226 C5	3318 F4	3490 C2	7201 D4
2253 B7	2487 C3	3232 C5	3319 E2	3494 D3	7230 C5
2254 C5	2488 C3	3233 C5	3321 F4	3497 C3	7231 C5
2255 B7	2489 D3	3234 D3	3322 E3	3499 C3	7232 D3
2257 B7	2490 D3	3235 C5	3323 F3	3800 B6	7233 C5
2258 D5	2491 D2	3236 D3	3324 F4	3801 B6	7241 B7
2259 D5	2492 D3	3237 C5	3325 F3	3802 B6	7250 B7
2260 D5	2493 D2	3238 D4	3327 F4	3803 B6	7251 B6
2261 C7	2494 D3	3239 D3	3328 F4	3804 B6	7252 A6
2262 D5	2495 C3	3240 D4	3329 F3	3805 B6	7253 A6
2263 C5	2496 C3	3241 B7	3330 F4	3806 B5	7254 A6
2264 C4	2497 C2	3242 C7	3333 E2	3807 B5	7255 E4
2265 D4	2800 B6	3243 D4	3334 E2	3808 B6	7256 D4
2266 C4	2801 B6	3244 D4	3335 F4	3809 B6	7259 D5
2267 D4	2802 B6	3245 D5	3336 E2	3831 B5	7260 D4
2268 C4	2803 B6	3246 D5	3337 F3	3832 B6	7261 D5
2269 D4	2804 C5	3247 C4	3338 F4	3833 B5	7268 A3
2272 D4	2805 B6	3248 C4	3339 F3	3834 B6	7269 A3
2273 D4	2831 A5	3250 B7	3340 E3	3835 B5	7270 A3
2275 C4	2832 B5	3251 A6	3341 E2	3836 B5	7271 A2
2276 D4	2835 B5	3252 C5	3342 E2	3837 B6	7272 A3
2277 C5	2836 B5	3253 A6	3343 F4	3838 B5	7273 C5
2278 D5	2837 B5	3254 D5	3344 E2	3839 B5	7276 C4
2279 C5	2838 B5	3255 D5	3345 E2	3840 B5	7277 D4
2280 A3	2839 B5	3256 D5	3346 F4	3841 B5	7300 D2
2282 E4	2840 B5	3257 D5	3402 B2	3842 B5	7301 E2
2293 D4	2841 B5	3258 A6	3403 B2	3843 B5	7302 E2
2300 D2	2842 B5	3259 A6	3404 A3	3844 B5	7303 F4
2301 D2	2843 C5	3260 D5	3406 A3	3845 B5	7305 F4
2302 D2	2844 B5	3261 D5	3407 A4	3846 B5	7306 F4
2303 D2	2845 B5	3262 A6	3410 A3	3847 C5	7307 F4
2304 D2	2846 C5	3266 D5	3411 A3	3848 B5	7400 A3
2305 D2	2847 C5	3268 C5	3412 A4	3849 C5	7405 E3
2306 E2	2848 C5	3269 C5	3413 A4	3850 B5	7406 A4
2307 E2	2849 B5	3270 C5	3414 A4	3851 C5	7480 C3
2308 D2	2850 C4	3271 C5	3415 A4	3852 C5	7481 B3
2309 E2	2851 C4	3275 D3	3416 A4	3853 C4	7483 D2
2310 F4	2852 C4	3276 D3	3417 A4	3854 C4	7484 C2
2311 E3	2853 C4	3278 D5	3419 A4	3855 C4	7485 B2
2315 F3	2854 C4	3279 D5	3420 E3	3856 C4	7800 B6
2316 F3	2855 C5	3280 E5	3424 A3	3857 C5	7801 A6
2317 F4	2856 B4	3281 D4	3425 A4	3858 C4	7802 C4
2318 F4	2857 A5	3282 E5	3426 E3	3859 C4	7803 C4
2319 F4	2858 A5	3283 D5	3428 C2	3860 B4	7830 B4
2322 F4	2859 A4	3285 D5	3429 A5	3861 B5	

EXPLODED VIEW



MECHANICAL PARTSLIST

401	3103 308 13040	DOOR-CD-ASSEMBLY
402	3103 308 84490	LCD DOTMATRIX B/W 100x32
403	3103 304 73160	MEMBRANE-KEYBOARD
404	3103 308 13050	CABINET-ASSEMBLY
406	3103 309 05430	CD-DRIVE DM55
407	3103 301 45980	SPRING-BATTERY-PLUS
408	3103 301 45990	SPRING-BATTERY-MINUS
409	3103 301 46000	SPRING-BATTERY-CHARGE
411	3103 301 06700	SPRING-OPEN
412	3103 304 73260	SUSPENSION
413	3103 308 13060	BOTTOM-ASSEMBLY

ELECTRICAL PARTSLIST

MISCELLANEOUS

402	3103 308 84490	LCD DOTMATRIX B/W 100 X 32
403	3103 304 73160	MEMBRANE-KEYBOARD
406	3103 309 05430	CD-DRIVE DM55
1250	2422 025 17975	CONNECTOR, CD-DRIVE, 8 pins
1251 ▲	2422 086 11012	FUSE 0,7A 50V UL
1252	2422 026 05086	EXTERNAL DC-JACK
1301	2422 026 05386	SOCKET, HEADPHONE/RC
1401	2422 129 16818	SWITCH, CD-DOOR
1402	2422 127 00547	SLIDE SWITCH, HOLD/RESUME
1404	2422 025 17857	CONNECTOR, FLEXFOIL, 18 pins
1407	2422 025 16728	CONNECTOR, FLEXFOIL, 4 pins
1408	2422 128 02863	TACT SWITCH, DBB
1409	2422 128 02863	TACT SWITCH, ESP
1830	2422 025 17486	CONNECTOR, FLEXFOIL, 18 pins

CAPACITORS

2200 ©	2020 552 96623	2,2nF	10%	50V
2201 ©	2020 552 96623	2,2nF	10%	50V
2202 ©	2020 552 96623	2,2nF	10%	50V
2203 ©	4822 126 14472	1µF	10%	10V
2204 ©	4822 126 13879	220nF	20%	16V
2205 ©	2020 552 96632	22nF	10%	16V
2206 ©	2020 552 96632	22nF	10%	16V
2207 ©	2238 586 59812	100nF	10%	50V
2208 ©	2020 552 96628	10nF	10%	16V
2230 ©	2238 586 59812	100nF	10%	50V
2231 ©	4822 126 14507	18pF	5%	50V
2232 ©	2020 552 96305	4,7µF	20%	10V
2233 ©	5322 126 11583	10nF	10%	63V
2234 ©	2020 552 96618	1nF	10%	50V
2235 ©	2020 552 94427	100pF	5%	50V
2236 ©	2238 586 59812	100nF	10%	50V
2237 ©	3198 032 15190	100µF	20%	4V
2241 ©	2238 586 59812	100nF	10%	50V
2242 ©	3198 017 41050	1µF	20%	10V
2243 ©	2022 009 00656	47µF	20%	6,3V
2250 ©	2020 552 96305	4,7µF	20%	10V
2251 ©	4822 126 14472	1µF	10%	10V
2252 ©	4822 126 14241	330pF	10%	50V
2253 ©	2020 552 96632	22nF	10%	16V
2254 ©	2020 552 96625	3,3nF	10%	50V
2255 ©	4822 126 14472	1µF	10%	10V
2256 ©	2020 004 90331	47µF	20%	4V
2257 ©	3198 032 15190	100µF	20%	4V
2258 ©	4822 126 14472	1µF	10%	10V
2259 ©	2020 552 96628	10nF	10%	16V
2260 ©	2020 552 94427	100pF	5%	50V
2261 ©	2238 586 59812	100nF	10%	50V
2262 ©	2020 552 94427	100pF	5%	50V
2263 ©	4822 126 13883	220pF	5%	50V
2264 ©	4822 126 13883	220pF	5%	50V
2265 ©	2238 586 59812	100nF	10%	50V
2266 ©	4822 126 13883	220pF	5%	50V
2267 ©	2238 586 59812	100nF	10%	50V
2268 ©	4822 126 13883	220pF	5%	50V
2269 ©	2238 586 59812	100nF	10%	50V
2272 ©	4822 126 14472	1µF	10%	10V
2273 ©	2022 009 00656	47µF	20%	6,3V
2275 ©	2020 552 96628	10nF	10%	16V
2276 ©	2238 586 59812	100nF	10%	50V
2277 ©	3198 017 41050	1µF	20%	10V

CAPACITORS

2278 ©	3198 017 41050	1µF	20%	10V
2279 ©	2238 586 59812	100nF	10%	50V
2280 ©	2238 586 59812	100nF	10%	50V
2281 ©	3198 017 34730	47nF	10%	16V
2282 ©	4822 126 14472	1µF	10%	10V
2292 ©	2020 012 93793	100µF	20%	6,3V
2293 ©	2020 552 96618	1nF	10%	50V
2300 ©	4822 126 14241	330pF	10%	50V
2301 ©	4822 126 14241	330pF	10%	50V
2302 ©	4822 126 11785	47pF	5%	50V
2303 ©	4822 126 11785	47pF	5%	50V
2304 ©	4822 126 14241	330pF	10%	50V
2305 ©	4822 126 14241	330pF	10%	50V
2306 ©	2020 552 96625	3,3nF	10%	50V
2307 ©	2020 552 96625	3,3nF	10%	50V
2308 ©	2020 552 96305	4,7µF	20%	10V
2309 ©	2020 552 96305	4,7µF	20%	10V
2310 ©	4822 126 14472	1µF	10%	10V
2311 ©	4822 124 11946	22µF	20%	16V
2312 ©	2020 004 90331	47µF	20%	4V
2313 ©	2020 004 90282	1µF	20%	35V
2314 ©	4822 124 11946	22µF	20%	16V
2316 ©	3198 032 27190	100µF	20%	6,3V
2317 ©	2238 586 59812	100nF	10%	50V
2318 ©	4822 126 14472	1µF	10%	10V
2319 ©	3198 017 41050	1µF	20%	10V
2320 ©	2238 586 59812	100nF	10%	50V
2322 ©	2238 586 59812	100nF	10%	50V
2323 ©	2238 586 59812	100nF	10%	50V
2324 ©	4822 126 14549	33nF	10%	16V
2325 ©	4822 126 14549	33nF	10%	16V
2327 ©	2238 586 59812	100nF	10%	50V
2328 ©	2238 586 59812	100nF	10%	50V
2330 ©	2020 012 93793	100µF	20%	6,3V
2331 ©	4822 124 12397	330µF	20%	6,3V
2332 ©	4822 124 12397	330µF	20%	6,3V
2333 ©	3198 017 41050	1µF	20%	10V
2334 ©	2238 586 59812	100nF	10%	50V
2336 ©	2238 586 59812	100nF	10%	50V
2400 ©	4822 126 14472	1µF	10%	10V
2401 ©	2020 552 96305	4,7µF	20%	10V
2402 ©	2020 552 96618	1nF	10%	50V
2406 ©	2020 552 96618	1nF	10%	50V
2407 ©	3198 032 54110	4,7µF	20%	20V
2408 ©	3198 032 54110	4,7µF	20%	20V
2409 ©	3198 032 54110	4,7µF	20%	20V
2410 ©	4822 126 14472	1µF	10%	10V
2411 ©	4822 126 14472	1µF	10%	10V
2412 ©	4822 126 14472	1µF	10%	10V
2413 ©	4822 126 14472	1µF	10%	10V
2414 ©	4822 126 14472	1µF	10%	10V
2415 ©	2238 586 59812	100nF	10%	50V
2418 ©	4822 126 13883	220pF	5%	50V
2419 ©	4822 126 13883	220pF	5%	50V
2420 ©	5322 126 11583	10nF	10%	63V
2421 ©	2238 586 59812	100nF	10%	50V
2475 ©	2238 586 59812	100nF	10%	50V
2476 ©	2238 586 59812	100nF	10%	50V
2479 ©	2238 586 59812	100nF	10%	50V
2480 ©	2238 586 59812	100nF	10%	50V
2481 ©	2238 586 59812	100nF	10%	50V
2482 ©	2238 586 59812	100nF	10%	50V
2483 ©	2238 586 59812	100nF	10%	50V
2484 ©	2238 586 59812	100nF	10%	50V

CAPACITORS

2485©	2238 586 59812	100nF	10%	50V
2486©	2238 586 59812	100nF	10%	50V
2487©	2238 586 59812	100nF	10%	50V
2488©	2238 586 59812	100nF	10%	50V
2489©	2238 586 59812	100nF	10%	50V
2490©	4822 124 11946	22µF	20%	16V
2491©	2238 586 59812	100nF	10%	50V
2492©	2238 586 59812	100nF	10%	50V
2493©	2238 586 59812	100nF	10%	50V
2494©	2238 586 59812	100nF	10%	50V
2495©	2238 586 59812	100nF	10%	50V
2496©	2238 586 59812	100nF	10%	50V
2497©	2238 586 59812	100nF	10%	50V
2498©	2238 586 59812	100nF	10%	50V
2499©	2020 012 93794	22µF	20%	6,3V
2800©	2020 552 96305	4,7µF	20%	10V
2801©	4822 126 13193	4,7nF	10%	63V
2802©	2020 552 96305	4,7µF	20%	10V
2803©	2238 586 59812	100nF	10%	50V
2804©	2022 009 00656	47µF	20%	6,3V
2805©	2238 586 59812	100nF	10%	50V
2830©	2020 012 93794	22µF	20%	6,3V
2831©	4822 126 14508	180pF	5%	50V
2832©	4822 126 14241	330pF		50V
2835©	4822 126 14241	330pF		50V
2836©	4822 126 14241	330pF		50V
2837©	4822 126 13883	220pF	5%	50V
2838©	4822 126 13883	220pF	5%	50V
2839©	4822 126 13883	220pF	5%	50V
2840©	4822 126 13883	220pF	5%	50V
2841©	4822 126 13883	220pF	5%	50V
2842©	4822 126 13883	220pF	5%	50V
2843©	4822 124 11946	22µF	20%	16V
2844©	2238 586 59812	100nF	10%	50V
2845©	3198 017 34730	47nF	10%	16V
2846©	2020 552 96618	1nF	10%	50V
2847©	2020 552 96632	22nF	10%	16V
2848©	4822 126 11669	27pF	10%	50V
2849©	2020 552 96628	10nF	10%	16V
2850©	2020 552 96625	3,3nF	10%	50V
2851©	2020 552 96625	3,3nF	10%	50V
2852©	2020 552 96625	3,3nF	10%	50V
2853©	2020 552 96621	1,5nF	10%	50V
2854©	2020 552 96621	1,5nF	10%	50V
2855©	2020 552 96625	3,3nF	10%	50V
2856©	4822 126 14549	33nF	10%	16V
2857©	2238 586 59812	100nF	10%	50V
2858©	4822 126 13344	1,5nF	5%	63V
2859©	2020 004 90331	47µF	20%	4V
2860©	4822 126 13344	1,5nF	5%	63V
2861©	3198 017 41050	1µF	20%	10V
2862©	3198 017 41050	1µF	20%	10V
2863©	4822 126 11785	47pF	5%	50V
2888©	2238 586 59812	100nF	10%	50V
2890©	4822 126 13887	4,7pF	5%	50V

RESISTORS

3200©	4822 117 13601	22kΩ	5%	0,06W
3201©	4822 117 12917	1Ω	5%	0,06W
3202©	4822 117 12917	1Ω	5%	0,06W
3203©	4822 117 13602	2,2kΩ	5%	0,06W
3204©	3198 031 04720	4,7kΩ	5%	0,06W
3208©	3198 031 02250	2,2MΩ	5%	0,06W
3209©	4822 117 13603	33kΩ	5%	0,06W

RESISTORS

3210©	4822 117 13601	22kΩ	5%	0,06W
3211©	4822 117 13606	10kΩ	5%	0,06W
3212©	4822 117 13596	220Ω	5%	0,06W
3213©	4822 117 13543	470Ω	5%	0,06W
3214©	4822 117 11297	100kΩ	5%	0,06W
3215©	3198 031 01050	1MΩ	5%	0,06W
3216©	3198 031 02240	220kΩ	5%	0,06W
3217©	4822 117 11297	100kΩ	5%	0,06W
3218©	3198 031 08230	82kΩ	5%	0,06W
3219©	3198 031 02250	2,2MΩ	5%	0,06W
3220©	3198 031 01050	1MΩ	5%	0,06W
3222©	3198 031 01540	150kΩ	5%	0,06W
3223©	3198 031 02250	2,2MΩ	5%	0,06W
3224©	3198 031 04740	470kΩ	5%	0,06W
3225©	4822 117 13606	10kΩ	5%	0,06W
3226©	4822 117 11297	100kΩ	5%	0,06W
3230©	4822 051 30103	10kΩ	5%	0,06W
3231©	4822 051 30474	470kΩ	5%	0,06W
3232©	3198 031 02250	2,2MΩ	5%	0,06W
3233©	3198 031 01050	1MΩ	5%	0,06W
3234©	4822 117 11297	100kΩ	5%	0,06W
3235©	4822 117 11297	100kΩ	5%	0,06W
3236©	4822 117 13606	10kΩ	5%	0,06W
3237©	3198 031 01220	1,2kΩ	5%	0,06W
3238©	4822 117 11297	100kΩ	5%	0,06W
3239©	3198 031 03320	3,3kΩ	5%	0,06W
3240©	4822 117 13606	10kΩ	5%	0,06W
3241©	3198 031 05620	5,6kΩ	5%	0,06W
3242©	4822 117 13605	CHIP JUMPER 0402		
3243©	3198 031 04730	47kΩ	5%	0,06W
3244©	3198 031 04730	47kΩ	5%	0,06W
3245©	4822 117 13601	22kΩ	5%	0,06W
3246©	3198 031 04730	47kΩ	5%	0,06W
3247©	4822 117 13606	10kΩ	5%	0,06W
3248©	3198 031 01530	15kΩ	5%	0,06W
3250©	3198 031 06810	680Ω	5%	0,06W
3251©	3198 031 03320	3,3kΩ	5%	0,06W
3252©	4822 117 13597	330Ω	5%	0,06W
3253©	4822 117 13545	100Ω	5%	0,06W
3254©	3198 031 04730	47kΩ	5%	0,06W
3255©	3198 031 04730	47kΩ	5%	0,06W
3256©	3198 031 02720	2,7kΩ	5%	0,06W
3257©	3198 031 02240	220kΩ	5%	0,06W
3258©	4822 117 13543	470Ω	5%	0,06W
3259©	4822 117 13543	470Ω	5%	0,06W
3260©	3198 031 01050	1MΩ	5%	0,06W
3261©	4822 117 13606	10kΩ	5%	0,06W
3262©	4822 117 13543	470Ω	5%	0,06W
3266©	4822 117 13606	10kΩ	5%	0,06W
3268©	2120 108 93942	10kΩ	1%	0,06W
3269©	2120 108 93942	10kΩ	1%	0,06W
3270©	3198 031 02280	2,2Ω	5%	0,06W
3270©	4822 117 13605	CHIP JUMPER 0402		
3271©	2322 705 70338	3,3Ω	5%	0,06W
3272©	4822 051 30103	10kΩ	5%	0,06W
3273©	4822 117 13632	100kΩ	1%	0,06W
3274©	2120 108 93057	68kΩ	1%	0,06W
3275©	2120 108 93057	68kΩ	1%	0,06W
3276©	4822 117 13632	100kΩ	1%	0,06W
3277©	2120 108 93942	10kΩ	1%	0,06W
3278©	3198 031 02240	220kΩ	5%	0,06W
3279©	3198 031 02250	2,2MΩ	5%	0,06W
3280©	3198 031 04740	470kΩ	5%	0,06W
3281©	2322 705 87564	560kΩ	5%	0,06W

RESISTORS

3282	3198 031 04740	470kΩ	5%	0,06W	
3283	3198 031 04740	470kΩ	5%	0,06W	
3284	4822 116 30467	10kΩ	5%	NTC	
3286	4822 117 13606	10kΩ	5%	0,06W	
3288	3198 031 01090	10Ω	5%	0,06W	
3289	3198 031 05620	5,6kΩ	5%	0,06W	
3291	4822 117 11297	100kΩ	5%	0,06W	
3292	4822 117 13606	10kΩ	5%	0,06W	
3293	4822 117 13597	330Ω	5%	0,06W	
3294	4822 117 13605	CHIP JUMPER 0402			
3297	3198 031 06810	680Ω	5%	0,06W	
3298	4822 117 13605	CHIP JUMPER 0402			
3300	4822 117 13603	33kΩ	5%	0,06W	
3301	4822 117 13603	33kΩ	5%	0,06W	
3302	4822 117 13603	33kΩ	5%	0,06W	
3303	4822 117 13603	33kΩ	5%	0,06W	
3304	3198 031 01530	15kΩ	5%	0,06W	
3305	3198 031 01530	15kΩ	5%	0,06W	
3306	3198 031 01830	18kΩ	5%	0,06W	
3307	3198 031 01830	18kΩ	5%	0,06W	
3308	3198 031 01530	15kΩ	5%	0,06W	
3309	3198 031 01530	15kΩ	5%	0,06W	
3310	3198 031 05620	5,6kΩ	5%	0,06W	
3311	3198 031 05620	5,6kΩ	5%	0,06W	
3312	3198 031 01050	1MΩ	5%	0,06W	
3313	3198 031 01050	1MΩ	5%	0,06W	
3314	3198 031 03320	3,3kΩ	5%	0,06W	
3315	3198 031 03320	3,3kΩ	5%	0,06W	
3316	4822 117 13606	10kΩ	5%	0,06W	
3317	3198 031 04720	4,7kΩ	5%	0,06W	
3318	4822 117 11297	100kΩ	5%	0,06W	
3319	4822 117 13613	2,2Ω	5%	0,06W	
3320	2120 377 90014	POTMETER 2x10kΩ			
3321	3198 031 04740	470kΩ	5%	0,06W	
3322	2322 705 87108	1Ω	5%	0,06W	for /17 only
3322	3198 031 02290	22Ω	5%	0,06W	not for /17
3323	2322 705 87108	1Ω	5%	0,06W	for /17 only
3323	3198 031 02290	22Ω	5%	0,06W	not for /17
3324	3198 031 02280	2,2Ω	5%	0,06W	
3325	3198 031 02280	2,2Ω	5%	0,06W	
3327	3198 031 01050	1MΩ	5%	0,06W	
3328	4822 117 13603	33kΩ	5%	0,06W	
3329	4822 117 13546	47Ω	5%	0,06W	
3330	4822 117 13606	10kΩ	5%	0,06W	
3333	3198 031 03320	3,3kΩ	5%	0,06W	
3334	3198 031 03320	3,3kΩ	5%	0,06W	
3336	4822 117 13596	220Ω	5%	0,06W	
3339	4822 117 13597	330Ω	5%	0,06W	
3340	4822 117 13597	330Ω	5%	0,06W	
3343	4822 117 13606	10kΩ	5%	0,06W	
3344	3198 031 01090	10Ω	5%	0,06W	
3345	4822 117 13613	2,2Ω	5%	0,06W	
3346	4822 117 13606	10kΩ	5%	0,06W	
3401	2120 108 93942	10kΩ	1%	0,06W	
3402	4822 117 11297	100kΩ	5%	0,06W	
3403	2120 108 93943	18kΩ	1%	0,06W	
3404	2120 108 93944	22kΩ	1%	0,06W	
3405	2120 108 93943	18kΩ	1%	0,06W	
3406	3198 031 03320	3,3kΩ	5%	0,06W	
3407	4822 117 11297	100kΩ	5%	0,06W	
3410	3198 031 01090	10Ω	5%	0,06W	
3411	3198 031 01090	10Ω	5%	0,06W	
3412	4822 117 13543	470Ω	5%	0,06W	
3413	4822 117 13543	470Ω	5%	0,06W	

RESISTORS

3414	4822 117 13543	470Ω	5%	0,06W	
3415	4822 117 13606	10kΩ	5%	0,06W	
3416	4822 117 13606	10kΩ	5%	0,06W	
3417	4822 117 13606	10kΩ	5%	0,06W	
3418	4822 051 30563	56kΩ	5%	0,06W	
3419	3198 031 04720	4,7kΩ	5%	0,06W	
3420	3198 031 04740	470kΩ	5%	0,06W	
3424	3198 031 04720	4,7kΩ	5%	0,06W	
3425	3198 031 04730	47kΩ	5%	0,06W	
3426	4822 117 13605	CHIP JUMPER 0402			
3428	4822 117 13606	10kΩ	5%	0,06W	
3429	3198 031 04740	470kΩ	5%	0,06W	
3430	3198 031 03340	330kΩ	5%	0,06W	
3435	3198 031 04730	47kΩ	5%	0,06W	
3436	3198 031 04720	4,7kΩ	5%	0,06W	
3437	4822 117 13602	2,2kΩ	5%	0,06W	
3438	4822 117 12925	47kΩ	1%	0,06W	
3439	4822 051 30105	1MΩ	5%	0,06W	
3440	3198 031 01050	1MΩ	5%	0,06W	
3441	3198 031 02250	2,2MΩ	5%	0,06W	
3442	4822 117 13601	22kΩ	5%	0,06W	
3443	4822 117 13605	CHIP JUMPER 0402			
3444	4822 117 13605	CHIP JUMPER 0402			
3445	4822 117 13605	CHIP JUMPER 0402			
3456	4822 117 13545	100Ω	5%	0,06W	
3457	4822 117 13545	100Ω	5%	0,06W	
3460	4822 117 13606	10kΩ	5%	0,06W	
3461	4822 051 30561	560Ω	5%	0,06W	
3462	3198 031 01510	150Ω	5%	0,06W	
3466	4822 117 13605	CHIP JUMPER 0402			
3467	4822 117 13605	CHIP JUMPER 0402			
3468	4822 117 13605	CHIP JUMPER 0402			
3476	4822 117 11297	100kΩ	5%	0,06W	
3477	4822 117 11297	100kΩ	5%	0,06W	
3478	4822 117 11297	100kΩ	5%	0,06W	
3479	3198 031 01090	10Ω	5%	0,06W	
3480	4822 051 30109	10Ω	5%	0,06W	
3481	3198 031 01090	10Ω	5%	0,06W	
3482	3198 031 01590	15Ω	5%	0,06W	
3483	3198 031 01590	15Ω	5%	0,06W	
3484	3198 031 01590	15Ω	5%	0,06W	
3485	4822 117 13606	10kΩ	5%	0,06W	
3489	4822 117 13545	100Ω	5%	0,06W	
3490	4822 117 13545	100Ω	5%	0,06W	
3493	4822 051 30109	10Ω	5%	0,06W	
3494	3198 031 01590	15Ω	5%	0,06W	
3496	4822 051 30332	3,3kΩ	5%	0,06W	
3497	3198 031 01590	15Ω	5%	0,06W	
3498	4822 051 30479	47Ω	5%	0,06W	
3499	3198 031 01590	15Ω	5%	0,06W	
3800	4822 117 12917	1Ω	5%	0,06W	
3801	3198 031 01530	15kΩ	5%	0,06W	
3802	3198 031 06830	68kΩ	5%	0,06W	
3803	3198 031 03320	3,3kΩ	5%	0,06W	
3804	4822 117 13546	47Ω	5%	0,06W	
3805	4822 117 13606	10kΩ	5%	0,06W	
3806	3198 031 03320	3,3kΩ	5%	0,06W	
3807	4822 117 13543	470Ω	5%	0,06W	
3808	3198 031 04730	47kΩ	5%	0,06W	
3809	3198 031 05630	56kΩ	5%	0,06W	
3830	4822 051 30109	10Ω	5%	0,06W	
3831	3198 031 06820	6,8kΩ	5%	0,06W	
3832	3198 031 06820	6,8kΩ	5%	0,06W	
3833	3198 031 06820	6,8kΩ	5%	0,06W	

RESISTORS

3834	©	3198 031 06820	6,8kΩ	5%	0,06W
3835	©	3198 031 02730	27kΩ	5%	0,06W
3836	©	3198 031 02730	27kΩ	5%	0,06W
3837	©	3198 031 02730	27kΩ	5%	0,06W
3838	©	3198 031 02730	27kΩ	5%	0,06W
3839	©	3198 031 02730	27kΩ	5%	0,06W
3840	©	3198 031 02730	27kΩ	5%	0,06W
3841	©	4822 117 13606	10kΩ	5%	0,06W
3842	©	4822 117 13606	10kΩ	5%	0,06W
3843	©	4822 117 13606	10kΩ	5%	0,06W
3844	©	4822 117 13606	10kΩ	5%	0,06W
3845	©	4822 117 13606	10kΩ	5%	0,06W
3846	©	4822 117 13606	10kΩ	5%	0,06W
3847	©	3198 031 03390	33Ω	5%	0,06W
3848	©	4822 117 13603	33kΩ	5%	0,06W
3849	©	4822 117 13548	1kΩ	5%	0,06W
3850	©	4822 117 13601	22kΩ	5%	0,06W
3851	©	4822 117 13548	1kΩ	5%	0,06W
3852	©	3198 031 01090	10Ω	5%	0,06W
3853	©	3198 031 01090	10Ω	5%	0,06W
3854	©	4822 117 13602	2,2kΩ	5%	0,06W
3855	©	4822 117 13602	2,2kΩ	5%	0,06W
3856	©	4822 117 13602	2,2kΩ	5%	0,06W
3857	©	4822 117 13602	2,2kΩ	5%	0,06W
3858	©	4822 117 13602	2,2kΩ	5%	0,06W
3859	©	4822 117 13602	2,2kΩ	5%	0,06W
3860	©	4822 117 13606	10kΩ	5%	0,06W
3867	©	3198 031 02290	22Ω	5%	0,06W
3868	©	3198 031 02290	22Ω	5%	0,06W
3869	©	4822 117 13546	47Ω	5%	0,06W
3890	©	4822 117 13605	CHIP JUMPER 0402		
3891	©	4822 117 13605	CHIP JUMPER 0402		
3892	©	4822 117 13605	CHIP JUMPER 0402		
3893	©	4822 117 13605	CHIP JUMPER 0402		
3895	©	3198 031 01050	1MΩ	5%	0,06W
3896	©	3198 031 04720	4,7kΩ	5%	0,06W
3897	©	4822 117 11297	100kΩ	5%	0,06W

COILS

1403	©	2422 540 98536	CER.RES. 4,2MHz		
1840	©	4822 242 10989	CER.RES. 16,9MHz		
5230	©	4822 157 11705	10μH 10%		
5250	▲	2422 536 00438	TRANSFORMER 7006-2N		
5251	©	2422 536 00058	2,2μH 20%		
5252	©	4822 157 70753	100μH 10% LQH4N		
5401	©	4822 157 11074	100μH		

DIODES

6230	©	4822 130 11397	BAS316		
6231	©	9322 128 70685	SS14		
6232	©	4822 130 11397	BAS316		
6233	©	4822 130 11397	BAS316		
6250	©	3198 020 55680	BZX384-C5V6		
6251	©	4822 130 11564	BZX384-C3V9		
6252	©	9322 128 70685	SS14		
6253	©	4822 130 80622	BAT54		
6254	©	4822 130 80622	BAT54		
6257	©	9322 128 70685	SS14		
6300	©	4822 130 11551	BZX384-C10		
6301	©	4822 130 11551	BZX384-C10		

TRANSISTORS

7201	©	3198 010 42310	BC847BW	
7230	©	3198 010 42310	BC847BW	
7231	©	3198 010 42310	BC847BW	
7233	▲	5322 130 60123	BC807-40	
7241	▲	5322 130 60123	BC807-40	
7250	©	4822 130 42615	BC817-40	
7251	▲	5322 130 61569	BC868	
7252	▲	4822 130 60142	BC869	
7253	©	3198 010 42310	BC847BW	
7254	©	3198 010 42310	BC847BW	
7255	©	5322 130 61569	BC868	
7259	©	3198 010 42320	BC857BW	
7260	©	3198 010 42310	BC847BW	
7261	©	3198 010 42310	BC847BW	
7268	©	3198 010 44350	BC807-25W	
7269	©	3198 010 42310	BC847BW	
7270	©	3198 010 42310	BC847BW	
7271	©	3198 010 42310	BC847BW	
7272	©	3198 010 42310	BC847BW	
7276	©	3198 010 42320	BC857BW	
7277	©	3198 010 42310	BC847BW	
7301	©	3198 010 42310	BC847BW	
7302	©	3198 010 42310	BC847BW	
7303	©	3198 010 42310	BC847BW	
7306	©	3198 010 42310	BC847BW	
7307	©	3198 010 42310	BC847BW	
7404	©	3198 010 42320	BC857BW	
7405	©	3198 010 42310	BC847BW	
7406	©	3198 010 42310	BC847BW	
7801	©	3198 010 42310	BC847BW	
7802	©	3198 010 42310	BC847BW	
7803	©	5322 130 60123	BC807-40	

INTEGRATED CIRCUITS

7200	©	9322 181 40668	BD6609FV (DISC MOTOR DRIVER)	
7232	©	5322 209 82941	LM358D (DUAL OPAMP)	
7256	©	9322 171 12671	SC111259AFTA (SERVO DRIVER)	
7273	©	4822 209 17289	74LV14PW	
7300	©	4822 209 33165	TDA1308T/N1	
7305	©	4822 209 16083	BA3574BFS (HEADPHONE AMP.)	
7400	©	3103 308 84691	TMP86CH21AU EXP431 (μP)	
7480	©	9322 171 79671	TMS320DA150GGU160 (DSP)	
7481	©	9322 166 67668	MT48LC4M16A2TG-7E (DRAM)	
7482	©	3103 308 84480	FLASH EPROM EXP431	
7483	©	9351 960 10118	74LVC139PW	
7484	©	9322 158 50668	74LCX74T	
7485	©	4822 209 30426	74HC00D	
7800	©	4822 209 17286	TZA1024T/N1 (HF-AMPLIFIER)	
7830	©	9352 641 80557	SAA7324H/M2B (SIGNAL PROC.)	

DOCUMENT HISTORY

Version 1.0

- Initial release