

TCL

SERVICE MANUAL



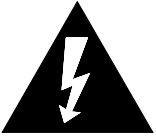
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This manual is the latest at the time of printing, and does not include the modification which may be made after the printing, by the constant improvement of product

1. CAUTION:

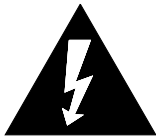
Use of controls, adjustments or procedures other than those specified herein may result in hazardous radiation exposure.



CAUTION
RISK OF ELECTRIC
SHOCK DO NOT OPEN.



CAUTION: TO REDUCE THE RISK OF ELECTRICAL SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.



The lightning flash with arrowhead symbol, with an equilateral triangle is intended to alert the user to the presence of uninsulated “dangerous voltage” within the product’s enclosure that may be of sufficient magnitude to constitute a risk of electric shock to the person.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

WARNING: TO REDUCE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

IMPORTANT SAFETY INSTRUCTIONS

CAUTION:

Read all of these instructions. Save these instructions for later use. Follow all Warnings and Instructions marked on the audio equipment.

1. Read Instructions- All the safety and operating instructions should be read before the product is operated.
2. Retain Instructions- The safety and operating instructions should be retained for future reference.
3. Heed Warnings- All warnings on the product and in the operating instructions should be adhered to.
4. Follow Instructions- All operating and use instructions should be followed.

FOR YOUR PERSONAL SAFETY

1. When the power cord or plug is damaged or frayed, unplug this television set from the wall outlet and refer servicing to qualified service personnel.
2. Do not overload wall outlets and extension cords as this can result in fire or electric shock.
3. Do not allow anything to rest on or roll over the power cord, and do not place the TV where power cord is subject to traffic or abuse. This may result in a shock or fire hazard.
4. Do not attempt to service this television set yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.
5. Never push objects of any kind into this television set through cabinet slots as they may touch dangerous voltage points or short out parts that could result in a fire or electric shock. Never spill liquid of any kind on the television set.
6. If the television set has been dropped or the cabinet has been damaged, unplug this television set from the wall outlet and refer servicing to qualified service personnel.
7. If liquid has been spilled into the television set, unplug this television set from the wall outlet and refer servicing to qualified service personnel.
8. Do not subject your television set to impact of any kind. Be particularly careful not to damage the picture tube surface.
9. Unplug this television set from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.
- 10.1. Do not place this television set on an unstable cart, stand, or table. The television set may fall, causing serious injury to a child or an adult, and serious damage to the appliance. Use only with a cart or stand recommended by the manufacturer, or sold with the television set. Wall or shelf mounting should follow the manufacturer's instructions, and should use a mounting kit approved by the manufacturer.
- 10.2. An appliance and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the appliance and cart combination to overturn.



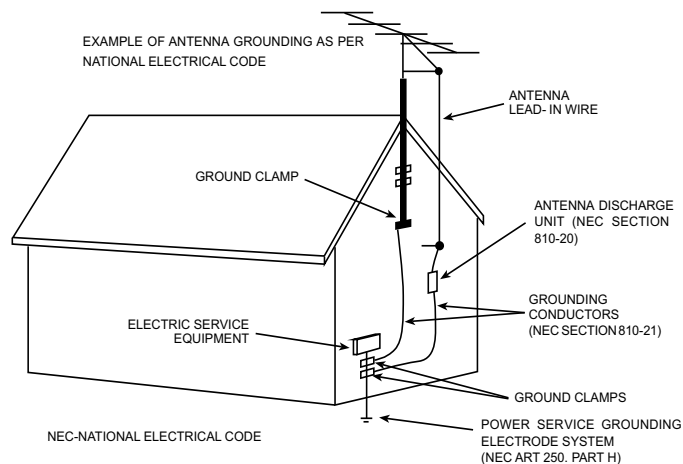
PROTECTION AND LOCATION OF YOUR SET

11. • Do not use this television set near water ... for example, near a bathtub, washbowl, kitchen sink, or laundry tub, in a wet basement, or near a swimming pool, etc.
 - Never expose the set to rain or water. If the set has been exposed to rain or water, unplug the set from the wall outlet and refer servicing to qualified service personnel.
12. Choose a place where light (artificial or sunlight) does not shine directly on the screen.
13. Avoid dusty places, since piling up of dust inside TV chassis may cause failure of the set when high humidity persists.
14. The set has slots, or openings in the cabinet for ventilation purposes, to provide reliable operation of the receiver, to protect it from overheating. These openings must not be blocked or covered.
 - Never cover the slots or openings with cloth or other material.
 - Never block the bottom ventilation slots of the set by placing it on a bed, sofa, rug, etc.
 - Never place the set near or over a radiator or heat register.
 - Never place the set in a "built-in" enclosure, unless proper ventilation is provided.

PROTECTION AND LOCATION OF YOUR SET

- 15.1. If an outside antenna is connected to the television set, be sure the antenna system is grounded so as to provide some protection against voltage surges and built up static charges, Section 810 of the National Electrical Code, NFPA No. 70-1975, provides information with respect to proper grounding of the mast and supporting structure, grounding of the lead-in wire to an antenna discharge unit, size of grounding conductors, location of antenna discharge unit, connection to grounding electrode, and requirements for the grounding electrode.

EXAMPLE OF ANTENNA GROUNDING AS PER NATIONAL ELECTRICAL CODE INSTRUCTIONS



- 15.2. Note to CATV system installer : (Only for the television set with CATV reception)

This reminder is provided to call the CATV system installer's attention to Article 820-40 of the NEC that provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building, as close to the point of cable entry as practical.

16. An outside antenna system should not be located in the vicinity of overhead power lines or other electric lights or power circuits, or where it can fall into such power lines or circuits. When installing an outside antenna system, extreme care should be taken to keep from touching such power lines or circuits as contact with them might be fatal.
17. For added protection for this television set during a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet and disconnect the antenna. This will prevent damage due to lightning and power-line surges.

OPERATION OF YOUR SET

18. This television set should be operated only from the type of power source indicated on the marking label. If you are not sure of the type of power supply at your home, consult your television dealer or local power company. For television sets designed to operate from battery power, refer to the operating instructions.
19. If the television set does not operate normally by following the operating instructions, unplug this television set from the wall outlet and refer servicing to qualified service personnel. Adjust only those controls that are covered in the operating instructions as improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the television set to normal operation.
20. When going on a holiday : If your television set is to remain unused for a period of time, for instance, when you go on a holiday, turn the television set " off " and unplug the television set from the wall outlet.

IF THE SET DOES NOT OPERATE PROPERLY

21. If you are unable to restore normal operation by following the detailed procedure in your operating instructions, do not attempt any further adjustment. Unplug the set and call your dealer or service technician.
22. Whenever the television set is damaged or fails, or a distinct change in performance indicates a need for service, unplug the set and have it checked by a professional service technician.
23. It is normal for some TV sets to make occasional snapping or popping sounds, particularly when being turned on or off. If the snapping or popping is continuous or frequent, unplug the set and consult your dealer or service technician.

FOR SERVICE AND MODIFICATION

24. Do not use attachments not recommended by the television set manufacturer as they may cause hazards.
25. When replacement parts are required, be sure the service technician has used replacement parts specified by the manufacturer that have the same characteristics as the original part. Unauthorized substitutions may result in fire, electric shock, or other hazards.
26. Upon completion of any service or repairs to the television set, ask the service technician to perform routine safety checks to determine that the television is in safe operating condition.

2、Specification

Item	Model	机型
	内容	
Master Data	主要数据	
-Customer ID	-顾客ID	
-Destination	-目的地	南美 SOUTH AMERICA
-Brand	-牌子	
-BOM NO.	-BOM号	
-Assembling Way	-走货方式	Unit
-Chassis	-机芯号	M123SP
Reception	接收	
-Tuning [Channels Amt.]	-频道数量	181
-Tuning [Technology]	-调谐技术	PLL
-Tuning [Indication]	-搜台指示	-----
-Frequency Bands	-频率波段	Full-Cable
-IF Frequency	-中频频率	45.75MHZ
-TV Systems (Color+ Sound)	-TV制式 (彩色+声音)	PAL-M,PAL-N,NTSC-M(3.58+4.5)
-AV Systems	-AV制式	PAL,NTSC
Picture-Processing	图像处理	
-SCAN	-扫描方式	Standard
-Wide Screen Switching	-宽屏幕转换	
-Comb filter	-梳状滤波器	X
-Picture Enhancement	-图像提升	
LTI / CTI	亮度/色度提升电路	
Black Stretch	黑电平延伸	X
Blue Stretch	蓝电平延伸	
Dynamic Skin	动态肤色	
Others	其他	Blue mute
-Picture Control [General]	-图像控制 [普通的]	
Brightness	亮度	X
Sharpness	清晰度	X
Contrast	对比度	X
Tint	色调	X
Color	色度	X
-Picture Control [Special]	-图像控制 [特殊的]	
Smart Pictures * modes	几种图像美化模式	4
VM	速率调制	
Color Temperature	色温	X
Others	其他	
-Picture Noise Reduction	-图像降噪	
Picture - Display	图像显示	
-CRT Type	-CRT类型	
Normal Flat	普平	
Pure Flat	纯平	X
Super Flat	超平	
-Deflection system	-偏转系统	
1Fh	1Fh	X
2Fh	2Fh	
-Tube Technology	-显象管技术(具体看CRT规格书而定)	
Iron	铁 (材料)	
AK	AK钢	
Inver	铟瓦钢	
Black Matrix	黑色聚阵(关机后CRT屏幕颜色)	X
Others	其他	
-CRT Deflection (* Deg.)	-CRT偏转度 (90, 110...)	90 degr
-CRT Magnetic Field	-CRT磁场区域	
-Screen Ratio	-屏幕比率	4:3
-Screen Size / Vis. Size	-屏幕尺寸/ 视觉尺寸	21"
Sound	声音	
-Audio Power Consumption	-伴音功耗	5W+5W
-Surround Sound	-环绕立体声	Stereo wide
-Mono (TV)	-单声道(TV)	
-Mono (AV)	-单声道(AV)	
-Nicam	-丽音	
-America Stereo (MTS,BTSC,MPS)	-美国立体声	X

Item	Model 内容	机型
-America SAP	-美国SAP	X
-Korea Stereo	-韩国立体声	
-Thai Bilingual	-泰国双语	
-Super Woofer	-超重低音	
-AVL	-自动音量平衡	
-Sound Control [General]	-声音控制 (普通的)	
Volume	音量	X
Mute	静音	X
-Sound Control [Special]	-声音控制 (特殊的)	
Treble	高音	X
Bass	低音	X
Balance	平衡	X
Equalizer	均衡	
Smart Sound * modes	几种声音美化模式	4
Others	其他	
-Speakers Quantity	-喇叭数量	2
-Speakers Size	-喇叭尺寸	
User Interface	用户界面	
-Menu Language	-菜单语言	English, Portuguese, Spanish, french
-Features [General]	-特点 (普通的)	
AT	音响电视	
Auto Sleep	自动睡眠(是指X小时不操作电视,电视自动休眠)	
AV Lock	AV锁	
Biological clock	生物钟	
Calendar	日历	X
Clock	时钟	X
Channel Skip	频道跳跃	
Channel Swap	频道互换(两个频道互换位置)	
Channel Adjustment	频道互换(1个频道取代另一个)	
Channel Naming	频道命名	
Channel Lock	频道锁	
Child Lock	童锁	X
Favorite Channel	喜爱频道	X
Game	游戏	X
Hotel Mode	宾馆模式	
High Sensitive	超强接收	
Notebook	记事簿	X
On/Off Timer	定时开/关机	X
Panel Lock	按键锁	X
Parent Guide	父母指导	X
Preset	频道预置(宾馆模式中, 用户不可调)	
Program prearrange	节目预置(用户可调)	
Recall	回看	X
Rotation	地磁校正(旋转)	
Others	其他	
-Features [Special]	-特点(特殊的)	
V-chip / CCD	V-chip / CCD	X
Teletext *Pages	图文	
FM Radio	FM收音机	
Others	其他	
Tuning Features	调谐特点	
-Auto Channel Program	-自动频道编排	X
-Auto/Manual Tuning	-自动 / 手动搜台	X
-Auto/Manual Store	-自动 / 手动存储	X
-Fine Tuning	-微调	X
-Factory Mode	-工厂模式	X
-Service Mode	-维修模式	X
Cabinet	外壳	
-Cabinet Name	-外壳名称	21A71
-Front Cabinet Color	-前壳颜色	
-Middle Cabinet Color	-中壳颜色	
-Rear Cabinet Color	-后壳颜色	

Item	Model 内容	机型
-Number of Local Control(incl.Mains)	-本机控制按键孔数量(包括主开关)	7
-Number of Indicator Control(incl.Mains)	-本机指示灯数量(包括主开关上的灯)	1
Local Controls Front	-正面的控制孔数量	
-Mains Switch	电源开关	X
-CH+ CH- VOL+ VOL-	频道+-, 音量+-	
-TV/AV	TV / AV	
-Menu	菜单	
-Auto Search	自动搜台	
Local Controls Top	-顶部的控制孔数量	
-CH+ CH- VOL+ VOL-	频道+-, 音量+-	X
-TV/AV	TV / AV	X
-Menu	菜单	X
-Auto Search	自动搜台	
Local Controls Side	-侧面的控制孔数量	
-CH+ CH- VOL+ VOL-	频道+-, 音量+-	
-TV/AV	TV / AV	
-Menu	菜单	
-Auto Search	自动搜台	
Indicator	-指示灯	
-RC Received LED	遥控接收灯	
-Color of RC Received LED	遥控接收灯颜色	
-Standby LED	待机灯	X
-Color of Standby LED	待机灯颜色	RED
Remote Controller	遥控器	
-Type	-类型	R
-Batteries Type	-电池	2XAA
Connectors Rear	后壳端子接口	
-SCART Full (RGB) w/o Y/C	不含Y/C的SCART	
-SCART Full with Y/C	含Y/C的SCART	
-SCART Single (CVBS)	-单SCART接口(CVBS)	
-Component In (YCbCr) Cinch	YUV	X
-In Y/C+Cinch(CVBS+ Stereo)	-In Y/C+Cinch(CVBS+ Stereo)	X
-In Y/C+Cinch (CVBS+ Mono)	-In Y/C+Cinch (CVBS+ Mono)	
-In Cinch(CVBS+ Stereo)	-In Cinch(CVBS+ Stereo)	X
-In Cinch (CVBS+ Mono)	-In Cinch (CVBS+ Mono)	
-Out Cinch(CVBS+ Stereo)	-Out Cinch(CVBS+ Stereo)	X
-Out Cinch(CVBS+ Mono)	-Out Cinch(CVBS+ Mono)	
-Super Woofer	-超重低音接口	
-Digital Audio Out	-数字音频输出	
-Loudspeakers	-外接喇叭口	
-Control Busses	-控制总线	
-After Service Slot	-售后维修口	
-ITV Smart Port	-ITV 通信端口	
- Antenna in	-天线输入端口	
75 Ohms (IEC Type)	75 ohms (IEC类型)	X
Connectors Front	正面端子接口	
-In Y/C+Cinch(CVBS+ Stereo)	-In Y/C+Cinch(CVBS+ Stereo)	
-In Y/C+Cinch (CVBS+ Mono)	-In Y/C+Cinch (CVBS+ Mono)	
-In Cinch(CVBS+ Stereo)	-In Cinch(CVBS+ Stereo)	
-In Cinch (CVBS+ Mono)	-In Cinch (CVBS+ Mono)	
-Out Headphone	-耳机输出端口	
Mini-Jack 3.5mm	袖珍插孔 3.5mm	
Connectors Side	侧面端子接口	
-In Y/C+Cinch(CVBS+ Stereo)	-In Y/C+Cinch(CVBS+ Stereo)	
-In Y/C+Cinch (CVBS+ Mono)	-In Y/C+Cinch (CVBS+ Mono)	
-In Cinch(CVBS+ Stereo)	-In Cinch(CVBS+ Stereo)	X
-In Cinch (CVBS+ Mono)	-In Cinch (CVBS+ Mono)	
-Out Headphone	-耳机输出端口	
Mini-Jack 3.5mm	袖珍插孔 3.5mm	
Final Equipment	出厂资料	
-Packing -Methods	-包装方法	
* Colors Printing	几种颜色彩印	

Item	Model 内容	机型
Carton Color	纸箱颜色	
-Documents and Manuals	-文件和手册	
Instruction Book	说明书	X
Screen Sticker	屏幕贴纸	
Plastic Bag	塑料袋	
Warranty Card	保修卡	
Guarantee Doc.	保证书	
Warning Label	警告标签	X
Approbation Label	认证标签	
Others	其他	
-Languages Instruction Book	-说明书语言	English
-Indication on BACKOVER	-后壳的标示	
Made-in in family sheet	制造产地标签	X
FCC/Elect Shock Caution Label	FCC/ Elect 小心警告标签	
CE/Elect Shock Caution Label	CE/ Elect 小心警告标签	
Warning Label	警告标签	
Others	其他	
Approbation	认证	
FCC	FCC	
FDA	FDA	
UL/CUL	UL/CUL	
CB	CB	X
VDE	VDE	
Others	Others	
Miscellaneous	其他的	
-Mains Voltage	-电源电压	100v-240v
-Mains Frequency	-电源频率	50/60Hz
-Type Mains Cord	-电源线类型	
-Type Mains plug	-电源插头类型	
-Power Consumption TV in ON	-开机功耗	Less than 80W
-Power Consumption TV in Standby	-待机功耗	Less than 3W

3、 Alignment Procedure

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M123SP Alignment Procedure

I. Summarize

M123SP, is NTSC-PAL system model developed for TCL market specially. In trial run, burn the software to TMPA8873PSNG IC by OTP method. After the trial run, make the mask, please take care in production. To solve the probable problems in production, for the workers participate in alignment, please be familiar with the Alignment Procedure, and be master of the features.

There are 2 operation modes: user mode and factory mode. You can use the Remote control or buttons on the panel to operate in user mode, but only Remote control works in factory mode.

The way to enter factory mode: Press “D-MODE” button on RC, press “OK” and “CH+” “CH-” to select the parameter you want to adjust., Press “VOL+” “VOL-” to change the parameters. To quit factory mode, press “D-MODE” button (on the right of SURR button), the factory data changed will be memorized.

A few special modes:

Aging mode — used before the aging before alignment. The aging could start in factory mode.

Vertical stop mode—used to confirm the screen voltage. Press “INPUT” button in factory mode to enter Vertical stop mode. Then press “INPUT” button again to exit.

White balance alignment mode—used for white balance auto alignment. Press “BUS OFF” button near the left of MTS button to enter White balance alignment mode.

Factory mode—. Press “SOUND” button in factory mode to initialize the set. The screen displays “WAIT”, after the initialization, the screen displays “OK”, and exit the Factory mode automatically.

Then press “D-MODE” button again, it will not enable you to enter Factory mode if you want to enter again, you need operate as follows: turn down the volume to 0 press “Volume down” button on the panel, press “INFO” button on the RC meantime.

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TCL-THOMSON Electronics R&D Center (Shen'Zhen Lab)

II. Alignment contents:**1. Adjustment of B+ voltage**

Receive Philips standard testing pattern to RF input.

If the VR800 exists in the board, adjust it in STANDARD mode until voltage at following value:

Model	B+ (v)
M123SP	110 ± 2.0
21E10	110 ± 2.0

2. RF AGC adjustment

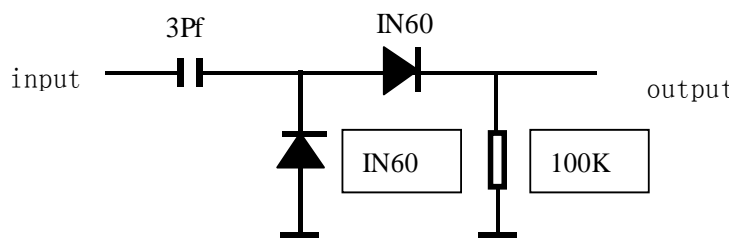
AGC Alignment Procedures:

- 1) Apply 8-scale gray signal (80dB), then adjust AGC data in D-mode to get the noise picture (snow picture) disappear exactly. Test Pin 1 of TU101 (IF output) and record the voltage value as $V_{1P.P}$.
<Illustrate as Picture A>
- 2) Apply 8-scale gray signal (80dB), and then adjust AGC data in D-mode until the synchronization signal distortion appear exactly. Test Pin 1 of TU101 (IF output) and record the voltage value as $V_{2P.P}$. <Illustrate as Picture A>
- 3) Calculate the value of $V_{P.P}$ with the formula: $V_{P.P} = (V_{2P.P} \times V_{1P.P})^{1/2}$
Apply 8-scale gray signal (80dB), test Pin 1 of TU101 (IF output), adjust AGC data until the voltage of Pin 1 of TU101 $V_{P.P} = (V_{2P.P} \times V_{1P.P})^{1/2}$.
- 4) Test three units according to 1), 2), 3) steps, and record the values of AGC in three units. Take the average value as benchmark.

Remarks:

Comparing test is necessary due to different probe of Oscilloscope and different Test Circuit (Picture A).

- 1) AGC voltage value should be tested afresh, due to the type/supplier of Tuner or Saw filter changed, or other related components changed.



(Picture A)

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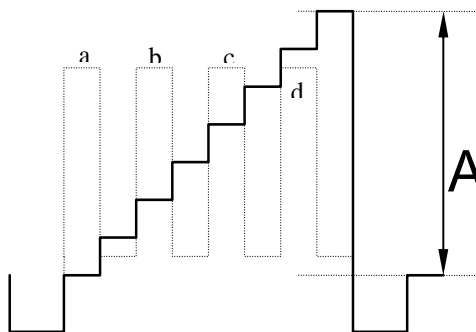
TCL-THOMSON Electronics R&D Center (Shen'Zhen Lab)

3. Screen & Focus voltage adjustment

- ① Apply pattern signal in normal status, enter Factory mode, press “INPUT” button to stop vertical scan. **Note:** (the RC/GC/BC is preset to be 40, GD/BD is 40)
- ② Adjust the SCRREEN switch on the flyback transformer to make a horizontal shining line just visible on the screen.
- ③ Turn on the vertical output, adjust the “FOCUS” on the flyback transformer to obtain the optimum focus.

4.1 Adjustment of Sub-contrast, Sub-tint and Sub-color for NSTC and PAL signal (NORMAL)(Press KEY 5 in D-Mode)

1. connect the probe of Oscilloscope to the conjunction between R201 and P201 (B-out).
2. Apply the Grey-scale/Color-bar (NTSC signal) to the AV\TV input, in STANDARD status.
3. Select CNTC to adjust the contrast, until that the amplitude “A” is 2.0V_{P-P} as shown below.
4. Select COLC to adjust the color by tuning the amplitude of “a” and “d” to the same.
5. Select TNTCV\T to adjust the tint by tuning the amplitude of “b” and “c” to the same.
6. Apply the Grey-scale/Color-bar (PAL signal) to the AV input, in STANDARD status.
7. Select COLP to adjust the sub-color by tuning the amplitude of “a”, “b”, “c” and “d” to the same.

**4.2 White balance adjustment (NORMAL)**

1) Apply the black and white pattern in normal status;

2) Alignment of normal color temperature

- ① Change Color Temperature to normal status
- ② Use a color analyzer to measure the black side of the screen. By changing the value of RC, GC and BC, set the reading of the color analyzer to standard, **$x=285\pm 8$, $y=294\pm 8$** .
- ③ Use a color analyzer to measure the white side of the screen. By changing the value of GD, BD, set the reading of the color analyzer to standard, **$x=285\pm 8$, $y=294\pm 8$** .
- ④ Separately set the brightness and contrast from min. to max., repeat the step 2 and 3 until the reading of the color analyzer is correct.

Note: Provided the production line is equipped with the self- White balance adjusting

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equipment, white balance can be adjusted automatically as following: Press "BUS OFF" button under factory mode, the TV set will adjust automatically.

standard:

Warm X=310±8, Y=314±8

Cool X=278±8, Y=282±8

Remark:

1) Provided the production line is equipped with the self- White balance adjusting equipment, white balance of M123SP chassis can be adjusted automatically as following: Press "I2C BUS" button under factory mode, the TV set will adjust automatically.

2) Free-alignment of warm and cool temperature by presetting the value of RC-W, GC-W, BC-W, GD-W, BD-W (for warm temperature) / RC-C,GC-C,BC-C,GD-C,BD-C(for cool temperature) into memory

5. Adjustment of Sub-brightness

Apply the Grey-scale/Color bar (NTSC signal) to the AV input, in normal status. Enter factory alignment menu 8, Select BRTS to adjust the sub-brightness, until that the 2nd dark bar of 8 level Grey scale just can be seen.

6. picture geometric adjustment

1. Apply the Philips standard testing pattern NTSC (PAL-N) in normal status, then enter menu 3, adjusting the following data to get the min-distortion.

HPOS6(HPOS5) (Horizontal Center)

2. Apply the Philips standard testing pattern in normal status, then enter menu 2, adjusting the following data to get the min-distortion.

HIGH6 (HIGH5) (Height)

VLIN6 (VLIN5) (Linearity)

VSC6 (VSC5) (Vertical-S Correction)

VCEN6 (VCEN5) (Vertical Center)

7.X rays over voltage protecting circuit test :

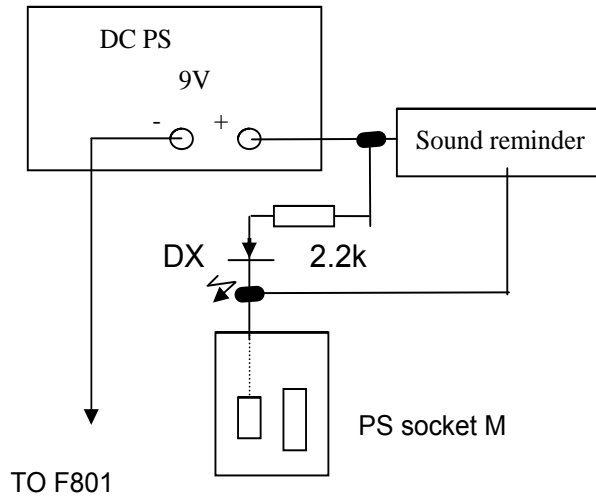
TV enter working mode, apply more than 26V DC voltage between two ends of C431, the set should enter protecting mode, or check **X rays protecting circuit**.

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8. PS line polarities test :

Connect follow the graphic below:



Plug the PS line onto the PS socket M, then touch any pin of F801 with the probe, the LED DX will shine at the moment, with sound reminder, or it is disqualification.

9.PS power test (Random test) :

Instruments: Power meter.

Input signal pattern: Color bar, Sound 1KHZ , 100% modulation.

Input signal intensity: $\geq 60\text{dBu}$ (1 Mv rms)

Test points: find the graphic below

Test means: Set the Brightness, CR to the highest, adjust the volume to make the sound output to be 0.5W. Connect the power meter to test the power consumption. Transfer the set to be standby, and test the power consumption at the moment, which should meet the requirements below:

Model	Power	Standby power (110V~220V)
M123SP	$\leq 80\text{W}$	$< 3\text{W}$
M123SP	$\leq 80\text{W}$	$< 3\text{W}$

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10. High voltage and Ib value limit test(random test)

Instruments: High voltage meter, Ib meter.

Input signal pattern: White vertical

Input signal intensity: 60dBuv (1 Mv rms)

Test means: Connect High voltage meter and Ib meter. Test voltage of different Ib separately, It should meet the requirements below:

Model	Ib, Ib scope	Anode high voltage (Kv)	
		21"	
		Value	Diff.
	Ib=50 μ A Scope: 50 μ A&1200 μ A	28.0 \pm 2.5	<2

11.Heater voltage test (random test)

Instruments : RMS voltage meter

Input signal pattern : Philips test graphic

Input signal intensity : 1 mVrms (60dBuV) to 50 mVrms

Connect the RMS voltage meter to the 2 ends of CRT glowers, test the heater voltage of highest CR and Brightness, It should meet: 6.3 \pm 0.3Vrms**12. CCD and VOL-CHIP function test**

VOL-CHIP and CCD function test, please find the service manual in detail.

13. Initialization

Under the factory mode, press "SOUND" button, the screen displays "WAIT", when the screen displays "OK", the initialization finished. You can enter the next working procedure.

14.EEPROM DATA:

Note: the items with * are adjustable, the items with BLUE COLOR are work in CRT parameter, other items are not, pls do not adjust them;

Use TMPA8873*SANG(13-PA8873-PSP),D-Model G2_FLAG04 posit 00

Use TMPA8873*SBNG(13-PA8873-PSPB),D-Model G2_FLAG04 posit 40

Data	FAC 01				
	RC*	GC*	BC*	GD*	BD*
南美 M123SP	40	40	40	40	40
20E10	40	40	40	40	40

Data	FAC 02					
	HIGH6*	VP60	VLIN6*	VSC6*	VBLK6	VCEN6*
南美 M123SP	26	00	0E	19	00	2A
20E10	26	00	10	17	00	21
	HIGH5*	VP50	VLIN5*	VSC5*	VBLK5	VCEN5*
南美 M123SP	26	06	0B	17	00	2D
20E10	24	06	0B	16	00	24

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Data	FAC 03							
	HPOS6*	HPOS5*	U	V	STRAP F0	SIF FREQ	STRAP	PIF FREQ
南美 M123SP	11	0D	08	08	08	06	00	02
20E10	11	0D	08	08	08	06	00	02

Data	FAC 04							
	CNTX	CNTN	BRTX	BRTN	COLX	COLN	TNTX	TNTN
南美 M123SP	7F	10	20	1B	7F	0E	2C	30
20E10	7F	10	20	1B	7F	0E	2C	30

Data	FAC 05							
	BRTC	COLC	COLP	SCOL	SCNT	CNTC	TNTCT	TNTCV
南美 M123SP	48	37	00	07	0F	36	45	3D
20E10	48	37	00	07	0F	45	45	3D

Data	FAC 06							
	ST3	SV3	SV4	SVD	ASSH	SHPX	SHPN	
南美 M123SP	1B	1B	1B	1B	07	1A	1A	
20E10	1B	1B	1B	1B	07	1A	1A	

Data	FAC 07							
	MOD1	MOD2	MOD3	OPT	OPTM1	OPTM2	HDCNT	HSTOP
南美 M123SP	60	F3	88	37	C2	83	09	FF
20E10	60	F1	88	37	C2	83	09	FF

Data	FAC 08							
	RFAGC*	BRTS*	OSD	OSDF	CCD OSD	CCD OSDF	TXCN	RGCN
南美 M123SP	25	00	21	53	4A	65	10	09
20E10	25	00	21	53	4A	65	10	09

Data	FAC 09								
	V01	V05	V10	V25	V50	V75	V90	V100	VOLMAX
南美 M123SP	38	41	48	59	65	6A	6D	70	32
20E10	38	41	4B	63	6D	D73	75	78	32

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Data Model	FAC 10								
	CURTCEN	VOLX	PWTM	MODE4	MODE5	MODE6	MODE7	MODE8	MODE9
南美 M123SP	A5	7F	08	FF	7F	61	D7	2D	CA
20E10	A5	7F	08	FF	7F	61	D7	2D	CA

Data Model	FAC 11						
	CON1	CON2	CON3	STSADJ	ALI 1	ALI 2	ALI3
南美 M123SP	06	06	02	00	0A	0A	03
20E10	06	06	02	00	0A	0A	03

Data Model	FAC 12							
	SVM	SVM1	OSD2	OSDF2	PYNX	PYNN	PYXS	PYNS
南美 M123SP	10	10	20	64	28	18	22	10
20E10	10	10	20	64	28	18	22	10

Data Model	FAC 13						
	CLTM	CLVO	CLVS	ABL	DCBS	FLG0	FLG1
南美 M123SP	04	03	03	27	14	82	0C
20E10	04	03	03	27	14	82	0C

Data Model	FAC 14						
	HAFC	AGCC	NOIS	ONTM	NSHP	PVLVL	PLMT
南美 M123SP	09	1C	01	08	1A	80	80
20E10	09	1C	01	08	1A	80	80

Data Model	FAC 15							
	RC-C	GC-C	BC-C	GD-C	BD-C	YUV-RC	YUV-RC	YUV-RC
南美 M123SP	10	0D	06	01	10	00	00	00
20E10	--	--	--	--	--	--	--	--

Data Model	FAC 16						
	RC-W	GC-W	BC-W	GD-W	BD-W	YUV-RC	YUV-RC
南美 M123SP	10	08	0D	F3	E3	00	00
20E10	--	--	--	--	--	--	--

Data Model	FAC 17			
	D-COL	D-BRI	D-CON	D-SHP
南美 M123SP	32	32	5A	32
20E10	32	32	5A	32

Chassis Name	M123SP 南美软件	Serial No.	
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Data Model	FAC 18				FAC 19			
	S-COL	S-BRI	S-CON	S-SHP	M-COL	M-BRI	M-CON	M-SHP
南美 M123SP	32	32	32	32	32	32	1E	32
20E10	32	32	32	32	32	32	1E	32

Data Model	FAC 20								
	SEG-POINT1	SEG-POINT2	DATA-VL	DATA-VH	DATA-UF	SPE-POS1	SPE-DATA1	SENSI-ON	SENSI-OFF
南美 M123SP	173	407	01	02	08	06	05	00	00
20E10	173	407	01	02	08	06	05	00	00

Data Model	FAC 21					
	THEATER-BAS	THEATER-TRE	CONCERT-BAS	CONCERT-TRE	BROCAST-BAS	BROCAST-TRE
南美 M123SP	2D	4A	38	3E	19	2C
20E10	2D	4A	38	3E	19	2C

Data Model	FAC 22				
	VOL_MAI	GATE	VOL-OUT	AV GAIN	OPTM3
南美 M123SP	03	2A	75	2D	40
20E10	03	2A	75	2D	40

Data Model	FAC 25					
	G2_FLAG00	G2_FLAG01	G2_FLAG02	G2_FLAG03	G2_FLAG04	G2_FLAG05
南美 M123SP	30	06	00	02	40	00
20E10	30	06	00	02	40	00

Chassis Name	M123SP 南美软件	Serial No.	
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5、 IC Brief Introduction

TOSHIBA Integrated Circuit

TMPA8873PSNG

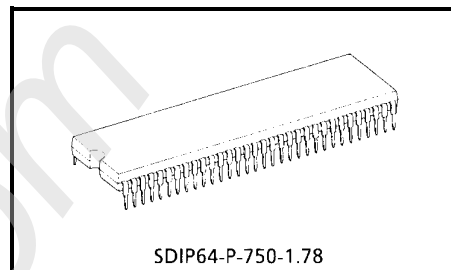
TMPA8873CMNG /CPNG /CRNG /CSNG

Tentative

MCU and Signal Processor for a PAL/NTSC TV

The TMPA8873CPNG is an integrated circuit for a PAL/NTSC TV. A MCU and a TV signal processor are integrated in a 64-pin shrink DIP package. The MCU contains 8-bit CPU, ROM, RAM, I/O ports, timer/counters, A/D converters, an on-screen display controller, remote control interfaces, IIC bus interfaces and the Closed Caption decoder. The TV signal processor contains PIF, SIF, Video, multi-standard chroma, Sync, RGB processors.

Mask ROM: TMPA8873CMNG (ROM size: 32k)
Mask ROM: TMPA8873CPNG (ROM size: 48k)
Mask ROM: TMPA8873CRNG (ROM size: 56k)
Mask ROM: TMPA8873CSNG (ROM size: 64k)
OTP ROM: TMPA8873PSNG (ROM size: 64k)



Weight: 8.85 g (typ.)

Features**MCU**

- High speed 8-bit CPU (TLCS-870/X series)
- Instruction execution time: 0.5 μ s (at 8 MHz)
- (TMPA8873CPNG)
 - 48-Kbytes ROM, 2-Kbytes RAM
- ROM correction
- 12 I/O ports
- 14-bit PWM output 1 ch for a voltage synthesizer
- 7-bit PWM output 1 channel
- 8-bit A/D converter 3 ch for a touch-key input with key ON wake-up CIRCUIT
- Remote control signal preprocessor
- Two 16-bit internal timer/counter 2 ch
- Two 8-bit internal timer/counter 2 ch
- Time base timer, watchdog timer
- 16 interrupt sources: external 5, internal 11
- IIC bus interface (multi-master)
- STOP and IDLE power saving modes

TV Processor**IF**

- Integrated PIF VCO aligned automatically
- Negative demodulation PIF
- Multi-frequency SIF demodulator without external Tank-coil
- SIF BPF built-in
- SIF Trap filter built in

Video

- Integrated chroma traps
- Black stretch
- Y-gamma

Chroma

- Integrated chroma BPFs
- PAL/NTSC demodulation

CCD Decoder

- Digital data slicer for NTSC

OSD

- Clock generation for OSD display
- Font ROM characters: 384 characters
- Characters display: 32 columns \times 12 lines
- Composition: 16 \times 18 dots
- Size of character: 3 (line by line)
- Color of character: 8 (character by character)
- Display position: H 256/V 512 steps
- BOX function
- Fringing, smoothing, Italic, underline function
- Conform to CCD REGULATION
- Jitter elimination

RGB/Base-Band

- Integrated 1 H base-band delay line
- Base-band TINT control
- Internal OSD interface
- Half-tone and transparent for OSD
- External YCbCr interface for DVD
- RGB cut-off/drive controls by bus
- ABCL (ABL and ACL combined)

Sync.

- Integrated $f_H \times 640$ VCO
- DC coupled vertical ramp output (single)
- Sync output

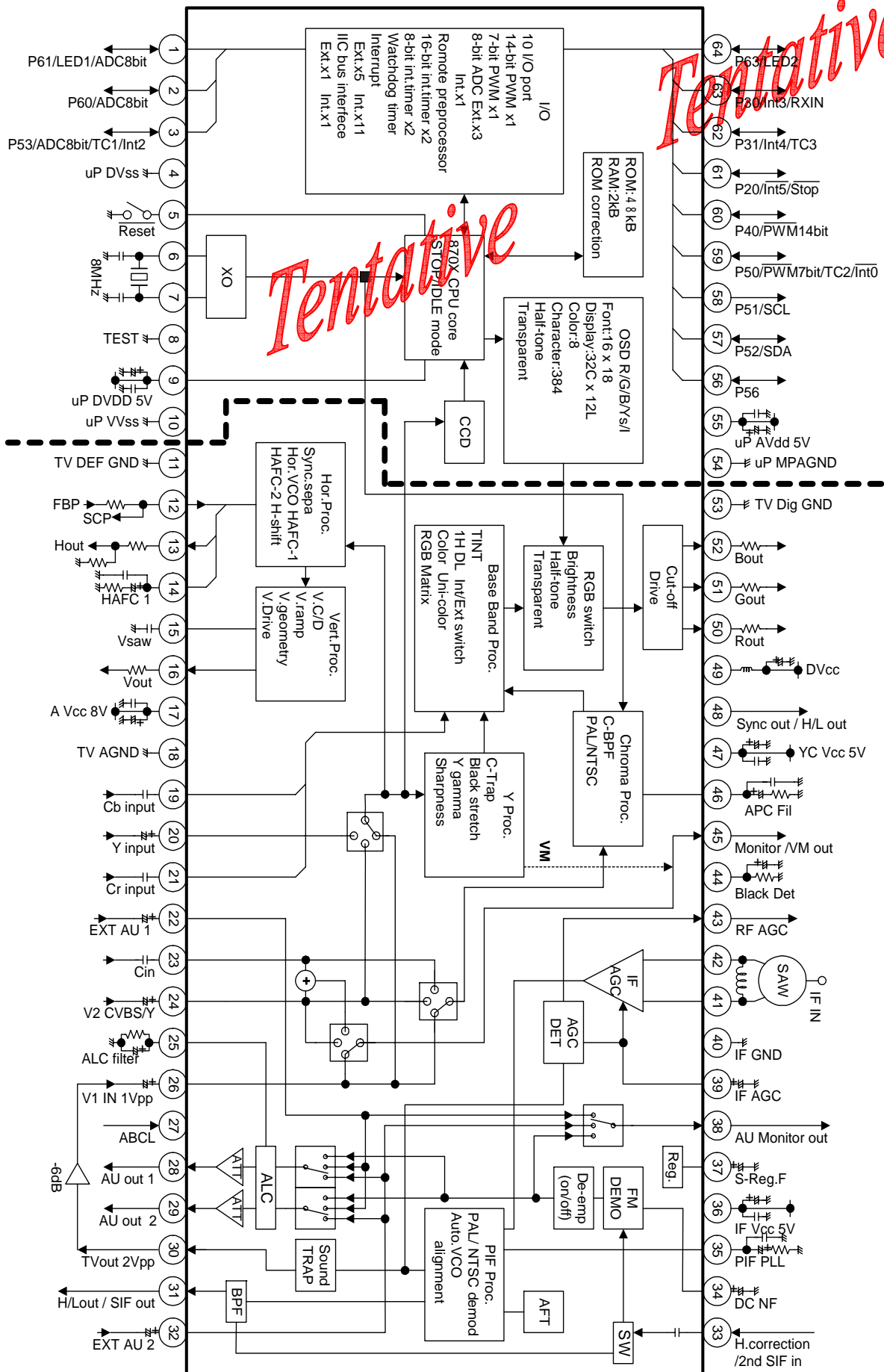
AV Switch

- 2 for video
- 2 for audio(mono)
 - or 1 for audio (Stereo, 2ch ATT), controlled by IIC bus
- ALC (Auto-Audio Level Control)

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Block Diagram



Basic Structure

1. Internal Connections

TMPA8873 has two pieces of IC chip in one package, using Multi-Chip-Package (MCP) technology. One is a micro controller (MCU) and the other one is a signal processor (SP) for a color TV. There are some internal connections between these two ICs for handling below signals.

	Signal Name	Direction	Description
1	SCL	M to S	Internal IIC bus SCL
2	SDA	Bi-direction	Internal IIC bus SDA
3	OSD R	M to S	OSD signal connection
4	OSD G	M to S	OSD signal connection
5	OSD B	M to S	OSD signal connection
6	OSD Y/BL	M to S	OSD display control
7	OSD I, CS OUT	M to S	OSD half-tone control/Test pattern signal
8	C-Video	S to M	Composite video signal from internal video switch, for CCD
9	C-Sync	S to M	Composite sync. signal from sync. Separator, for CCD
10	HD	S to M	Horizontal timing pulse regenerated from FBP, for OSD
11	VD	S to M	Vertical timing pulse from sync. Separator, for OSD
12	CLK	M to S	8 MHz clock
13	AV _{DD}	M to S	Reference voltage for C-Video interface
14	ADC	S to M	A/D converter monitoring RF-AGC, R-Y and B-Y

Functions of SP from MCU are controllable through the IIC bus of the internal connections.

2. Power Supply

TMPA8873 has some power supplies and GND pins. Power supplies related MCU must be applied at the first. Power supplies for H.VCC and TV D.VCC are the second with at least 100 ms delay after MCU power ON. The other power supplies are the last, which are recommended to be supplied from a regulator circuit using FBP.

3. Crystal Resonator

TMPA8873 requires only one crystal resonator, in stead that a conventional two-chip solution requires two resonators at least, one for MCU and the other one for SP. An oscillation clock with the crystal resonator of TMPA8873 is supplied for MCU operation, PIF VCO automatic alignment, alignment free AFT, chroma demodulation and horizontal oscillation. The oscillation frequency is very important so that those of functions work properly, so that designing the oscillation frequency accurately is required. The spec of crystal is recommended to be within

$$f_{osc}: 8 \text{ MHz } \pm 20 \text{ ppm}$$

$$f_{temp}: 8 \text{ MHz } \pm 40 \text{ ppm } (-20^{\circ}\text{C to } +65^{\circ}\text{C})$$

While RESET of MCU is active, the MCU function stops. Hardware and software initialization sequence including power supplies control is required, because status of any hardware after the RESET period is unknown especially horizontal oscillator which is a very basic timing generator of SP operation.

TERMINAL INTERFACE

MCU BLOCK

Pin No.	Pin Name	I/O	Function	Interface Circuit
1	P61 (/KWU5) (AIN5) (LED1)	I/O (Input) (Input) (Output)	Key on wake up input A/D converter analog input LED output	<p>The diagram shows a key-on wake-up input circuit. A 5k resistor is connected to pin 1. A 1k resistor and a 22pF capacitor are connected to the input of an inverter. The output of the inverter is labeled 'Key-on Wake-up'. The input of the inverter is also connected to a pull-up resistor and a capacitor. The output of the inverter is connected to an LED. The initial state is 'Hi-Z' and it can be disabled.</p>
2	P60 (/KWU4) (AIN4)	I/O (Input) (Input)	Key on wake up input A/D converter analog input	<p>The diagram shows a key-on wake-up input circuit. A 5k resistor is connected to pin 2. A 1k resistor and a 22pF capacitor are connected to the input of an inverter. The output of the inverter is labeled 'Key-on Wake-up'. The input of the inverter is also connected to a pull-up resistor and a capacitor. The initial state is 'Hi-Z' and it can be disabled.</p>
3	P53 (/KWU0) (AIN0) (TC1) (INT2) (SCK1)	I/O (Input) (Input) (Input) (Input) (I/O)	Key on wake up input A/D converter analog input Timer/counter input External interrupt input SIO serial clock input / output	<p>The diagram shows a key-on wake-up input circuit. A 5k resistor is connected to pin 3. A 1k resistor and a 22pF capacitor are connected to the input of an inverter. The output of the inverter is labeled 'Key-on Wake-up'. The input of the inverter is also connected to a pull-up resistor and a capacitor. The initial state is 'Hi-Z' and it can be disabled.</p>
4	up DVss	Power Supply	GND	—
5	Reset	I/O	Reset signal input or watchdog timer output Address trap reset output System clock reset output	<p>The diagram shows a reset signal input circuit. A 220k resistor is connected to pin 5. A 1k resistor is connected to the input of an inverter. The output of the inverter is labeled 'Reset'. The input of the inverter is also connected to a pull-up resistor and a capacitor. The initial state is 'Hi-Z' and it can be disabled.</p>

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Pin No.	Pin Name	I/O	Function	Interface Circuit
6 7	Xout Xin	Output Input	X'tal connecting pins	
8	TEST	Input	Test pin for out-going test	
9	up DVdd	Power Supply	Vdd Supply 5V	
10	up VVss	Power Supply	GND for Slicer circuit	—
54	up AGND	Power Supply	GND for Oscillator circuit	—
55	up AVdd	Power Supply	Vdd for Oscillator circuit Supply 5V	—
56	P56	I/O		
57	P52 (SDA) (SO1)	I/O (I/O) (Output)	IIC bus serial data input / output SIO serial data output	

TOSHIBA Confidential TMPA8873PSNG /CMNG /CPNG /CRNG /CSNG

Pin No.	Pin Name	I/O	Function	Interface Circuit
58	P51 (SCL) (SI1)	I/O (I/O) (Input)	IIC bus serial clock input / output SIO serial data input	
59	P50 (/PWM8) (TC2) (INT0)	I/O (Output) (Input) (Input)	7-bit D/A conversion (PWM) output Timer/Counter input External interrupt input	
60	P40 (/PWM0)	I/O (Output)	14/12-bit D/A conversion (PWM) output	
61	P20 (/INT5) (/STOP)	I/O (Input) (Input)	External interrupt input STOP mode release signal input	
62	P31 (INT4) (TC3)	I/O (Input) (Input)	External interrupt input Timer/Counter input	

TOSHIBA Confidential TMPA8873PSNG /CMNG /CPNG /CRNG /CSNG

Pin No.	Pin Name	I/O	Function	Interface Circuit
63	P30 (INT3) (RXIN)	I/O (Input) (Input)	External interrupt input Remote control signal preprocessor input	<p>The diagram shows pin 63 connected to a 1k resistor and a diode. The circuit includes an AND gate with inputs from the pin and a 'Disable' signal. The output of the AND gate is connected to pin 9. The initial state is 'Hi-Z'.</p>
64	P63 (LED2)	I/O (Output)	LED output	<p>The diagram shows pin 64 connected to a 1k resistor and a diode. The circuit includes an AND gate with inputs from the pin and a 'Disable' signal. The output of the AND gate is connected to pin 9. The initial state is 'Hi-Z'.</p>

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SIGNAL PROCESSOR BLOCK

Pin No.	Pin Name	Function	Interface Circuit	I/O Signal
11	TV DEF AGND	GND terminal for TV DEF block.	—	—
12	FBP in	Input terminal for FBP.		—
13	H out	Output terminal for Horizontal driving pulse.		—
14	HAFC 1	Terminal to be connected capacitor for H AFC filter. This terminal voltage controls H VCO frequency.		—
15	V saw	Terminal to be connected capacitor to generate V saw signal. V saw amplitude is kept constant by V AGC function.		—
16	V out	Output terminal for Vertical driving pulse.		—
17	AVcc 8V	Vcc terminal for DEF, RGB, Audio out and PIF out circuit. Supply 8V.	—	—
18	TV A GND	GND terminal for TV block.	—	—
19	Cb in	Input terminal for Cb signal.		—

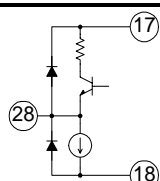
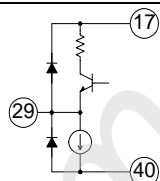
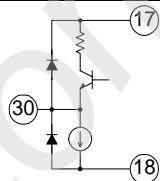
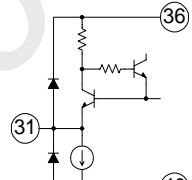
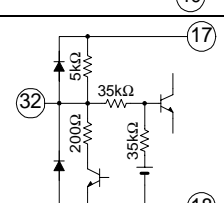
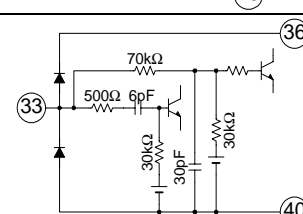
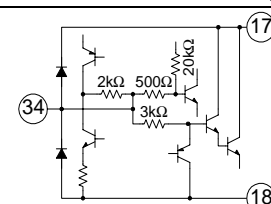
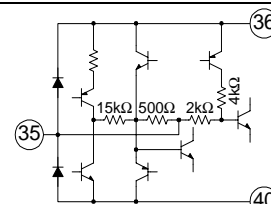
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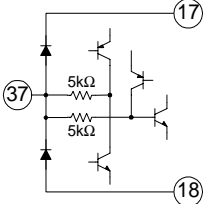
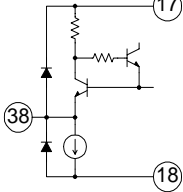
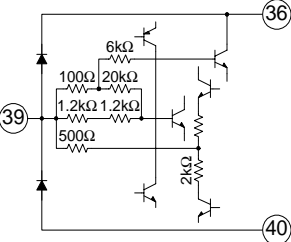
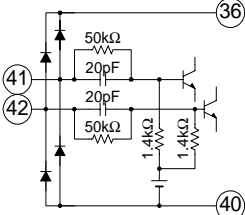
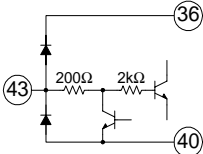
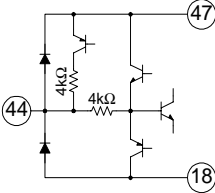
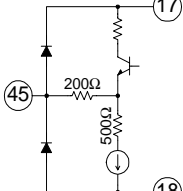
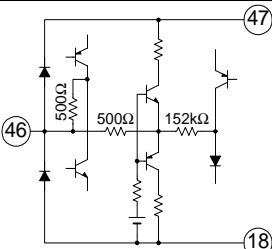
Pin No.	Pin Name	Function	Interface Circuit	I/O Signal
20	Y in	Input terminal for Y signal.		
21	Cr in	Input terminal for Cr signal.		
22	Ext Au1	Input terminal for Audio signal 1.		
23	C in	Input terminal for Chroma signal.		
24	V2 in	Input terminal for Video signal.		
25	ALC filter	Terminal to be connected capacitor for ALC (Audio Level Control).		
26	V1 in	Input terminal for Video signal. (Input level = 1 Vp-p)		
27	ABCL	Input terminal for ABL/ACL control.		

Tentative

TOSHIBA Confidential TMPA8873PSNG /CMNG /CPNG /CRNG /CSNG

Pin No.	Pin Name	Function	Interface Circuit	I/O Signal
28	Au out 1	Output terminal 1 for Audio signal.		Tentative
29	Au out 2	Output terminal 2 for Audio signal.		
30	TV out	Output terminal for detected PIF signal.		
31	1bit DAC /SIF out	Output terminal for 1bit DAC or detected SIF signal.		
32	Ext Au2 in	Input terminal for Audio signal 1.		
33	H correc / SIF in	Input terminal for H correction and 2nd SIF.		
34	DC NF	Terminal to be connected capacitor for DC Negative Feedback from SIF Det output.		
35	PIF PLL	Terminal to be connected with loop filter for PIF PLL. This terminal voltage is controlled PIF VCO frequency.		
36	IF Vcc 5V	Vcc terminal for IF circuit. Supply 5V.		—

TOSHIBA Confidential TMPA8873PSNG /CMNG /CPNG /CRNG /CSNG

Pin No.	Pin Name	Function	Interface Circuit	I/O Signal
37	Reg Fil	Terminal to be connected capacitor for stabilizing internal bias.		
38	AUDIO Monitor out	Output terminal for External audio signal or TV audio signal selected by BUS (Audio SW).		
39	IF AGC	Terminal to be connected with IF AGC filter.		
40	IF GND	GND terminal for IF circuit.		—
41 42	IF in	Input terminals for IF signals. Pin41 and Pin42 are both input poles of differential amplifier.		
43	RF AGC	Output terminal for RF AGC control level.		
44	Black Det	Terminal to be connected with Black Det filter for black stretch.		
45	SVM / Monitor	Output terminal for monitor function. Also output terminal for SVM signal. Selectable through IIC bus		
46	APC filter	Terminal to be connected with APC filter for Chroma demodulation. This terminal voltage controls frequency of VCXO.		

Tentative

TOSHIBA Confidential TMPA8873PSNG /CMNG /CPNG /CRNG /CSNG

Pin No.	Pin Name	Function	Interface Circuit	I/O Signal
47	YC Vcc 5V	Vcc terminal for Y/C circuit. Supply 5V.	—	—
48	Sync out	Output terminal for Sync pulse. A pull up resistor is required because of its open collector output. (Pull up resistor: minimum 4.7kohm)		—
49	DVCC	Vcc terminal for Digital block. This terminal voltage is clipped about 3.3V by regulator circuit. Supply DVCC voltage from A VCC 8V(#17) voltage via 270Ω.	—	—
50	R out	Output terminal for R signal.		—
51	G out	Output terminal for G signal.		—
52	B out	Output terminal for B signal.		—
53	TV DGND	GND terminal for digital block.	—	—

Tentative

Signal Processor Descriptions**1. Tank-Coil-Less PIF VCO**

TMPA8873 adopts a tank-coil-less PIF VCO circuit, which has advantages of cost, performance of weak IF input and easy to design PCB layout. The PIF PLL system has self-alignment circuit, so that the micro controller needs only to order the PIF PLL system to start self-alignment through the IIC bus. The self-alignment finishes within 50 ms.

*Tentative***2. Built-In Sound Band Pass Filter**

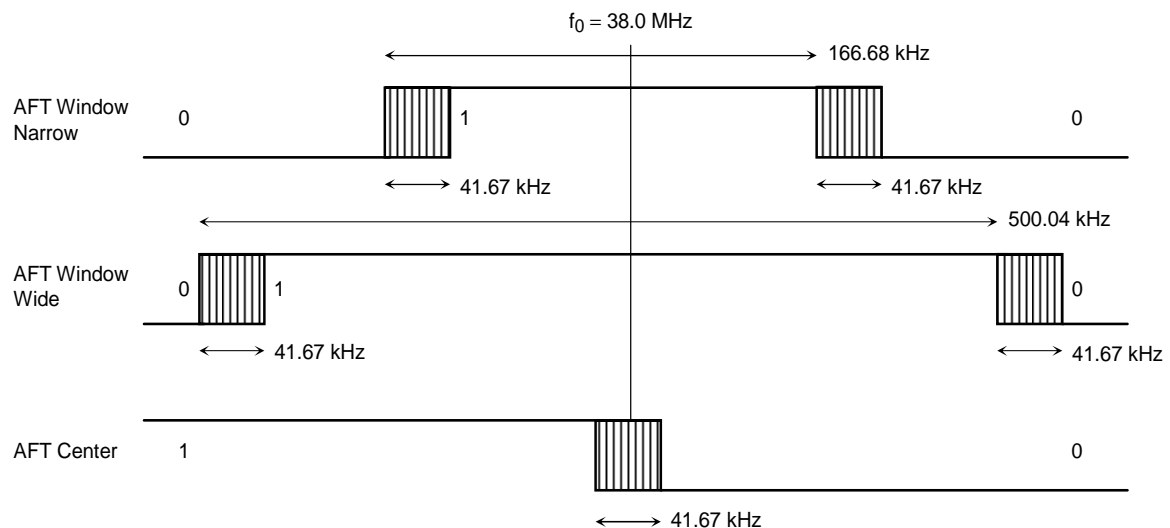
A sound band pass filter is integrated on the chip for multi frequency SIF systems. The 1st SIF demodulator multiplies PIF input signal and regenerated PIF carrier from VCO with 90° angle, and gets multi-frequency SIF signal as 6.5 MHz, 6.0 MHz, 5.5 MHz and 4.5 MHz according to the SIF system.

3. Built-In Sound Trap Filter

A sound trap filter is integrated on the chip for multi frequency SIF systems. The sound trap filter characteristics are changed by WRITE BUS register setting. It is better that the setting data is had for each SIF frequency.

4. AFT

A recent IF system adopts a digital AFT circuit. But analog DC voltage is used as interface between an IF system and a micro controller in the AFT control loop. TMPA8873 adopts a digital interface through IIC bus shown as below.

**5. Non-Standard IF Signals**

TMPA8873 prepares ways for non-standard IF inputs. The OVER MOD switch is available for over-modulated PIF signals in the condition of more than 87.5% modulation at 100 IRE, which is the maximum modulation Standard of PAL and NTSC. In addition, TMPA8873 has capability to modulate more than 400% over-modulated SIF signal without undesired voltage turning over also.

6. AV Switch

The audio switch has two inputs for an external audio, and one for internal demodulated audio signal. The two external audio inputs can use as audio stereo input. The switched audio signal goes into the audio attenuator, which has controllability of audio gain from 0dB to -80dB or less with near log curve characteristic.

The video switch has one input for an external CVBS or S-VHS signal, the other for the demodulated TV video signal and the last for an external YCbCr signal, mainly coming from a DVD player. The CIN terminal for the external S-VHS signal has capability to detect DC level of the input signal, and the micro controller can read the result as 'CIN DC' through the IIC bus. This function may prepare a way for automatic switching, when inserting S-VHS connection, by means of software control.

A monitor output is available with the selected video signal. In the case of selecting S-VHS input, Y and C signals are mixed for the monitor output. This output is useful for signal detecting by the TC3 counting of the micro controller through an external LPF circuit for strict signal detecting performance.

7. Asymmetric Sharpness

External analog circuits are likely to generate 'over-shoot' signal. The asymmetric sharpness circuit is provided to compensate this undesired signal. It is possible to get more gain of pre-shoot than over-shoot by using the asymmetric sharpness, instead of that a conventional sharpness function generates both pre-shoot and over-shoot symmetrically.

8. Scan Velocity Modulation (SVM)

The SVM output is available for a large screen size TV. The SVM or the monitor output is selectable at pin 45 through the IIC bus. The SVM gain and timing is also selectable to match an external SVM drive circuit.

9. Chroma Demodulator

The PAL/NTSC chroma demodulator is integrated with the automatic color system detection. The 1 H-delay line is integrated on the chip for PAL chroma demodulation. The 1 H-delay line can act as a chroma comb filter on NTSC chroma system.

10. Base Band Color System

TMPA8873 features a base band color system for a YCbCr inputs capability for a DVD and a SDTV signals. Those signals are demodulated outside of TMPA8873, so that color signals (Cb, Cr) has different color level, different demodulation angle and different relative amplitude from the color signals demodulated by the internal chroma demodulator of TMPA8873. The base band color system is required to have control functions of color saturation, TINT and relative amplitude, and TMPA8873 has all of these functions in it. Because of base band TINT function, TMPA8873 has capability to control PAL TINT, which is basically hard to control on a conventional signal processor IC. Of course the control software can inhibit the PAL TINT function.

11. Transparent OSD Interface

TMPA8873 provides a transparent OSD capability. A conventional OSD system provides a half-tone function for OSD interface, by reducing the gain of a main picture signal during high period of 'Ym' signal from the micro controller. TMPA8873 has one more control line as 'T' for OSD from the micro controller, which enables to put a color on the same area of half-tone, so that software can achieve a see-through color menu by using the transparent OSD.

12. Noise Level Detection

The Noise detector is integrated. The noise detection level is set by WRITE BUS register. The result can be read through the IIC bus. According to the result, the micro controller can adjust level of some controls in the signal processor. For example,

- (1) When a noisy signal comes in, horizontal synchronization is influenced and the picture on the screen looks bad. Selecting less H-AFC gain makes the picture look better.
- (2) When a very noisy signal comes in, the vertical frequency detector sometimes makes miss-detection, and causes vertical jittering. Selecting the auto-50 Hz mode or auto-60 Hz mode, according to the vertical frequency information just before, may solve the vertical jittering.

13. Signal Detection Flags

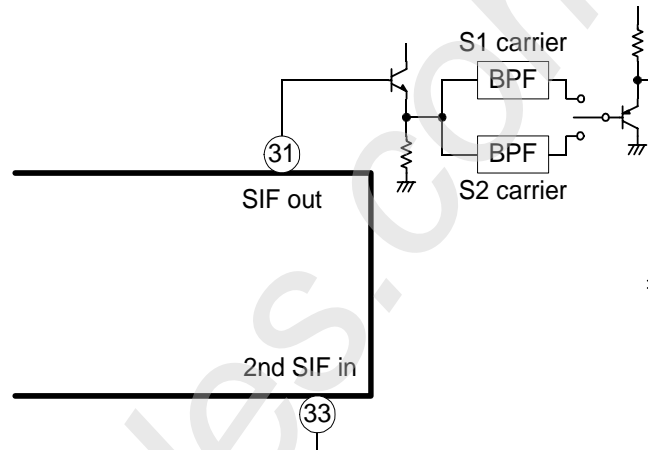
There are some flags on the READ BUS registers. They indicate that a certain signal is detected at the moment. But reliability of a detection result is not so accurate if checking only one flag, so that confirming several flags, which means similar result by each other, at the same time is recommended.

14. Control the Signal Processor

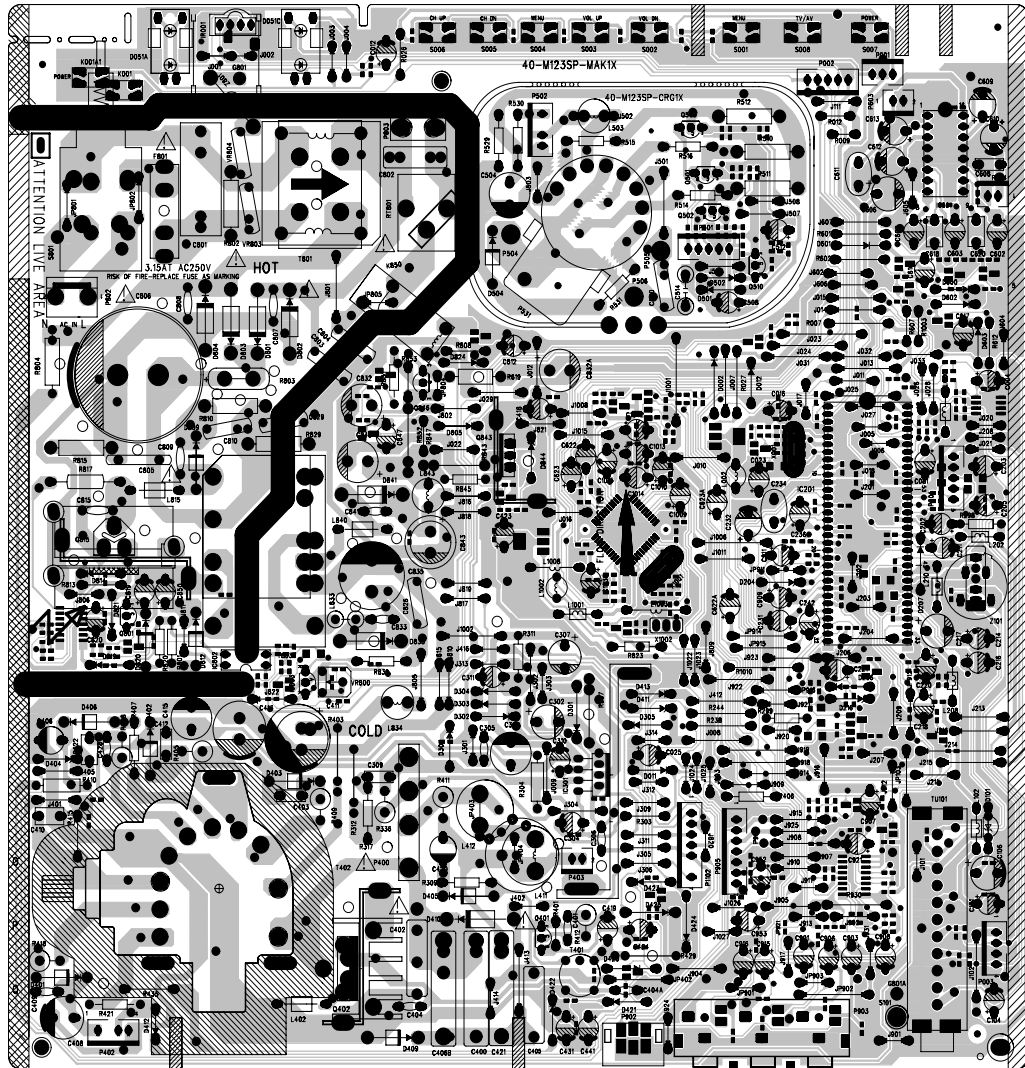
The signal processor is connected with the micro controller by means of internal wiring. All functions of the signal processor can be controlled through IIC bus, which is a part of the internal connections.

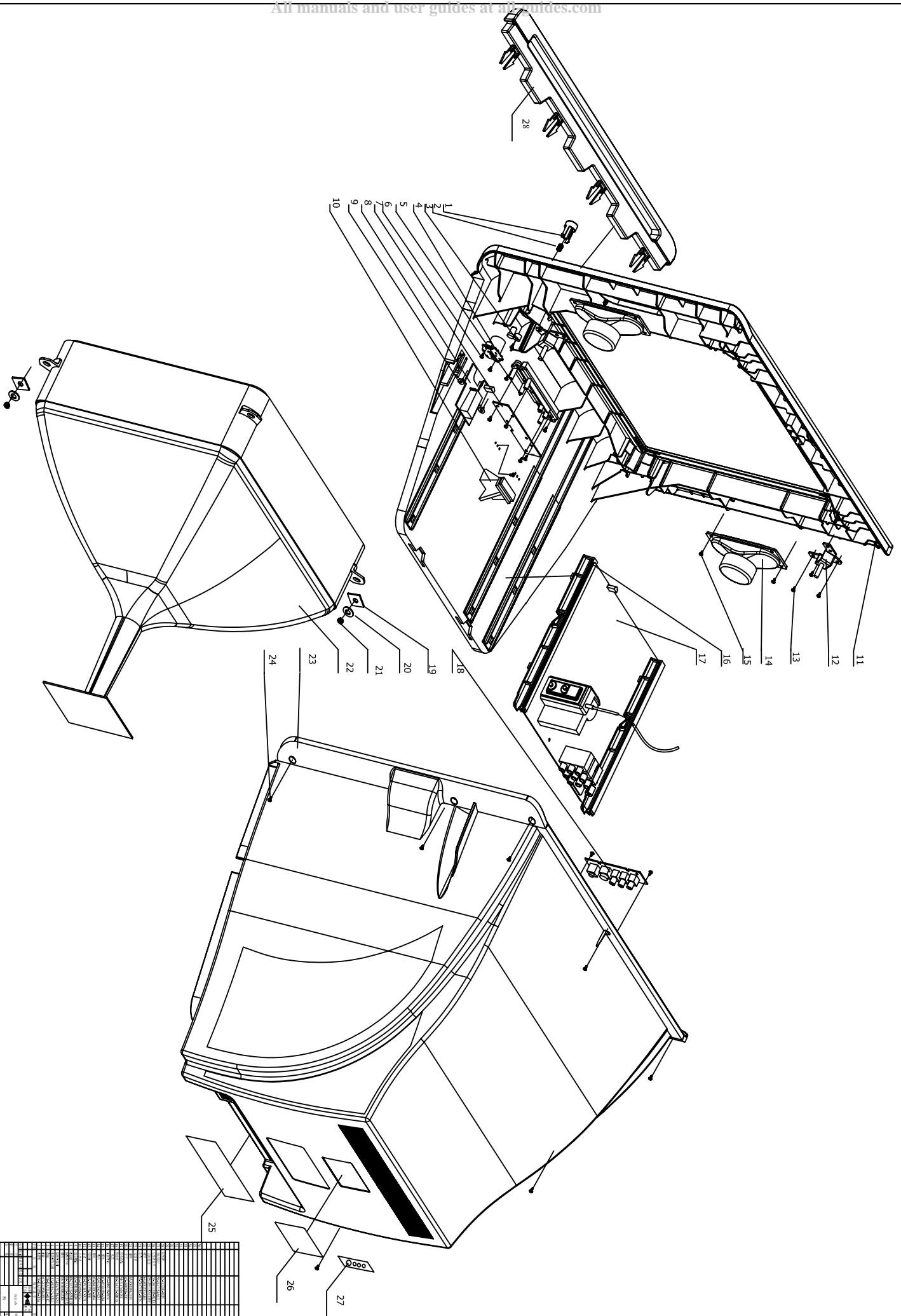
15. Thai mono-bilingual system

Thai mono-bilingual system requires two external sound BPFs(for S1/ S2 carriers) and SW. Refer to following block diagram. Because two SIF frequencies are very near to each other.



6、PCB Layout





Part No.	Part Name	QTY	Unit
1	FRONT PANEL	1	PC
2	BEZEL	1	PC
3	SCREEN	1	PC
4	SPEAKER	2	PC
5	SPEAKER	2	PC
6	MOUNTING BRACKET	2	PC
7	MOUNTING BRACKET	2	PC
8	MOUNTING BRACKET	2	PC
9	MOUNTING BRACKET	2	PC
10	MOUNTING BRACKET	2	PC
11	REAR PANEL	1	PC
12	INTERNAL COMPONENT	1	PC
13	INTERNAL COMPONENT	1	PC
14	INTERNAL COMPONENT	1	PC
15	INTERNAL COMPONENT	1	PC
16	INTERNAL COMPONENT	1	PC
17	INTERNAL COMPONENT	1	PC
18	INTERNAL COMPONENT	1	PC
19	INTERNAL COMPONENT	1	PC
20	INTERNAL COMPONENT	1	PC
21	INTERNAL COMPONENT	1	PC
22	INTERNAL COMPONENT	1	PC
23	INTERNAL COMPONENT	1	PC
24	INTERNAL COMPONENT	1	PC
25	INTERNAL COMPONENT	1	PC
26	INTERNAL COMPONENT	1	PC
27	INTERNAL COMPONENT	1	PC
28	INTERNAL COMPONENT	1	PC

10-1N4148-ABX	DIODE 1N4148 (SWITCHING)	0.005	PC	
10-1N4148-ABX	DIODE 1N4148 (SWITCHING)	0.005	PC	
10-1N4148-ABX	DIODE 1N4148 (SWITCHING)	0.005	PC	
10-1N4148-ABX	DIODE 1N4148 (SWITCHING)	0.005	PC	
10-1N4148-ABX	DIODE 1N4148 (SWITCHING)	0.005	PC	
10-1N4148-ABX	DIODE 1N4148 (SWITCHING)	0.005	PC	
10-79C18V-DBX	DIODE ZENER 18V 1/2W 5%	0.005	PC	
10-79C3V9-DBX	DIODE ZENER 3V9 1/2W 5%	0.005	PC	
10-79C3V9-DBX	DIODE ZENER 3V9 1/2W 5%	0.005	PC	
10-79C5V1-DBX	DIODE ZENER 5V1 1/2W 5%	0.005	PC	
10-79C5V1-DBX	DIODE ZENER 5V1 1/2W 5%	0.005	PC	
10-79C6V2-DBX	DIODE ZENER 6V2 1/2W 5%	0.005	PC	
10-79C7V5-DBX	TCL10-79C7V5-DBX= DIODE ZENER 7V5 1/2W 5	0.005	PC	
10-79C8V2-DBX	DIODE ZENER 8V2 1/2W 5%	0.005	PC	
10-CW574C-DJX	DIODE CW574CD	0.005	PC	
11-4508DZ-OCX	TRANSISTOR BU450DZ	0.005	PC	
11-C144ES-0BX	TCL11-C144ES-0BX= TRANSISTOR PDTC144ES (0.005	PC	
11-CA8550-DBX	TRANSISTOR 8550D-TO-92(PNP)	0.005	PC	
11-KTD863-0BX	TRANSISTOR KTD863	0.005	PC	
11-SA1015-YBX	TRANSISTOR ST2SA1015Y (PNP)	0.005	PC	
11-SA1015-YBX	TRANSISTOR ST2SA1015Y (PNP)	0.005	PC	
11-SC1815-YBX	TRANSISTOR 2SC1815-Y (NPN)	0.005	PC	
11-SC1815-YBX	TRANSISTOR 2SC1815-Y (NPN)	0.005	PC	
11-SC1815-YBX	TRANSISTOR 2SC1815-Y (NPN)	0.005	PC	
11-SC1815-YBX	TRANSISTOR 2SC1815-Y (NPN)	0.005	PC	
11-SC1815-YBX	TRANSISTOR 2SC1815-Y (NPN)	0.005	PC	
11-SC1815-YBX	TRANSISTOR 2SC1815-Y (NPN)	0.005	PC	
11-SD2012-OCX	TRANSISTOR 2SD2012	0.005	PC	
11-SK2645-0AX	TRANSISTOR 2SK2645-01MR (POWER	0.005	PC	
11-TC3207-0BX	TRANSISTOR KTC3207	0.005	PC	
11-TC3207-0BX	TRANSISTOR KTC3207	0.005	PC	
11-TC3207-0BX	TRANSISTOR KTC3207	0.005	PC	
13-000TL4-31T	IC TL431ACL	0.005	PC	
13-0HPC92-2CP	PHOTO COUPLER HPC922-C	0.005	PC	
13-24LC08-BNB	IC EEPROM 24LC08BN(WRITE)	0.005	PC	
13-HCF405-3BB	IC HCF4053BM1	0.005	PC	
13-LD1117-50B	5.0V IC LD1117S50TR	0.005	PC	
13-LD1117-50B	5.0V IC LD1117S50TR	0.005	PC	
13-MSP342-5GB	IC MSP 3425G	0.005	PC	
13-TDA486-4AS	IC TDA4864AJ	0.005	PC	
13-TEA150-6TB	IC TEA1506T/N1 118	0.005	PC	
13-TEA202-5BP	IC TEA2025B2X2W	0.005	PC	
13-TSM123-05M01	MCU TMPA8873CSBNG	0.005	PC	
18-EF0229-JGX	RES. FUS. 2.2 OHM 1W +/-5%	0.005	PC	
18-EF0478-JGX	RES. FUS. 0.47 OHM 1W +/-5%	0.005	PC	
22-PTC909-3A5	PTC 9 OHM	0.005	PC	
25-BLA100-M1X	CAP. ELEC 10 UF 250V +/-20%	0.005	PC	
25-BLA100-M1X	CAP. ELEC 10 UF 250V +/-20%	0.005	PC	
25-BMJ151-M1X	CAP. ELEC 150 UF 400V +/-20%	0.005	PC	
26-AIC221-KBX	CAP. CER 220 PF 500V +/-10% B	0.005	PC	
26-AIC391-KBX	CAP. CER 390 PF 500V +/-10% B	0.005	PC	
26-AIC391-KBX	CAP. CER 390 PF 500V +/-10% B	0.005	PC	
26-AIC391-KBX	CAP. CER 390 PF 500V +/-10% B	0.005	PC	
26-AIL103-KBX	CAP.CER 10NF 500V +/-10%	0.005	PC	
26-AIL103-KBX	CAP.CER 10NF 500V +/-10%	0.005	PC	

26-AKA221-KRX	CAP. CER 220 PF 1KV +/-10%	0.005	PC	
26-AKM221-KRX	CAP. CER 220 PF 1KV +/-10%	0.005	PC	
26-AMM102-KBX	CAP. CER 1000 PF 2KV +/-10% B	0.005	PC	
26-AMM561-KRX	CAP. CER 560PF 2KV +/-10%	0.005	PC	
26-APK222-MEX	CAP. CER 2200PF 400VAC +/-20% E	0.005	PC	
26-APK471-KBX	CAP. CER 470PF 400VAC +/-10% B	0.005	PC	
26-APK471-KBX	CAP. CER 470PF 400VAC +/-10% B	0.005	PC	
26-AQK472-ZFX	CAP. CER 4700PF 250VAC +80%-20% F	0.005	PC	
26-AQK472-ZFX	CAP. CER 4700PF 250VAC +80%-20% F	0.005	PC	
37-FBAT04-CAA1A	FBT BSC25-0252T	0.01	PC	
42-51208D-XX1G	SPEAKER 8 OHM 5W (52MMX120MM)	0.01	PC	
42-51208D-XX1G	SPEAKER 8 OHM 5W (52MMX120MM)	0.01	PC	
45-FIL4M5-0Y3	CER.FILTER LT4.5MH	0.005	PC	
45-OSC18M-4Y20A	CRYSTAL 18.432MHZ(CL=12PF)	0.005	PC	
45-OSC8M0-0Y0	CRYSTAL 8.0MHZ	0.005	PC	
45-SAWF18-590	SAW FILTER F1859	0.005	PC	
47-CRT022-NX0G	CRT SOCKET GZS10-2-DD2 (DQ5)	0.01	PC	
48-POW001-AX0G	SWITCH POWER	0.005	PC	
50-03150D-1GS1G	TCL50-03150D-1GS1G= FUSE 3.15AT 250VAC 5	0.01	PC	
51-DC0220-0QN01G	POWER CORD CS-016+H03VVH2-F	0.005	PC	
55-DA71FC-0CN9M	FRONT CABINET	0.03	PC	
55-DA71RC-0CN5F	REAR CABINET	0.01	PC	
76-002091-0AT	CARTON BOX LWH 624X384X556MM	0.001	PC	
T8-HS36R3-M123A	M123SP REMOTE HANDSET ASS'Y(W/MSP)	0.01	PC	
74-100100-8CD	POLYBAG (100CMX100CM)	0.03	PC	FOR FRONT CABINET
74-120120-8CD	POLYBAG (120CMX120CM)	0.004	PC	FOR REAR CABINET
74-279070-50C	EPE BOARD (580MMX440MMX5MM)	0.004	PC	FOR REAR CABINET
74-344780-50C	EPE BOARD (900MMX400MMX5MM)	0.021	PC	FOR REAR CABINET
76-001497-0AF	CARTON BOX LWH 640X460X360MM	0.001	PC	FOR OTHER
76-00DA71-0AF	CARTON BOX	0.015	PC	FOR FRONT CABINET
76-00DA71-0AR	CARTON BOX	0.004	PC	FOR REAR CABINET
76-346740-01A	CARTON SHEET LWH 440X620X3MM	0.002	PC	FOR OTHER
77-120120-6WC	RAW BAG POLYBAG -- 00 00 R=N	0.015	PC	FOR FRONT CABINET
76-002091-0AT	CARTON BOX LWH 624X384X556MM	0.05	PC	
76-326350-01A	CARTON SHEET 61X37X0.3CM	0.1	PC	
11-0BC337-0BX	TRANSISTOR (NPN) BC337-40	1	PC	Q1501
13-C73C03-02B	IC SC73C0302	1	PC	IC1501
14-IRE05B-XX0	IR EMITTING DIODE TSAL6200	1	PC	D1501
18-CB0221-JNX	RES. C.F. 220 OHM 1/6W +/-5%	1	PC	R1502
18-CB0229-JNX	RES. C.F. 2.2 OHM 1/6W +/-5%	1	PC	R1501
25-HBB479-M1X	CAP. ELEC 4.7 UF 10V +/-20%	1	PC	C1504
26-EBP101-JCS	CAP. CER 100 PF 50V +/-5%	1	PC	C1501
26-EBP101-JCS	CAP. CER 100 PF 50V +/-5%	1	PC	C1502
26-EBP104-ZFS	CAP. CER 0.1UF 50V +80%/-20%	1	PC	C1503
40-UOCASR-RMB1XG	P.C.B. REMOTE HANDSET BD	1	PC	
41-WJ0120-B00	WIREBAREJUMPER12MM	1	PC	J1501
45-COS455-KY1	CERAMIC RESONATOR 455KHZ	1	PC	X1501
49-HS36R1-00X9A	RUBBER PAD KEYS	1	PC	
55-HS36RB-1HA5F	LOWER CASE - REMOTE HANDSET	1	PC	
55-HS36RD-0HA5F	BATT. DOOR - REMOTE HANDSET	1	PC	
55-HS36RT-1HACQ	RREMOTE HANDSET-FRONT CABINET	1	PC	
58-HS36R3-2UI9A	INLAY REMOTE HANDSET	1	PC	
67-X38064-0E2	BATTERY SPRING (+/-)	1	PC	
67-X38065-0E2	BATTERY SPRING (+)	1	PC	
67-X38066-0E2	BATTERY SPRING (-)	1	PC	
74-007026-60C	POLYBAG (70MMX260MMX0.06MM)	1	PC	

T8-HS36R3-M123A	M123SP REMOTE HANDSET ASS'Y(W/MSP)	1	PC	
10-CW574C-DJX	DIODE CW574CD	1	PC	D101
11-4508DZ-0CX	TRANSISTOR BU450DZ	1	PC	Q402
13-TDA486-4AS	IC TDA4864AJ	1	PC	IC301
13-TEA202-5BP	IC TEA2025B2X2W	1	PC	IC601
18-EE0109-JS2	RES. FUS. 1 OHM 1/2W +/-5%	1	PC	R405
18-EE0109-JS2	RES. FUS. 1 OHM 1/2W +/-5%	1	PC	R409
18-EE0109-JS2	RES. FUS. 1 OHM 1/2W +/-5%	1	PC	R418
18-EF0478-JGX	RES. FUS. 0.47 OHM 1W +/-5%	1	PC	R403
18-EG0109-JHX	RES. FUS. 1 OHM 2W +/-5%	1	PC	R421
18-FF0102-JSX	RMOF 1W +/-5% 1K Ω	1	PC	R408
18-FF0103-JGX	RES. M.O. 10K OHM 1W +/-5%	1	PC	R309
18-FF0120-JGX	RES. M.O. 12 OHM 1W +/-5%	1	PC	R429
18-FF0122-JAX	RES. M.O. 1200 OHM 1W +/-5%	1	PC	R411
18-FF0123-JGX	RES. M.O. 12K OHM 1W +/-5%	1	PC	J405
18-FF0221-JSX	RES.M.O.F 1.0W 1.0W 220 OHM +/-5%	1	PC	R412
18-FF0221-JSX	RES.M.O.F 1.0W 1.0W 220 OHM +/-5%	1	PC	R336
18-FF0569-JGX	RES. M.O.F 5.6 OHM 1W +/-5%	1	PC	R304
18-FG0221-JHX	RES. M.O. 220 OHM 2W +/-5%	1	PC	R307
18-RF0828-JGX	RES. WIRE ROUND 0.82 OHM 1W +/-5%	1	PC	R312
25-BDA471-M1X	CAP. ELEC 470 UF 25V +/-20%	1	PC	C415
25-BDA471-M1X	CAP. ELEC 470 UF 25V +/-20%	1	PC	C308
25-BLA100-M1X	CAP. ELEC 10 UF 250V +/-20%	1	PC	C408
25-PJG101-M1X	CAP.CELE 100UF/160V/+/-20%	1	PC	C411
26-AMM331-JZX	CAP. CER 330 PF 2KV +/-5% SL	1	PC	C402
27-AGR334-JSX	CAP. M.PP 0.33 UF 250V +/-5%	1	PC	C421
27-ALR123-J0X	CAP. M PP 0.012 UF 1.6KV +/-5%	1	PC	C406B
27-LCA104-J0X	CAP. P.E. 0.1UF 100V +/-5%	1	PC	C234
36-HDR029-XX0	TRANSFORMER HOR. DRIVE BCT-1012A	1	PC	T401
36-LIN580-XX1	COIL LINEARITY 58 UH	1	PC	L412
36-WID960-XX1	COIL WIDTH 96 UH	1	PC	L411
37-FBAT04-CAA1A	FBT BSC25-0252T	1	PC	T402
45-OSC8M0-0Y0	CRYSTAL 8.0MHZ	1	PC	X001
45-SAWF18-590	SAW FILTER F1859	1	PC	Z101
46-12866W-02XG	PIN BASE *2 S11-02Y	1	PC	P604
46-20598W-04XG	PIN BASE *4 TJC1-4A	1	PC	P400 FOR DY COMMECTOR
46-33079W-02XG	PIN BASE *2 TJC3-2A	1	PC	P603
46-33079W-04XG	PIN BASE *4 TJC3-4A	1	PC	P003
64-P30080-104G	M/C SCREW P 3 X 8	1	PC	FOR IC301
64-P30080-104G	M/C SCREW P 3 X 8	1	PC	FOR Q402
65-Z30050-23MG	NUT M 3	1	PC	FOR IC301
67-387190-1A0	HEAT SINK	1	PC	FOR IC601
67-H27292-2A0	HEAT SINK	1	PC	FOR Q402
67-H30752-3A0	HEAT SINK	1	PC	FOR IC301
45-FIL4M5-0Y3	CER.FILTER LT4.5MH	1	PC	X1002
45-OSC18M-4Y20A	CRYSTAL 18.432MHZ(CL=12PF)	1	PC	X1001
10-0RU3AM-FBX	HIGH EFFICIENCY RECTIFIER RU3AM	1	PC	D833
10-0RU4YX-F0X	DIODE GRU4YX (FAST RECOVERY)	1	PC	D841
11-SD2012-0CX	TRANSISTOR 2SD2012	1	PC	Q843
11-SK2645-0AX	TRANSISTOR 2SK2645-01MR (POWER	1	PC	Q815
13-000TL4-31T	IC TL431ACLP	1	PC	IC803
13-0HPC92-2CP	PHOTO COUPLER HPC922-C	1	PC	IC802
18-DF0334-JGX1	METAL FILM FIXED RESISTOR 1WS 330K Ω	1	PC	R804
18-EF0229-JGX	RES. FUS. 2.2 OHM 1W +/-5%	1	PC	R843
18-FG0229-JHX	RES. M.O. 2.2 OHM 2W +/-5%	1	PC	R852

18-KF0825-JHX	RES. GLASS GLAZE 8.2M OHM 1W	1	PC	R829
18-RG0108-JHX	RES. WIRE ROUND 0.1 OHM 2W +/-5%	1	PC	R815
22-NTC479-XX0	NTC 4.7 OHM +/-18% NTC4.7D2-14	1	PC	R803
22-PTC909-3A5	PTC 9 OHM	1	PC	RT801
25-BDA222-M1S	CAP. ELEC 25V/2200UF/+/-20%	1	PC	C843
25-BMJ151-M1X	CAP. ELEC 150 UF 400V +/-20%	1	PC	C806
25-PJG101-M1X	CAP.CELE 100UF/160V/+/-20%	1	PC	C835
26-AIL103-KBX	CAP.CER 10NF 500V +/-10%	1	PC	C826
26-AIL103-KBX	CAP.CER 10NF 500V +/-10%	1	PC	C805
26-AKA221-KRX	CAP. CER 220 PF 1KV +/-10%	1	PC	C833
26-AKM221-KRX	CAP. CER 220 PF 1KV +/-10%	1	PC	C809
26-AMM561-KRX	CAP. CER 560PF 2KV +/-10%	1	PC	C815
26-APK222-MEX	CAP. CER 2200PF 400VAC+/-20% E	1	PC	C829
26-APK471-KBX	CAP. CER 470PF 400VAC +/-10% B	1	PC	C804
26-APK471-KBX	CAP. CER 470PF 400VAC +/-10% B	1	PC	C803
26-AQK472-ZFX	CAP. CER 4700PF 250VAC +80%-20% F	1	PC	C807
26-AQK472-ZFX	CAP. CER 4700PF 250VAC +80%-20% F	1	PC	C808
27-AQT474-MV3	CAP.M.PP0.47UF275VAC+/-20%	1	PC	C801
27-MHM104-K0X	CAP. M.P.E 0.1 UF 400V +/-10%	1	PC	C802
34-R101K2-1BX	COIL CHOKE 100 UH +/-10%	1	PC	L834
34-R220K2-1BX	COIL CHOKE 22 UH +/-10%	1	PC	L843
35-392170-00X	FERR.COIL BF-I35050C-683	1	PC	L833
36-LIF010-AX1	LINE FILTER	1	PC	T801
36-TRF198-AX0	TCL36-TRF198-AX0= TRANSFORMER CONV. BCK3	1	PC	T803
46-10962W-02XG	PIN BASE *2 TJC2-2A	1	PC	P803
50-03150D-1GS1G	TCL50-03150D-1GS1G= FUSE 3.15AT 250VAC 5	1	PC	F801
63-B30100-AB4G	S/T SCREW B 3 X 10 AB	1	PC	FOR Q815
64-P30080-104G	M/C SCREW P 3 X 8	1	PC	FOR Q843
66-20516X-0B0	FUSE HOLDER	2	PC	FOR F801
67-H10918-4M2	HEAT SINK	1	PC	FOR Q843
67-H41341-2A0	HEAT SINK	1	PC	FOR Q815
67-M40068-1E4	CRT BRACKET	1	PC	FOR Q815
71-270870-0A9	LABEL	1	PC	
71-DYP000-WX2	LABEL	1	PC	STICK ON HEAT SINK
90-0DSTG1-SR1U	HEAT SINK DSTG-1	0.001	G	
47-SVI002-XX0	Y/C SOCKET VERTICAL TYPE	1	PC	P902
47-RCA040-XX0G	RCA SOCKET AV-3.2-9W-H	1	PC	P903
36-DEG210-BX3	DEGAUSSING COIL 2500MM	1	PC	
41-GND021-XX0	CRT GROUND BRAIDS	1	PC	
42-51208D-XX1G	SPEAKER 8 OHM 5W (52MMX120MM)	1	PC	W602
42-51208D-XX1G	SPEAKER 8 OHM 5W (52MMX120MM)	1	PC	W601
44-21RFLW-TS2A	CRT A51ELD031X006	0	PC	
46-14026H-02XG	HS 2P 2468#22 570MM S11-2Y/7MM	1	PC	P601H FOR M. BD P603
46-27688H-04X02G	HS 4PIN TCL1711	1	PC	P400 FOR DY CONNECTOR (MAIN BD)
46-35196H-02XG	HS 2P22 570/7 TJC3-2Y	1	PC	P602H FOR M. BD P604
54-113970-0U0	PVC TUBE AWG NO.5	0.32	M	FOR L & R SPEAKING WIRE
54-114000-00X	FELT TAPE (150MMX19MMX0.3MM)	4	PC	MTG CRT
54-205140-000	SPACER CRT MOUNTING T=2MM	4	PC	MTG CRT
54-314740-0X0	CRT FIBRE SHEET (22MMX22MMX0.8MM)	4	PC	FOR CRT
54-415400-000	RUBBER PAD	2	PC	
57-10654X-00F	TWIST TIE NY66	15	PC	
57-DA71CM-CX19B	TOUCH BUTTON DPT-TP05110184-K	1	PC	

57-FGPA71-XX2	SHINE AUREOLE	1	PC	
59-312160-000	SPEAKER RUBBER CUSHION	8	PC	MTG SPK
63-B30100-AB4G	S/T SCREW B 3 X 10 AB	4	PC	MTG KEY BD & PUSH BUTTON
63-B30100-AB4G	S/T SCREW B 3 X 10 AB	2	PC	MTG KEY BD & F. CAB.
63-B40150-AB4G	S/T SCREW B 4 X 15 AB	12	PC	MTG CRT METAL & FRONT CABINET
63-W30080-AB4G	S/T SCREW W 3 X 8 AB	1	PC	MTG LENS & FRONT CABINET
63-W30100-AB4G	S/T SCREW W 3 X 10 AB	2	PC	MTG MAIN PCB
63-W30100-AB4G	S/T SCREW W 3 X 10 AB	2	PC	MTG LIGHT BD & F. CAB.
63-W30120-AB4G	S/T SCREW W 3 X 12 AB	4	PC	MTG SPK & FRONT CABINET
63-Z30100-AB4G	S/T SCREW 3.0 X 10	2	PC	MTG POWER BD & F. CAB.
65-A60180-20EG	EXT. TOOTH WASHTER 6 X 18 X 2	4	PC	FOR CRT
65-Z60100-50EG	NUT M 6.0 X 1.0	4	PC	FOR CRT
67-325570-2E0	CRT BRACKET	4	PC	
67-X12668-0E0	SPRING CRT 6MMX40MMX0.5MM	1	PC	
67-X41381-0E2	POWER KNOB SPRING	1	PC	
71-RADIOV-SCR9X	TV PRI LABEL 21A71 BLACK WHITE RED R=N	1	PC	
72-DA71GP-X499B	TV IB OPERATION MANUAL R=N	1	PC	
74-022032-6WE1A	POLYBAG	1	PC	
74-120120-80H1A	POLYBAG	1	PC	
77-050010-6WC	BUBBLE BAG	1	PC	
58-DA41RI-CUI9F	TV DEC OVERLAY REAR AV -- 12 00 R=N	1	PC	
58-DA71SI-2UI9K	TV PRI OVERLAY SIDE AV 21A71 BK 02 00 R=	1	PC	
63-B40200-AB2G	S/T SCREW B 4 X 20 AB	7	PC	MTG FRONT & REAR CAB.
63-F30100-BT3G	S/T SCREW F 3 X 10 BT	2	PC	MTG RCA JACK & REAR CABINET
63-W30100-AB4G	S/T SCREW W 3 X 10 AB	2	PC	MTG SUPPORTOR & R.CAB.
63-W30100-AB4G	S/T SCREW W 3 X 10 AB	2	PC	MTG SIDE AV BD
18-FG0153-JHX	RES. M.O. 15K OHM 2W +/-5%	1	PC	R512
18-FG0153-JHX	RES. M.O. 15K OHM 2W +/-5%	1	PC	R511
18-FG0153-JHX	RES. M.O. 15K OHM 2W +/-5%	1	PC	R510
25-BLA100-M1X	CAP. ELEC 10 UF 250V +/-20%	1	PC	C504
26-AMM102-KBX	CAP. CER 1000 PF 2KV +/-10% B	1	PC	C500
26-EBP103-ZF1	CAP CER 50V 2.5MM 10nF -20%+80%	1	PC	C514
35-139730-00X	FERR. BEAD BF60	2	PC	FOR C514 (L505 & L506)
46-10967W-01XG	PIN BASE *1 TJC1-1A	1	PC	P504
46-29355H-04XG	HS 4P24 450 2(N) SCN-4Y	1	PC	FROM P502 TO M.BD P402
46-29356H-05XG	HS 5P24 450 F/W 2* SCN-5Y	1	PC	FROM P501 TO P201
47-CRT022-NX0G	CRT SOCKET GZS10-2-DD2 (DQ5)	1	PC	P531
46-28246H-04XG	HS 4P 2468#24 200 TJC3-4Y/JC25-4Y	1	PC	P1002 FOR PWR SW. BD P1101E
46-39626W-07XG	CONNECTOR	1	PC	P1001 FOR FILM SWITCH
46-32535H-04XG	TCL46-32535H-04XG= HS 4P24 550 TJC3-4Y/S	1	PC	P904A R - VAGAINST SILK-SCREEN FOR M.BD P904
47-RCA002-XX0G	RCA SOCKET AV-8.4-6 (WHITE)	1	PC	P1102

47-RCA003-XX0G	RCA SOCKET AV-8.4-6 (YELLOW)	1	PC	P1101
47-RCA017-XX0G	RCA JACK RED (RCA-101P) (THREE FEET)	1	PC	P1103
02-IRR001-XX1S	TCL02-IRR001-XX1S= 02-IRR001-XX1S = IR R	1	PC	IR1101
46-31788H-02XG	HS 2P22 350 TJC3-2Y/SCN-2Y	1	PC	P1101C FOR M. BD P001
46-33079W-04XG	PIN BASE *4 TJC3-4A	1	PC	P1101E FOR KEY BD P1002
46-33079W-04XG	PIN BASE *4 TJC3-4A	1	PC	D1101 FOR 57-FGPA71- XX2
46-35063W-03XG	PIN BASE *3 VH-3A	1	PC	P801 FOR POWER CORD
46-35063W-03XG	PIN BASE *3 VH-3A	1	PC	P802
46-35144H-04XG	HS 4P 2468#24 350 TJC3-4Y/SNC-4Y	1	PC	P1101B FOR M. BD P002
46-KK025T-03FG	HS 3PIN Y0605115.4	1	PC	FOR PWR SW. BD(P802) & PARTS
48-POW001-AX0G	SWITCH POWER	1	PC	SW801
07-457FF5-NA9G	TUNER F07GP-4ND-E	1	PC	TU101
13-TSM123-05M01	MCU TMPA8873CSBNG	1	PC	IC201
46-33079W-02XG	PIN BASE *2 TJC3-2A	1	PC	P001 P2 - P3AGAINST SILK-SCREEN
46-33079W-04XG	PIN BASE *4 TJC3-4A	1	PC	P904(PIN(4)-PIN(7))
46-33079W-04XG	PIN BASE *4 TJC3-4A	1	PC	P002 P2 - P5 FOR PWR SW. BD P1101B
46-35063W-03XG	PIN BASE *3 VH-3A	1	PC	P802 FOR POWER CORD
51-DC0220-0QN01G	POWER CORD CS-016+H03VVH2-F	1	PC	
70-271510-00A	SERVICE CARD	1	PC	FOR PRODUCTION USE
71-270870-0A9	LABEL	2	PC	
90-0DSTG1-SR1U	HEAT SINK DSTG-1	1	G	FOR Q801
90-269080-ZU0U	CLEAN COATING TC-131L 14KG/BARREL	0.1	G	
10-0FR104-FBX	DIODE FR104 (FAST RECTIFIER)	1	PC	D401
10-0FR104-FBX	DIODE FR104 (FAST RECTIFIER)	1	PC	D301
10-0FR104-FBX	DIODE FR104 (FAST RECTIFIER)	1	PC	D402
10-0FR104-FBX	DIODE FR104 (FAST RECTIFIER)	1	PC	D403
10-0FR104-FBX	DIODE FR104 (FAST RECTIFIER)	1	PC	D404
10-0FR104-FBX	DIODE FR104 (FAST RECTIFIER)	1	PC	D405
10-0FR104-FBX	DIODE FR104 (FAST RECTIFIER)	1	PC	D406
10-1N4002-EBX	DIODE 1N4002 (RECTIFIER)	1	PC	D424
10-1N4002-EBX	DIODE 1N4002 (RECTIFIER)	1	PC	D425
10-1N4148-ABX	DIODE 1N4148 (SWITCHING)	1	PC	D002
10-1N4148-ABX	DIODE 1N4148 (SWITCHING)	1	PC	D601
10-1N4148-ABX	DIODE 1N4148 (SWITCHING)	1	PC	D302
10-1N4148-ABX	DIODE 1N4148 (SWITCHING)	1	PC	D012
10-1N4148-ABX	DIODE 1N4148 (SWITCHING)	1	PC	D303
10-1N4148-ABX	DIODE 1N4148 (SWITCHING)	1	PC	D602
10-1N4148-ABX	DIODE 1N4148 (SWITCHING)	1	PC	D603
10-1N4148-ABX	DIODE 1N4148 (SWITCHING)	1	PC	D600
10-1N4148-ABX	DIODE 1N4148 (SWITCHING)	1	PC	D412
10-1N4148-ABX	DIODE 1N4148 (SWITCHING)	1	PC	D413
10-1N4148-ABX	DIODE 1N4148 (SWITCHING)	1	PC	D307
10-1N4148-ABX	DIODE 1N4148 (SWITCHING)	1	PC	D305
10-1N4148-ABX	DIODE 1N4148 (SWITCHING)	1	PC	D206
10-79C3V9-DBX	DIODE ZENER 3V9 1/2W 5%	1	PC	D304
10-79C3V9-DBX	DIODE ZENER 3V9 1/2W 5%	1	PC	D411

10-79C5V1-DBX	DIODE ZENER 5V1 1/2W 5%	1	PC	D216
10-79C6V2-DBX	DIODE ZENER 6V2 1/2W 5%	1	PC	D207
10-79C8V2-DBX	DIODE ZENER 8V2 1/2W 5%	1	PC	+TO GND, "" ""TO J405&R406"
11-KTD863-OBX	TRANSISTOR KTD863	1	PC	Q401
18-CB0101-JNX	RES. C.F. 100 OHM 1/6W +/-5%	1	PC	R009
18-CB0102-JNX	RES. C.F. 1K OHM 1/6W +/-5%	1	PC	R415
18-CB0102-JNX	RES. C.F. 1K OHM 1/6W +/-5%	1	PC	R007
18-CB0103-JNX	RES. C.F. 10K OHM 1/6W +/-5%	1	PC	R012
18-CB0103-JNX	RES. C.F. 10K OHM 1/6W +/-5%	1	PC	R406
18-CB0121-JNX	RES. C.F. 120 OHM 1/6W +/-5%	1	PC	R401
18-CB0222-JNX	RES. C.F. 2.2K OHM 1/6W +/-5%	1	PC	J921
18-CB0272-JNX	RES. C.F. 2.7K OHM 1/6W +/-5%	1	PC	R607
18-CB0333-JNX	RES. C.F. 33K OHM 1/6W +/-5%	1	PC	R612
18-CB0470-JNX	RES. C.F. 47 OHM 1/6W +/-5%	1	PC	C404
18-CB0472-JNX	CARBON RES. C.F. 4.7K OHM 1/6W +/-5%	1	PC	R601
18-CB0472-JNX	CARBON RES. C.F. 4.7K OHM 1/6W +/-5%	1	PC	R602
18-CB0473-JNX	RES. C.F. 47K OHM 1/6W +/-5%	1	PC	R930
18-CB0561-JNX	RES. C.F. 560 OHM 1/6W +/-5%	1	PC	R238
18-CB0569-JNX	RES. C.F. 5.6 OHM 1/6W +/-5%	1	PC	R317
18-CD0100-JNX	RES. C.F. 10 OHM 1/4W +/-5%	1	PC	R407
18-CD0122-JNX	RES. C.F. 1.2K OHM 1/4W +/-5%	1	PC	R311
18-CD0820-JNX	RES. C.F. 82 OHM 1/4W +/-5%	1	PC	R298
18-CE0332-JNX	RES. C.F. 3.3K OHM 1/2W +/-5%	1	PC	R410
18-DB0243-FNX	RES. M.F. 24K OHM 1/6W +/-1%	1	PC	R303
18-DB0682-FNX	RES. M.F. 1/6W 6.8K OHM +/-1%	1	PC	R244
25-BCB100-M1X	CAP. ELEC 10 UF 16V +/-20%	1	PC	C907
25-BCB100-M1X	CAP. ELEC 10 UF 16V +/-20%	1	PC	C242
25-BCB100-M1X	CAP. ELEC 10 UF 16V +/-20%	1	PC	C901
25-BCB100-M1X	CAP. ELEC 10 UF 16V +/-20%	1	PC	C908
25-BCB100-M1X	CAP. ELEC 10 UF 16V +/-20%	1	PC	C952
25-BCB100-M1X	CAP. ELEC 10 UF 16V +/-20%	1	PC	C953
25-BCB100-M1X	CAP. ELEC 10 UF 16V +/-20%	1	PC	C004
25-BCB100-M1X	CAP. ELEC 10 UF 16V +/-20%	1	PC	C016
25-BCB100-M1X	CAP. ELEC 10 UF 16V +/-20%	1	PC	C023
25-BCB100-M1X	CAP. ELEC 10 UF 16V +/-20%	1	PC	C025
25-BCB101-M1X	CAP. ELEC 100 UF 16V +/-20%	1	PC	C311
25-BCB101-M1X	CAP. ELEC 100 UF 16V +/-20%	1	PC	C609
25-BCB101-M1X	CAP. ELEC 100 UF 16V +/-20%	1	PC	C612
25-BCB101-M1X	CAP. ELEC 100 UF 16V +/-20%	1	PC	C617
25-BCB101-M1X	CAP. ELEC 100 UF 16V +/-20%	1	PC	C607
25-BCB101-M1X	CAP. ELEC 100 UF 16V +/-20%	1	PC	C101
25-BCB101-M1X	CAP. ELEC 100 UF 16V +/-20%	1	PC	C211
25-BCB101-M1X	CAP. ELEC 100 UF 16V +/-20%	1	PC	C603
25-BCB101-M1X	CAP. ELEC 100 UF 16V +/-20%	1	PC	C906
25-BCB101-M1X	CAP. ELEC 100 UF 16V +/-20%	1	PC	C602
25-BCB101-M1X	CAP. ELEC 100 UF 16V +/-20%	1	PC	C921
25-BCB101-M1X	CAP. ELEC 100 UF 16V +/-20%	1	PC	C903
25-BCB221-M1X	CAP. ELEC 220 UF 16V +/-20%	1	PC	C613
25-BCB221-M1X	CAP. ELEC 220 UF 16V +/-20%	1	PC	C610
25-BCB221-M1X	CAP. ELEC 220 UF 16V +/-20%	1	PC	C232
25-BCB470-M1X	CAP. ELEC 47 UF 16V +/-20%	1	PC	C202
25-BCB470-M1X	CAP. ELEC 47 UF 16V +/-20%	1	PC	C081
25-BCB471-M1X	CAP. ELEC 470 UF 16V +/-20%	1	PC	C307
25-BCB471-M1X	CAP. ELEC 470 UF 16V +/-20%	1	PC	C606
25-BCB471-M1X	CAP. ELEC 470 UF 16V +/-20%	1	PC	C217

25-BDB102-M1X	CAP.ELEC 1000UF 25V +/-20%13*22	1	PC	C413
25-BDB470-M1X	CAP. ELEC 47 UF 25V +/-20%	1	PC	C419
25-BEB100-M1X	CAP. ELEC 10 UF 35V +/-20%	1	PC	C441
25-BEB101-M1X	CAP. ELEC 100 UF 35V +/-20%	1	PC	C302
25-BFB101-M1X	CAP. ELEC 100 UF 50V +/-20%	1	PC	C106
25-BFB109-M1X	CAP. ELEC 1 UF 50V +/-20%	1	PC	C916
25-BFB109-M1X	CAP. ELEC 1 UF 50V +/-20%	1	PC	C915
25-BFB109-M1X	CAP. ELEC 1 UF 50V +/-20%	1	PC	C911
25-BFB109-M1X	CAP. ELEC 1 UF 50V +/-20%	1	PC	C909
25-BFB109-M1X	CAP. ELEC 1 UF 50V +/-20%	1	PC	C616
25-BFB109-M1X	CAP. ELEC 1 UF 50V +/-20%	1	PC	C203
25-BFB229-M1X	CAP. ELEC 2.2 UF 50V +/-20%	1	PC	C214
25-BHB100-M1X	CAP. ELEC 10 UF 100V +/-20%	1	PC	C420
25-BHB100-M1X	CAP. ELEC 10 UF 100V +/-20%	1	PC	C406
25-MFB228-K1X	CAP.ELEC 0.22UF 50V +/-10%	1	PC	C205
25-MFB478-K1X	CAP.ELEC 50V 0.47UF +/-10%	1	PC	C236
25-MFB478-K1X	CAP.ELEC 50V 0.47UF +/-10%	1	PC	C218
25-RCB100-M1X	TCL25-RCB100-M1X= CAP.ELEC 10 UF 16V +/-	1	PC	C220
25-RCB100-M1X	TCL25-RCB100-M1X= CAP.ELEC 10 UF 16V +/-	1	PC	C227
25-RCB100-M1X	TCL25-RCB100-M1X= CAP.ELEC 10 UF 16V +/-	1	PC	C231
25-RFB479-M1X	CAP.ELEC 4.7 UF 50V +/-20%	1	PC	C310
25-RFB479-M1X	CAP.ELEC 4.7 UF 50V +/-20%	1	PC	C104
25-RFB479-M1X	CAP.ELEC 4.7 UF 50V +/-20%	1	PC	C304
25-RFB479-M1X	CAP.ELEC 4.7 UF 50V +/-20%	1	PC	C216
26-AIC391-KBX	CAP. CER 390 PF 500V +/-10% B	1	PC	C412
26-AIC391-KBX	CAP. CER 390 PF 500V +/-10% B	1	PC	C403
26-AIC391-KBX	CAP. CER 390 PF 500V +/-10% B	1	PC	C409
26-EBP680-JZX	CAP. CER 68PF 50V +/-5% SL TUBE	1	PC	FOR J405
27-MBC104-J0X	CAP. M.P.E 0.1 UF 63V +/-5%	1	PC	C305
27-MBC223-J0X	CAP. M.P.E 0.022UF 63V +/-5%	1	PC	C401
27-MBC224-J0X	CAP. M.P.E 0.22UF 63V +/-5%	1	PC	C611
27-MBC224-J0X	CAP. M.P.E 0.22UF 63V +/-5%	1	PC	C608
27-MBC224-J0X	CAP. M.P.E 0.22UF 63V +/-5%	1	PC	C620
27-MBC224-J0X	CAP. M.P.E 0.22UF 63V +/-5%	1	PC	C618
27-MBC473-K0X	CAP. M.PE 47NF 63V +/-10% 13076040	1	PC	C309
27-MCC104-J0X	CPM 100N0F +5% 100.0V R=N	1	PC	C410
27-MCC562-J0X	CAP. M.P.E 0.0056UF 100V +/-20%	1	PC	C422
27-PBC222-J0X	CAP. P.E 0.0022UF 63V +/-5%	1	PC	C306
34-A220K0-1IX	COIL PL - 22UH +/-10% LGA0305-220K	1	PC	L080
34-A220K0-1IX	COIL PL - 22UH +/-10% LGA0305-220K	1	PC	L208
34-A330K0-1IX	COIL CHOKE 33UH +/-10%	1	PC	L202
34-A330K0-1IX	COIL CHOKE 33UH +/-10%	1	PC	L102
34-R100J2-0EX	COIL PL - 10 UH +/-5%	1	PC	L002
40-M123SP-MAK1XG	P.C.B MAIN BD	1	PC	
41-WJ0075-B00	WIREBAREJUMPER7.5MM	1	PC	J924
41-WJ0075-B00	WIREBAREJUMPER7.5MM	1	PC	J020
41-WJ0075-B00	WIREBAREJUMPER7.5MM	1	PC	J206
41-WJ0075-B00	WIREBAREJUMPER7.5MM	1	PC	J101
41-WJ0075-B00	WIREBAREJUMPER7.5MM	1	PC	J314
41-WJ0075-B00	WIREBAREJUMPER7.5MM	1	PC	J202
41-WJ0075-B00	WIREBAREJUMPER7.5MM	1	PC	J301
41-WJ0075-B00	WIREBAREJUMPER7.5MM	1	PC	J303
41-WJ0075-B00	WIREBAREJUMPER7.5MM	1	PC	J416
41-WJ0075-B00	WIREBAREJUMPER7.5MM	1	PC	J312
41-WJ0075-B00	WIREBAREJUMPER7.5MM	1	PC	J208
41-WJ0075-B00	WIREBAREJUMPER7.5MM	1	PC	J901

41-WJ0075-B00	WIREBAREJUMPER7.5MM	1	PC	J903
41-WJ0075-B00	WIREBAREJUMPER7.5MM	1	PC	J913
41-WJ0075-B00	WIREBAREJUMPER7.5MM	1	PC	J920
41-WJ0075-B00	WIREBAREJUMPER7.5MM	1	PC	J201
41-WJ0075-B00	WIREBAREJUMPER7.5MM	1	PC	J005
41-WJ0075-B00	WIREBAREJUMPER7.5MM	1	PC	J021
41-WJ0075-B00	WIREBAREJUMPER7.5MM	1	PC	J911
41-WJ0075-B00	WIREBAREJUMPER7.5MM	1	PC	J203
41-WJ0075-B00	WIREBAREJUMPER7.5MM	1	PC	J604
41-WJ0075-B00	WIREBAREJUMPER7.5MM	1	PC	J313
41-WJ0075-B00	WIREBAREJUMPER7.5MM	1	PC	J017
41-WJ0075-B00	WIREBAREJUMPER7.5MM	1	PC	J207
41-WJ0075-B00	WIREBAREJUMPER7.5MM	1	PC	J018
41-WJ0075-B00	WIREBAREJUMPER7.5MM	1	PC	J006
41-WJ0100-B00	WIREBAREJUMPER10MM	1	PC	J028
41-WJ0100-B00	WIREBAREJUMPER10MM	1	PC	J211
41-WJ0100-B00	WIREBAREJUMPER10MM	1	PC	J1008
41-WJ0100-B00	WIREBAREJUMPER10MM	1	PC	J401
41-WJ0100-B00	WIREBAREJUMPER10MM	1	PC	J311
41-WJ0100-B00	WIREBAREJUMPER10MM	1	PC	J309
41-WJ0100-B00	WIREBAREJUMPER10MM	1	PC	R299
41-WJ0100-B00	WIREBAREJUMPER10MM	1	PC	JP912
41-WJ0100-B00	WIREBAREJUMPER10MM	1	PC	J606
41-WJ0100-B00	WIREBAREJUMPER10MM	1	PC	J033
41-WJ0100-B00	WIREBAREJUMPER10MM	1	PC	J414
41-WJ0100-B00	WIREBAREJUMPER10MM	1	PC	J909
41-WJ0100-B00	WIREBAREJUMPER10MM	1	PC	J912
41-WJ0100-B00	WIREBAREJUMPER10MM	1	PC	J011
41-WJ0100-B00	WIREBAREJUMPER10MM	1	PC	J916
41-WJ0100-B00	WIREBAREJUMPER10MM	1	PC	J305
41-WJ0100-B00	WIREBAREJUMPER10MM	1	PC	J016
41-WJ0100-B00	WIREBAREJUMPER10MM	1	PC	J022
41-WJ0100-B00	WIREBAREJUMPER10MM	1	PC	J026
41-WJ0100-B00	WIREBAREJUMPER10MM	1	PC	J902
41-WJ0100-B00	WIREBAREJUMPER10MM	1	PC	J907
41-WJ0100-B00	WIREBAREJUMPER10MM	1	PC	J602
41-WJ0100-B00	WIREBAREJUMPER10MM	1	PC	J027
41-WJ0125-B00	WIREBAREJUMPER12.5MM	1	PC	D409
41-WJ0125-B00	WIREBAREJUMPER12.5MM	1	PC	J032
41-WJ0125-B00	WIREBAREJUMPER12.5MM	1	PC	J304
41-WJ0125-B00	WIREBAREJUMPER12.5MM	1	PC	J009
41-WJ0125-B00	WIREBAREJUMPER12.5MM	1	PC	J012
41-WJ0125-B00	WIREBAREJUMPER12.5MM	1	PC	J607
41-WJ0125-B00	WIREBAREJUMPER12.5MM	1	PC	J204
41-WJ0125-B00	WIREBAREJUMPER12.5MM	1	PC	J010
41-WJ0125-B00	WIREBAREJUMPER12.5MM	1	PC	J914
41-WJ0125-B00	WIREBAREJUMPER12.5MM	1	PC	J015
41-WJ0125-B00	WIREBAREJUMPER12.5MM	1	PC	J213
41-WJ0125-B00	WIREBAREJUMPER12.5MM	1	PC	J923
41-WJ0125-B00	WIREBAREJUMPER12.5MM	1	PC	J014
41-WJ0125-B00	WIREBAREJUMPER12.5MM	1	PC	J216
41-WJ0125-B00	WIREBAREJUMPER12.5MM	1	PC	J302
41-WJ0125-B00	WIREBAREJUMPER12.5MM	1	PC	JP103
41-WJ0125-B00	WIREBAREJUMPER12.5MM	1	PC	R619
41-WJ0125-B00	WIREBAREJUMPER12.5MM	1	PC	J029
41-WJ0150-B00	WIREBAREJUMPER15MM	1	PC	J007

41-WJ0150-B00	WIREBAREJUMPER15MM	1	PC	R027
41-WJ0150-B00	WIREBAREJUMPER15MM	1	PC	J008
41-WJ0150-B00	WIREBAREJUMPER15MM	1	PC	J102
41-WJ0150-B00	WIREBAREJUMPER15MM	1	PC	J215
41-WJ0150-B00	WIREBAREJUMPER15MM	1	PC	J412
41-WJ0150-B00	WIREBAREJUMPER15MM	1	PC	J908
41-WJ0150-B00	WIREBAREJUMPER15MM	1	PC	J1002
41-WJ0150-B00	WIREBAREJUMPER15MM	1	PC	JP402
41-WJ0150-B00	WIREBAREJUMPER15MM	1	PC	L402
41-WJ0150-B00	WIREBAREJUMPER15MM	1	PC	J031
41-WJ0175-B00	WIREBAREJUMPER17.5MM	1	PC	J922
41-WJ0175-B00	WIREBAREJUMPER17.5MM	1	PC	J919
41-WJ0175-B00	WIREBAREJUMPER17.5MM	1	PC	J918
41-WJ0175-B00	WIREBAREJUMPER17.5MM	1	PC	J025
41-WJ0175-B00	WIREBAREJUMPER17.5MM	1	PC	J024
41-WJ0175-B00	WIREBAREJUMPER17.5MM	1	PC	J013
41-WJ0200-B00	WIREBAREJUMPER20MM	1	PC	J023
41-WJ0200-B00	WIREBAREJUMPER20MM	1	PC	J214
66-343730-0B0	HOLLOW RIVET 1.6MMX3.0MMX3.2MM	2	PC	FOR L411
66-343730-0B0	HOLLOW RIVET 1.6MMX3.0MMX3.2MM	2	PC	FOR L412
66-343730-0B0	HOLLOW RIVET 1.6MMX3.0MMX3.2MM	2	PC	FOR C421
66-343730-0B0	HOLLOW RIVET 1.6MMX3.0MMX3.2MM	2	PC	FOR C406B
66-343730-0B0	HOLLOW RIVET 1.6MMX3.0MMX3.2MM	1	PC	FOR Q402
66-343730-0B0	HOLLOW RIVET 1.6MMX3.0MMX3.2MM	4	PC	FOR T402
18-CB0101-JNX	RES. C.F. 100 OHM 1/6W +/-5%	1	PC	R1010
18-CB0333-JNX	RES. C.F. 33K OHM 1/6W +/-5%	1	PC	R1003
25-BCB100-M1X	CAP. ELEC 10 UF 16V +/-20%	1	PC	C1015
25-BCB100-M1X	CAP. ELEC 10 UF 16V +/-20%	1	PC	C1013
25-BCB100-M1X	CAP. ELEC 10 UF 16V +/-20%	1	PC	C1009
25-BCB220-M1X	CAP. ELEC 22 UF 16V +/-20%	1	PC	C1042
25-BCB470-M1X	CAP. ELEC 47 UF 16V +/-20%	1	PC	C1038
25-BFB229-M1X	CAP. ELEC 2.2 UF 50V +/-20%	1	PC	C623
25-BFB229-M1X	CAP. ELEC 2.2 UF 50V +/-20%	1	PC	C622
25-BFB339-M1X	CAP. ELEC 3.3 UF 50V +/-20%	1	PC	C1010
34-A109K0-1IX	COIL CHOKE 1 UH +/-10%	1	PC	L1003
34-A109K0-1IX	COIL CHOKE 1 UH +/-10%	1	PC	L1008
34-A220K0-1IX	COIL PL - 22UH +/-10% LGA0305-220K	1	PC	L1001
34-R220J2-0EX	COIL PL - 22 UH +/-5%	1	PC	L1002
41-WJ0075-B00	WIREBAREJUMPER7.5MM	1	PC	J1024
41-WJ0075-B00	WIREBAREJUMPER7.5MM	1	PC	J1027
41-WJ0075-B00	WIREBAREJUMPER7.5MM	1	PC	J1025
41-WJ0075-B00	WIREBAREJUMPER7.5MM	1	PC	J1023
41-WJ0075-B00	WIREBAREJUMPER7.5MM	1	PC	J1022
41-WJ0100-B00	WIREBAREJUMPER10MM	1	PC	J1026
41-WJ0125-B00	WIREBAREJUMPER12.5MM	1	PC	J1015
41-WJ0125-B00	WIREBAREJUMPER12.5MM	1	PC	J1011
41-WJ0150-B00	WIREBAREJUMPER15MM	1	PC	J1002
41-WJ0175-B00	WIREBAREJUMPER17.5MM	1	PC	J1006
41-WJ0200-B00	WIREBAREJUMPER20MM	1	PC	J1001
10-0FR104-FBX	DIODE FR104 (FAST RECTIFIER)	1	PC	D812
10-0FR104-FBX	DIODE FR104 (FAST RECTIFIER)	1	PC	D820
10-0RL255-EBX	DIODE RL255 OR RL206(POWER RECTIFIER)	1	PC	D801
10-0RL255-EBX	DIODE RL255 OR RL206(POWER RECTIFIER)	1	PC	D802
10-0RL255-EBX	DIODE RL255 OR RL206(POWER RECTIFIER)	1	PC	D803
10-0RL255-EBX	DIODE RL255 OR RL206(POWER RECTIFIER)	1	PC	D804
10-1N4148-ABX	DIODE 1N4148 (SWITCHING)	1	PC	D805

10-1N4148-ABX	DIODE 1N4148 (SWITCHING)	1	PC	D814
10-1N4148-ABX	DIODE 1N4148 (SWITCHING)	1	PC	D819
10-79C18V-DBX	DIODE ZENER 18V 1/2W 5%	1	PC	D821
10-79C7V5-DBX	TCL10-79C7V5-DBX= DIODE ZENER 7V5 1/2W 5	1	PC	D844
11-CA8550-DBX	TRANSISTOR 8550D-TO-92(PNP)	1	PC	Q846
11-SA1015-YBX	TRANSISTOR ST2SA1015Y (PNP)	1	PC	Q801
18-CB0103-JNX	RES. C.F. 10K OHM 1/6W +/-5%	1	PC	R853
18-CB0222-JNX	RES. C.F. 2.2K OHM 1/6W +/-5%	1	PC	R847
18-CD0101-JNX	RES. C.F. 100 OHM 1/4W +/-5%	1	PC	R813
18-CD0102-JNX	RES. C.F. 1K OHM 1/4W +/-5%	1	PC	R845
18-CD0222-JNX	RES. C.F. 2.2K OHM 1/4W +/-5%	1	PC	R817
18-CD0479-JNX	RES. C.F. 4.7 OHM 1/4W +/-5%	1	PC	R820
18-CD0560-JNX	RES. C.F. 56 OHM 1/4W +/-5%	1	PC	R801
18-CE0479-JNX	RES. C.F. 4.7 OHM 1/2W +/-5%	1	PC	R823
18-CE0561-JNX	RES. C.F. 560 OHM 1/2W +/-5%	1	PC	R851
18-DE0823-FNX	RES. M.F. 82K OHM 1/2W +/-1%	1	PC	R839
18-KE0105-JN3	RES. H.VOLT. CC 1M OHM 1/2W +/-5%	1	PC	R802
25-BCB101-M1X	CAP. ELEC 100 UF 16V +/-20%	1	PC	C423
25-BCB221-M1X	CAP. ELEC 220 UF 16V +/-20%	1	PC	C418
25-BCB471-M1X	CAP. ELEC 470 UF 16V +/-20%	1	PC	C845
25-BCB471-M1X	CAP. ELEC 470 UF 16V +/-20%	1	PC	C832
25-BDB220-M1X	CAP. ELEC 22 UF 25V +/-20%	1	PC	C819
25-BDB220-M1X	CAP. ELEC 22 UF 25V +/-20%	1	PC	C850
25-BDB470-M1X	CAP. ELEC 47 UF 25V +/-20%	1	PC	C820
25-BFB109-M1X	CAP. ELEC 1 UF 50V +/-20%	1	PC	C847
26-AIC221-KBX	CAP. CER 220 PF 500V +/-10% B	1	PC	C841
35-LB1005-0IX	FERR BEAD H75 (3.5X1X5)	1	PC	L840
35-LB1005-0IX	FERR BEAD H75 (3.5X1X5)	1	PC	L815
41-WJ0075-B00	WIREBAREJUMPER7.5MM	1	PC	J806
41-WJ0075-B00	WIREBAREJUMPER7.5MM	1	PC	J811
41-WJ0075-B00	WIREBAREJUMPER7.5MM	1	PC	JP805
41-WJ0100-B00	WIREBAREJUMPER10MM	1	PC	FOR T803 (15) & C835(-)
41-WJ0100-B00	WIREBAREJUMPER10MM	1	PC	J809
41-WJ0100-B00	WIREBAREJUMPER10MM	1	PC	J802
41-WJ0100-B00	WIREBAREJUMPER10MM	1	PC	J821
41-WJ0100-B00	WIREBAREJUMPER10MM	1	PC	J820
41-WJ0100-B00	WIREBAREJUMPER10MM	1	PC	J819
41-WJ0100-B00	WIREBAREJUMPER10MM	1	PC	J818
41-WJ0100-B00	WIREBAREJUMPER10MM	1	PC	J817
41-WJ0100-B00	WIREBAREJUMPER10MM	1	PC	J816
41-WJ0100-B00	WIREBAREJUMPER10MM	1	PC	J815
41-WJ0100-B00	WIREBAREJUMPER10MM	1	PC	J810
41-WJ0100-B00	WIREBAREJUMPER10MM	1	PC	J822
41-WJ0125-B00	WIREBAREJUMPER12.5MM	1	PC	J805
41-WJ0150-B00	WIREBAREJUMPER15MM	1	PC	J801
41-WJ0150-B00	WIREBAREJUMPER15MM	1	PC	R810
66-343730-0B0	HOLLOW RIVET 1.6MMX3.0MMX3.2MM	4	PC	FOR T803(1,8,9,16)
66-343730-0B0	HOLLOW RIVET 1.6MMX3.0MMX3.2MM	3	PC	FOR RT801
66-343730-0B0	HOLLOW RIVET 1.6MMX3.0MMX3.2MM	1	PC	FOR Q815
66-343740-0B0	HOLLOW RIVET (2.3MMX4.0MMX3.5MM)	2	PC	FOR P803
66-343740-0B0	HOLLOW RIVET (2.3MMX4.0MMX3.5MM)	2	PC	FOR C806
10-79C5V1-DBX	DIODE ZENER 5V1 1/2W 5%	1	PC	D204
41-WJ0100-B00	WIREBAREJUMPER10MM	1	PC	J209
41-WJ0100-B00	WIREBAREJUMPER10MM	1	PC	J925
41-WJ0125-B00	WIREBAREJUMPER12.5MM	1	PC	J915

41-WJ0075-B00	WIREBAREJUMPER7.5MM	1	PC	J917
10-1N4004-EBX	DIODE 1N4004 (RECTIFIER)	1	PC	D504
10-1N4148-ABX	DIODE 1N4148 (SWITCHING)	1	PC	D501
10-1N4148-ABX	DIODE 1N4148 (SWITCHING)	1	PC	D502
11-SA1015-YBX	TRANSISTOR ST2SA1015Y (PNP)	1	PC	Q510
11-TC3207-0BX	TRANSISTOR KTC3207	1	PC	Q503
11-TC3207-0BX	TRANSISTOR KTC3207	1	PC	Q502
11-TC3207-0BX	TRANSISTOR KTC3207	1	PC	Q501
18-CE0100-JNX	RES. C.F. 10 OHM 1/2W +/-10%	1	PC	R530
18-CE0105-JNX	RES. C.F. 1M OHM 1/2W +/-5%	1	PC	R529
18-CE0152-JNX	RES. C.F. 1.5K OHM 1/2W +/-5%	1	PC	R531
18-FE0272-JNX	RES. M.O. 2.7K OHM 1/2W +/-5%	1	PC	R514
18-FE0272-JNX	RES. M.O. 2.7K OHM 1/2W +/-5%	1	PC	R516
18-FE0272-JNX	RES. M.O. 2.7K OHM 1/2W +/-5%	1	PC	R515
25-BCB100-M1X	CAP. ELEC 10 UF 16V +/-20%	1	PC	C512
25-BCB221-M1X	CAP. ELEC 220 UF 16V +/-20%	1	PC	C508
41-WJ0075-B00	WIREBAREJUMPER7.5MM	1	PC	J508
41-WJ0075-B00	WIREBAREJUMPER7.5MM	1	PC	J503
41-WJ0100-B00	WIREBAREJUMPER10MM	1	PC	J502
41-WJ0100-B00	WIREBAREJUMPER10MM	1	PC	J509
41-WJ0100-B00	WIREBAREJUMPER10MM	1	PC	J507
41-WJ0150-B00	WIREBAREJUMPER15MM	1	PC	J501
11-C144ES-0BX	TCL11-C144ES-0BX= TRANSISTOR PDTTC144ES (1	PC	Q1002
11-SC1815-YBX	TRANSISTOR 2SC1815-Y (NPN)	1	PC	Q1025
11-SC1815-YBX	TRANSISTOR 2SC1815-Y (NPN)	1	PC	Q1027
11-SC1815-YBX	TRANSISTOR 2SC1815-Y (NPN)	1	PC	Q1026
11-SC1815-YBX	TRANSISTOR 2SC1815-Y (NPN)	1	PC	Q1024
11-SC1815-YBX	TRANSISTOR 2SC1815-Y (NPN)	1	PC	Q1023
11-SC1815-YBX	TRANSISTOR 2SC1815-Y (NPN)	1	PC	Q1022
18-CB0102-JNX	RES. C.F. 1K OHM 1/6W +/-5%	1	PC	R1021
18-CB0103-JNX	RES. C.F. 10K OHM 1/6W +/-5%	1	PC	R1032
18-CB0103-JNX	RES. C.F. 10K OHM 1/6W +/-5%	1	PC	R1027
18-CB0103-JNX	RES. C.F. 10K OHM 1/6W +/-5%	1	PC	R1028
18-CB0103-JNX	RES. C.F. 10K OHM 1/6W +/-5%	1	PC	R1029
18-CB0103-JNX	RES. C.F. 10K OHM 1/6W +/-5%	1	PC	R1030
18-CB0103-JNX	RES. C.F. 10K OHM 1/6W +/-5%	1	PC	R1031
18-CB0152-JNX	RES. C.F. 1.5K OHM 1/6W +/-5%	1	PC	R1022
18-CB0182-JNX	RES. C.F. 1.8K OHM 1/6W +/-5%	1	PC	R1023
18-CB0272-JNX	RES. C.F. 2.7K OHM 1/6W +/-5%	1	PC	R1024
18-CB0432-JNX	RES. C.F. 4.3K OHM 1/6W +/-5%	1	PC	R1025
18-CB0471-JNX	RES. C.F. 470 OHM 1/6W +/-5%	1	PC	R1004B
18-CB0471-JNX	RES. C.F. 470 OHM 1/6W +/-5%	1	PC	R1004A
18-CB0682-JNX	RES. C.F. 6.8K OHM 1/6W +/-5%	1	PC	R1026
40-29A71T-KEB1XG	P.C.B KEY BD	1	PC	
41-WJ0060-B00	WIREBAREJUMPER6MM	1	PC	J1001
41-WJ0060-B00	WIREBAREJUMPER6MM	1	PC	J1002
41-WJ0065-B00	1 R=N	1	PC	J1003
40-21A71H-SIA1XG	P.C.B. SIDE AV BD	1	PC	
41-WJ0060-B00	WIREBAREJUMPER6MM	1	PC	J1102
18-CB0221-JNX	RES. C.F. 220 OHM 1/6W +/-5%	1	PC	R1104
18-CB0470-JNX	RES. C.F. 47 OHM 1/6W +/-5%	1	PC	R1101
25-BCB220-M1X	CAP. ELEC 22 UF 16V +/-20%	1	PC	C1101
40-21A71H-SWB1XG	P.C.B SWITCH BD	1	PC	
41-WJ0060-B00	WIREBAREJUMPER6MM	1	PC	J1103
41-WJ0060-B00	WIREBAREJUMPER6MM	1	PC	J1106

41-WJ0060-B00	WIREBAREJUMPER6MM	1	PC	R1103
41-WJ0060-B00	WIREBAREJUMPER6MM	1	PC	R1115
41-WJ0090-B00	WIRE BARE JUMPER 9MM	1	PC	J1105
66-382330-0B7	RIVET 2.0X3.7X3.5	2	PC	FOR P802
66-382330-0B7	RIVET 2.0X3.7X3.5	2	PC	FOR P801
41-WJ0080-B00	WIREBAREJUMPER8MM	1	PC	JP801
41-WJ0080-B00	WIREBAREJUMPER8MM	1	PC	JP802
71-BAR004-XX0	BAR CODE LABEL 102X51 MM	1	PC	FOR PMC
74-015010-42C	PLASTIC BAG 15CMX10CM	0.07	PC	FOR PMC
74-025070-40F	PLASTIC BAG 250X700X0.04	0.013	PC	FOR PMC
74-036017-30D	PLASTIC BAG 35.5CMX16.5CM	0.1	PC	FOR PMC
74-036052-40C	POLYBAG	0.013	PC	FOR PMC
74-038024-40C	PLASTIC BAG 38CMX23.5CM	0.07	PC	FOR PMC
74-045045-40F	POLYBAG W/ANTISTATIC MAIN PCB	0.002	PC	FOR PMC
75-401460-C00	POLYFOAM	0.1	PC	FOR PMC
75-401690-C00	POLYFOAM	0.1	PC	FOR PMC
76-002135-0AP	CARTON BOX	0.05	PC	FOR PMC
09-38B3V9-DTX	SMD. DIODE BZX384B3V9	0	PC	D001
09-55C8V2-DTX	SMD.DIODE BZV55-C8V2	0	PC	D218
09-55C8V2-DTX	SMD.DIODE BZV55-C8V2	0	PC	D217
12-BC847A-0BX	SMD TRANSISTOR BC847A (NPN)	0	PC	Q602
12-BC847A-0BX	SMD TRANSISTOR BC847A (NPN)	0	PC	Q601
12-BC847A-0BX	SMD TRANSISTOR BC847A (NPN)	0	PC	Q006
12-BC847A-0BX	SMD TRANSISTOR BC847A (NPN)	0	PC	Q907
12-BC847A-0BX	SMD TRANSISTOR BC847A (NPN)	0	PC	Q605
12-BC847A-0BX	SMD TRANSISTOR BC847A (NPN)	0	PC	Q208
12-BC857A-0BX	SMD TRANSISTOR BC857A (PNP)	0	PC	Q003
12-BC857A-0BX	SMD TRANSISTOR BC857A (PNP)	0	PC	Q207
12-BC857A-0BX	SMD TRANSISTOR BC857A (PNP)	0	PC	Q210
12-BC857A-0BX	SMD TRANSISTOR BC857A (PNP)	0	PC	Q603
12-BC857A-0BX	SMD TRANSISTOR BC857A (PNP)	0	PC	Q604
13-24LC08-BNB	IC EEPROM 24LC08BN(WRITE)	0	PC	IC001
13-HCF405-3BB	IC HCF4053BM1	0	PC	IC901
13-LD1117-50B	5.0V IC LD1117S50TR	0	PC	IC002
19-AA0512-JTX	RES.SMD 5.1K 1/16W +/-5% 0603	0	PC	R306
19-AB0000-JTX	RES SMD 0 OHM 1/10W +/-5% 0603	0	PC	R917
19-AB0000-JTX	RES SMD 0 OHM 1/10W +/-5% 0603	0	PC	J019
19-AB0000-JTX	RES SMD 0 OHM 1/10W +/-5% 0603	0	PC	R227
19-AB0000-JTX	RES SMD 0 OHM 1/10W +/-5% 0603	0	PC	JP401
19-AB0000-JTX	RES SMD 0 OHM 1/10W +/-5% 0603	0	PC	J906
19-AB0000-JTX	RES SMD 0 OHM 1/10W +/-5% 0603	0	PC	J324
19-AB0100-JTX	RES SMD 10 OHM 1/10W +/-5%	0	PC	R231
19-AB0100-JTX	RES SMD 10 OHM 1/10W +/-5%	0	PC	R005
19-AB0100-JTX	RES SMD 10 OHM 1/10W +/-5%	0	PC	R001
19-AB0101-JTX	RES SMD 100 OHM 1/10W 0603	0	PC	R103
19-AB0101-JTX	RES SMD 100 OHM 1/10W 0603	0	PC	R102
19-AB0101-JTX	RES SMD 100 OHM 1/10W 0603	0	PC	R047
19-AB0101-JTX	RES SMD 100 OHM 1/10W 0603	0	PC	R028
19-AB0101-JTX	RES SMD 100 OHM 1/10W 0603	0	PC	R249
19-AB0101-JTX	RES SMD 100 OHM 1/10W 0603	0	PC	R208
19-AB0101-JTX	RES SMD 100 OHM 1/10W 0603	0	PC	R604
19-AB0101-JTX	RES SMD 100 OHM 1/10W 0603	0	PC	R603
19-AB0101-JTX	RES SMD 100 OHM 1/10W 0603	0	PC	R207
19-AB0102-JTX	RES SMD 1K OHM 1/10W 0603	0	PC	R954
19-AB0102-JTX	RES SMD 1K OHM 1/10W 0603	0	PC	R953
19-AB0102-JTX	RES SMD 1K OHM 1/10W 0603	0	PC	R902

19-AB0102-JTX	RES SMD 1K OHM 1/10W 0603	0	PC	R901
19-AB0102-JTX	RES SMD 1K OHM 1/10W 0603	0	PC	R609
19-AB0102-JTX	RES SMD 1K OHM 1/10W 0603	0	PC	R920
19-AB0102-JTX	RES SMD 1K OHM 1/10W 0603	0	PC	R922
19-AB0102-JTX	RES SMD 1K OHM 1/10W 0603	0	PC	R013
19-AB0102-JTX	RES SMD 1K OHM 1/10W 0603	0	PC	R606
19-AB0103-JTX	RES SMD 10K OHM 1/10W 0603	0	PC	R006
19-AB0103-JTX	RES SMD 10K OHM 1/10W 0603	0	PC	R912
19-AB0103-JTX	RES SMD 10K OHM 1/10W 0603	0	PC	R010
19-AB0103-JTX	RES SMD 10K OHM 1/10W 0603	0	PC	R1018
19-AB0103-JTX	RES SMD 10K OHM 1/10W 0603	0	PC	R011
19-AB0103-JTX	RES SMD 10K OHM 1/10W 0603	0	PC	R030
19-AB0103-JTX	RES SMD 10K OHM 1/10W 0603	0	PC	R051
19-AB0103-JTX	RES SMD 10K OHM 1/10W 0603	0	PC	R315
19-AB0103-JTX	RES SMD 10K OHM 1/10W 0603	0	PC	R052
19-AB0103-JTX	RES SMD 10K OHM 1/10W 0603	0	PC	R913
19-AB0103-JTX	RES SMD 10K OHM 1/10W 0603	0	PC	R008
19-AB0104-JTX	SMD. RES 100K OHM 1/10W 0603	0	PC	R031
19-AB0104-JTX	SMD. RES 100K OHM 1/10W 0603	0	PC	R232
19-AB0105-JTX	RES SMD 1M OHM 1/10W 0603	0	PC	R221
19-AB0152-JTX	SMD. RES 1.5K OHM 1/10W +/-5% 0603	0	PC	R218
19-AB0152-JTX	SMD. RES 1.5K OHM 1/10W +/-5% 0603	0	PC	R222
19-AB0154-JTX	SMD. RES 150K 1/10W +/-5% 0603	0	PC	R245
19-AB0183-JTX	SMD. RES 18K OHM 1/10W +/-5% 0603	0	PC	R302
19-AB0221-JTX	RES SMD 220 OHM 1/10W 0603	0	PC	R203
19-AB0221-JTX	RES SMD 220 OHM 1/10W 0603	0	PC	R228
19-AB0221-JTX	RES SMD 220 OHM 1/10W 0603	0	PC	R201
19-AB0221-JTX	RES SMD 220 OHM 1/10W 0603	0	PC	R202
19-AB0222-JTX	RES SMD 2.2K OHM 1/10W 0603	0	PC	R015
19-AB0223-JTX	SMD. RES 22K OHM 1/10W +/-5% 0603	0	PC	R215
19-AB0224-JTX	SMD RES 220K OHM 1/10W 0603	0	PC	R206
19-AB0271-JTX	SMD. RES 270 OHM 1/10W +/-5% 0603	0	PC	R217
19-AB0272-JTX	RES SMD 2.7K OHM 1/10W 0603	0	PC	R461
19-AB0272-JTX	RES SMD 2.7K OHM 1/10W 0603	0	PC	R610
19-AB0272-JTX	RES SMD 2.7K OHM 1/10W 0603	0	PC	R608
19-AB0273-JTX	SMD. RES 27K OHM 1/10W +/-5%	0	PC	R216
19-AB0332-JTX	SMD RES 3.3K OHM 1/10W 0603	0	PC	R209
19-AB0332-JTX	SMD RES 3.3K OHM 1/10W 0603	0	PC	R617
19-AB0332-JTX	SMD RES 3.3K OHM 1/10W 0603	0	PC	R616
19-AB0333-JTX	RES. SMD 33K OHM 1/10W 0603	0	PC	R205
19-AB0470-JTX	RES SMD 47 OHM 1/10W +/-5%0603	0	PC	R002
19-AB0471-JTX	SMD. RES 470 OHM 1/10W +/-5%	0	PC	R924
19-AB0472-JTX	RES SMD 4.7K OHM 1/10W 0603	0	PC	R029
19-AB0472-JTX	RES SMD 4.7K OHM 1/10W 0603	0	PC	R003
19-AB0472-JTX	RES SMD 4.7K OHM 1/10W 0603	0	PC	R004
19-AB0473-JTX	SMD. RES 47K OHM 1/10W 0603	0	PC	R928
19-AB0473-JTX	SMD. RES 47K OHM 1/10W 0603	0	PC	R931
19-AB0473-JTX	SMD. RES 47K OHM 1/10W 0603	0	PC	R932
19-AB0473-JTX	SMD. RES 47K OHM 1/10W 0603	0	PC	R937
19-AB0473-JTX	SMD. RES 47K OHM 1/10W 0603	0	PC	R926
19-AB0473-JTX	SMD. RES 47K OHM 1/10W 0603	0	PC	R927
19-AB0473-JTX	SMD. RES 47K OHM 1/10W 0603	0	PC	R936
19-AB0510-JTX	RES SMD 51 OHM 1/10W 0603	0	PC	R923
19-AB0820-JTX	SMD. RES 82 OHM 1/10W +/-5% 0603	0	PC	R929
19-AB0820-JTX	SMD. RES 82 OHM 1/10W +/-5% 0603	0	PC	R903
19-AB0822-JTX	SMD. RES 8.2K OHM 1/10W +/-5% 0603	0	PC	R237

28-AB0101-JCX	SMD. CAP 100 PF 50VDC +/-5%	0	PC	C002
28-AB0101-JCX	SMD. CAP 100 PF 50VDC +/-5%	0	PC	C103
28-AB0101-JCX	SMD. CAP 100 PF 50VDC +/-5%	0	PC	C107
28-AB0101-JCX	SMD. CAP 100 PF 50VDC +/-5%	0	PC	C001
28-AB0102-KBX	SMD. CAP 1000 PF 50V +/-10% B	0	PC	C219
28-AB0103-KBX	SMD. CAP 0.01 UF 50V +/-10% 0603	0	PC	C105
28-AB0103-KBX	SMD. CAP 0.01 UF 50V +/-10% 0603	0	PC	C102
28-AB0103-KBX	SMD. CAP 0.01 UF 50V +/-10% 0603	0	PC	C082
28-AB0103-KBX	SMD. CAP 0.01 UF 50V +/-10% 0603	0	PC	C005
28-AB0103-KBX	SMD. CAP 0.01 UF 50V +/-10% 0603	0	PC	C233
28-AB0103-KBX	SMD. CAP 0.01 UF 50V +/-10% 0603	0	PC	C020
28-AB0103-KBX	SMD. CAP 0.01 UF 50V +/-10% 0603	0	PC	C917
28-AB0103-KBX	SMD. CAP 0.01 UF 50V +/-10% 0603	0	PC	C201
28-AB0103-KBX	SMD. CAP 0.01 UF 50V +/-10% 0603	0	PC	C212
28-AB0103-KBX	SMD. CAP 0.01 UF 50V +/-10% 0603	0	PC	C221
28-AB0103-KBX	SMD. CAP 0.01 UF 50V +/-10% 0603	0	PC	C228
28-AB0103-KBX	SMD. CAP 0.01 UF 50V +/-10% 0603	0	PC	C239
28-AB0103-KBX	SMD. CAP 0.01 UF 50V +/-10% 0603	0	PC	C019
28-AB0103-KBX	SMD. CAP 0.01 UF 50V +/-10% 0603	0	PC	C024
28-AB0103-KBX	SMD. CAP 0.01 UF 50V +/-10% 0603	0	PC	C017
28-AB0104-ZFX	CAP. SMD 0.1UF 50V +80%~-20% F	0	PC	C285
28-AB0104-ZFX	CAP. SMD 0.1UF 50V +80%~-20% F	0	PC	C451
28-AB0222-KBX	CAP.SMD 2200PF 50V +/-10% 0603	0	PC	C213
28-AB0222-KBX	CAP.SMD 2200PF 50V +/-10% 0603	0	PC	C407
28-AB0222-KBX	CAP.SMD 2200PF 50V +/-10% 0603	0	PC	C014
28-AB0224-ZFX	CAP.SMD 0.22UF 50V +80-20%0603	0	PC	C614
28-AB0270-JCX	SMD. CAP 27 PF 50V +/-5% 0603	0	PC	C011
28-AB0300-JCX	SMD CAP. 30 PF 50V +/-5% 0603	0	PC	C022
28-AB0300-JCX	SMD CAP. 30 PF 50V +/-5% 0603	0	PC	C021
28-AB0472-KBX	CAP.SMD 4700PF 50V +/-10% 0603	0	PC	C619
28-AB0472-KBX	CAP.SMD 4700PF 50V +/-10% 0603	0	PC	C621
28-AB0821-JCX	CAP.SMD 820PF 50V +/-5% 0603	0	PC	C204
28-AB0822-KBX	SDM. CAP 8200 PF 50V +/-10% 0603	0	PC	C235
12-BC847A-0BX	SMD TRANSISTOR BC847A (NPN)	0	PC	Q1006
12-BC847A-0BX	SMD TRANSISTOR BC847A (NPN)	0	PC	Q1005
12-BC847A-0BX	SMD TRANSISTOR BC847A (NPN)	0	PC	Q1001
13-MSP342-5GB	IC MSP 3425G	0	PC	IC1001
19-AB0101-JTX	RES SMD 100 OHM 1/10W 0603	0	PC	R1011
19-AB0101-JTX	RES SMD 100 OHM 1/10W 0603	0	PC	R1002
19-AB0101-JTX	RES SMD 100 OHM 1/10W 0603	0	PC	R1001
19-AB0102-JTX	RES SMD 1K OHM 1/10W 0603	0	PC	R1015
19-AB0102-JTX	RES SMD 1K OHM 1/10W 0603	0	PC	R1014
19-AB0102-JTX	RES SMD 1K OHM 1/10W 0603	0	PC	R1016
19-AB0102-JTX	RES SMD 1K OHM 1/10W 0603	0	PC	R1017
19-AB0103-JTX	RES SMD 10K OHM 1/10W 0603	0	PC	R1040
19-AB0103-JTX	RES SMD 10K OHM 1/10W 0603	0	PC	R1018
19-AB0103-JTX	RES SMD 10K OHM 1/10W 0603	0	PC	R1041
19-AB0391-JTX	SMD RES 390 OHM 1/10W 0603	0	PC	R1012
28-AB0102-KBX	SMD. CAP 1000 PF 50V +/-10% B	0	PC	C1019
28-AB0102-KBX	SMD. CAP 1000 PF 50V +/-10% B	0	PC	C1018
28-AB0102-KBX	SMD. CAP 1000 PF 50V +/-10% B	0	PC	C1020
28-AB0102-KBX	SMD. CAP 1000 PF 50V +/-10% B	0	PC	C1041
28-AB0102-KBX	SMD. CAP 1000 PF 50V +/-10% B	0	PC	C1040
28-AB0102-KBX	SMD. CAP 1000 PF 50V +/-10% B	0	PC	C1021
28-AB0103-KBX	SMD. CAP 0.01 UF 50V +/-10% 0603	0	PC	C1043
28-AB0103-KBX	SMD. CAP 0.01 UF 50V +/-10% 0603	0	PC	C1034

28-AB0103-KBX	SMD. CAP 0.01 UF 50V +/-10% 0603	0	PC	C1033
28-AB0103-KBX	SMD. CAP 0.01 UF 50V +/-10% 0603	0	PC	C1031
28-AB0103-KBX	SMD. CAP 0.01 UF 50V +/-10% 0603	0	PC	C1011
28-AB0104-KBX	SMD. CAP 50VDC 0.1UF +/-10% 06	0	PC	C1012
28-AB0104-KBX	SMD. CAP 50VDC 0.1UF +/-10% 06	0	PC	C1008
28-AB0104-KBX	SMD. CAP 50VDC 0.1UF +/-10% 06	0	PC	C1006
28-AB0104-KBX	SMD. CAP 50VDC 0.1UF +/-10% 06	0	PC	C1037
28-AB0104-KBX	SMD. CAP 50VDC 0.1UF +/-10% 06	0	PC	C1039
28-AB0152-KBX	SMD. CAP 1500 PF 50V +/-10% B	0	PC	C1007
28-AB0220-JCX	CAP. SMD 22PF 50V +/-5% C	0	PC	C1036
28-AB0220-JCX	CAP. SMD 22PF 50V +/-5% C	0	PC	C1035
28-AB0222-KBX	CAP.SMD 2200PF 50V +/-10% 0603	0	PC	C1005
28-AB0339-CCX	SMD.CAP. 50V 3.3PF +/-0.25PF	0	PC	C1001
28-AB0339-CCX	SMD.CAP. 50V 3.3PF +/-0.25PF	0	PC	C1002
28-AB0471-JCX	CAP.SMD 470PF 50V +/-5% 0603	0	PC	C1025
28-AB0560-JCX	SMD CAP. 56 PF 50V +/-5% 0603	0	PC	C1004
09-BAS316-ATX	SMD.DIODE BAS316 115	0	PC	D840
12-BC847A-0BX	SMD TRANSISTOR BC847A (NPN)	0	PC	Q844
12-BC847A-0BX	SMD TRANSISTOR BC847A (NPN)	0	PC	Q841
12-BC847A-0BX	SMD TRANSISTOR BC847A (NPN)	0	PC	Q802
12-BC847A-0BX	SMD TRANSISTOR BC847A (NPN)	0	PC	Q847
12-BC847A-0BX	SMD TRANSISTOR BC847A (NPN)	0	PC	Q845
13-LD1117-50B	5.0V IC LD1117S50TR	0	PC	IC402
13-TEA150-6TB	IC TEA1506T/N1 118	0	PC	IC801
19-AB0000-JTX	RES SMD 0 OHM 1/10W +/-5% 0603	0	PC	R824B
19-AB0100-JTX	RES SMD 10 OHM 1/10W +/-5%	0	PC	R814
19-AB0102-JTX	RES SMD 1K OHM 1/10W 0603	0	PC	R844
19-AB0103-JTX	RES SMD 10K OHM 1/10W 0603	0	PC	R841
19-AB0103-JTX	RES SMD 10K OHM 1/10W 0603	0	PC	R825
19-AB0122-JTX	SMD. RES 1.2K OHM 1/10 J 0603	0	PC	R811
19-AB0202-FTX	SMD. RES 2K OHM 1/10W +/-1% 0603	0	PC	R838
19-AB0222-JTX	RES SMD 2.2K OHM 1/10W 0603	0	PC	R848
19-AB0223-JTX	SMD. RES 22K OHM 1/10W +/-5% 0603	0	PC	R831
19-AB0223-JTX	SMD. RES 22K OHM 1/10W +/-5% 0603	0	PC	R846
19-AB0223-JTX	SMD. RES 22K OHM 1/10W +/-5% 0603	0	PC	R832
19-AB0272-JTX	RES SMD 2.7K OHM 1/10W 0603	0	PC	R835
19-AB0274-JTX	SMD. RES 270K OHM 1/10W +/-5% 0603	0	PC	R819
19-AB0332-JTX	SMD RES 3.3K OHM 1/10W 0603	0	PC	R812
19-AB0333-JTX	RES. SMD 33K OHM 1/10W 0603	0	PC	R818
19-AB0333-JTX	RES. SMD 33K OHM 1/10W 0603	0	PC	R837
19-AB0394-JTX	SMD. RES 390K OHM 1/10W +/-5%	0	PC	R822
19-AB0471-JTX	SMD. RES 470 OHM 1/10W +/-5%	0	PC	R821
19-AB0472-JTX	RES SMD 4.7K OHM 1/10W 0603	0	PC	R836
19-AB0683-JTX	RES SMD 68K OHM 1/10W 0603	0	PC	R826
28-AB0102-KBX	SMD. CAP 1000 PF 50V +/-10% B	0	PC	C839
28-AB0103-KBX	SMD. CAP 0.01 UF 50V +/-10% 0603	0	PC	C842
28-AB0103-KBX	SMD. CAP 0.01 UF 50V +/-10% 0603	0	PC	C831
28-AB0103-KBX	SMD. CAP 0.01 UF 50V +/-10% 0603	0	PC	C844
28-AB0103-KBX	SMD. CAP 0.01 UF 50V +/-10% 0603	0	PC	C425
28-AB0103-KBX	SMD. CAP 0.01 UF 50V +/-10% 0603	0	PC	C417
28-AB0104-KBX	SMD. CAP 50VDC 0.1UF +/-10% 06	0	PC	C814
28-AB0104-KBX	SMD. CAP 50VDC 0.1UF +/-10% 06	0	PC	C837
28-AB0221-JCX	CAP.SMD 220PF 50V C 0603 +/-5%	0	PC	C821
28-AB0224-ZFX	CAP.SMD 0.22UF 50V +80-20%0603	0	PC	C818
28-AB0471-KBX	SMD.CAP. 470PF 50V +/-10%	0	PC	C813
28-AB0471-KBX	SMD.CAP. 470PF 50V +/-10%	0	PC	C816

28-AB0473-KBX	SMD CAP 0.047UF 50V +/-10%0603	0	PC	C811
12-BC847A-0BX	SMD TRANSISTOR BC847A (NPN)	0	PC	Q951
19-AB0103-JTX	RES SMD 10K OHM 1/10W 0603	0	PC	R911
19-AB0103-JTX	RES SMD 10K OHM 1/10W 0603	0	PC	R952
19-AB0472-JTX	RES SMD 4.7K OHM 1/10W 0603	0	PC	R900
28-AB0102-KBX	SMD. CAP 1000 PF 50V +/-10% B	0	PC	C951
19-AB0101-JTX	RES SMD 100 OHM 1/10W 0603	0	PC	R916
19-AB0101-JTX	RES SMD 100 OHM 1/10W 0603	0	PC	R915
19-AB0820-JTX	SMD. RES 82 OHM 1/10W +/-5% 0603	0	PC	R921
19-AB0820-JTX	SMD. RES 82 OHM 1/10W +/-5% 0603	0	PC	R905
28-AB0104-ZFX	CAP. SMD 0.1UF 50V +80%~-20% F	0	PC	C910
28-AB0104-ZFX	CAP. SMD 0.1UF 50V +80%~-20% F	0	PC	C912
		0.001	ST	58-DA71MP-0UI
19-AB0101-JTX	RES SMD 100 OHM 1/10W 0603	0	PC	R501
19-AB0101-JTX	RES SMD 100 OHM 1/10W 0603	0	PC	R504
19-AB0101-JTX	RES SMD 100 OHM 1/10W 0603	0	PC	R507
19-AB0102-JTX	RES SMD 1K OHM 1/10W 0603	0	PC	R522
19-AB0272-JTX	RES SMD 2.7K OHM 1/10W 0603	0	PC	R524
19-AB0471-JTX	SMD. RES 470 OHM 1/10W +/-5%	0	PC	R525
19-AB0471-JTX	SMD. RES 470 OHM 1/10W +/-5%	0	PC	R526
19-AB0471-JTX	SMD. RES 470 OHM 1/10W +/-5%	0	PC	R527
19-AB0472-JTX	RES SMD 4.7K OHM 1/10W 0603	0	PC	R508
19-AB0472-JTX	RES SMD 4.7K OHM 1/10W 0603	0	PC	R505
19-AB0472-JTX	RES SMD 4.7K OHM 1/10W 0603	0	PC	R502
19-AB0561-JTX	RES SMD 560 OHM 1/10W 0603	0	PC	R523
19-AB0751-JTX	SMD. RES 750 OHM 1/10W 0603	0	PC	R503
19-AB0751-JTX	SMD. RES 750 OHM 1/10W 0603	0	PC	R506
19-AB0751-JTX	SMD. RES 750 OHM 1/10W 0603	0	PC	R509
28-AB0103-KBX	SMD. CAP 0.01 UF 50V +/-10% 0603	0	PC	C507
28-AB0681-JCX	SMD. CAP 680 PF 50V +/-5% 0603	0	PC	C503
28-AB0681-JCX	SMD. CAP 680 PF 50V +/-5% 0603	0	PC	C502
28-AB0681-JCX	SMD. CAP 680 PF 50V +/-5% 0603	0	PC	C501
19-AB0393-FTX	SMD.RES 39K OHM 1/10W +/-1%	0	PC	R842
19-AB0912-JTX	RES. SMD 9100 OHM 1/10W	0	PC	R414
74-100100-8CD	POLYBAG (100CMX100CM)	1	PC	FOR FRONT CABINET
74-120120-8CD	POLYBAG (120CMX120CM)	1	PC	FOR REAR CABINET
74-279070-50C	EPE BOARD (580MMX440MMX5MM)	0.333	PC	FOR REAR CABINET
74-344780-50C	EPE BOARD (900MMX400MMX5MM)	0.667	PC	FOR REAR CABINET
76-001497-0AF	CARTON BOX LWH 640X460X360MM	0.018	PC	FOR OTHER
76-00DA71-0AF	CARTON BOX	0.5	PC	FOR FRONT CABINET
76-00DA71-0AR	CARTON BOX	0.333	PC	FOR REAR CABINET
76-346740-01A	CARTON SHEET LWH 440X620X3MM	0.055	PC	FOR OTHER
77-120120-6WC	RAW BAG POLYBAG -- 00 00 R=N	0.5	PC	FOR FRONT CABINET
55-DA71FC-0CN9M	FRONT CABINET	1	PC	
56-DA71LE-0HC5Z	LENS	1	PC	
56-DA71PK-0HA5C	POWER KNOB	1	PC	
59-130460-00X	RUBBER PAD (25MMX7MM)	2	PC	STICK ON F. CAB.(FOOTING)
62-395050-0UN	MAIN BD RAIL (SMALL)	2	PC	
62-406210-0UN	TRACK	2	PC	
62-413280-0HN5C	BRACKET	1	PC	
55-DA71RC-0CN5F	REAR CABINET	1	PC	
62-314340-0UN	FBT SUPPORTER HIPS-KINGFA 113 (VO)	1	PC	
62-388180-0HA	POWER SW.ADAPTER	1	PC	
62-227680-0UA	BRACKET ABS-KINGFA 606 (UO)	1	PC	
62-227680-1UA	FBT BRACKET	1	PC	