

Service Manual



Colour Television TX-29PN1D, TX-29PN1F, TX-29PN1P, TX-28PN1D, TX-28PN1F, TX-28PN1P, GP4L Chassis

SPECIFICATIONS

(Information in brackets [] refers to models 28")

Power Source:	220-240V a.c., 50Hz
Power Consumption:	68W [65W]
Stand-by Power Consumption:	1W
Aerial Impedance:	75Ω unbalanced, Coaxial Type
Receiving System:	PAL-I, B/G, D/K, PAL-525/60 SECAM B/G, D/K, L/L' M.NTSC (AV only) NTSC (AV only)
Receiving Channels:	VHF E2-E12 VHF H1-H2 (ITALY) VHF A-H (ITALY) VHF R1-R2 VHF R3-R5 VHF R6-R12 UHF E21-E69 CATV (S01-S05) CATV S1-S10 (M1-M10) CATV S11-S20 (U1-U10) CATV S21-S41 (HYPERBAND)
Intermediate Frequency:	
Video/Audio	
Video	38,9MHz, 33,9MHz
Sound	33,4MHz (B/G), 33,16MHz (A2) 33,05MHz (NICAM B/G, D/K, L) 32,4MHz (D/K), 32,66MHz (CZ STEREO) 40,4MHz (L'), 39,75MHz (L'NICAM)
Colour	34,47MHz (PAL) 34,5MHz, 34,65MHz (SECAM) 38,3MHz, 38,15MHz (SECAM L')
Terminals:	
AV1 IN	Video (21 pin) 1V p-p 75Ω Audio (21 pin) 500mV rms 10kΩ RGB (21 pin) 0,7V p-p 75Ω
AV1 OUT	Video (21 pin) 1V p-p 75Ω Audio (21 pin) 500mV rms 1kΩ

AV2 IN	Video (21 pin) 1V p-p 75Ω Audio (21 pin) 500mV rms 10kΩ S-Video IN Y: 1V p-p 75Ω (21-pin) C:0,3V p-p 75Ω
AV2 OUT	Video (21 pin) 1V p-p 75Ω Audio (21 pin) 500mV rms 1kΩ
AV3 IN	Audio (RCAx2) 500mV rms 10kΩ Video (RCAx1) 1V p-p 75Ω

High Voltage:	31kV ± 1kV
Picture Tube:	A68EPD10X30 68cm [W66MAF185X03 66cm]
Audio Output:	2x5W RMS, 2x10W MPO, 8Ω impedance
Headphones:	8Ω Impedance
Accessories supplied :	Remote Control 2 x R6 (UM3) Batteries
Dimensions:	
Height:	584mm [528mm]
Width:	668mm [698mm]
Depth:	500mm [490mm]
Net weight:	40kg [35,5kg]

Note:
Specifications are subject to change without notice.
Weights and dimensions shown are approximate.

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SAFETY PRECAUTION

GENERAL GUIDE LINES

1. It is advisable to insert an isolation transformer in the a.c. supply before servicing a hot chassis.
2. When servicing, observe the original lead dress in the high voltage circuits. If a short circuit is found, replace all parts that have been overheated or damaged by the short circuit.
3. After servicing, see that all the protective devices such as insulation barriers, insulation papers, shields and isolation R-C combinations are correctly installed.
4. When the receiver is not being used for a long period of time, unplug the power cord from the a.c. outlet.
5. Potentials as high as 32kV are present when this receiver is in operation. Operation of the receiver without the rear cover involves the danger of a shock hazard from the receiver power supply. Servicing should not be attempted by anyone who is not familiar with the precautions necessary when working on high voltage equipment. Always discharge the anode of the tube.
6. After servicing make the following leakage current checks to prevent the customer from being exposed to shock hazard.

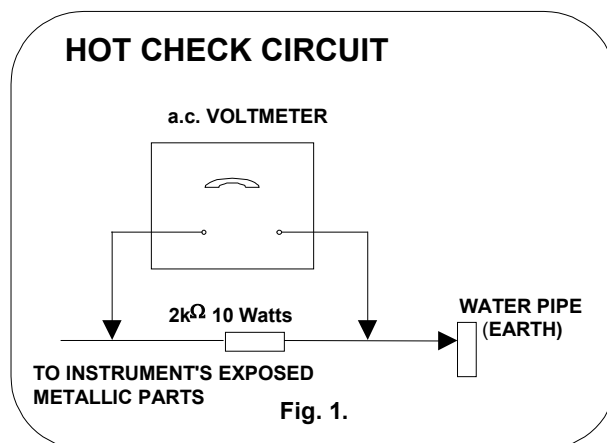
LEAKAGE CURRENT COLD CHECK

1. Unplug the a.c. cord and connect a jumper between the two prongs of the plug.
2. Turn on the receiver's power switch.
3. Measure the resistance value with an ohmmeter, between the jumpered a.c. plug and each exposed metallic cabinet part on the receiver, such as screw heads, aerials, connectors, control shafts etc. When the exposed metallic part has a return path to the chassis, the reading should be between 4M ohm and 20M ohm. When the exposed metal does not have a return path to the chassis, the reading must be infinite.

LEAKAGE CURRENT HOT CHECK

1. Plug the a.c. cord directly into the a.c. outlet. Do not use an isolation transformer for this check.
2. Connect a 2k Ω 10W resistor in series with an exposed metallic part on the receiver and an earth, such as a water pipe.
3. Use an a.c. voltmeter with high impedance to measure the potential across the resistor.

4. Check each exposed metallic part and check the voltage at each point.
5. Reverse the a.c. plug at the outlet and repeat each of the previous measurements.
6. The potential at any point should not exceed 1,4 Vrms. In case a measurement is outside the limits specified, there is a possibility of a shock hazard, and the receiver should be repaired and rechecked before it is returned to the customer.



X-RADIATION WARNING

1. The potential sources of X-Radiation in TV sets are the high voltage section and the picture tube.
2. When using a picture tube test jig for service, ensure that the jig is capable of handling 32kV without causing X-Radiation.

NOTE: It is important to use an accurate periodically calibrated high voltage meter.

1. Set the brightness to minimum.
2. Measure the high voltage. The meter should indicate: 31kV \pm 1kV.
If the meter indication is out of tolerance, immediate service and correction is required to prevent the possibility of premature component failure.
3. To prevent any X-Radiation possibility, it is essential to use the specified tube.

SERVICE HINTS

How to remove the rear cover

1. Remove the 10 screws as shown in Fig.2.



Fig. 2

LOCATION OF CONTROLS

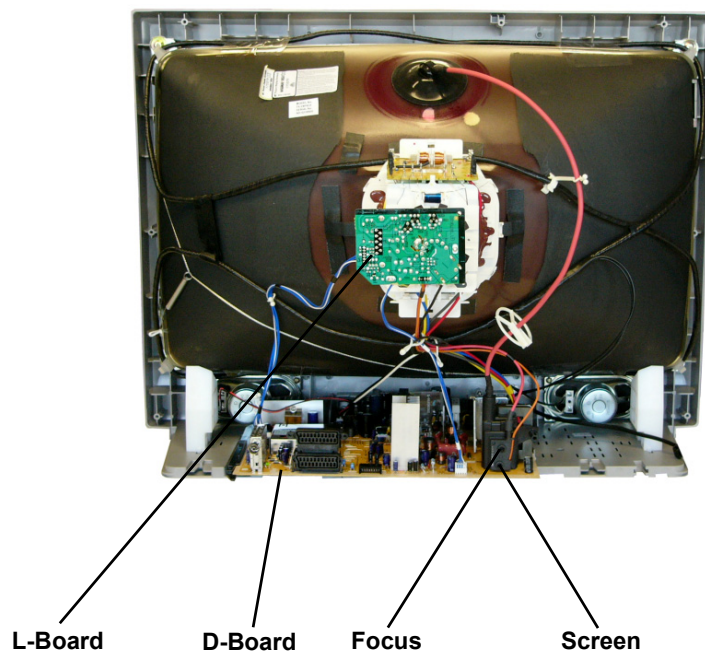
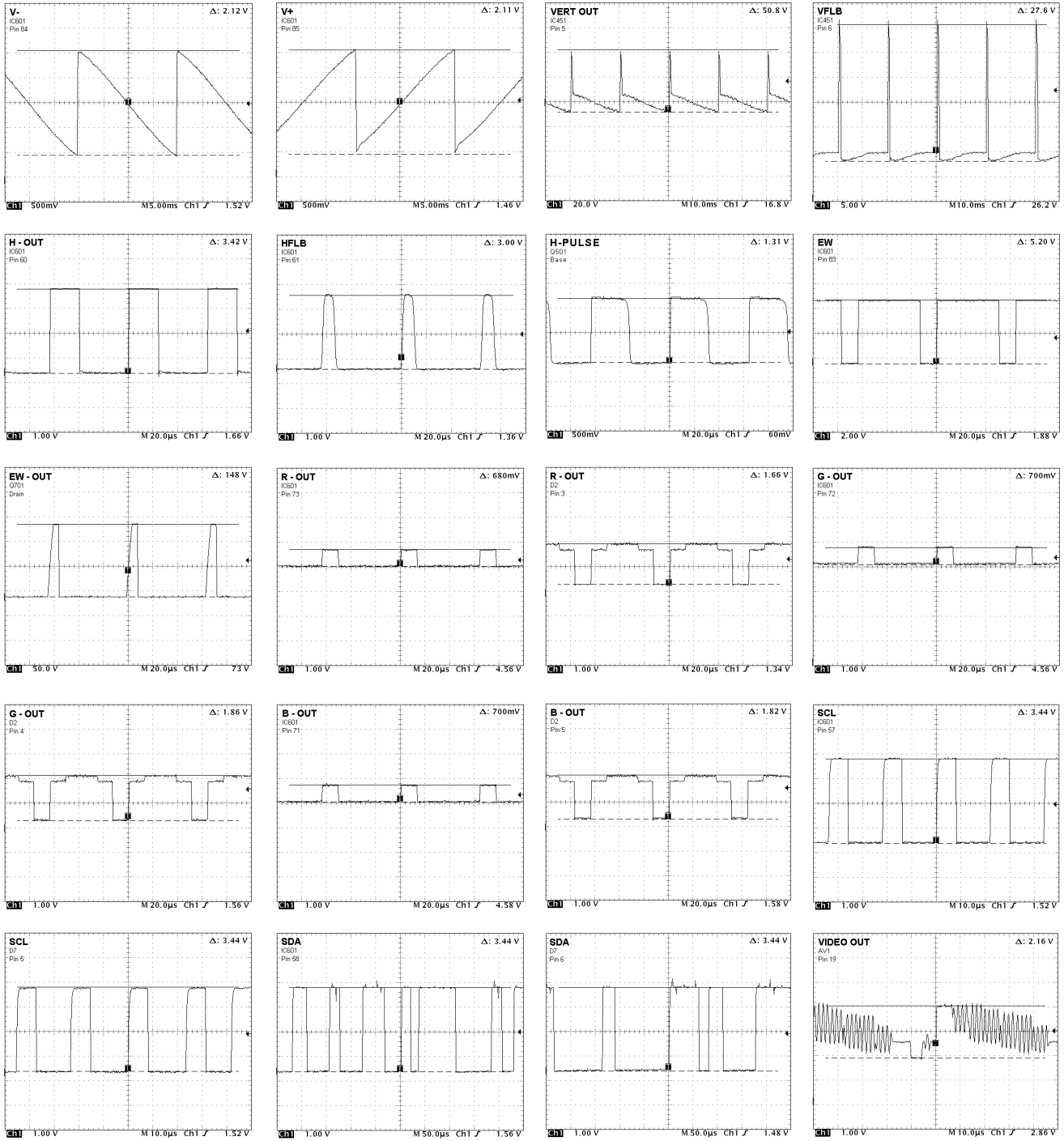


Fig.3

WAVEFORM PATTERN TABLE



CONDITIONS: Contrast: MAX, Brightness: MID, Colour: MID, Sharpness: MID

R,G,B /IC601/: Receive a window pattern.

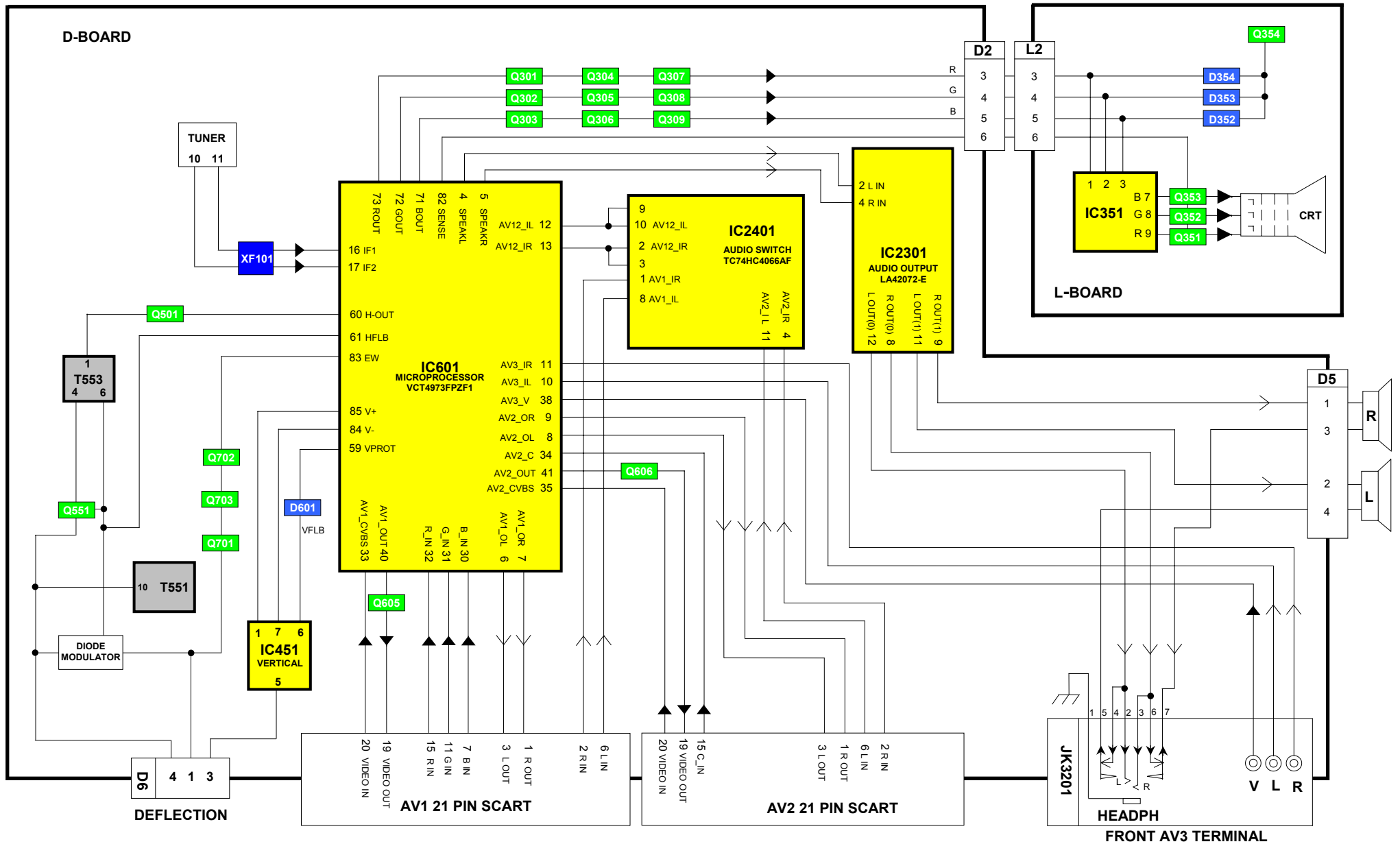
ALIGNMENT SETTINGS

(The figures below are nominal and used for representative purposes only.)

1. Set the Bass to maximum position, set the Treble to minimum position, set the Volume to minimum then press the down button (-V) on the customer controls at the front of the TV and at the same time press the **INDEX** button on the remote control, this will place the TV into the Service Mode 1.
2. Press the **RED / GREEN** buttons to step up / down through the functions.
3. Press the **YELLOW / BLUE** buttons to alter the function values.
4. Press the **OK** button after each adjustment has been made to store the required values.
5. To exit the Service Mode, press the **"N"** button.

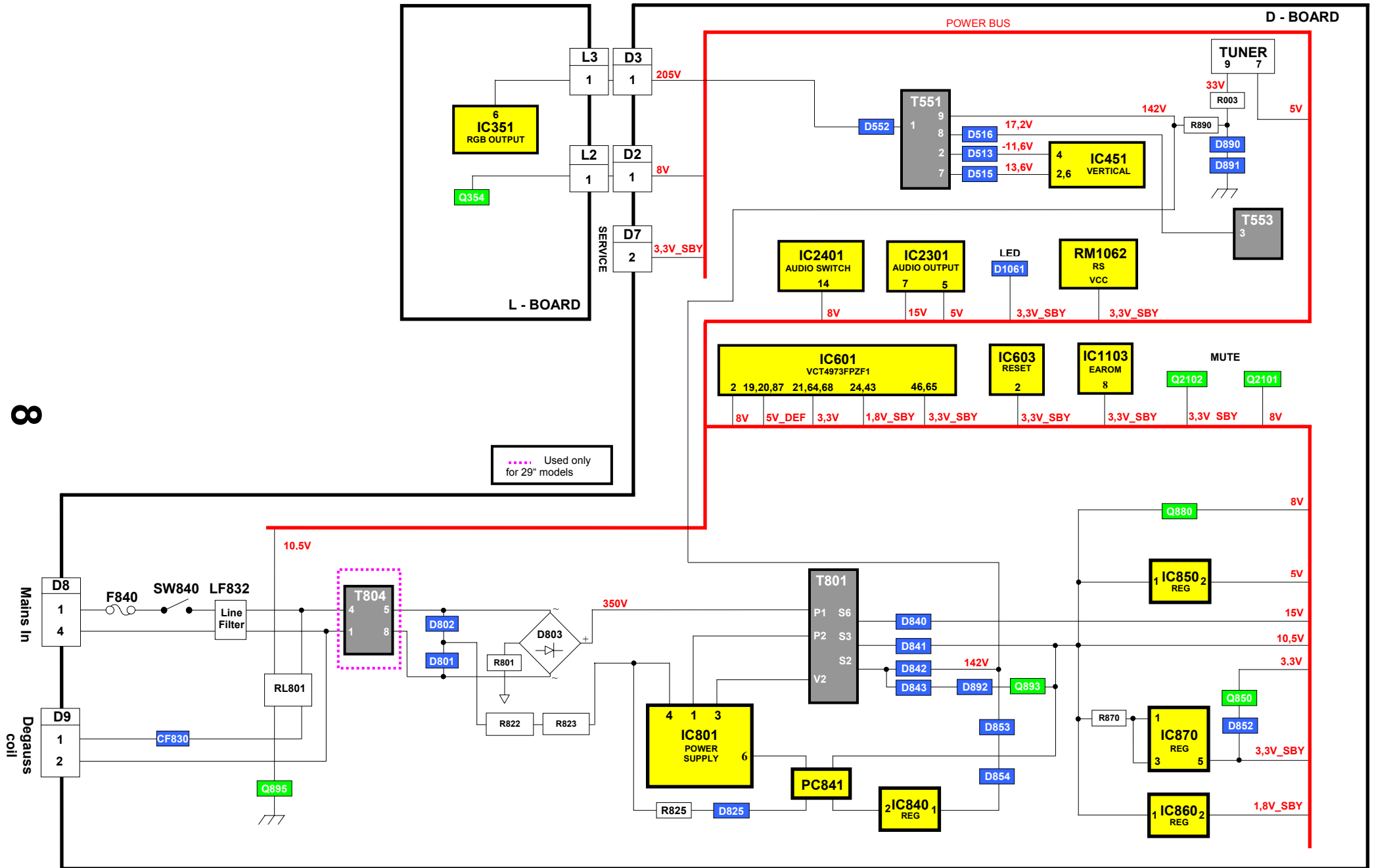
Alignment Function	Setting indication Note: All setting values are approximate	Settings / Special features
EAROM copy	TV/EXT	---
FLASH program copy	EXT -> TV	---
Horizontal Position	H-Pos -4	Optimum setting.
Vertical Position	V-Pos 0	Optimum setting.
Horizontal Amplitude	H-Amp 93	Optimum setting.
Vert. Amplitude	V-Amp -15	Optimum setting.
EW-amplitude	EW-Amp 1 - 30	Optimum setting.
Lower Corner	Lower Corner 11	Optimum setting.
Trapezium-comp	Trapez 1 4	Optimum setting.
Upper Corner	Upper Corner 11	Optimum setting.
Vertical Linearity	V-Lin 39	Optimum setting.
Vertical Symmetry	V-Sym -6	Optimum setting.
Angle	Angle 0	Optimum setting.
Bow	Bow 0	Optimum setting.
DVCO	DVCO 63	Receive a PAL Colour Bar Pattern. For DVCO alignment press "Blue" button, wait until the figure colour is changed from red to black colour.
Highlight Lowligh	High 0374 0318 0335 Low 0207 0331 0256	Optimum setting.
Sub-Brightness	Sub-Brightness -10	Optimum setting.

VIDEO & STEREO AUDIO & DEFLECTION BLOCK DIAGRAM

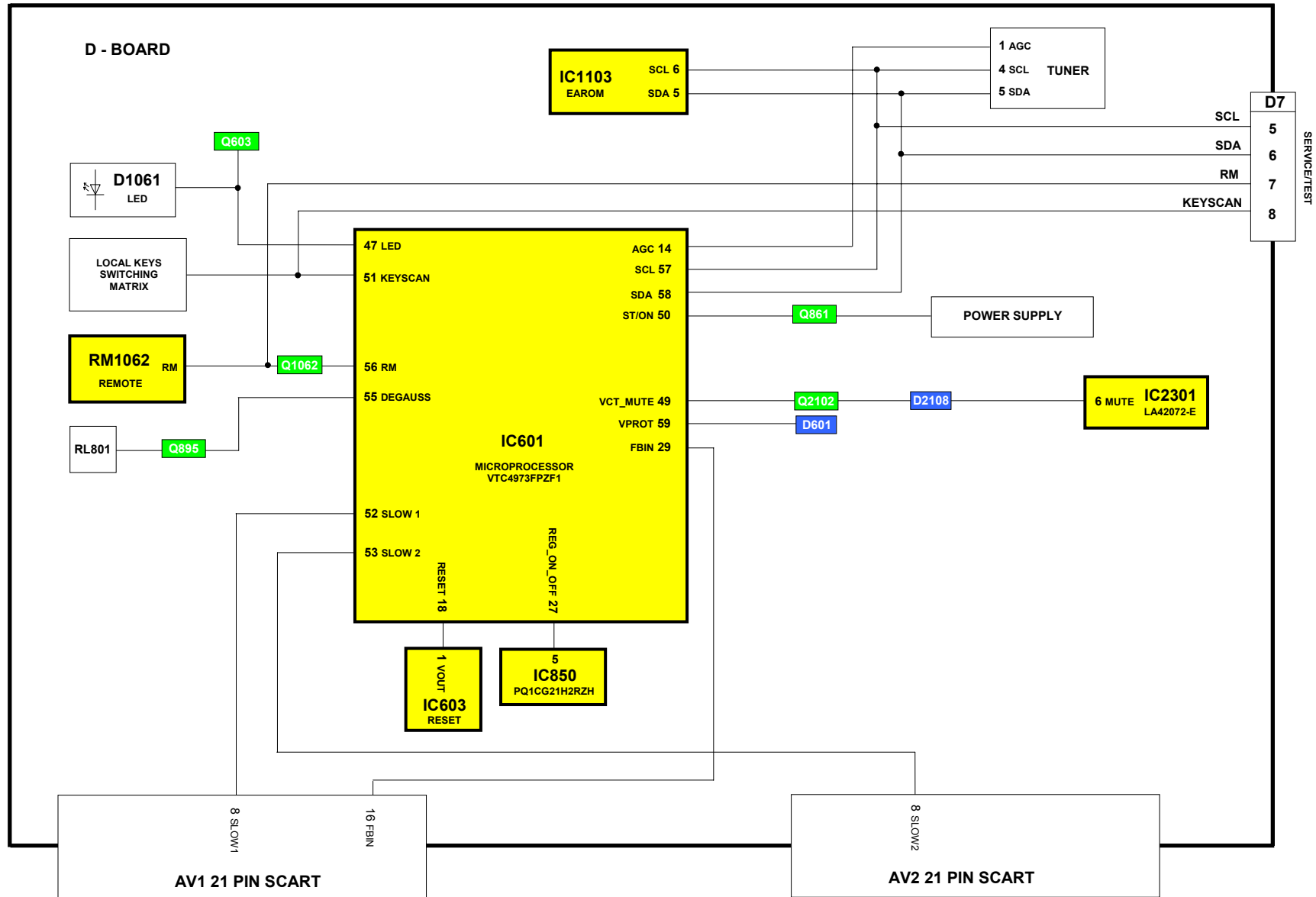


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POWER SUPPLY BLOCK DIAGRAM



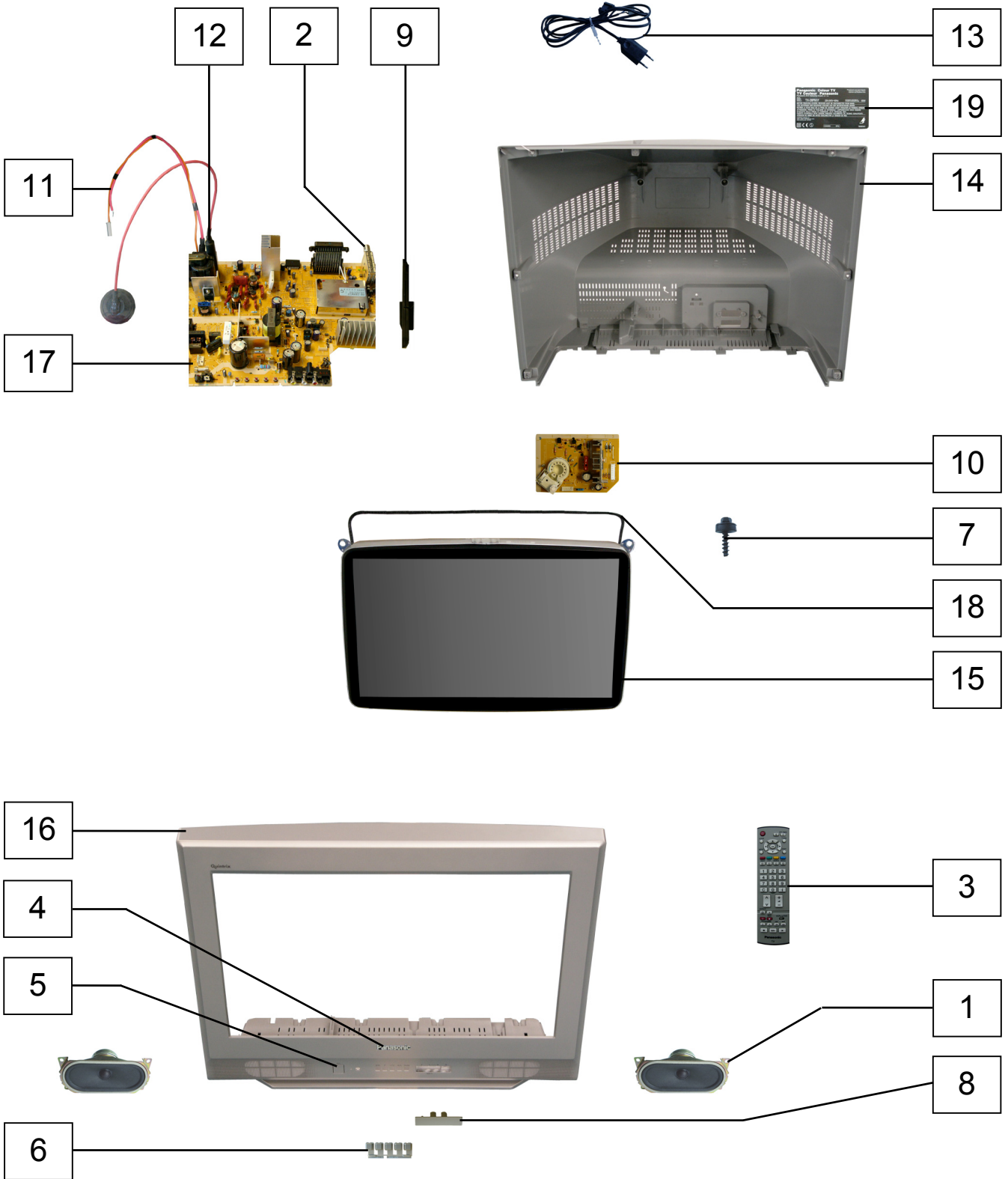
CONTROL BLOCK DIAGRAM



PARTS LOCATION


NOTE:







The numbers on the exploded view below refer to the exploded view section of the Replacement Parts List.



REPLACEMENT PARTS LIST

Important Safety Notice

Components Identified by  mark have special characteristics important for safety.
 * When replacing any of these components, use only manufacturers specified parts.
 In case of ordering these spare parts, please always add the complete Model-Type number to your order.

Cct Ref	Parts Number	Description
COMMON PARTS		
EXPLODED VIEW		
1	EASG12D552A2	SPEAKER
2	ENV57K01G3F	TUNER
3	EUR7651010	REMOTE CONTROL
4	TBM0E3002	PANASONIC BADGE
5	TBX0E81100	POWER BUTTON
6	TBX0E81200	5-KEY BUTTON
7	THT1062J	CRT FIXING SCREW
8	TKP0E12701	AV COVER
9	TMZ0E9803	CHASSIS RAIL
10	TNP0EL006AA	L P.C.B. 
11	TXJ/FCODEG1	FOCUS LEAD ASSY 
12	ZTFP14501A	F.B.T.+ ANODE ASSY 
MISCELLANEOUS COMPONENTS		
.	R6RC/2P	BATTERY
.	TES2298	CRT EARTH SPRING
.	TKP0E12601	IR WINDOW
.	TMW0E704-1	LED HOLDER
I.C.s		
IC351	TDA6108JF	RGB OUTPUT
IC451	LA78045-E	VERTICAL OUTPUT
IC601	GP4L/SW1.03	MICRO VCT4973FPZF1
IC603	XC61CN2802TH	IC RESET
IC801	STRW6754LF06	POWER SUPPLY
IC840	SE130N	ERROR AMPLIFIER
IC850	PQ1CG21H2RZH	REGULATOR
IC860	PQ1CG21H2RZH	REGULATOR
IC870	C0CBABD00059	REGULATOR
IC2301	LA42072-E	AUDIO AMPLIFIER
IC2401	C0JBAS000227	AUDIO SWITCH
RM1062	KSM-602LM2EL	LED RECEIVER
FUSES		
F840	K5D502BNA005	FUSE 
F841	TSF19632	FS LINK 
DIODES		
CF830	59890T60B110	THERMISTOR 
D351	1N4148-34	DIODE
D352	1N4148-34	DIODE
D353	1N4148-34	DIODE
D354	1N4148-34	DIODE
D357	1N4148-34	DIODE
D358	1N4148-34	DIODE
D359	1N4148-34	DIODE

Cct Ref	Parts Number	Description
D360	EU02	DIODE
D361	EU02	DIODE
D362	EU02	DIODE
D402	1SR124-4AT82	DIODE
D501	1SR124-4AT82	DIODE
D506	1SR124-4AT82	DIODE
D507	1N4148-34	DIODE
D512	1N4148-34	DIODE
D513	1SR124-4AT82	DIODE
D515	1SR124-4AT82	DIODE
D516	1SR124-4AT82	DIODE
D552	1SR124-4AT82	DIODE
D556	FMQ-G2FLS699	DIODE
D557	RU3LFA1	DIODE
D558	1N4148-34	DIODE
D561	1N4148-34	DIODE
D562	1N4148-34	DIODE
D580	MA4130MTA	DIODE
D601	DAN217T146	DIODE
D604	1N4148WS	DIODE
D708	1SR124-4AT82	DIODE
D801	EU02	DIODE
D802	EU02	DIODE
D803	RS406MBSR01	DIODE
D810	SARS01LF-F7	DIODE
D817	1SR124-4AT82	DIODE
D820	MAZ20820A0LS	DIODE
D823	1N4148-34	DIODE
D824	1N4148-34	DIODE
D825	GDZJ6.8C-34	DIODE
D840	RU4AMLF-M1	DIODE
D841	RU3LFA1	DIODE
D842	RU4BLF-L1	DIODE
D843	AU02AV0	DIODE
D844	1N4148WS	DIODE
D845	GDZJ3.3A-34	DIODE
D846	1SR124-4AT82	DIODE
D847	1N4148-34	DIODE
D849	GDZJ3.6A-34	DIODE
D850	B0JCNE000004	DIODE SFPB-74V
D851	B0HCMM000014	DIODE
D852	GDZJ6.8C-34	DIODE
D853	MTZJT-777.5B	DIODE
D854	MA165TA5	DIODE
D860	B0JCNE000004	DIODE SFPB-74V
D861	B0HCMM000014	DIODE
D862	GDZJ20C-34	DIODE
D880	GDZJ8.2B-34	DIODE
D881	1N4148WS	DIODE
D890	MTZJT-7716A	DIODE
D891	MTZJT-7716A	DIODE

Cct Ref	Parts Number	Description
D892	BT149D	DIODE
D895	GDZJ5.1B-34	DIODE
D896	1N4148WS	DIODE
D897	1N4148-34	DIODE
D1056	GDZJ3.6A-34	DIODE
D1061	LS5469-GK	LED
D1132	GDZJ3.9A-34	DIODE
D2103	1N4148-34	DIODE
D2107	1N4148-34	DIODE
D2108	1N4148-34	DIODE
D3141	GDZJ8.2C-34	DIODE
D3142	GDZJ8.2C-34	DIODE
D3143	1N4148-34	DIODE
D3144	1N4148-34	DIODE
PC841	SFH617A-20P6	PHOTO COUPLER
TRANSISTORS		
Q301	BC847B	TRANSISTOR
Q302	BC847B	TRANSISTOR
Q303	BC847B	TRANSISTOR
Q304	BC847B	TRANSISTOR
Q305	BC847B	TRANSISTOR
Q306	BC847B	TRANSISTOR
Q307	BC857B	TRANSISTOR
Q308	BC857B	TRANSISTOR
Q309	BC857B	TRANSISTOR
Q351	2SA1767	TRANSISTOR
Q352	2SA1767	TRANSISTOR
Q353	2SA1767	TRANSISTOR
Q354	BC857B	TRANSISTOR
Q501	2SD2195T100	TRANSISTOR
Q551	2SC5517000LK	TRANSISTOR
Q581	BC857B	TRANSISTOR
Q603	BC847B	TRANSISTOR
Q605	BC847B	TRANSISTOR
Q606	BC847B	TRANSISTOR
Q610	BC857B	TRANSISTOR
Q611	BC857B	TRANSISTOR
Q701	2SK3342TE16Q	TRANSISTOR
Q702	MMBT3904	TRANSISTOR
Q703	MMBT3904	TRANSISTOR
Q841A	BC847B	TRANSISTOR
Q850	2SC1318-S	TRANSISTOR
Q861	BC847B	TRANSISTOR
Q880	BC547B/126	TRANSISTOR
Q881	BC847B	TRANSISTOR
Q882	BC857B	TRANSISTOR
Q893	BC847B	TRANSISTOR
Q895	BC847B	TRANSISTOR
Q1062	BC847B	TRANSISTOR
Q2101	BC857B	TRANSISTOR
Q2102	BC847B	TRANSISTOR
Q2402	BC847B	TRANSISTOR
Q2403	BC847B	TRANSISTOR
TRANSFORMERS		
T553	ETH19Y209AZ	TRANSFORMER
T801	ETS35AA6X6AC	TRANSFORMER
COILS		
L002	TALV35VB100K	COIL
L004	TALV35VB100K	COIL
L005	EXCELSA35T	COIL
L108	ELJFAR68KF2	COIL
L300	EXCELD35V	COIL
L301	TLTACT4R7K	COIL
L553	ELC16B821L	COIL
L555	ELC10D821E	COIL

Cct Ref	Parts Number	Description			
L556	ELC08D682E	COIL			
L601	G0C100JA0055	COIL			
L602	G0C100JA0055	COIL			
L603	G0C100JA0055	COIL			
L604	G0C100JA0055	COIL			
L605	EXCELD35V	COIL			
L606	G0C100JA0055	COIL			
L607	EXCELD35V	COIL			
L608	G0C100JA0055	COIL			
L609	G0C100JA0055	COIL			
L610	EXCELSA35T	COIL			
L611	G0C100JA0055	COIL			
L613	EXCELSA35V	COIL			
L614	EXCELSA35V	COIL			
L615	EXCELD35V	COIL			
L616	EXCELSA35T	COIL			
L617	EXCELSA35V	COIL			
L623	EXCELSA35V	COIL			
L625	EXCELSA35V	COIL			
L820	EXCELSA39V	COIL			
L841	EXCELSA35T	COIL			
L842	EXCELSA35T	COIL			
L844	EXCELSA39V	COIL			
L845	EXCELSA39V	COIL			
L846	EXCELSA35B	COIL			
L847	TSL0808S470K	COIL			
L850	G0A471ZA0041	COIL			
L860	G0A471ZA0041	COIL			
L861	TLTACT4R7K	COIL			
L1061	TLT331K991R	COIL			
L2301	EXCELSA35T	COIL			
L2302	EXCELSA35T	COIL			
L2303	ELJFC100KF	COIL			
L2313	EXCELD35V	COIL			
L2314	EXCELD35V	COIL			
L2321	EXC3BB221H	COIL			
L2322	EXC3BB221H	COIL			
L2323	EXCELD35V	COIL			
L2324	EXCELD35V	COIL			
L2325	EXCELD35V	COIL			
L2326	EXCELD35V	COIL			
L2327	EXCELD35V	COIL			
L3000	TLTACT2R2K	COIL			
L3001	TLTACT2R2K	COIL			
L3002	ELJFC4R7KF	COIL			
L3003	ELJFC4R7KF	COIL			
L3004	ELJFC2R2KF	COIL			
L3005	ELJFC2R2KF	COIL			
L3006	TLTACT4R7K	COIL			
L3007	TLTACT4R7K	COIL			
L3142	SPT0305A6R8K	COIL			
L3143	SPT0305A6R8K	COIL			
FILTERS					
LF832	ELF18N012A	LINE FILTER			
XF101	F4SE-H0E5	FILTER			
CRYSTALS					
X601	4730007267	CRYSTAL			
RESISTORS					
JA4	ERJ6GEY0R00	S.M.CARB	0.1W	-	0 Ω
JA5	ERJ6GEY0R00	S.M.CARB	0.1W	-	0 Ω
JA6	ERJ6GEY0R00	S.M.CARB	0.1W	-	0 Ω
JA8	ERJ6GEY0R00	S.M.CARB	0.1W	-	0 Ω
JA9	ERJ6GEY0R00	S.M.CARB	0.1W	-	0 Ω
JA10	ERJ6GEY0R00	S.M.CARB	0.1W	-	0 Ω
JA11	ERJ6GEY0R00	S.M.CARB	0.1W	-	0 Ω

Cct Ref	Parts Number	Description			
JA12	ERJ6GEY0R00	S.M.CARB	0.1W	-	0 Ω
JA13	ERJ6GEY0R00	S.M.CARB	0.1W	-	0 Ω
JA14	ERJ6GEY0R00	S.M.CARB	0.1W	-	0 Ω
JA15	ERJ6GEY0R00	S.M.CARB	0.1W	-	0 Ω
JA17	ERJ6GEY0R00	S.M.CARB	0.1W	-	0 Ω
JA18	ERJ6GEY0R00	S.M.CARB	0.1W	-	0 Ω
JA19	ERJ6GEY0R00	S.M.CARB	0.1W	-	0 Ω
JA20	ERJ6GEY0R00	S.M.CARB	0.1W	-	0 Ω
JA21	ERJ6GEY0R00	S.M.CARB	0.1W	-	0 Ω
JSD501	ERJ6GEY0R00	S.M.CARB	0.1W	-	0 Ω
JSD608	ERJ6GEY0R00	S.M.CARB	0.1W	-	0 Ω
JSD669	ERJ8GEY0R00	S.M.CARB	.125W	-	0 Ω
JSD670	ERJ8GEY0R00	S.M.CARB	.125W	-	0 Ω
JSD671	ERJ6GEY0R00	S.M.CARB	0.1W	-	0 Ω
JSD672	ERJ6GEY0R00	S.M.CARB	0.1W	-	0 Ω
JSD674	ERJ6GEY0R00	S.M.CARB	0.1W	-	0 Ω
JSD675	ERJ6GEY0R00	S.M.CARB	0.1W	-	0 Ω
JSD676	ERJ6GEY0R00	S.M.CARB	0.1W	-	0 Ω
JSD2312	ERJ6GEY0R00	S.M.CARB	0.1W	-	0 Ω
JSD3132	ERJ6GEY0R00	S.M.CARB	0.1W	-	0 Ω
JSD3133	ERJ6GEY0R00	S.M.CARB	0.1W	-	0 Ω
L003	ERJ6GEY0R00	S.M.CARB	0.1W	-	0 Ω
R001	ERJ6GEYJ220	S.M.CARB	0.1W	5%	22 Ω
R002	ERJ6GEYJ220	S.M.CARB	0.1W	5%	22 Ω
R003	ERJ6GEYJ103	S.M.CARB	0.1W	5%	10K Ω
R005	ERJ6GEYJ512	S.M.CARB	0.1W	5%	5K1 Ω
R006	ERJ6GEYJ473	S.M.CARB	0.1W	5%	47K Ω
R007	ERJ6GEYJ682	S.M.CARB	0.1W	5%	6K8 Ω
R253	ERJ6GEYJ103	S.M.CARB	0.1W	5%	10K Ω
R255	ERJ6GEYJ103	S.M.CARB	0.1W	5%	10K Ω
R256	ERJ6GEYJ101	S.M.CARB	0.1W	5%	100 Ω
R257	ERJ6GEYJ101	S.M.CARB	0.1W	5%	100 Ω
R301	ERJ6GEYJ103	S.M.CARB	0.1W	5%	10K Ω
R302	ERJ6GEYJ103	S.M.CARB	0.1W	5%	10K Ω
R303	ERJ6GEYJ103	S.M.CARB	0.1W	5%	10K Ω
R304	ERJ6GEYJ240	S.M.CARB	0.1W	5%	24 Ω
R305	ERJ6GEYJ240	S.M.CARB	0.1W	5%	24 Ω
R306	ERJ6GEYJ240	S.M.CARB	0.1W	5%	24 Ω
R307	ERJ6GEYJ681	S.M.CARB	0.1W	5%	680 Ω
R308	ERJ6GEYJ681	S.M.CARB	0.1W	5%	680 Ω
R309	ERJ6GEYJ681	S.M.CARB	0.1W	5%	680 Ω
R310	ERJ8GEYJ221V	SMD	0.25W	5%	220 Ω
R311	ERJ8GEYJ221V	SMD	0.25W	5%	220 Ω
R312	ERJ8GEYJ221V	SMD	0.25W	5%	220 Ω
R317	ERJ6GEYJ151	S.M.CARB	0.1W	5%	150 Ω
R318	ERJ6GEYJ151	S.M.CARB	0.1W	5%	150 Ω
R319	ERJ6GEYJ151	S.M.CARB	0.1W	5%	150 Ω
R351	ERJ6GEYJ222	S.M.CARB	0.1W	5%	2K2 Ω
R352	ERJ6GEY0R00	S.M.CARB	0.1W	-	0 Ω
R353	ERJ6GEYJ331	S.M.CARB	0.1W	5%	330 Ω
R354	ERJ6GEYJ331	S.M.CARB	0.1W	5%	330 Ω
R355	ERJ6GEYJ331	S.M.CARB	0.1W	5%	330 Ω
R356	ERJ6GEYJ331	S.M.CARB	0.1W	5%	330 Ω
R357	ERJ6GEYJ220	S.M.CARB	0.1W	5%	22 Ω
R360	ERQ12AJ121	FUSIBLE	0.5W	5%	120 Ω
R363	ERD25TJ102	CARBON	0.25W	5%	1K Ω
R364	ERD25TJ102	CARBON	0.25W	5%	1K Ω
R365	ERD25TJ102	CARBON	0.25W	5%	1K Ω
R366	ERDS1TJ152	CARBON	0.5W	5%	1K5 Ω
R367	ERDS1TJ152	CARBON	0.5W	5%	1K5 Ω
R368	ERDS1TJ152	CARBON	0.5W	5%	1K5 Ω
R374	ERD25TJ274	CARBON	0.25W	5%	270K Ω
R375	ERJ6GEYJ684	S.M.CARB	0.1W	5%	680K Ω
R376	ERJ6GEYJ183	S.M.CARB	0.1W	5%	18K Ω
R403	ERJ6GEYJ563	S.M.CARB	0.1W	5%	56K Ω
R405	ERJ6GEYJ563	S.M.CARB	0.1W	5%	56K Ω

Cct Ref	Parts Number	Description			
R406	ERX12SJR82P	METAL	0.5W	5%	R82 Ω
R416	ERX2SJSR82H	METAL	2W	5%	0.82 Ω
R451	ERJ6GEYJ223	S.M.CARB	0.1W	5%	22K Ω
R453	ERJ6GEYJ103	S.M.CARB	0.1W	5%	10K Ω
R505	ERG1SJ222E	METAL	0.5W	5%	2K2 Ω
R507	ERJ6GEYJ561	S.M.CARB	0.1W	5%	560 Ω
R512	ERJ6ENF1001	S.M.CARB	0.1W	1%	1K Ω
R513	ERJ6GEYJ680	S.M.CARB	0.1W	5%	68 Ω
R554	343-23R3AY	METAL	10W	5%	3R3 Ω
R557	ERG2SJ102E	METAL	2W	5%	1K Ω
R559	ERQ12HHR39P	FUSIBLE	0.5W	10%	R39 Ω
R561	ERJ6GEYJ183	S.M.CARB	0.1W	5%	18K Ω
R562	ERJ6GEYJ472	S.M.CARB	0.1W	5%	4K7 Ω
R563	ERJ6GEYJ103	S.M.CARB	0.1W	5%	10K Ω
R564	ERJ6GEYJ273	S.M.CARB	0.1W	5%	27K Ω
R565	ERJ6GEYJ272	S.M.CARB	0.1W	5%	2K7 Ω
R566	ERJ6GEYJ303	S.M.CARB	0.1W	5%	30K Ω
R567	ERJ6GEYJ273	S.M.CARB	0.1W	5%	27K Ω
R568	ERJ6GEYJ822	S.M.CARB	0.1W	5%	8K2 Ω
R569	ERJ6GEYJ153	S.M.CARB	0.1W	5%	15K Ω
R580	ERJ6ENF2202	SMD	.125W	1%	22K Ω
R592	ERJ6GEYJ103	S.M.CARB	0.1W	5%	10K Ω
R593	ERJ6GEYJ103	S.M.CARB	0.1W	5%	10K Ω
R594	ERJ6GEYJ332	S.M.CARB	0.1W	5%	3K3 Ω
R602	ERJ6GEYJ103	S.M.CARB	0.1W	5%	10K Ω
R604	ERJ6GEY0R00	S.M.CARB	0.1W	-	0 Ω
R606	ERJ6GEYJ752	S.M.CARB	0.1W	5%	7K5 Ω
R607	ERJ6GEYJ752	S.M.CARB	0.1W	5%	7K5 Ω
R608	ERJ6GEYJ472	S.M.CARB	0.1W	5%	4K7 Ω
R609	ERJ6GEYJ102	S.M.CARB	0.1W	5%	1K Ω
R610	ERJ6GEYJ101	S.M.CARB	0.1W	5%	100 Ω
R611	ERJ6GEYJ4R7V	S.M.CARB	.125W	5%	4.7 Ω
R614	ERJ6ENF2200	S.M. CAR	0.1W	5%	22 Ω
R615	ERJ6GEYJ122	S.M.CARB	0.1W	5%	1K2 Ω
R616	ERJ6GEYJ563	S.M.CARB	0.1W	5%	56K Ω
R619	ERJ6GEYJ332	S.M.CARB	0.1W	5%	3K3 Ω
R621	ERJ6GEYJ220	S.M.CARB	0.1W	5%	22 Ω
R622	ERJ6GEYJ220	S.M.CARB	0.1W	5%	22 Ω
R624	ERJ6GEYJ102	S.M.CARB	0.1W	5%	1K Ω
R625	ERJ6GEYJ102	S.M.CARB	0.1W	5%	1K Ω
R626	ERJ6GEYJ103	S.M.CARB	0.1W	5%	10K Ω
R627	ERJ6GEYJ101	S.M.CARB	0.1W	5%	100 Ω
R628	ERJ6GEYJ823	S.M.CARB	0.1W	5%	82K Ω
R631	ERJ6GEYJ123	S.M.CARB	0.1W	5%	12K Ω
R632	ERJ6GEYJ562	S.M.CARB	0.1W	5%	5K6 Ω
R634	ERJ6GEYJ102	S.M.CARB	0.1W	5%	1K Ω
R635	ERJ6GEYJ821	S.M.CARB	0.1W	5%	820 Ω
R636	ERJ6GEYJ821	S.M.CARB	0.1W	5%	820 Ω
R637	ERJ6GEYJ102	S.M.CARB	0.1W	5%	1K Ω
R638	ERJ6GEYJ184	S.M.CARB	0.1W	5%	180K Ω
R639	ERJ6GEYJ681	S.M.CARB	0.1W	5%	680 Ω
R640	ERJ6GEYJ681	S.M.CARB	0.1W	5%	680 Ω
R644	ERJ6GEYJ823	S.M.CARB	0.1W	5%	82K Ω
R645	ERJ6GEYJ100	S.M.CARB	0.1W	5%	10 Ω
R646	ERJ6GEYJ184	S.M.CARB	0.1W	5%	180K Ω
R647	ERJ6GEYJ750	S.M.CARB	0.1W	5%	75 Ω
R653	ERJ6GEYJ823	S.M.CARB	0.1W	5%	82K Ω
R665	ERJ6GEYJ471	S.M.CARB	0.1W	5%	470 Ω
R666	ERJ6GEYJ471	S.M.CARB	0.1W	5%	470 Ω
R667	ERJ6GEYJ471	S.M.CARB	0.1W	5%	470 Ω
R668	ERJ6GEYJ471	S.M.CARB	0.1W	5%	470 Ω
R702	ERJ6GEYJ680	S.M.CARB	0.1W	5%	68 Ω
R703	ERJ6GEYJ103	S.M.CARB	0.1W	5%	10K Ω
R704	ERJ6GEYJ471	S.M.CARB	0.1W	5%	470 Ω
R705	ERJ6GEYJ103	S.M.CARB	0.1W	5%	10K Ω
R706	ERG1SJ100	METAL	1W	5%	10 Ω

Cct Ref	Parts Number	Description			
R713	ERQ12AJ120E	METAL	0.5W	5%	12 Ω
R801	ERF7ZK2R2	WOUND	7W	10%	2R2 Ω
R806	ERC12ZGK105C	SOLID	0.5W	10%	1M Ω Δ
R811	ERG2SJS104H	METAL	2W	5%	100K Ω
R817	ERG1SJ100	METAL	1W	5%	10 Ω
R820	ERX12SJR47	METAL	0.5W	5%	R47 Ω
R821	ERX12SJR56E	METAL	0.5W	5%	0.56 Ω
R822	ERDS1TJ124	CARBON	0.5W	5%	120K Ω
R823	ERDS1TJ124	CARBON	0.5W	5%	120K Ω
R824	ERD25TJ272F	CARBON	0.25W	5%	2K7 Ω
R825	ERD25TJ102	CARBON	0.25W	5%	1K Ω
R830	ERDS2TJ221T	CARBON	0.5W	5%	220 Ω
R832	ERDS1TJ224T	CARBON	0.5W	5%	220K Ω
R840	ERD75TAJ825	CARBON	1W	5%	8M2 Ω Δ
R841	ERX1SJ1R0V	METAL	1W	5%	1 Ω
R844	ERDS1TJ100	CARBON	0.5W	5%	10 Ω
R846	ERDS1TJ751	CARBON	0.5W	5%	750 Ω
R847	ERDS1TJ122	CARBON	0.5W	5%	1K2 Ω
R848	ERJ6GEYJ103	S.M.CARB	0.1W	5%	10K Ω
R849	ERJ6GEYJ472	S.M.CARB	0.1W	5%	4K7 Ω
R851	ERJ6ENF4701	SMD	.125W	1%	4K7 Ω
R852	ERJ6ENF1581V	SMD	.125W	1%	1.58K Ω
R853	ERJ6GEYJ820	S.M.CARB	0.1W	5%	82 Ω
R861	ERJ6GEYJ153	S.M.CARB	0.1W	5%	15K Ω
R862	ERJ6ENF6341V	SMD	.125W	1%	6K34 Ω
R863	ERJ6ENF2701	S.M.CARB	0.1W	5%	27 Ω
R864	ERJ6GEYJ103	S.M.CARB	0.1W	5%	10K Ω
R865	ERJ6GEYJ272	S.M.CARB	0.1W	5%	2K7 Ω
R870	ERDS1TJ101	CARBON	0.5W	5%	100 Ω
R880	ERJ6GEYJ750	S.M.CARB	0.1W	5%	75 Ω
R881	ERJ6GEYJ472	S.M.CARB	0.1W	5%	4K7 Ω
R882	ERJ6GEYJ472	S.M.CARB	0.1W	5%	4K7 Ω
R883	ERJ6GEYJ472	S.M.CARB	0.1W	5%	4K7 Ω
R884	ERJ6GEYJ103	S.M.CARB	0.1W	5%	10K Ω
R890	ERG2SJS273	METAL	2W	5%	27K Ω
R892	ERJ6GEYJ472	S.M.CARB	0.1W	5%	4K7 Ω
R893	ERJ6GEYJ683	S.M.CARB	0.1W	5%	68K Ω
R894	ERJ6GEYJ683	S.M.CARB	0.1W	5%	68K Ω
R895	ERJ6GEYJ472	S.M.CARB	0.1W	5%	4K7 Ω
R896	ERJ6GEYJ472	S.M.CARB	0.1W	5%	4K7 Ω
R897	ERJ6GEYJ560	S.M.CARB	0.1W	5%	56 Ω
R898	ERJ6GEYJ203	S.M.CARB	0.1W	5%	20K Ω
R899	ERJ6GEYJ203	S.M.CARB	0.1W	5%	20K Ω
R1026	ERJ6GEYJ222	S.M.CARB	0.1W	5%	2K2 Ω
R1027	ERJ6GEYJ332	S.M.CARB	0.1W	5%	3K3 Ω
R1028	ERJ6GEYJ682	S.M.CARB	0.1W	5%	6K8 Ω
R1029	ERJ6GEYJ153	S.M.CARB	0.1W	5%	15K Ω
R1031	ERJ6GEYJ152	S.M.CARB	0.1W	5%	1K5 Ω
R1061	ERJ6GEYJ471	S.M.CARB	0.1W	5%	470 Ω
R1062	ERD25TJ102	CARBON	0.25W	5%	1K Ω
R1064	ERJ6GEYJ102	S.M.CARB	0.1W	5%	1K Ω
R1109	ERJ6GEYJ103	S.M.CARB	0.1W	5%	10K Ω
R1115	ERJ6GEYJ101	S.M.CARB	0.1W	5%	100 Ω
R1126	ERJ6GEYJ101	S.M.CARB	0.1W	5%	100 Ω
R1128	ERJ6GEYJ272	S.M.CARB	0.1W	5%	2K7 Ω
R1129	ERJ6GEYJ272	S.M.CARB	0.1W	5%	2K7 Ω
R1131	ERJ6GEYJ123	S.M.CARB	0.1W	5%	12K Ω
R1140	ERJ6GEYJ822	S.M.CARB	0.1W	5%	8K2 Ω
R1142	ERJ6GEYJ100	S.M.CARB	0.1W	5%	10 Ω
R1177	ERJ6GEYJ101	S.M.CARB	0.1W	5%	100 Ω
R1181	ERJ6GEYJ101	S.M.CARB	0.1W	5%	100 Ω
R1201	ERJ6GEYJ472	S.M.CARB	0.1W	5%	4K7 Ω
R1202	ERJ6GEYJ472	S.M.CARB	0.1W	5%	4K7 Ω
R1228	ERJ6GEYJ220	S.M.CARB	0.1W	5%	22 Ω
R1229	ERJ6GEYJ220	S.M.CARB	0.1W	5%	22 Ω
R2110	ERJ6GEY0R00	S.M.CARB	0.1W	-	0 Ω

Cct Ref	Parts Number	Description			
R2111	ERJ6GEYJ221	S.M.CARB	0.1W	5%	220 Ω
R2112	ERJ6GEYJ102	S.M.CARB	0.1W	5%	1K Ω
R2114	ERJ6GEYJ103	S.M.CARB	0.1W	5%	10K Ω
R2115	ERJ6GEYJ222	S.M.CARB	0.1W	5%	2K2 Ω
R2116	ERD25TJ102	CARBON	0.25W	5%	1K Ω
R2325	ERJ6GEYJ2R2V	SMD	.125W	5%	2R2 Ω
R2326	ERJ6GEYJ2R2V	SMD	.125W	5%	2R2 Ω
R2328	ERJ6GEYJ2R2V	SMD	.125W	5%	2R2 Ω
R2329	ERJ6GEYJ2R2V	SMD	.125W	5%	2R2 Ω
R2401	ERJ6GEYJ822	S.M.CARB	0.1W	5%	8K2 Ω
R2402	ERJ6GEYJ223	S.M.CARB	0.1W	5%	22K Ω
R2407	ERJ6GEYJ472	S.M.CARB	0.1W	5%	4K7 Ω
R2408	ERJ6GEYJ822	S.M.CARB	0.1W	5%	8K2 Ω
R2503	ERJ6GEYJ750	S.M.CARB	0.1W	5%	75 Ω
R2505	ERJ6GEYJ750	S.M.CARB	0.1W	5%	75 Ω
R2506	ERJ6GEYJ750	S.M.CARB	0.1W	5%	75 Ω
R3002	ERJ6GEYJ750	S.M.CARB	0.1W	5%	75 Ω
R3003	ERJ6GEYJ101	S.M.CARB	0.1W	5%	100 Ω
R3004	ERJ6GEYJ683	S.M.CARB	0.1W	5%	68K Ω
R3006	ERJ6GEYJ750	S.M.CARB	0.1W	5%	75 Ω
R3007	ERJ6GEYJ101	S.M.CARB	0.1W	5%	100 Ω
R3008	ERJ6GEYJ683	S.M.CARB	0.1W	5%	68K Ω
R3009	ERJ6GEYJ750	S.M.CARB	0.1W	5%	75 Ω
R3010	ERJ6GEYJ750	S.M.CARB	0.1W	5%	75 Ω
R3015	ERJ6GEYJ101	S.M.CARB	0.1W	5%	100 Ω
R3016	ERJ6GEYJ683	S.M.CARB	0.1W	5%	68K Ω
R3019	ERJ6GEYJ101	S.M.CARB	0.1W	5%	100 Ω
R3020	ERJ6GEYJ683	S.M.CARB	0.1W	5%	68K Ω
R3021	ERJ6GEYJ750	S.M.CARB	0.1W	5%	75 Ω
R3044	ERJ6GEYJ750	S.M.CARB	0.1W	5%	75 Ω
R3132	ERJ6GEYJ101	S.M.CARB	0.1W	5%	100 Ω
R3133	ERJ6GEYJ101	S.M.CARB	0.1W	5%	100 Ω
R3134	ERDS1TJ151	CARBON	0.5W	5%	150 Ω
R3135	ERDS1TJ151	CARBON	0.5W	5%	150 Ω
R3143	ERJ6GEYJ153	S.M.CARB	0.1W	5%	15K Ω
R3145	ERJ6GEYJ153	S.M.CARB	0.1W	5%	15K Ω
R3247	ERJ6GEYJ101	S.M.CARB	0.1W	5%	100 Ω
R3250	ERJ6GEYJ101	S.M.CARB	0.1W	5%	100 Ω
CAPACITORS					
C001	ECUV1H104KBX	S.M. CAP	50V		100nF
C005	ECUV1H104KBX	S.M. CAP	50V		100nF
C006	ECA1HM101GB	ELECT	50V		100μF
C008	ECA1HM010GB	ELECT	50V		1μF
C252	ECUV1H472KBX	S.M. CAP	50V		4.7nF
C253	ECJ2VF1C474Z	S.M.CAP	16V		470nF
C256	ECUV1H472KBX	S.M. CAP	50V		4.7nF
C257	ECJ2VF1C474Z	S.M.CAP	16V		470nF
C301	ECUV1H683ZFX	S.M. CAP	50V		68nF
C304	ECUV1H104KBX	S.M. CAP	50V		100nF
C305	F2A1C3310039	ELECT	16V		330μF
C306	ECJ2VC1H102J	S.M.CAP	50V		1nF
C307	ECJ2VC1H102J	S.M.CAP	50V		1nF
C308	ECJ2VC1H102J	S.M.CAP	50V		1nF
C350	ECJ2VF1H224Z	S.M.CAP	50V		220nF
C352	ECA1CM471GB	ELECT	16V		470μF
C353	ECJ2VC1H102J	S.M.CAP	50V		1nF
C355	ECUV1H222KBX	S.M. CAP	50V		2.2nF
C356	ECUV1H222KBX	S.M. CAP	50V		2.2nF
C357	ECUV1H222KBX	S.M. CAP	50V		2.2nF
C361	ECA2EM100B	ELECT	250V		10μF
C362	ECWF2224JBB	FILM	250V		220nF
C363	ECJ2VF1H224Z	S.M.CAP	50V		220nF
C370	ECKC3D102J	CERAMIC	2KV		1nF
C401	ECUV1H560GCG	S.M. CAP	50V		56pF
C403	ECJ2VC1H030C	S.M.CAP	50V		3pF
C404	ECQB1H222J	FILM	50V		2.2nF

Cct Ref	Parts Number	Description		
C406	ECA1VM221B	ELECT	35V	220µF
C407	ECUV1H560GCG	S.M. CAP	50V	56pF
C408	ECQV1H274JL3	FILM	50V	270nF
C454	ECJ2VB1C124K	CERAMIC	16V	120nF
C501	ECA1HM220GB	ELECT	50V	22µF
C505	ECQV1H104J	FILM	50V	100nF
C507	ECJ2VF1H224Z	S.M.CAP	50V	220nF
C511	ECA1HHG010B	ELECT	50V	1µF
C514	ECA1CM102B	ELECT	16V	1000µF
C516	ECA1CM102B	ELECT	16V	1000µF
C518	ECA1HM330B	ELECT	50V	33µF
C551	ECWH20102JVY	FILM	2kV	1nF
C552	F2A2E100A025	ELECT	250V	10µF
C555	ECWF4303JBB	FILM	400V	30nF
C556	ECWF2334JSB	FILM	250V	330nF
C558	ECA1HHG220B	ELECT	50V	22µF
C562	ECWH20102JVY	FILM	2kV	1nF
C565	ECQB1H273J	FILM	50V	27nF
C581	ECA1HM4R7GB	ELECT	50V	4.7µF
C601	ECJ2FB1C474K	S.M.CAP	16V	470nF
C602	ECJ2VB1H223K	S.M.CAP	50V	22nF
C603	ECUV1H104KBX	S.M. CAP	50V	100nF
C604	F2A1C101A180	ELECT	16V	100µF
C605	ECUV1H104KBX	S.M. CAP	50V	100nF
C606	ECUV1H104KBX	S.M. CAP	50V	100nF
C610	ECUV1H104KBX	S.M. CAP	50V	100nF
C611	ECUV1H104KBX	S.M. CAP	50V	100nF
C612	ECUV1H104KBX	S.M. CAP	50V	100nF
C613	ECJ2VC1H102J	S.M.CAP	50V	1nF
C614	ECUV1H220JCX	S.M. CAP	50V	22pF
C615	ECUV1H220JCX	S.M. CAP	50V	22pF
C616	ECJ2YF1C225Z	CERAMIC	16V	2.2µF
C618	F2A1C101A180	ELECT	16V	100µF
C619	F2A1C101A180	ELECT	16V	100µF
C620	ECUV1H332ZFX	S.M. CAP	50V	3.3nF
C621	ECJ2YF1C225Z	CERAMIC	16V	2.2µF
C622	F2A1C101A180	ELECT	16V	100µF
C623	F2A1C101A180	ELECT	16V	100µF
C624	ECJ2VF1H102Z	S.M.CAP	50V	1nF
C626	F2A1C101A180	ELECT	16V	100µF
C627	F2A1C101A180	ELECT	16V	100µF
C628	F2A1C100A180	ELECT	16V	10µF
C630	ECJ2VF1H103Z	S.M.CAP	50V	10nF
C631	ECUV1H332ZFX	S.M. CAP	50V	3.3nF
C632	F2A1H4R7A182	ELECT	50V	4.7µF
C633	ECJ2FB1C474K	S.M.CAP	16V	470nF
C634	ECJ2FB1C474K	S.M.CAP	16V	470nF
C635	ECUV1H104KBX	S.M. CAP	50V	100nF
C636	ECUV1H104KBX	S.M. CAP	50V	100nF
C637	ECUV1H104KBX	S.M. CAP	50V	100nF
C639	ECUV1H104KBX	S.M. CAP	50V	100nF
C640	ECUV1H104KBX	S.M. CAP	50V	100nF
C643	ECJ2VC1H390J	S.M.CAP	50V	39pF
C644	ECUV1H104KBX	S.M. CAP	50V	100nF
C645	ECUV1H104KBX	S.M. CAP	50V	100nF
C646	ECJ2VC1H102J	S.M.CAP	50V	1nF
C647	ECUV1H104KBX	S.M. CAP	50V	100nF
C648	ECUV1H104KBX	S.M. CAP	50V	100nF
C649	ECUV1H104KBX	S.M. CAP	50V	100nF
C650	ECUV1H104KBX	S.M. CAP	50V	100nF
C651	ECA1CM221GB	ELECT	16V	220µF
C653	ECUV1H104KBX	S.M. CAP	50V	100nF
C654	F2A1C101A180	ELECT	16V	100µF
C655	ECA1CM221GB	ELECT	16V	220µF
C661	ECJ2VC1H102J	S.M.CAP	50V	1nF
C662	ECJ2VC1H102J	S.M.CAP	50V	1nF

Cct Ref	Parts Number	Description		
C663	F2A1H3R3A182	ELECT	50V	3.3µF
C664	ECUV1H104KBX	S.M. CAP	50V	100nF
C665	F2A1C470A180	ELECT	16V	47µF
C666	F2A1C470A180	ELECT	16V	47µF
C667	F2A1C470A180	ELECT	16V	47µF
C668	F2A1C470A180	ELECT	16V	47µF
C704	F1B2H392A015	CERAMIC	500V	3.9nF
C806	ECKWBE472ZER	CERAMIC	250V	4.7nF
C807	ECKWBE472ZER	CERAMIC	250V	4.7nF
C808	ECKWBE472ZER	CERAMIC	250V	4.7nF
C809	ECKWBE472ZER	CERAMIC	250V	4.7nF
C810	ECEC2GA151CJ	ELECT	400V	150µF
C811	ECQM4473JZW	FILM	400V	47nF
C816	ECA1VM100B	ELECT	35V	10µF
C819	F2A1H1R00053	ELECT	50V	1µF
C825	ECQB1H471KF3	FILM	50V	470pF
C826	ECQB1H103J	FILM	50V	10nF
C830	ECQB1H182K	FILM	50V	1.8nF
C833	ECQU2A224BN9	FILM	250V	220nF
C834	ECQE2A473JFB	FILM	250V	47nF
C838	ECQU2A224BN9	FILM	250V	220nF
C839	ECQU2A224BN9	FILM	250V	220nF
C840	ECKWNA222ME	CERAMIC	250V	2.2nF
C842	ECA1HHG222E	ELECT	50V	2200µF
C843	F1B2H471A015	CERAMIC	500V	470pF
C844	EEUFC1C472E	ELECT	16V	4700µF
C845	ECKC3D471JB	CERAMIC	2KV	470pF
C846	EEUEB2D101B	ELECT	250V	100pF
C847	ECA2DM2R2B	ELEKT	200V	2.2µF
C849	ECA2CM221E	ELECT	160V	220µF
C850	ECA1CM102B	ELECT	16V	1000µF
C851	ECUV1H103JCN	S.M.CAP	50V	10nF
C852	EEUFC1A471B	ELECT	10V	470µF
C853	ECUV1H103JCN	S.M.CAP	50V	10nF
C854	ECUV1H682KBX	S.M. CAP	50V	6.8nF
C855	ECJ2FB1H104	S.M.CAP	50V	100nF
C860	EEUFC1E471B	ELECT	25V	470µF
C861	ECUV1H103JCN	S.M.CAP	50V	10nF
C862	EEUFC1A471B	ELECT	10V	470µF
C863	ECUV1H103JCN	S.M.CAP	50V	10nF
C864	ECJ2VB1H102K	S.M.CAP	50V	1nF
C865	ECJ2FB1H104	S.M.CAP	50V	100nF
C870	ECA1HM101GB	ELECT	50V	100µF
C871	ECUV1H103JCN	S.M.CAP	50V	10nF
C872	ECUV1H103JCN	S.M.CAP	50V	10nF
C873	ECA1AM101B	ELECT	10V	100µF
C874	ECUV1H103JCN	S.M.CAP	50V	10nF
C880	EEUFC1C471B	ELECT	16V	470µF
C881	ECUV1H103JCN	S.M.CAP	50V	10nF
C882	ECA1AM101B	ELECT	10V	100µF
C890	ECA1HM330B	ELECT	50V	33µF
C892	ECUV1H101JCG	S.M.CAP	50V	100pF
C893	ECJ2VB1H102K	S.M.CAP	50V	1nF
C894	F1B2H471A015	CERAMIC	500V	470pF
C1064	ECUV1H103JCN	S.M.CAP	50V	10nF
C1065	F2A1C101A180	ELECT	16V	100µF
C1066	ECJ2VC1H331J	S.M.CAP	50V	330pF
C1118	ECJ2FB1H104	S.M.CAP	50V	100nF
C1122	F2A1C101A180	ELECT	16V	100µF
C1142	ECUV1H104KBX	S.M. CAP	50V	100nF
C2129	F2A1C1020049	ELECT	16V	1000µF
C2303	ECEA1CKA100	ELECT	16V	10µF
C2308	ECJ2VF1H224Z	S.M.CAP	50V	220nF
C2309	ECJ2VF1H224Z	S.M.CAP	50V	220nF
C2314	ECA1EM470GB	ELECT	25V	47µF
C2315	ECA1EM222GB	ELECT	25V	2200µF

Cct Ref	Parts Number	Description		
C2317	ECJ2VF1H224Z	S.M.CAP	50V	220nF
C2319	ECJ2VF1H224Z	S.M.CAP	50V	220nF
C2320	ECJ2VC1H102J	S.M.CAP	50V	1nF
C2321	ECJ2VC1H102J	S.M.CAP	50V	1nF
C2322	ECJ2VC1H102J	S.M.CAP	50V	1nF
C2323	ECJ2VC1H102J	S.M.CAP	50V	1nF
C2329	ECJ2VC1H102J	S.M.CAP	50V	1nF
C2350	ECJ2VF1H224Z	S.M.CAP	50V	220nF
C2351	ECJ2VF1H224Z	S.M.CAP	50V	220nF
C2352	ECJ2VF1H224Z	S.M.CAP	50V	220nF
C2353	ECJ2VF1H224Z	S.M.CAP	50V	220nF
C2407	ECJ2VF1C105Z	S.M.CAP	16V	1µF
C2411	ECJ2VF1C105Z	S.M.CAP	16V	1µF
C2412	ECJ2VF1C105Z	S.M.CAP	16V	1µF
C2414	F2A1C100A180	ELECT	16V	10µF
C2416	ECJ2VF1C105Z	S.M.CAP	16V	1µF
C2417	ECUV1H104KBX	S.M. CAP	50V	100nF
C2418	ECQB1H153K	FILM	50V	15nF
C3005	ECJ2VC1H331J	S.M.CAP	50V	330pF
C3006	ECUV1H561KBX	S.M. CAP	50V	560pF
C3007	ECUV1H561KBX	S.M. CAP	50V	560pF
C3008	ECJ2VC1H331J	S.M.CAP	50V	330pF
C3010	ECJ2VC1H331J	S.M.CAP	50V	330pF
C3012	ECJ2VC1H331J	S.M.CAP	50V	330pF
C3019	ECJ2VC1H331J	S.M.CAP	50V	330pF
C3026	ECJ2VC1H331J	S.M.CAP	50V	330pF
C3028	ECUV1H101JCG	S.M.CAP	50V	100pF
C3029	ECUV1H101JCG	S.M.CAP	50V	100pF
C3030	ECUV1H561KBX	S.M. CAP	50V	560pF
C3031	ECJ2VC1H331J	S.M.CAP	50V	330pF
C3032	ECUV1H561KBX	S.M. CAP	50V	560pF
C3033	ECJ2VC1H331J	S.M.CAP	50V	330pF
C3136	ECUV1H103JCN	S.M.CAP	50V	10nF
C3137	ECUV1H103JCN	S.M.CAP	50V	10nF
C3138	F2A1C101A180	ELECT	16V	100µF
C3139	F2A1C101A180	ELECT	16V	100µF
C3143	ECUV1H561KBX	S.M. CAP	50V	560pF
C3144	ECUV1H561KBX	S.M. CAP	50V	560pF
C3145	ECUV1H561KBX	S.M. CAP	50V	560pF
C3146	ECUV1H561KBX	S.M. CAP	50V	560pF
TERMINALS AND LINKS				
JK3001	0350808500	21PIN TERMINAL		
JK3201	TJB16673	A.V. TERMINAL		
SC351	0330550049	CRT SOCKET		△
SWITCHES				
SW840	ESB92S11B	SWITCH		△
SW1011	EVQ11G05R	SWITCH		
SW1012	EVQ11G05R	SWITCH		
SW1013	EVQ11G05R	SWITCH		
SW1014	EVQ11G05R	SWITCH		
SW1015	EVQ11G05R	SWITCH		
RELAYS				
RL801	8-1419125-3	RELAY		△
DIFFERENCES FOR MODEL TX--28PN1D				
EXPLODED VIEW				
13	TXASX01ABLE	AC CORD ASSY		△
14	TKU0E0140	BACK COVER		△
15	W66MAF185X03	C.R.T.		△
16	TKY0E0151	CABINET		
17	D-28PN1D	D P.C.B.		△
18	TLK0E9023	DEGAUSS COIL		△
19	TBM0E0422	MODEL LABEL		

Cct Ref	Parts Number	Description		
MISCELLANEOUS COMPONENTS				
.	TPC0E46001	CARTON		
.	TPD0E0066	BOTTOM CUSHION		
.	TPD0E0067	TOP CUSHION		
INSTRUCTION BOOKS				
.	TQB0E0149A-M	GERMAN		
.	TQB0E0149C-M	ITALIAN		
.	TQB0E0149D-M	FRENCH		
I.C.s				
IC1103	GP4L/2A06D	EAROM 24C32ANSU27T		
DIODES				
D511	MA4200LTA	DIODE		
COILS				
L557	ELH5L6164	COIL		
L704	ELC10D123E	COIL		
RESISTORS				
R404	ERJ6GEYJ183	S.M.CARB	0.1W 5%	18K Ω
R407	ERG1SJ331	METAL	1W 5%	330 Ω
R413	ERJ6GEYJ183	S.M.CARB	0.1W 5%	18K Ω
R506	ERG1SJ101	METAL	1W 5%	100 Ω
R508	ERG1SJ470P	METAL	1W 5%	47 Ω
R556	ERQ12AJ151P	FUSIBLE	0.5W 5%	150 Ω
R810	ERG2FJ120	METAL	2W 5%	12 Ω
CAPACITORS				
C553	ECWF2155JSB	FILM	250V	1.5µF △
C554	ECWF2334JSB	FILM	250V	330nF
C559	ECWH16622JVB	FILM	1.6KV	6.2nF
C560	ECQF4273JZH	FILM	400V	27nF
C569	ECWH16472JVB	FILM	1600V	4.7nF △
C821	ECKC3D681J	CERAMIC	2KV	680pF
DIFFERENCES FOR MODEL TX--28PN1F				
EXPLODED VIEW				
13	TXASX01ABLE	AC CORD ASSY		△
14	TKU0E0140	BACK COVER		△
15	W66MAF185X03	C.R.T.		△
16	TKY0E0151	CABINET		
17	D-28PN1F	D P.C.B.		△
18	TLK0E9023	DEGAUSS COIL		△
19	TBM0E0421	MODEL LABEL		
MISCELLANEOUS COMPONENTS				
.	TPC0E46001	CARTON		
.	TPD0E0066	BOTTOM CUSHION		
.	TPD0E0067	TOP CUSHION		
INSTRUCTION BOOKS				
.	TQB0E0148A-M	GERMAN		
.	TQB0E0148B-M	DUTCH		
.	TQB0E0148D-M	FRENCH		
.	TQB0E0148E-M	SPANISH		
.	TQB0E0148F-M	SWEDISH		
.	TQB0E0148G-M	NORWAY		
.	TQB0E0148H-M	FINNISH		
.	TQB0E0148J-M	PORTUGUESE		
.	TQB0E0148K-M	DANISH		
I.C.s				
IC1103	GP4L/2A06F	EAROM 24C32ANSU27T		
DIODES				
D511	MA4200LTA	DIODE		
COILS				
L557	ELH5L6164	COIL		

Cct Ref	Parts Number	Description				
L704	ELC10D123E	COIL				
RESISTORS						
R404	ERJ6GEYJ183	S.M.CARB	0.1W	5%	18K Ω	
R407	ERG1SJ331	METAL	1W	5%	330 Ω	
R413	ERJ6GEYJ183	S.M.CARB	0.1W	5%	18K Ω	
R506	ERG1SJ101	METAL	1W	5%	100 Ω	
R508	ERG1SJ470P	METAL	1W	5%	47 Ω	
R556	ERQ12AJ151P	FUSIBLE	0.5W	5%	150 Ω	
R810	ERG2FJ120	METAL	2W	5%	12 Ω	
CAPACITORS						
C553	ECWF2155JSB	FILM	250V	1.5μF	△	
C554	ECWF2334JSB	FILM	250V	330nF		
C559	ECWH16622JVB	FILM	1.6KV	6.2nF		
C560	ECQF4273JZH	FILM	400V	27nF		
C569	ECWH16472JVB	FILM	1600V	4.7nF	△	
C821	ECKC3D681J	CERAMIC	2KV	680pF		
DIFFERENCES FOR MODEL TX--28PN1P						
EXPLODED VIEW						
13	TXASX01ABLE	AC CORD ASSY				△
14	TKU0E0140	BACK COVER				△
15	W66MAF185X03	C.R.T.				△
16	TKY0E0151	CABINET				
17	D-28PN1P	D P.C.B.				△
18	TLK0E9023	DEGAUSS COIL				△
19	TBM0E0423	MODEL LABEL				
MISCELLANEOUS COMPONENTS						
.	TPC0E46001	CARTON				
.	TPD0E0066	BOTTOM CUSHION				
.	TPD0E0067	TOP CUSHION				
INSTRUCTION BOOKS						
.	TQB0E0150M-M	BULGARIAN				
.	TQB0E0150N-M	ROMANIAN				
.	TQB0E0150P-M	POLISH				
.	TQB0E0150Q-M	HUNGARIAN				
.	TQB0E0150R-M	CZECH				
.	TQB0E0150U-M	ENGLISH				
.	TQB0E0150W-M	SLOVAKIAN				
I.C.s						
IC1103	GP4L/2A06P	EAROM 24C32ANSU27T				
DIODES						
D511	MA4200LTA	DIODE				
COILS						
L557	ELH5L6164	COIL				
L704	ELC10D123E	COIL				
RESISTORS						
R404	ERJ6GEYJ183	S.M.CARB	0.1W	5%	18K Ω	
R407	ERG1SJ331	METAL	1W	5%	330 Ω	
R413	ERJ6GEYJ183	S.M.CARB	0.1W	5%	18K Ω	
R506	ERG1SJ101	METAL	1W	5%	100 Ω	
R508	ERG1SJ470P	METAL	1W	5%	47 Ω	
R556	ERQ12AJ151P	FUSIBLE	0.5W	5%	150 Ω	
R810	ERG2FJ120	METAL	2W	5%	12 Ω	
CAPACITORS						
C553	ECWF2155JSB	FILM	250V	1.5μF	△	
C554	ECWF2334JSB	FILM	250V	330nF		
C559	ECWH16622JVB	FILM	1.6KV	6.2nF		
C560	ECQF4273JZH	FILM	400V	27nF		
C569	ECWH16472JVB	FILM	1600V	4.7nF	△	
C821	ECKC3D681J	CERAMIC	2KV	680pF		


Cct Ref	Parts Number	Description				
DIFFERENCES FOR MODEL TX--29PN1D						
EXPLODED VIEW						
13	TXASX01AAXE	AC CORD ASSY				△
14	TKU0E0141	BACK COVER				△
15	A68EPD10X30	C.R.T.				△
16	TKY0E0152	CABINET				
17	D-29PN1D	D P.C.B.				△
18	TLK8E05210	DEGAUSS COIL				△
19	TBM0E0425	MODEL LABEL				
MISCELLANEOUS COMPONENTS						
.	TPC0E45301	CARTON				
.	TPD0E0068	BOTTOM CUSHION				
.	TPD0E0069	TOP CUSHION				
INSTRUCTION BOOKS						
.	TQB0E0152A-M	GERMAN				
.	TQB0E0152C-M	ITALIAN				
.	TQB0E0152D-M	FRENCH				
I.C.s						
IC1103	GP4L/3A06D	EAROM 24C32ANSU27T				
DIODES						
D511	MA4200MTA	DIODE				
COILS						
L557	ELH5L6118	COIL				
L704	ELC18B123L	COIL				
T804	ETQR36T002A	COIL				△
RESISTORS						
R404	ERJ6GEYJ273	S.M.CARB	0.1W	5%	27K Ω	
R407	ERG1SJ221P	METAL	1W	5%	220 Ω	
R413	ERJ6GEYJ273	S.M.CARB	0.1W	5%	27K Ω	
R506	ERG1SJ470P	METAL	1W	5%	47 Ω	
R508	ERG1SJ680	METAL	1W	5%	68 Ω	
R556	ERQ12AJ101	FUSIBLE	0.5W	5%	100 Ω	
R810	ERG2FJ470H	METAL	2W	5%	47 Ω	
CAPACITORS						
C553	ECWF2135JSB	FILM	250V	1.3μF	△	
C554	ECWF2564JBB	FILM	250V	560nF	△	
C559	ECWH16562JVB	FILM	1K6V	5.6nF		
C560	ECQM4223KC	FILM	400V	220nF		
C569	ECWH16822JVB	FILM	1600V	8.2nF	△	
C821	ECKC3D102J	CERAMIC	2KV	1nF		
DIFFERENCES FOR MODEL TX--29PN1F						
EXPLODED VIEW						
13	TXASX01AAXE	AC CORD ASSY				△
14	TKU0E0141	BACK COVER				△
15	A68EPD10X30	C.R.T.				△
16	TKY0E0152	CABINET				
17	D-29PN1F	D P.C.B.				△
18	TLK8E05210	DEGAUSS COIL				△
19	TBM0E0424	MODEL LABEL				
MISCELLANEOUS COMPONENTS						
.	TPC0E45301	CARTON				
.	TPD0E0068	BOTTOM CUSHION				
.	TPD0E0069	TOP CUSHION				
INSTRUCTION BOOKS						
.	TQB0E0151A-M	GERMAN				
.	TQB0E0151B-M	DUTCH				
.	TQB0E0151D-M	FRENCH				
.	TQB0E0151E-M	SPANISH				

Cct Ref	Parts Number	Description
.	TQB0E0151F-M	SWEDISH
.	TQB0E0151G-M	NORWEGIAN
.	TQB0E0151H-M	FINNISH
.	TQB0E0151K-M	DANISH
I.C.s		
IC1103	GP4L/3A06F	EAROM 24C32ANSU27T
DIODES		
D511	MA4200MTA	DIODE
COILS		
L557	ELH5L6118	COIL
L704	ELC18B123L	COIL
T804	ETQR36T002A	COIL ▲
RESISTORS		
R404	ERJ6GEYJ273	S.M.CARB 0.1W 5% 27K Ω
R407	ERG1SJ221P	METAL 1W 5% 220 Ω
R413	ERJ6GEYJ273	S.M.CARB 0.1W 5% 27K Ω
R506	ERG1SJ470P	METAL 1W 5% 47 Ω
R508	ERG1SJ680	METAL 1W 5% 68 Ω
R556	ERQ12AJ101	FUSIBLE 0.5W 5% 100 Ω
R810	ERG2FJ470H	METAL 2W 5% 47 Ω
CAPACITORS		
C553	ECWF2135JSB	FILM 250V 1.3 μ F ▲
C554	ECWF2564JBB	FILM 250V 560nF ▲
C559	ECWH16562JVB	FILM 1K6V 5.6nF
C560	ECQM4223KC	FILM 400V 220nF
C569	ECWH16822JVB	FILM 1600V 8.2nF ▲
C821	ECKC3D102J	CERAMIC 2KV 1nF
DIFFERENCES FOR MODEL TX--29PN1P		
EXPLODED VIEW		
13	TXASX01AAXE	AC CORD ASSY ▲
14	TKU0E0141	BACK COVER ▲
15	A68EPD10X30	C.R.T. ▲
16	TKY0E0152	CABINET
17	D-29PN1P	D P.C.B. ▲
18	TLK8E05210	DEGAUSS COIL ▲
19	TBM0E0426	MODEL LABEL
MISCELLANEOUS COMPONENTS		
.	TPC0E45301	CARTON
.	TPD0E0068	BOTTOM CUSHION
.	TPD0E0069	TOP CUSHION
INSTRUCTION BOOKS		
.	TQB0E0153M-M	BULGARIAN
.	TQB0E0153N-M	ROMANIAN
.	TQB0E0153P-M	POLISH
.	TQB0E0153Q-M	HUNGARIAN
.	TQB0E0153R-M	CZECH
.	TQB0E0153U-M	ENGLISH
.	TQB0E0153W1M	SLOVAKIAN
I.C.s		
IC1103	GP4L/3A06P	EAROM 24C32ANSU27T
DIODES		
D511	MA4200MTA	DIODE
COILS		
L557	ELH5L6118	COIL
L704	ELC18B123L	COIL
T804	ETQR36T002A	COIL ▲
RESISTORS		
R404	ERJ6GEYJ273	S.M.CARB 0.1W 5% 27K Ω
R407	ERG1SJ221P	METAL 1W 5% 220 Ω
R413	ERJ6GEYJ273	S.M.CARB 0.1W 5% 27K Ω

Cct Ref	Parts Number	Description
R506	ERG1SJ470P	METAL 1W 5% 47 Ω
R508	ERG1SJ680	METAL 1W 5% 68 Ω
R556	ERQ12AJ101	FUSIBLE 0.5W 5% 100 Ω
R810	ERG2FJ470H	METAL 2W 5% 47 Ω
CAPACITORS		
C553	ECWF2135JSB	FILM 250V 1.3 μ F ▲
C554	ECWF2564JBB	FILM 250V 560nF ▲
C559	ECWH16562JVB	FILM 1K6V 5.6nF
C560	ECQM4223KC	FILM 400V 220nF
C569	ECWH16822JVB	FILM 1600V 8.2nF ▲
C821	ECKC3D102J	CERAMIC 2KV 1nF

SCHEMATIC DIAGRAMS FOR MODELS TX-29PN1D, TX-29PN1F, TX-29PN1P TX-28PN1D, TX-28PN1F, TX-28PN1P (GP4L CHASSIS)

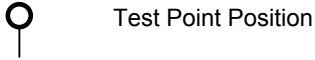
IMPORTANT SAFETY NOTICE

Components identified by  mark have special characteristics important for safety. When replacing any of these components, use only manufacturers' specified parts.

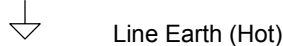
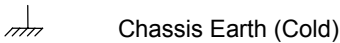
NOTE

1. RESISTOR
All resistors are carbon 1/4W resistor, unless marked otherwise.
Unit of resistance is OHM (Ω) (k=1,000, M=1,000,000)
2. CAPACITORS
All capacitors are ceramic 50V unless marked otherwise.
Unit of capacitance is μ F unless otherwise stated.
3. COIL
Unit of inductance is μ H, unless otherwise stated.

4. TEST POINT



5. EARTH SYMBOL



6. VOLTAGE MEASUREMENT

Voltage is measured by a d.c. voltmeter.

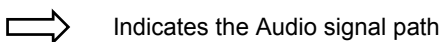
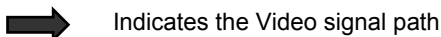
Measurement conditions are as follows:

Power source a.c. 220V-240V, 50Hz

Receiving Signal Colour Bar signal (RF)

All customer controls Maximum position

7.



These schematic diagrams are the latest at time of printing and are subject to change without notice.

REMARKS

- a. Do not touch the hot part, or the hot and cold parts at the same time, as you are liable to a shock hazard.
- b. Do not short circuit the hot and cold circuits as electrical components may be damaged.
- c. Do not connect an instrument, such as an oscilloscope, to the hot and cold circuits simultaneously as this may cause fuse failure. Connect the earth of the instruments to the earth connection of the circuit being measured.
- d. Make sure to disconnect the power plug before removing the chassis.

NOTE

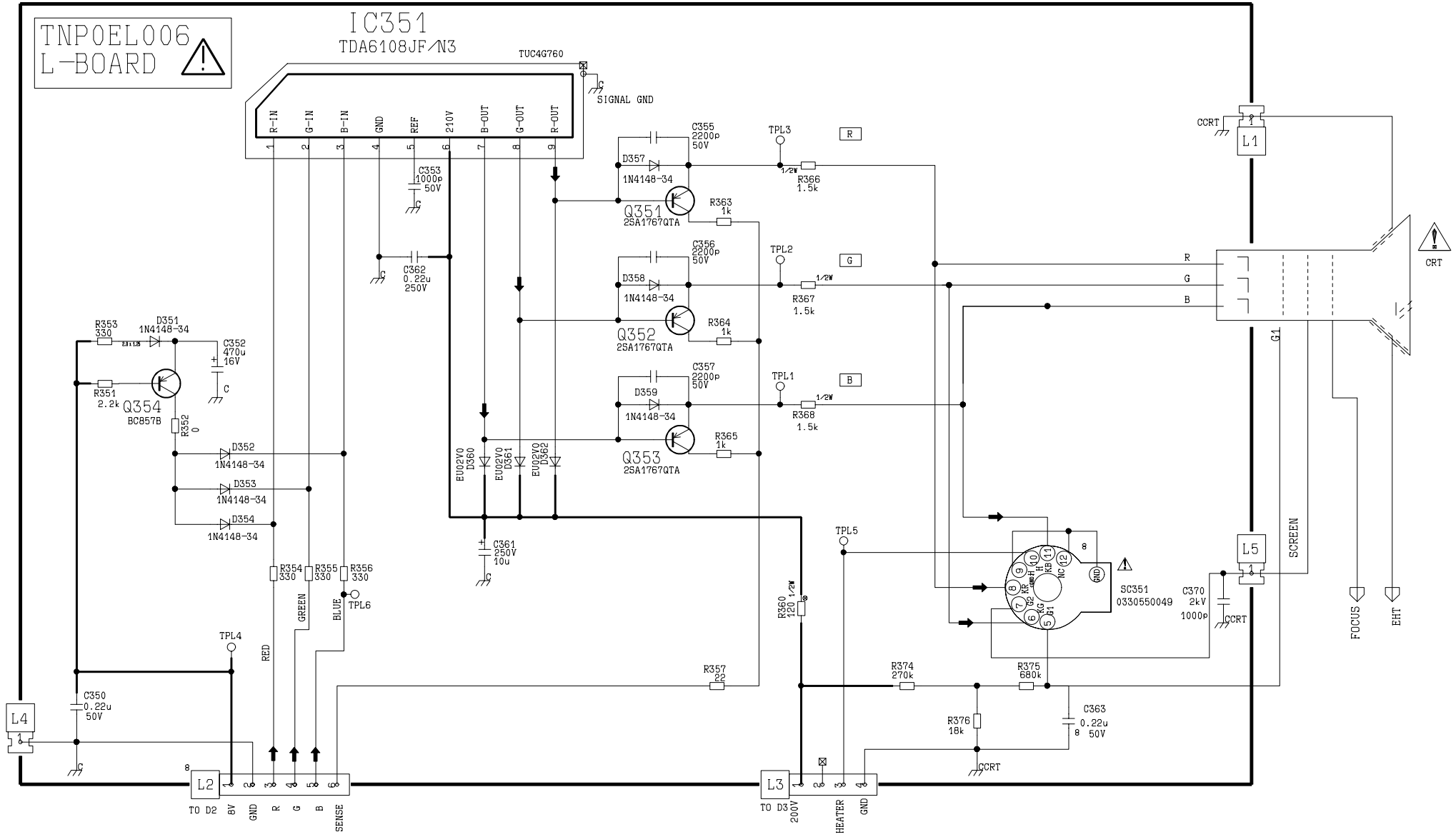
1. The Power Supply Circuit contains a circuit area, which uses a separate power supply to isolate the earth connection. The circuit is defined by HOT and COLD indications in the schematic diagram. All circuits, except the Power Circuit, are COLD.

TNPOEL006
L-BOARD



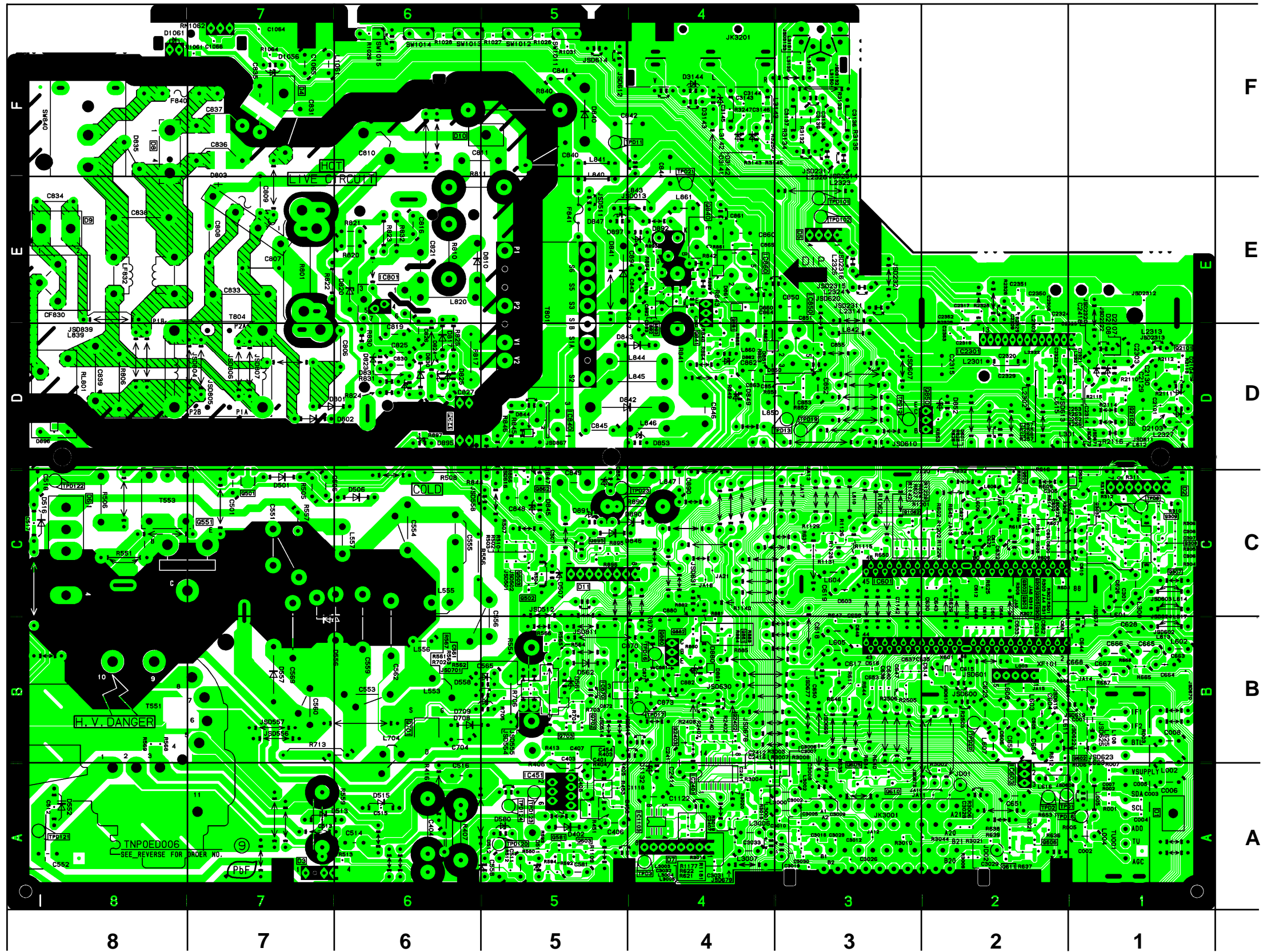
IC351
TDA6108JF-N3

TUC46760



**CONDUCTOR VIEWS FOR MODELS
TX-29PN1D, TX-29PN1F, TX-29PN1P, TX-28PN1D, TX-28PN1F, TX-28PN1P
D-BOARD TNP0ED006**

TRAN'S	D3144	F4	D862	D4	
Q1062	C3	D402	A5	D880	B4
Q2101	D1	D501	C7	D881	B4
Q2102	D1	D506	C6	D890	C4
Q2402	B4	D507	C5	D891	C5
Q2403	B4	D511	A5	D892	E4
Q301	C1	D512	A5	D895	D6
Q302	C1	D513	A7	D896	D8
Q303	C1	D515	A6	D897	E4
Q304	C1	D516	C8		
Q305	C1	D552	A8		
			IC'S		
Q306	C1	D556	B7	IC1103	A4
Q307	C1	D557	B7	IC2301	D2
Q308	C1	D558	B5	IC2401	A4
Q309	C1	D561	B5	IC451	A5
Q501	C7	D562	B5	IC601	C2
Q551	C7	D580	A5	IC603	A2
Q581	A5	D601	C2	IC801	E6
Q603	A5	D604	C1	IC840	D5
Q605	A3	D708	B6	IC850	D3
Q606	A2	D801	D7	IC860	E4
Q610	A3	D802	D7	IC870	B5
Q611	A2	D803	E7		
			TP'S		
Q701	B6	D810	E6		
Q702	B5	D817	D6	TPD1	A2
Q703	B5	D820	E6	TPD2	A2
Q841A	E4	D823	D6	TPD3	A4
Q850	D2	D824	D6	TPD8	C1
Q861	D4	D825	D6	TPD11	F5
Q880	B4	D840	F5	TPD12	D3
Q881	B4	D841	E5	TPD13	D3
Q882	B4	D842	D5	TPD16	B4
Q893	E4	D843	D4	TPD17	B4
Q895	C5	D844	D5	TPD18	A1
		D845	C5	TPD19	D3
DIODES	D846	C5	TPD20	B2	
D1056	F7	D847	E5	TPD21	E4
D1061	F8	D849	D4	TPD23	C5
D1132	A4	D850	D3	TPD101	E3
D2103	D1	D851	D4	TPD102	E3
D2107	D1	D852	D2	TPD120	A5
D2108	D1	D853	D4	TPD121	A8
D3141	F4	D854	C5	TPD122	C8
D3142	F4	D860	E4	TPD123	A5
D3143	F4	D861	E4	TPD124	A5



L-BOARD TNP0EL006

TRAN'S	D360	F3	
Q351	F1	D361	F2
Q352	F2	D362	F3
Q353	F1		
Q354	E3	IC'S	
		IC351	F2
DIODES			
D351	E3	TP'S	
D352	E3	TPL1	F1
D353	E3	TPL2	F2
D354	E2	TPL3	F1
D357	F2	TPL4	E3
D358	F2	TPL5	E1
D359	F1	TPL6	F3

