TCL
SERVICE MANUAL



CRT CHASSIS SY33

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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: 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 lighting 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.

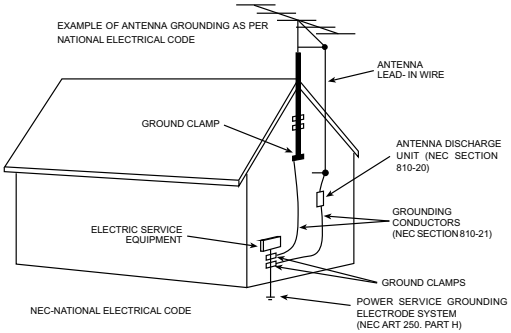
13. Avoid dusty places, since piling up of dust inside TV chassis may cause failure of the set when high humidity persists.

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

Chassis		SY33	SY33
Target Market		S.America	APAC/Russia
CRT	matching CRT size	21"	21"
	Slim CRT	√	√
Color System (TV)	PAL		
	PAL(BG DK I)		★ √
	PAL(M N)	√	
	SECAM		★ √
	NTSC	√	
Sound System (TV)	D/K		★ √
	B/G		★ √
	I		★ √
	M	√	
	M/N	√	
Sound System (TV)	Global NICAM		
	German Stereo		
	BTSC		
	Sound effect		
	Woofer		
	Teletext		
	V-chip/ CCD	★ √	
	MONO(AV)	★ √ (2for1)	★ √ (2for1)
	STEREO(AV)		
System (AV)	PAL	√	√
	PAL(M N)		
	NTSC	√	√
	SECAM		
Power Supply	AC 90-240V, 50/60Hz	AC90-270V	AC90-270V
	AC 180-240V, 50/60Hz		
	AC 160-240V, 50/60Hz		
	AC 110, 50/60Hz		
	AC108V-132V 50/60Hz		
Standby	<1W		
	<3W		
	<4W		
	<6W	√	√
	<9W		
	<10W		
	<12W		
picture	Comb-f for NTSC (1H delay)	√ (built-in MCU)	√ (built-in MCU)
	Comb-f for PAL/NTSC (4/2H delay)		
Terminal	Rear RCA x *	★2 input/ 1output	★2 input/ 1output
	Rear SCART(Single)		
	S-Video (Rear or Side)	★ √	★ √

	YPbPr	★ √	★ √
	HDMI		
Language		English/Portuguese/French/ Spanish	(1)English/Russian/Arabic; (2)English/Vietnamese/Thai；★ Thai Bilingual
digital module	DVB-T / ATSC		

3、Alignment Procedure

Method for Entering Factory Mode:

a. Production mode: Press the key [Fac] in remote control to enter or exit factory mode(But only display 4 pages);

b. Engineer mode: Press key [DISPLAY] to display channel information (Setup for display picture on bottom left of screen, press the number key [6][1][5][8] ;

c. Display "--PRODUCT--", then press the key [MUTE] two times, the factory menu on the screen 。The number on top right corner of factory menu is page number of factory menu. Press the key [CH+/-] to adjust curser up or down。Press the key [VOL+/-] to change the value。When choose the first top line, press [VOL+] / [VOL-] to choose the menu page。

d. Press key [sleep] to display factory menu in production mode. Please choose next page when display factory menu。

e. Press key [0] to be shifted to one bright line status in production mode,. Press key [0] again to return factory menu.

Relevant key number for one bright line:

[1] RB+ [2] GB+ [3] BB+

[4] RB- [5] GB- [6] BB-

Factory Service Menu Index:

*** PAGE 1 ******	Init	Range	
V.POSITION/50	19	0…63	
V.POS SHIFT/50	0	0…15	
V.SIZE/50	79	0…127	
V.LIN/50	23	0…31	
V.SC	17	0…31	
OSD-V-START/50	0	0…3	
OSD-H-POS	20	0…127	
CHANGE PRO.			
*** PAGE 1 ******	Init	Range	
V.POSITION/60	19	0…63	
V.POS SHIFT/60	0	0…15	
V.SIZE/60	79	0…127	
V.LIN/60	23	0…31	
V.SC	17	0…31	
OSD V.START/60	0	0…3	
OSD-H-POS	20	0…127	
CHANGE PRO.			
*** PAGE 2 ******	Init	Range	
H.PHASE/50	15	0…31	

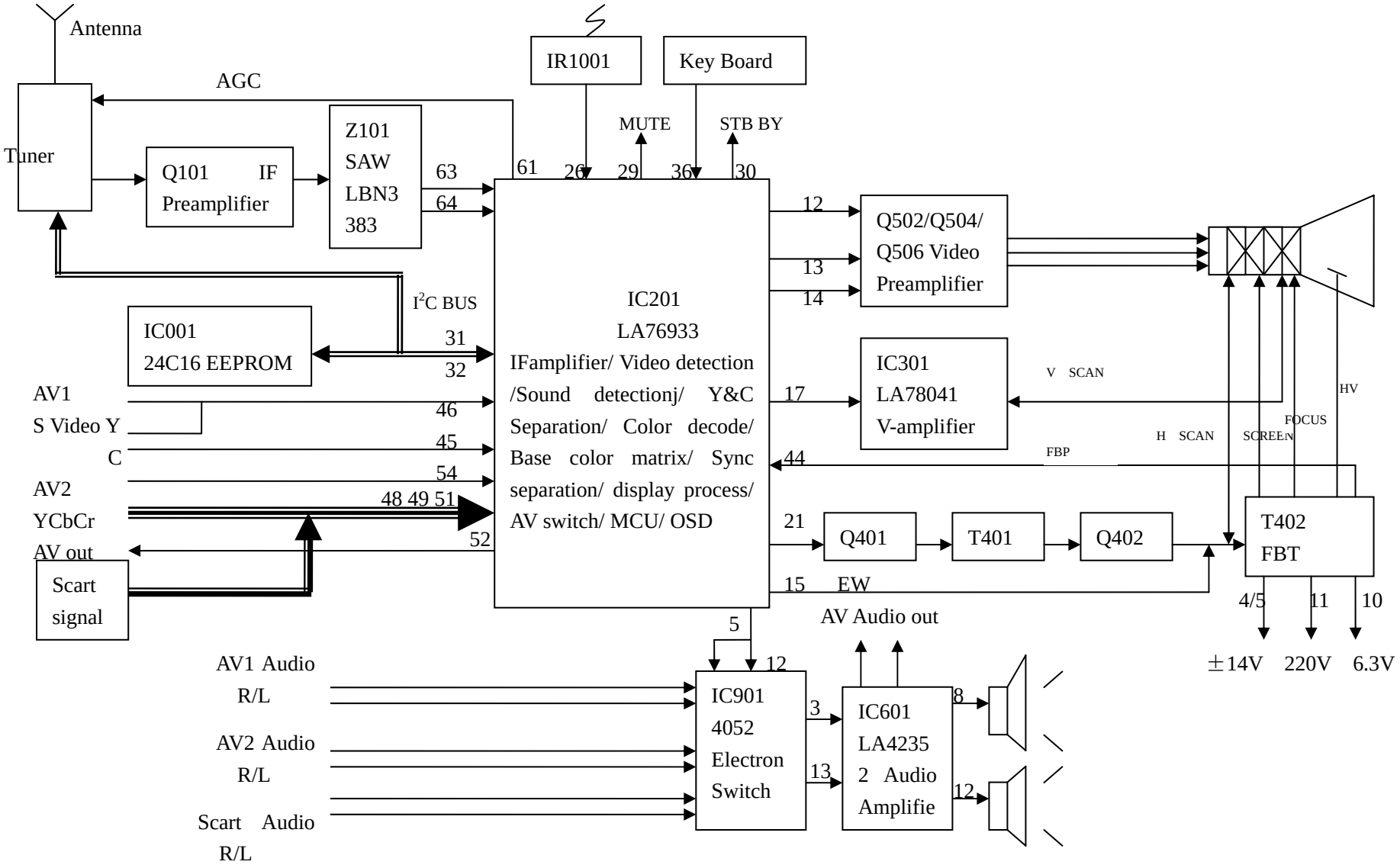
H-BLK L	0	0…7	
H-BLK R	3	0…7	
H-SIZE		0…63	
H.SIZE COMP/50		0…7	
TRAPE/50		0…63	
PARABOLAO/50		0…63	
U.CORNER TOP/50		0…15	
U.CORNER BTM/50,60		0…15	
*** PAGE 2 ******	Init	Range	
H.PHASE/60	15	0…31	
H-BLK L	0	0…7	
H-BLK R	3	0…7	
H-SIZE		0…63	
H.SIZE COMP/60		0…7	
TRAPE/60		0…63	
PARABOLAO/60		0…63	
U.CORNER TOP/60		0…15	
U.CORNER BTM/60		0…15	
*** PAGE 3 ******	Init	Range	
RB	127	0…255	
GB	127	0…255	
BB	127	0…255	
R-D	90	0…127	
G-D	12	0…15	
B-D	90	0…127	
S.B	80	0…127	
*** PAGE 4 ******	Init	Range	
PROD.AGING	OFF	OFF/ON	
RF-AGC-DELAY	16	0…63	
CONTRAST/50	60	0…63	
COLOR/50	20	0…63	
SHARP/50	8	0…31	
TINT/00	30	0…63	
EW-COR.SW	1	0/1	
CLEAR INFO	NO	NO/YES	
*** PAGE 5 ******	Init	Range	
OSD CON.	3	0…7	
FULL-OSD CON.	2	0…7	
OPT-AV	2	0…3	

OPT-SVIDEO	YES	NO/YES	
OPT-DVD	YES	NO/YES	
OPT-AV3	NO	NO/YES	
AMERICA	N/S	USA/(N/S)	
TUNE-SPEED	3	0…3	
CH6 BAND	0	0/1	
*** PAGE 6 ******	Init	Range	
OSD THEME	0	0…7	
OPT-LOGO	0	0/1	
HALF TONE	1	0…3	
*** PAGE 7 ***CHROMA	Init	Range	
COL-AUTO	ON	ON/OFF	
COL-NTSC	ON	ON/OFF	
COL-PAL/M	ON	ON/OFF	
COL-PAL/N	ON	ON/OFF	
C.TRAP ADJ/PAL	7	0…7	
C.TRAP ADJ/NTSC	4	0…7	
C.BPF ADJ.	0	0…3	
C.VCO ADJ/NTSC	4	0…7	
*** PAGE 8 ***FM	Init	Range	
DEEM.TC	1	0/1	
FM.GAIN	0	0/1	
INIT EEPROM	NO	YES/NO	
*** PAGE 9 ***Other	Init	Range	
PRO.MUTE	OFF	ON/OFF	
BRI.MAX	63	0…63	
VOL/01	0	0…127	
VOL/16	61	0…127	
VOL/36	103	0…127	
*** PAGE 10 ***ON/OFF	Init	Range	
AC-POWER ON	LAST	LAST/OFF	
ON-TV/AV	LAST	TV/LAST	
ON-DELAY	1	0…3	
ON-SEARCH	NO	YES/NO	
OFF-V.DELAY		0…7	

*** PAGE 11 ***PIC.	Init	Range	
BLK.STR.START	0	0…3	
BLK.STR.GAIN	3	0…3	
*** PAGE 12 ***PIC.	Init	Range	
BRT.ABL.DEF	1	0/1	
MID.STP.DEF	1	0/1	
BRT.ABL.TH	7	0…7	
CORING GAIN	0	0…3	
WPL OPE.POINT	2	0…3	
Y GAMMA	2	0…3	
DC.REST	2	0…3	
COL.KILLER OPE.	4	0…7	
RGB TEMP SW	1	0/1	
*** PAGE 13 ***PIC.	Init	Range	
SH ADJUST	0	0/1	
B-Y/DC	12	0…15	
R-Y/DC	12	0…15	
B-Y/DC.DVD	9	0…15	
R-Y/DC.DVD	9	0…15	
*** PAGE 14 ***SYNC.	Init	Range	
AFC GAIN/GATE	1	0/1	
FBPBLK.SW	1	0/1	
VSEPUP	0	0/1	
VBLK SW	0	0/1	
V.COUNT AUTO	YES	YES/NO	
V.COMP	3	0…7	
SYNC.SEP.S	4	0…7	
H.FREQ/ES	32	0…63	
VCO FREQ.IF/ES			
*** PAGE 15 ***C.DEMO	Init	Range	
G-Y AMP	8	0…15	
G-Y ANGLE	0	0/1	
R/B GAIN	8	0…15	
R/B ANGLE	8	0…15	
PAL APC SW	0	0/1	
OPT-V.PROTECT	OFF	OFF/ON	
V.PROTECT TH.	31	0…31	

OPT-ABL.P	OFF	OFF/ON	
ABL-LOW LIMIT	63	0…63	
*** PAGE 16 ***IF	Init	Range	
OVER.MOD.SW	OFF	OFF/ON	
OVER.MOD.LEVEL	2	0…15	
PRE-SHOOT ADJ	0	0…3	
OVER-SHOOT ADJ	0	0…3	
VIDEO LEVEL	7	0…7	
VIDEO.LVL.OFFSET	2	0…3	
S.TRAP ADJ	4	0…7	
IF VCO ADJ	2	0…3	

4、Block Diagram



5、Circuit Flow Introduction

1)、Chassis summarize

The main chip of SY33 chassis adopt IC LA76933 of SANYO company ,audio power amplifier adopts IC LA42352,power supply adopts IC STRW6553, and vertical scan amplifier adopts IC LA78041.The chassis has low cost and steady function, it has been adopts for 25M63,21M63 model.

2)、Base features

The unit TV supports PAL/DK.I,AV supports PAL/NTSC system, in 2XAV,1x S-video

3)、Unit Signal Flow Introduction

SY33 chassis circuit includes tuner, IF ,SAWF,LA76933 H/V scan circuit ,AV board, side AV board, keypad board, USB board, power board. audio power amplifier circuit and power supply circuit etc. The main ICs are LA78041,LA42352,HPC922-C,L7809CV,L7805CV, LA76933, HCF4052 IC etc.

1）TV signal flow

RF from antenna enters tuner to be processed (RF being inverted IF), and IF from pin11 of TU101 passes R106 ,C110 to Q101 IF preamplifier .

After amplifying, IF signal enters pin1 of Z101 to filter and separate SIF and PIF via pin4 and pin5 of Z101 into pin63 and pin64 of IC201(LA76933) to process PIF .

There are two ways output signal of process IF amplifier:

One is video signal, from pin60 of IC201 , after R227,R228 adjustment ,it is sent pin56 of IC201 to process demodulation of picture.

Another way is sound signal, from pin5 of IC201 and passes C260 coupling。 The sound signal is sent to pin1 and pin9 of IC901,after IC901 choosing, signal from pin3 and pin13 of IC901 is sent to pin2 and pin4 of IC601 to process sound power amplification. After amplifying, The signals from pin8 and pin12 of IC601 is sent to L/R speaker.

2) AV signal flow

AV1 signal process circuit.

Video signal of AV1from pin1 of P901 enters to pin46 of IC201 to decode process.

Sound signals of AV1from pin2 and pin3 of P901 input is sent to pin5 and pin 14 of IC901 to choose , after being choosed, the signal flow same as TV sound.

AV2 signal process circuit.

Video signal of AV2 from pin4of P901 is sent to pin54 of IC201 to decode process.

Sound signals of AV2 from pin5 and pin6 of P901 is sent to pin1 and pin 12 to choose signal,.After being choosed, the signal flow same as TV sound.

3) High-Definition signal flow.

Y signal from pin7 of P901 enters pin48 of IC201 to process video.

Cb signa from pin8 of P901 enters pin49 of IC201 to process video.

Cr signal from pin9 of P901 enters pin51 of IC201 to process video.

4) Sound signal flow

Volume control:

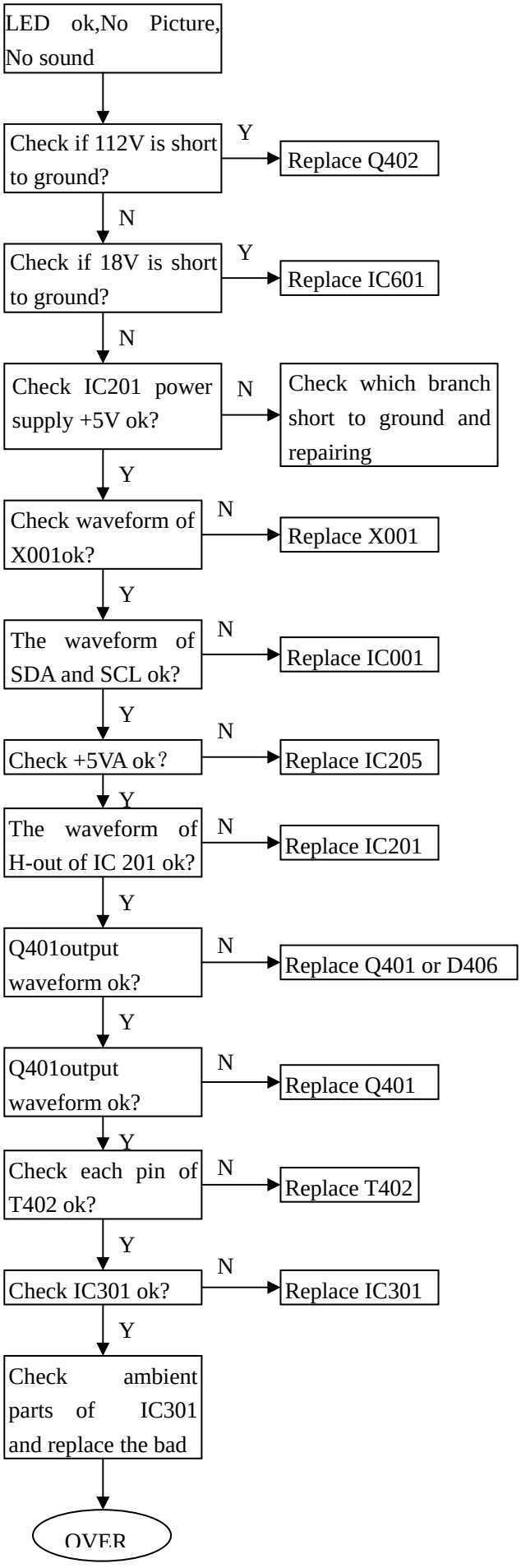
Sound signal from pin27 and pin28 of IC201 enters pin6 and pin13 of IC601 to be amplified and be sent out form pin8 and pin12 of IC601.

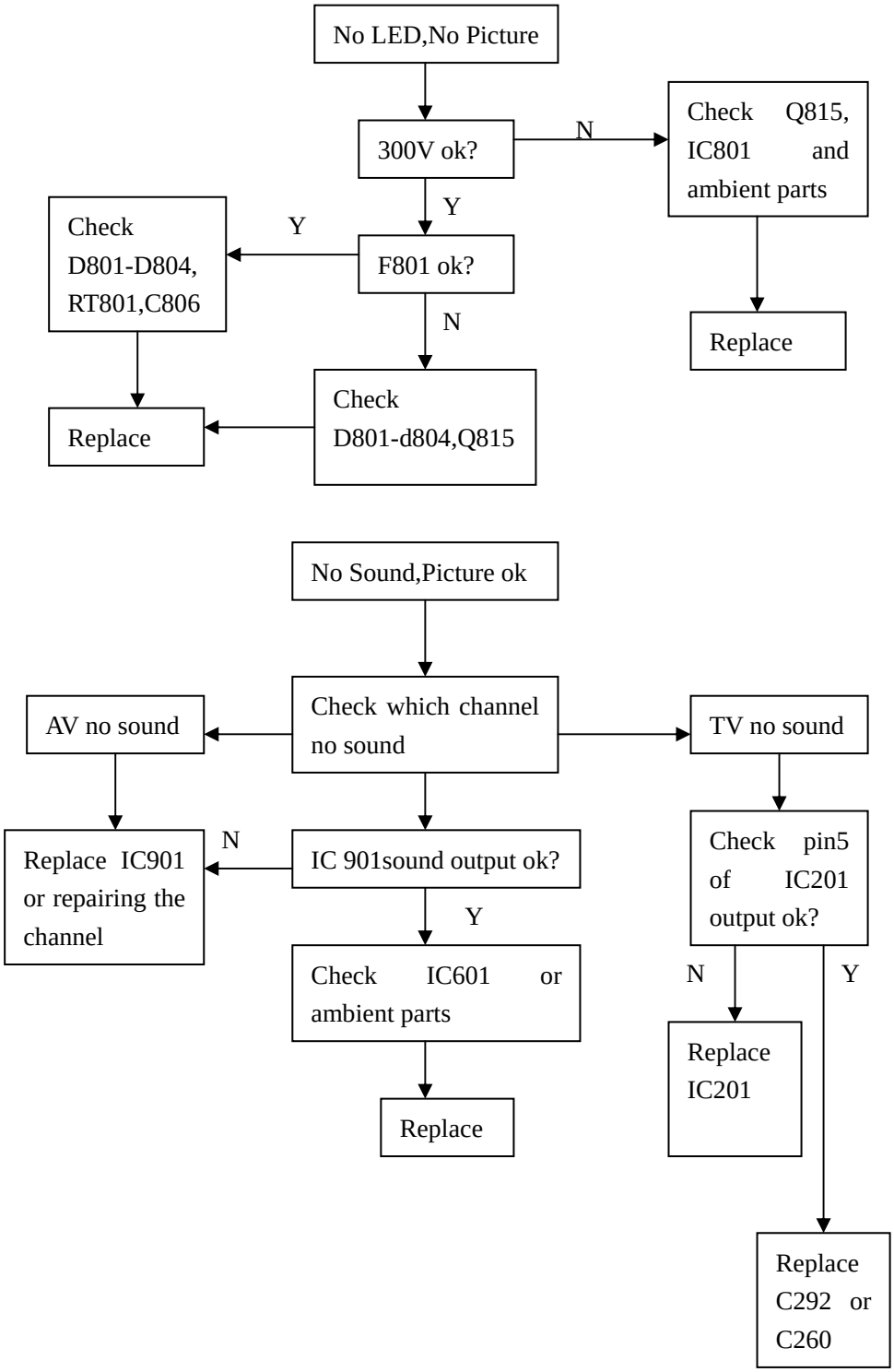
Mute control:

Pin30 of IC201 sends mute control signal, and passes D002 to connect base of Q602,controls the Q602 ON or OFF, the pin C of Q602 connects pin5 of IC601 to control mute normal working .When Q602 off, pin5 of IC601 is high level. So pin8 and pin12 of sound signal output to speaker, when MCU sent mute signal of high level,Q602 ON, it lets the pin5 of IC601 is low level to shut down the sound signal of pin8/pin12 of IC601, the mute is working.

TU101 is a common tuner. The RF signal is processed by tuner inside circuit disposal :high frequency amplifier 、mixing、 high frequency demodulation、AGC、AFT、PLL。Then IF output signal from pinIF of TU101 passes preamplifier Q101 to enter SAW Z101. The PIF signal from pin4 and pin5 of Z101, enters pin63 and pin64 of IC201 to be decoded.

6、Troubleshooting

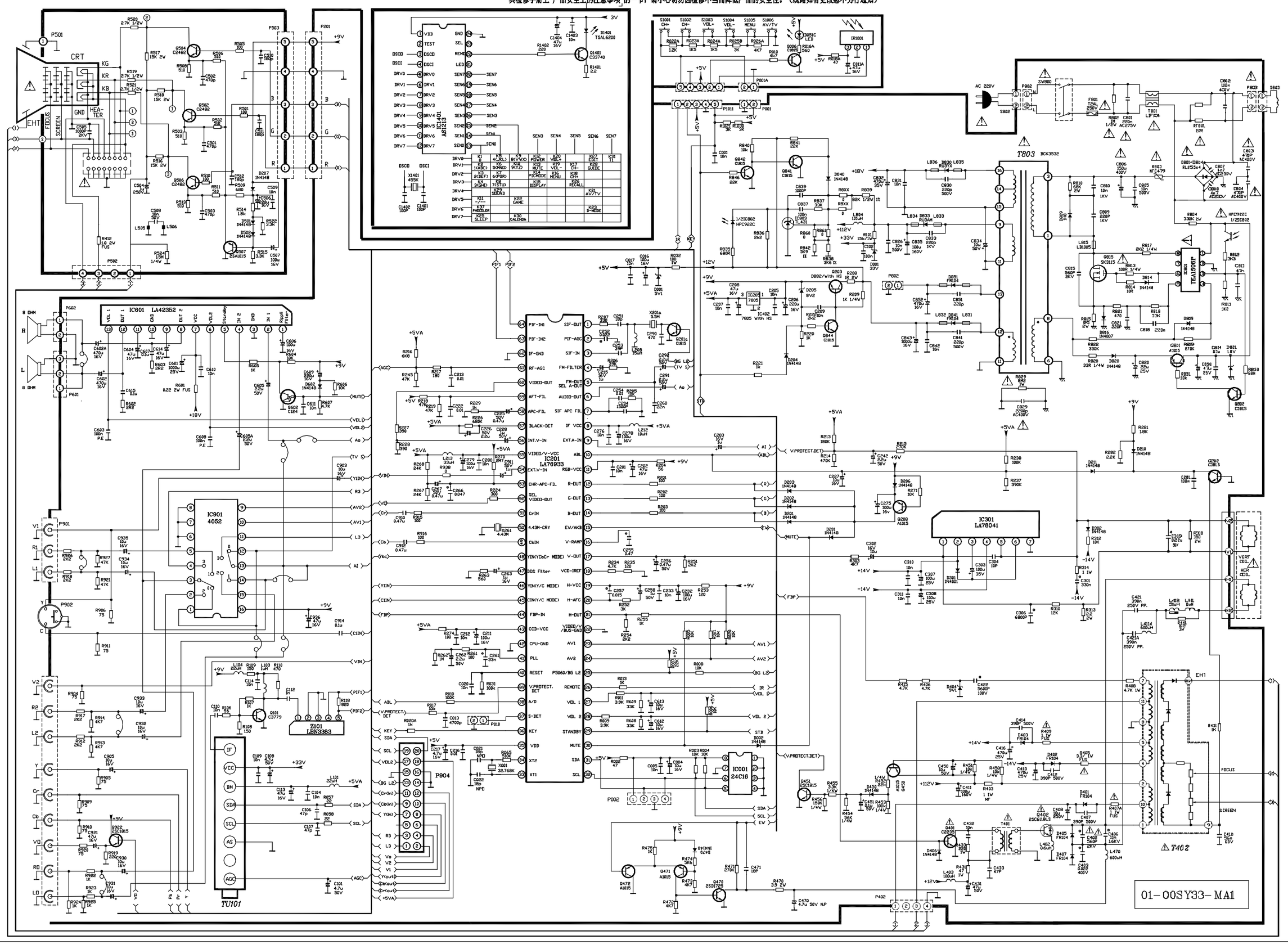



No LED,No Picture
300V ok?
N
Check Q815, IC801 and ambient parts
Y
Y
Check D801-D804, RT801,C806
F801 ok?
N
Replace
Replace
Check D801-d804,Q815
No Sound,Picture ok
Check which channel no sound
AV no sound
TV no sound
Replace IC901 or repairing the channel
N
IC 901sound output ok?
Y
Check pin5 of IC201 output ok?
Check IC601 or ambient parts
N
Y
Replace IC201
Replace
Replace C292 or C260

7ÿSchematic Diagram

M62/SY33

注意：为保证产品安全，附带△记号的零件是具有安全上的重要性，所以当替换这些零件时请详细阅读
其检修手册上「产品安全上的注意事项」的一节，请小心切勿因检修不当而降低产品的安全性。（线路如有更改恕不另行通知）



8ÿMain IC Introduction

1) LA76933

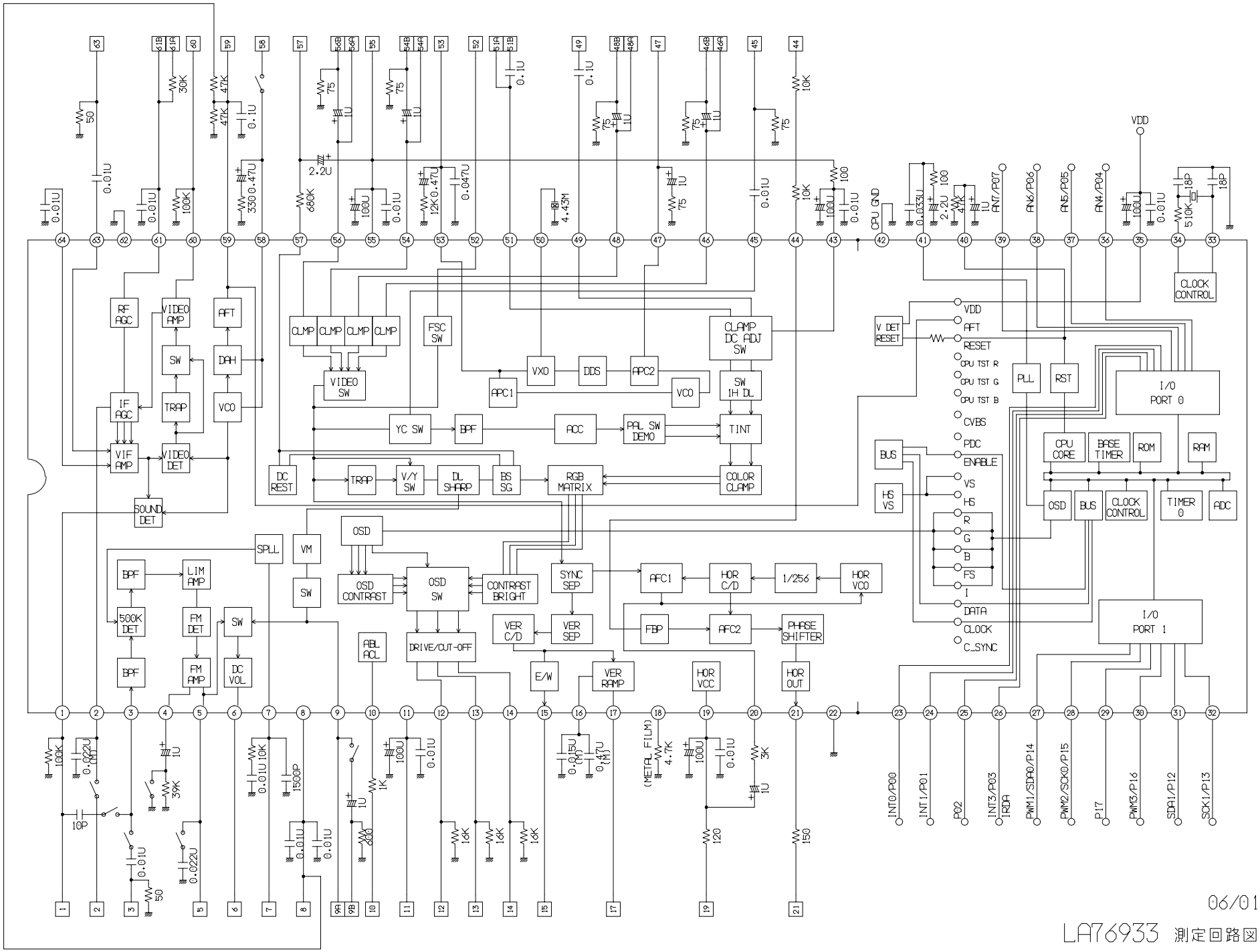
Pin Assignment

PIN	FUNCTION	PIN	FUNCTION
1	SIF Output	64	VIF Input1
2	VIF AGC	63	VIF Input2
3	SIF Input	62	IF Ground
4	FM Filter	61	RF AGC Output
5	FM Output / Selected Audio Output	60	Video Output
6	Audio Output	59	AFT Filter
7	SIF APC Filter	58	APC Filter
8	IF Vcc	57	Black Level Det. Filter
9	**Ext. Audio Input / VM Output**	56	Internal Video Input
10	ABL	55	Video/Vertical Vcc
11	RGB Vcc	54	External Video Input
12	Red Output	53	Chroma APC Filter
13	Green Output	52	Selected Video Output or fsc Output
14	Blue Output	51	Cr Input
15	E/W Output	50	4.43MHz Crystal
16	V Ramp Osc. Capacitor	49	Cb Input
17	Vertical Output	48	DVD-Y
18	VCO IREF	47	NC
19	Horizontal/BUS Vcc	46	YC-Y
20	Horizontal AFC Filter	45	YC-C
21	Horizontal Output	44	Flyback Pulse Input
22	Video/Vertical/BUS Ground	43	CCD Vcc
23	P00/INT0	42	CPU Ground
24	P01/INT1	41	FIL
25	P02	40	$\overline{\text{RES}}$
26	P03/INT3	39	P07/AN7
27	P14/PWM1	38	P06/AN6
28	P15/PWM2	37	P05/AN5
29	P17	36	P04/AN4
30	P16/PWM3	35	VDD
31	P12/SDA1	34	XT2
32	P13/SCK1	33	XT1

内部結線

Internal connections

PIN	FUNCTION	PAD Name	
		BIP	µCOM
PInt01	C_Sync	PSYNC	P33
PInt02	CLOCK	PCL	P32
PInt03	DATA	PDA	P31
PInt04	I	PI	I
PInt05	FS	PFS	BL
PInt06	INT_B	PB	B
PInt07	INT_G	PG	G
PInt08	INT_R	PR	R
PInt09	HS	PHS	HS
PInt10	VS	PVS	VS
PInt11	ENABLE	PENA	P30
PInt12	PDC	PPDC	PEIN
PInt13	CVBS	PCVBS	CVIN
PInt14	CPU TST B	PCPUB	TSTB
PInt15	CPU TST G	PCPUG	TSTG
PInt16	CPU TST R	PCPUR	TSTR
PInt17	Reset	PRES	RESi
PInt18	AFT	PAFT	AN3
PInt19	VDD	PVDD	VDDi
Pint20	4MHZ Clock	P4M	
Pint21	R out	PROUT	
Pint22	B out	PBOUT	
Pint23	Vref	PVREF	
Pint24	B input	PB_IN	
Pint25	R input	PR_IN	
Pint26	Vcc*2	PVCC2	



06/01/11

LA76933 測定回路図(SPEC)

"LA76933 PLOT AT 01/11/06 10:08:25 W=7120dm "SANYO LIBRARY AT LA76933-ALL.NET

GreenChip™II SMPS control IC

TEA1506P; TEA1506AP; TEA1506T; TEA1506AT

FEATURES

Distinctive features

- Universal mains supply operation (70 to 276 V AC)
- High level of integration; giving a low external component count.

Green features

- Valley or zero voltage switching for minimum switching losses
- Efficient quasi-resonant operation at high power levels
- Frequency reduction at low power standby for improved system efficiency (≤3 W)
- Cycle skipping mode at very low loads.

Protection features

- Safe restart mode for system fault conditions
- Continuous mode protection by means of demagnetization detection (zero switch-on current)
- Accurate and adjustable overvoltage protection (latched in TEA1506; safe restart in TEA1506A)
- Short winding protection
- Undervoltage protection (foldback during overload)
- Overtemperature protection
- Low and adjustable overcurrent protection trip level
- Soft (re)start.

APPLICATIONS

Besides typical application areas, i.e. TV and monitor supplies, the device can be used in adapters and chargers and all applications that demand an efficient and cost-effective solution up to 150 W. Unlike the other GreenChip™II control ICs, the TEA1506 has no internal high voltage start-up source and needs to be started by means of an external bleeder resistor.

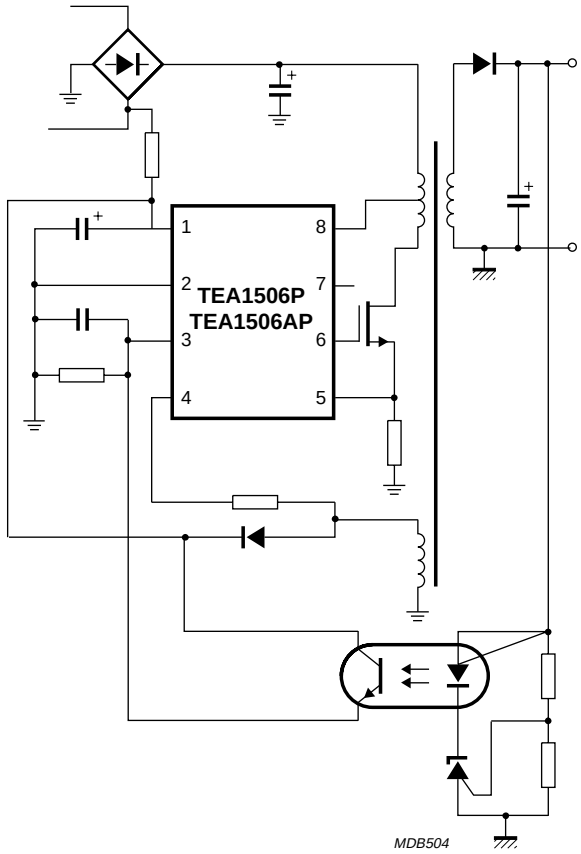


Fig.1 Basic application diagram.

BLOCK DIAGRAM

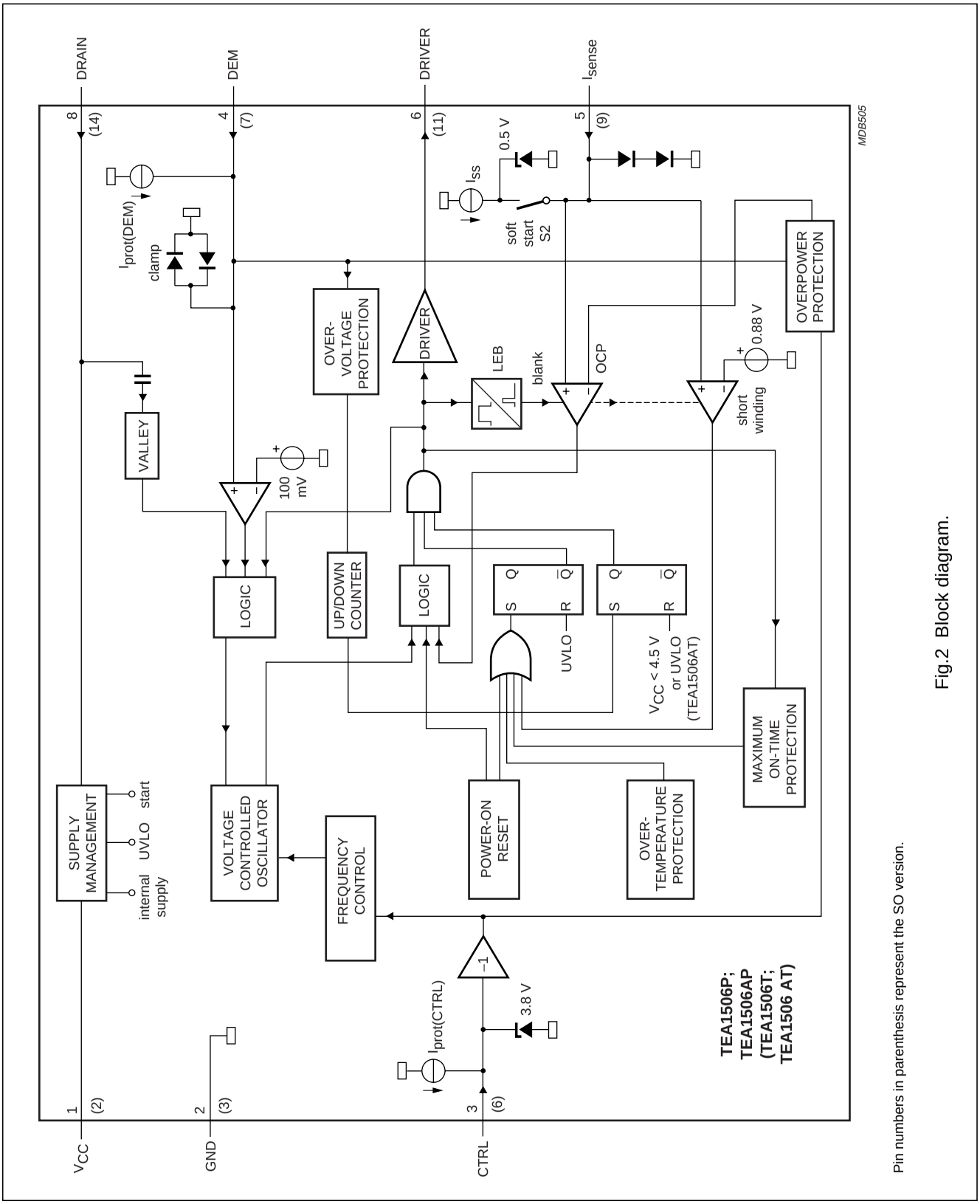


Fig.2 Block diagram.

PINNING

SYMBOL	PIN		DESCRIPTION
	DIP8	SO14	
V_{CC}	1	2	supply voltage
GND	2	3	ground
CTRL	3	6	control input
DEM	4	7	input from auxiliary winding for demagnetization timing; overvoltage and overpower protection
I_{sense}	5	9	programmable current sense input
DRIVER	6	11	gate driver output
HVS	7	12, 13	high voltage safety spacer; not connected
DRAIN	8	14	drain of external MOS switch; input for valley sensing and initial internal supply
n.c.	–	1, 4, 5, 8, 10	not connected

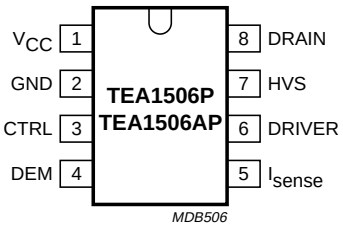


Fig.3 Pin configuration DIP8.

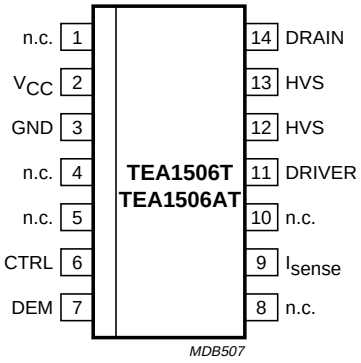


Fig.4 Pin configuration SO14.

FUNCTIONAL DESCRIPTION

The TEA1506 is the controller of a compact flyback converter, and is situated at the primary side. An auxiliary winding of the transformer provides demagnetization detection and powers the IC after start-up.

The TEA1506 can operate in multi modes (see Fig.5).

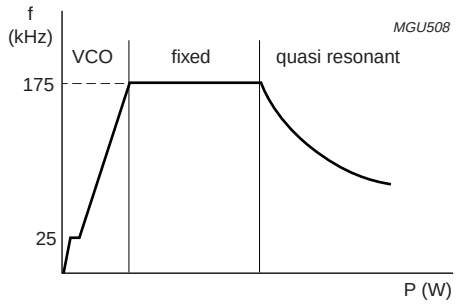


Fig.5 Multi modes operation.

The next converter stroke is started only after demagnetization of the transformer current (zero current switching), while the drain voltage has reached the lowest voltage to prevent switching losses (green function). The primary resonant circuit of the primary inductance and drain capacitor ensures this quasi-resonant operation. The design can be optimized in such a way that zero voltage switching can be reached over almost the universal mains range.

To prevent very high frequency operation at lower loads, the quasi-resonant operation changes smoothly in fixed frequency PWM control.

At very low power (standby) levels, the frequency is controlled down, via the VCO, to a minimum frequency of approximately 25 kHz.

Start-up and undervoltage lock-out

Initially the IC is in the save restart mode. As long as V_{CC} is below the $V_{CC(start)}$ level, the supply current is nearly zero.

The IC will activate the converter as soon as the voltage on pin V_{CC} passes the $V_{CC(start)}$ level.

The IC supply is taken over by the auxiliary winding as soon as the output voltage reaches its intended level.

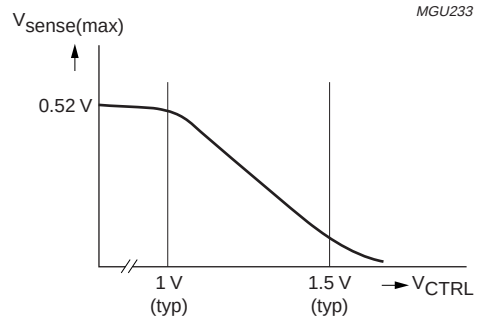


Fig.6 $V_{sense(max)}$ voltage as function of V_{CTRL}.

The moment the voltage on pin V_{CC} drops below the undervoltage lock-out level, the IC stops switching and re-enters the safe restart mode.

Supply management

All (internal) reference voltages are derived from a temperature compensated, on-chip band gap circuit.

Current mode control

Current mode control is used for its good line regulation behaviour.

The ‘on-time’ is controlled by the internally inverted control voltage, which is compared with the primary current information. The primary current is sensed across an external resistor. The driver output is latched in the logic, preventing multiple switch-on.

The internal control voltage is inversely proportional to the external control pin voltage, with an offset of 1.5 V. This means that a voltage range from 1 to 1.5 V on pin CTRL will result in an internal control voltage range from 0.5 to 0 V (a high external control voltage results in a low duty cycle).

Oscillator

The maximum fixed frequency of the oscillator is set by an internal current source and capacitor. The maximum frequency is reduced once the control voltage enters the VCO control window. Then, the maximum frequency changes linearly with the control voltage until the minimum frequency is reached (see Figs 6 and 7).

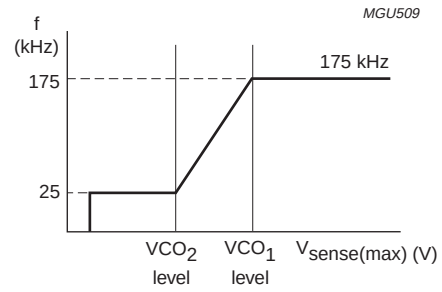


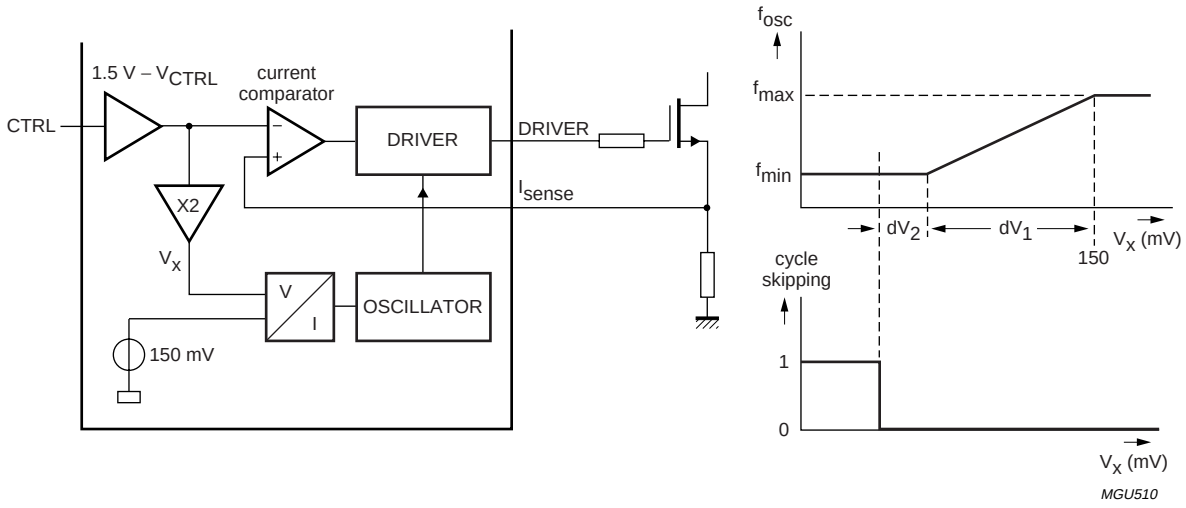
Fig.7 VCO frequency as function of $V_{sense(max)}$.

Cycle skipping

At very low power levels, a cycle skipping mode will be activated. A high control voltage will reduce the switching frequency to a minimum of 25 kHz. If the voltage on the control pin is raised even more, switch-on of the external power MOSFET will be inhibited until the voltage on the control pin has dropped to a lower value again (see Fig.8).

For system accuracy, it is not the absolute voltage on the control pin that will trigger the cycle skipping mode, but a signal derived from the internal VCO will be used.

Remark: If the no-load requirement of the system is such that the output voltage can be regulated to its intended level at a switching frequency of 25 kHz or above, the cycle skipping mode will not be activated.



The voltage levels dV_1 and dV_2 are fixed in the IC to 50 mV (typical) and 18 mV (typical) respectively.

Fig.8 The cycle skipping circuitry.

Demagnetization

The system will be in discontinuous conduction mode all the time. The oscillator will not start a new primary stroke until the secondary stroke has ended.

Demagnetization features a cycle-by-cycle output short-circuit protection by immediately lowering the frequency (longer off-time), thereby reducing the power level.

Demagnetization recognition is suppressed during the first t_{suppr} time. This suppression may be necessary in applications where the transformer has a large leakage inductance, at low output voltages and at start-up.

If pin DEM is open-circuit or not connected, a fault condition is assumed and the converter will stop operating immediately. Operation will recommence as soon as the fault condition is removed.

Minimum and maximum 'on-time'

The minimum 'on-time' of the SMPS is determined by the Leading Edge Blanking (LEB) time. The IC limits the 'on-time' to 50 μs. When the system desires an 'on-time' longer than 50 μs, a fault condition is assumed (e.g. removed C_i in Fig.12), the IC will stop switching and enter the safe restart mode.

OverVoltage Protection (OVP)

An OVP mode is implemented in the GreenChip series. This works for the TEA1506 by sensing the auxiliary voltage via the current flowing into pin DEM during the secondary stroke. The auxiliary winding voltage is a well-defined replica of the output voltage. Any voltage spikes are averaged by an internal filter.

If the output voltage exceeds the OVP trip level, an internal counter starts counting subsequent OVP events. The counter has been added to prevent incorrect OVP detections which might occur during ESD or lightning events. If the output voltage exceeds the OVP trip level a few times and not again in a subsequent cycle, the internal counter will count down with twice the speed compared with counting-up. However, when typical 10 cycles of subsequent OVP events are detected, the IC assumes a true OVP and the OVP circuit switches the power MOSFET off. Next, the controller waits until the UVLO level is reached on pin V_{CC}. When V_{CC} drops to UVLO, capacitor C_{VCC} will be recharged to the V_{start} level.

Regarding the TEA1506, the IC will not start switching again. Subsequently, V_{CC} will drop again to the UVLO level, etc.
Operation only recommences when the V_{CC} voltage drops below a level of about 4.5 V.

Regarding the TEA1506A, when the V_{start} level is reached, switching starts again (safe restart mode) when the V_{start} level is reached. This process is repeated as long as the OVP condition exists.

The output voltage $V_{o(OVP)}$ at which the OVP function trips, can be set by the demagnetization resistor, R_{DEM}:

$$V_{o(OVP)} = \frac{N_s}{N_{aux}}\{I_{(OVP)(DEM)} \times R_{DEM} + V_{clamp(DEM)(pos)}\}$$

where N_s is the number of secondary turns and N_{aux} is the number of auxiliary turns of the transformer.

Current $I_{(OVP)(DEM)}$ is internally trimmed.

The value of R_{DEM} can be adjusted to the turns ratio of the transformer, thus making an accurate OVP possible.

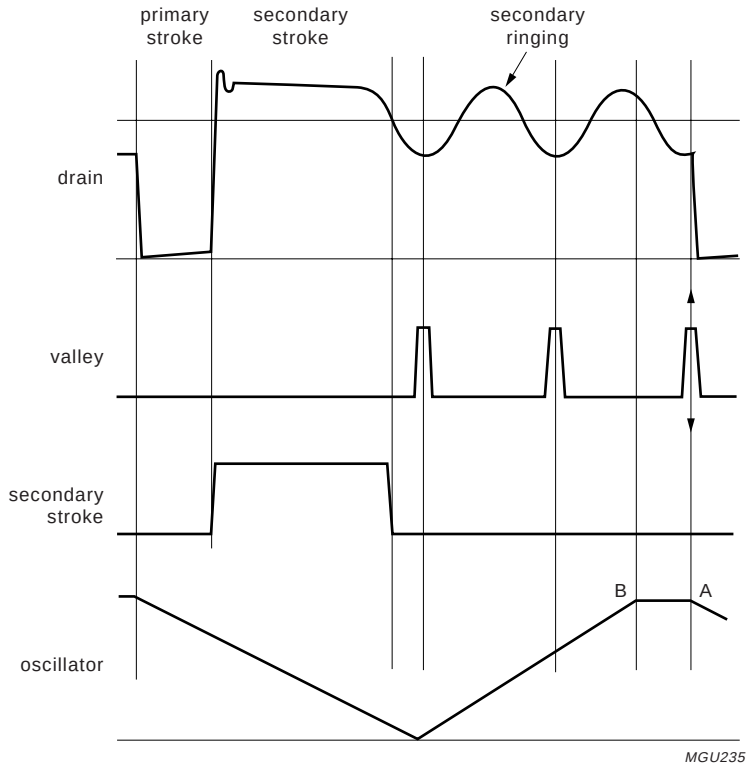
Valley switching

A new cycle starts when the power MOSFET is switched on (see Fig.9). After the 'on-time' (which is determined by the 'sense' voltage and the internal control voltage), the switch is opened and the secondary stroke starts. After the secondary stroke, the drain voltage shows an oscillation with a frequency of approximately $\frac{1}{2 \times \pi \times \sqrt{(L_p \times C_d)}}$

where L_p is the primary self inductance of the transformer and C_d is the capacitance on the drain node.

As soon as the oscillator voltage is high again and the secondary stroke has ended, the circuit waits for the lowest drain voltage before starting a new primary stroke. This method is called valley detection.
Figure 9 shows the drain voltage together with the valley signal, the signal indicating the secondary stroke and the oscillator signal.

In an optimum design, the reflected secondary voltage on the primary side will force the drain voltage to zero. Thus, zero voltage switching is very possible, preventing large capacitive switching losses $\left(P = \frac{1}{2} \times C \times V^2 \times f\right)$ and allowing high frequency operation, which results in small and cost effective inductors.



A: Start of new cycle at lowest drain voltage.
B: Start of new cycle in a classical PWM system at high drain voltage.

Fig.9 Signals for valley switching.

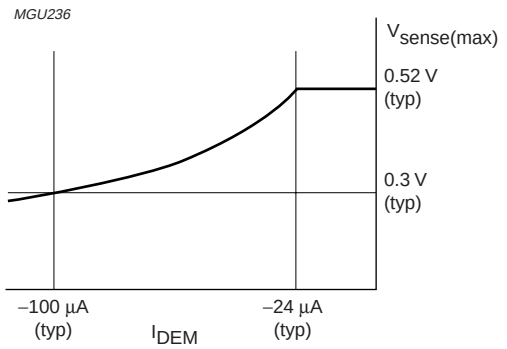


Fig.10 OPP correction curve.

OverCurrent Protection (OCP)

The cycle-by-cycle peak drain current limit circuit uses the external source resistor to measure the current accurately. This allows optimum size determination of the transformer core (cost issue). The circuit is activated after the leading edge blanking time, t_{leb}. The OCP circuit limits the 'sense' voltage to an internal level.

OverPower Protection (OPP)

During the primary stroke, the rectified mains input voltage is measured by sensing the current drawn from pin DEM. This current is dependent on the mains voltage, according to the following formula: $I_{DEM} \approx \frac{V_{aux}}{R_{DEM}} \approx \frac{N \times V_{mains}}{R_{DEM}}$

where: $N = \frac{N_{aux}}{N_p}$

The current information is used to adjust the peak drain current, which is measured via pin I_{sense}. The internal compensation is such that an almost mains independent maximum output power can be realized.

The OPP curve is given in Fig.10.

Short winding protection

After the leading edge blanking time, the short winding protection circuit is activated. If the 'sense' voltage exceeds the short winding protection voltage V_{swp}, the converter will stop switching. Once V_{CC} drops below the UVLO level, capacitor C_{VCC} will be recharged and the supply will restart again. This cycle will be repeated until the short-circuit is removed (safe restart mode).

The short winding protection will also protect in case of a secondary diode short-circuit.

OverTemperature Protection (OTP)

An accurate temperature protection is provided in the circuit. When the junction temperature exceeds the thermal shutdown temperature, the IC will enter the safe restart mode.

When the V_{start} level is reached, switching starts again. This process is repeated as long as the OTP condition exists.

Control pin protection

If pin CTRL is open-circuit or not connected, a fault condition is assumed and the converter will stop switching. Operation will recommence as soon as the fault condition is removed.

Soft start-up

To prevent transformer rattle during hiccup, the transformer peak current is slowly increased by the soft start function. This can be achieved by inserting a resistor and a capacitor between pin I_{sense} and the sense resistor (see Fig.11). An internal current source charges the capacitor to $V = I_{SS} \times R_{SS}$, with a maximum of approximately 0.5 V.

The start level and the time constant of the increasing primary current level can be adjusted externally by changing the values of R_{SS} and C_{SS}.

$$I_{primary(max)} = \frac{V_{ocp} - (I_{SS} \times R_{SS})}{R_{sense}}$$

$$\tau = R_{SS} \times C_{SS}$$

The charging current I_{SS} will flow as long as the voltage on pin I_{sense} is below approximately 0.5 V. If the voltage on pin I_{sense} exceeds 0.5 V, the soft start current source will start limiting the current I_{SS}. At the $V_{CC(start)}$ level, the I_{SS} current source is completely switched off.

Since the soft start current I_{SS} is supplied from pin DRAIN, the R_{SS} value will not affect the V_{CC} current during start-up.

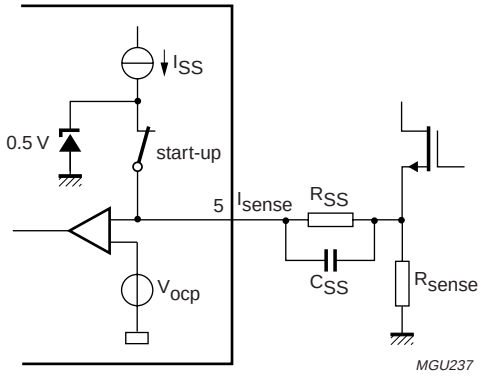


Fig.11 Soft start.

Driver

The driver circuit to the gate of the power MOSFET has a current sourcing capability of 135 mA typical and a current sink capability of 560 mA typical. This permits fast turn-on and turn-off of the power MOSFET for efficient operation.

A low driver source current has been chosen to limit the $\Delta V/\Delta t$ at switch-on. This reduces Electro Magnetic Interference (EMI) and also limits the current spikes across R_{sense}.

10、BOM List

MATERIAL CONCENTRATIVE BOM PRINT
MATERIAL NO.: 03-DM62SAB-SC60S
MATERIAL NAME: S21M62Q/CS-SY33-LA

Parent	Child	Description	Qty	Unit	BOM text
03-DM62SAB-SC60S	T6-016W31-A009XZ	ASS'Y-REMOTE CONTROL BD OF ARTEQU	1	PC	
T6-016W31-A009XZ	06-016W31-A009X	REMOTE CONTROLLER RC1663108	1	PC	
03-DM62SAB-SC60S	T8-21RFLN-HF4AB	ASS'Y - MATCH TUBE	1	PC	
T8-21RFLN-HF4AB	T8-21RFLN-FHF4AB	ASS'Y - MATCH TUBE(F.CAB)	1	PC	
T8-21RFLN-FHF4AB	44-21RFLN-HF4A	CRT A51ERS357X440	1	PC	
T8-21RFLN-FHF4AB	46-27688H-04XG	HS 4P A/B 400/13 RBGW TJC1/4Y	1	PC	FOR DY COIL
T8-21RFLN-HF4AB	T8-21RFLN-MHF4AB	ASS'Y - MATCH TUBE(MAIN BD)	1	PC	
T8-21RFLN-MHF4AB	10-0BY228-F0X	DIODE BY228	1	PC	D405
T8-21RFLN-MHF4AB	10-0FR104-FBX	DIODE FR104 (FAST RECTIFIER)	1	PC	D407
T8-21RFLN-MHF4AB	18-FG0151-JHX	RES. M.O. 150 OHM 2W +/-5%	1	PC	R318
T8-21RFLN-MHF4AB	18-FG0439-JHX	RES. M.O. 4.3 OHM 2W +/-5%	1	PC	R412
T8-21RFLN-MHF4AB	25-BCB101-M1X	CAP. ELEC 100 UF 16V +/-20%	1	PC	C275
T8-21RFLN-MHF4AB	27-AHQ393-JSX	CAP. M.PP 0.039 UF 400V +/-5%	1	PC	C403
T8-21RFLN-MHF4AB	27-AHR394-JSX	CAP. M.PP 0.39 UF 400V +/-5%	1	PC	C421
T8-21RFLN-MHF4AB	27-ALQ102-J0X	CAP. M.PP 0.001UF 1.6KV +/-5%	1	PC	C421A
T8-21RFLN-MHF4AB	27-ALQ272-J0X	CAP. M.PP 0.0027UF 1.6KV +/-5%	1	PC	C402
T8-21RFLN-MHF4AB	27-ALR133-J0X	CAP. M.PP 0.013 UF 1.6KV +/-5%	1	PC	C406
T8-21RFLN-MHF4AB	36-LIN180-XX1	TCL36-LIN180-XX1= COIL LINEARITY 18 UH R	1	PC	L412
T8-21RFLN-MHF4AB	36-WID601-XX1	COIL CHOKE 600 UH	1	PC	L411A
T8-21RFLN-MHF4AB	37-FCA001-EAA0A	FLYBACK BSC27-0101Q	1	PC	T402
T8-21RFLN-MHF4AB	66-343730-0B0	HOLLOW RIVET 1.6MMX3.0MMX3.2MM	2	PC	FOR L411A
T8-21RFLN-HF4AB	T8-DM62SAB-CRY	ASS'Y - CRT BD	1	PC	
T8-DM62SAB-CRY	10-1N4148-ABX	DIODE 1N4148 (SWITCHING)	3	PC	D207;D501;D502
T8-DM62SAB-CRY	11-SA1015-YBX	TRANSISTOR ST2SA1015Y (PNP)	1	PC	Q507

T8-DM62SAB-CRY	11-TC3207-0BX	TRANSISTOR KTC3207	3	PC	Q504;Q502;Q506
T8-DM62SAB-CRY	18-CB0101-JNX	RES. C.F. 100 OHM 1/6W +/-5%	3	PC	R510;R501;R505
T8-DM62SAB-CRY	18-CB0182-JNX	RES. C.F. 1.8K OHM 1/6W +/-5%	1	PC	R514
T8-DM62SAB-CRY	18-CB0332-JNX	RES. C.F. 3.3K OHM 1/6W +/-5%	2	PC	R515;R522
T8-DM62SAB-CRY	18-CB0511-JNX	RES. C.F. 510 OHM 1/6W +/-5%	6	PC	R513;R511;R508;R506;R503;R502
T8-DM62SAB-CRY	18-CB0681-JNX	RES. C.F. 680 OHM 1/6W +/-5%	1	PC	R509
T8-DM62SAB-CRY	18-CD0155-JNX	RES. C.F. 1.5M OHM 1/4W +/-5%	1	PC	R524
T8-DM62SAB-CRY	18-FE0272-JNX	RES. M.O. 2.7K OHM 1/2W +/-5%	3	PC	R519;R520;R521
T8-DM62SAB-CRY	18-FG0153-JHX	RES. M.O. 15K OHM 2W +/-5%	3	PC	R516;R517;R518
T8-DM62SAB-CRY	25-BCB101-M1X	CAP. ELEC 100 UF 16V +/-20%	1	PC	C507
T8-DM62SAB-CRY	25-BCB221-M1X	CAP. ELEC 220 UF 16V +/-20%	1	PC	C506
T8-DM62SAB-CRY	25-BLB109-M1X	TCL25-BLB109-M1X= CAP. ELEC 1 UF 250V +/	1	PC	C504
T8-DM62SAB-CRY	26-ABC471-JZX	CAP. CER 470 PF 50V +/-5% SL	3	PC	C502;C501;C503
T8-DM62SAB-CRY	26-AMM681-KRX	CAP. CER 680 PF 2KV +/-10% R	1	PC	C505
T8-DM62SAB-CRY	26-EBP103-ZF1	CAP CER 50V 2.5MM 10nF -20%+80%	1	PC	C508
T8-DM62SAB-CRY	26-EBP103-ZFS	CAP.CER 10NF 50V +80% -20%	1	PC	C509
T8-DM62SAB-CRY	35-139730-00X	FERR. BEAD BF60	2	PC	FOR C508
T8-DM62SAB-CRY	40-0Y12DG-CRB1XG	P.C.B CRT BD	1	PC	
T8-DM62SAB-CRY	46-10967W-01XG	PIN BASE *1 TJC1-1A	1	PC	P501
T8-DM62SAB-CRY	47-CRT004-XX0G	TCL47-CRT004-XX0G= CRT SOCKET GZS10-2-10	1	PC	S501
T8-DM62SAB-CRY	46-33079W-05XG	PIN BASE *5 TJC3-5A	1	PC	P503
T8-DM62SAB-CRY	46-35179W-04XG	PIN BASE TJC3-4A	1	PC	P502
03-DM62SAB-SC60S	T8-DM62SAB-BSY	ASS'Y - BASE	1	PC	
T8-DM62SAB-BSY	54-420800-000	RUBBER PAD	3	PC	
T8-DM62SAB-BSY	T8-DM62SAB-BSYZ	ASS'Y - BASE(ART)	1	PC	
T8-DM62SAB-BSYZ	62-444330-0CL1A	BASE	1	PC	
T8-DM62SAB-BSYZ	74-045035-50H	PLASTIC BAG	1	PC	
03-DM62SAB-SC60S	T8-DM62SAB-FCN	ASS'Y - FRONT CABINET	1	PC	

T8-DM62SAB-FCN	54-114002-00X	FELT TAPE (360MMX19MMX0.3MM)	6	PC	
T8-DM62SAB-FCN	54-205140-000	SPACER CRT MOUNTING T=2MM	4	PC	MTG CRT&F.CAB
T8-DM62SAB-FCN	54-314740-0X0	CRT FIBRE SHEET (22MMX22MMX0.8MM)	12	PC	MTG CHASSIN&CRT ;
T8-DM62SAB-FCN	57-389890-000	WIRE MOUNTS 80MMX2.2MM	3	PC	
T8-DM62SAB-FCN	62-227680-0UA	BRACKET ABS-KINGFA 606 (UO)	1	PC	
T8-DM62SAB-FCN	62-227680-1UA	FBT BRACKET	1	PC	
T8-DM62SAB-FCN	62-444320-0CL	SALVER	1	PC	
T8-DM62SAB-FCN	62-450560-0UN	TRACKING_R	1	PC	
T8-DM62SAB-FCN	62-450570-0UN	TRACKING_L	1	PC	
T8-DM62SAB-FCN	63-B30100-AB2G	SCREW-ST 3MM 10MM 62 R=Y	1	PC	MTG LENS PCB & F.CAB
T8-DM62SAB-FCN	63-B40100-BT4G	S/T SCREW B 4 X 10	3	PC	MTG ARMOR PLATE&CHASSIN
T8-DM62SAB-FCN	63-B40150-AB4G	SCREW-ST 4MM 15MM ISO 62 R=Y	6	PC	MTG CHASSIN & F.CAB
T8-DM62SAB-FCN	63-W30100-AB4G	S/T SCREW W 3 X 10 AB	3	PC	MTG LENS & F.CAB;MTG BUTTON & F.CAB
T8-DM62SAB-FCN	63-Z60250-AB4G	S/T SCREW HA 6X25	4	PC	MTG CRT & F.CAB
T8-DM62SAB-FCN	67-M44681-0E4	METAL PART	1	PC	
T8-DM62SAB-FCN	T8-DM62SAB-FCNZ	ASS'Y - FRONT CABINET(ART)	1	PC	
T8-DM62SAB-FCNZ	55-DM62FC-1CL1A	FRONT CABINET	1	PC	
T8-DM62SAB-FCNZ	56-DM62FB-0HA5O	PUSH BUTTON	1	PC	
T8-DM62SAB-FCNZ	56-DM62LE-0HC5Z	LENS	1	PC	
T8-DM62SAB-FCNZ	58-DM62FI-0UI1A	INLAY PUSH BUTTON	1	PC	
T8-DM62SAB-FCNZ	67-2960LG-0A09A	LOGO	1	PC	
T8-DM62SAB-FCN	41-GND021-LX0	ASS'Y-GND BRAID 21 "CRT	1	PC	
T8-DM62SAB-FCN	36-DEG210-BX3	DEGAUSSING COIL 2500MM	1	PC	
T8-DM62SAB-FCN	67-X12668-0E0	SPRING CRT 6MMX40MMX0.5MM	1	PC	
T8-DM62SAB-FCN	42-41208D-XX0G	SPEAKER YDP412-1A	2	PC	W601, W602
T8-DM62SAB-FCN	46-14026H-02XG	HS 2P 2468#22 570MM S11-2Y/7MM	1	PC	P602H FOR M.BD P602
T8-DM62SAB-FCN	46-27250H-02XG	HS 2P24 450/5 F/W TJC3-02H	1	PC	P601H FOR M.BD P601
T8-DM62SAB-FCN	63-Z30120-AB4G	S/T SCREW 3.0 X 12	4	PC	MTG SPK & F.CAB
03-DM62SAB-SC60S	T8-DM62SAB-MANSM	ASS'Y - CHASSIS BD	1	PC	

T8-DM62SAB-MANSM	T8-DM62SAB-IRY	ASS'Y - INFRARED RECEIVE BD	1	PC	
T8-DM62SAB-IRY	02-IRR001-XX1	IR RECEIVER MODULE HRM380017	1	PC	IR1101
T8-DM62SAB-IRY	11-SC1815-YBX	TRANSISTOR 2SC1815-Y (NPN)	1	PC	Q1101
T8-DM62SAB-IRY	14-LED03R-XX1	LED RED Φ3MM FO203	1	PC	D1101
T8-DM62SAB-IRY	18-CB0152-JNX	RES. C.F. 1.5K OHM 1/6W +/-5%	1	PC	R1102
T8-DM62SAB-IRY	18-CB0470-JNX	RES. C.F. 47 OHM 1/6W +/-5%	1	PC	R1103
T8-DM62SAB-IRY	18-CB0472-JNX	CARBON RES. C.F. 4.7K OHM 1/6W +/-5%	1	PC	R1101
T8-DM62SAB-IRY	25-HCB470-M1X	CAP. ELEC 47 UF 16V +/-20%	1	PC	C1101
T8-DM62SAB-IRY	26-EBP104-ZFS	CAP. CER 0.1UF 50V +80%/-20%	1	PC	C1102
T8-DM62SAB-IRY	40-21M62S-IRB1XG	P.C.B IR RECEIVE BD	1	PC	
T8-DM62SAB-IRY	46-33079W-04XG	PIN BASE *4 TJC3-4A	1	PC	P1101
T8-DM62SAB-MANSM	T8-DM62SAB-KEY	ASS'Y - KEY BD	1	PC	
T8-DM62SAB-KEY	18-CB0122-JNX	RES. C.F. 1.2K OHM 1/6W +/-5%	1	PC	R1001
T8-DM62SAB-KEY	18-CB0123-JNX	RES. C.F. 12K OHM 1/6W +/-5%	1	PC	R1006
T8-DM62SAB-KEY	18-CB0152-JNX	RES. C.F. 1.5K OHM 1/6W +/-5%	2	PC	R1002;R1003
T8-DM62SAB-KEY	18-CB0302-JNX	RES. C.F. 3K OHM 1/6W +/-5%	1	PC	R1004
T8-DM62SAB-KEY	18-CB0472-JNX	CARBON RES. C.F. 4.7K OHM 1/6W +/-5%	1	PC	R1005
T8-DM62SAB-KEY	40-21V18S-KEC1XG	P.C.B KEY BD	1	PC	
T8-DM62SAB-KEY	46-27626W-02XG	PIN BASE *2 TJC3-2A (HORIZ)	1	PC	P1001
T8-DM62SAB-KEY	48-TAC002-XX1	TACT SWITCH TSVB-3-D	7	PC	K1001;K1002;K1003;K1004;K1005;K1006;K1007
T8-DM62SAB-MANSM	T8-DM62SAB-MAN	ASS'Y - MAIN BD	1	PC	
T8-DM62SAB-MAN	07-457FF5-NA8XG	FS TUNER FSNA05T-4-E	1	PC	TU101
T8-DM62SAB-MAN	10-0001H8-FBX	DIODE 1H8 (FAST RECOVERY)	1	PC	D809
T8-DM62SAB-MAN	10-0FR104-FBX	DIODE FR104 (FAST RECTIFIER)	5	PC	D820;D403;D402;D401;D490
T8-DM62SAB-MAN	10-0RL255-EBX	DIODE RL255 OR RL206(POWER RECTIFIER)	4	PC	D802;D803;D804;D801
T8-DM62SAB-MAN	10-0RU3AM-FBX	HIGH EFFICIENCY RECTIFIER RU3AM	1	PC	D833

T8-DM62SAB-MAN	10-0RU3YX-FBX	DIODE RU3YX	2	PC	D830;D841
T8-DM62SAB-MAN	10-1N4001-EBX	DIODE 1N4001 (RECTIFIER)	1	PC	D301
T8-DM62SAB-MAN	10-1N4007-EBX	DIODE IN4007	1	PC	D816
T8-DM62SAB-MAN	10-1N4148-ABX	DIODE 1N4148 (SWITCHING)	21	PC	D204;D206;D819;D203;D202;D201;D840;D814;D210;D602;D211;D302;D406;D470;D306;D220;D862;D863;D601;D601A;D603
T8-DM62SAB-MAN	10-79C18V-DBX	DIODE ZENER 18V 1/2W 5%	1	PC	D821
T8-DM62SAB-MAN	10-79C33V-DBX	DIODE ZENER 33V 1/2W 5%	1	PC	D101
T8-DM62SAB-MAN	10-79C8V2-DBX	DIODE ZENER 8V2 1/2W 5%	1	PC	D205
T8-DM62SAB-MAN	10-79C9V1-DBX	DIODE ZENER 9V1 1/2W 5%	1	PC	D404
T8-DM62SAB-MAN	10-HS5V1B-DBX	DIODE 500MW 5.1HSB	1	PC	D001
T8-DM62SAB-MAN	11-SA1015-YBX	TRANSISTOR ST2SA1015Y (PNP)	4	PC	Q208;Q471;Q801;Q472
T8-DM62SAB-MAN	11-DD1556-0AX	TRANSISTOR 3DD1556	1	PC	Q402
T8-DM62SAB-MAN	11-DD2603-RAX	TRANSISTOR 3DD2603-R	1	PC	Q470
T8-DM62SAB-MAN	11-C124ES-0BX	TRANSISTOR PDTC124ES (NPN)	1	PC	Q602
T8-DM62SAB-MAN	11-SC1815-YBX	TRANSISTOR 2SC1815-Y (NPN)	7	PC	Q844;Q842;Q841;Q802;Q202;Q922;Q306
T8-DM62SAB-MAN	11-SC2235-YAX	TRANSISTOR 2SC2235-Y(NPN)	1	PC	Q401
T8-DM62SAB-MAN	11-SC3779-DBX	TRANSISTOR 2SC3779D (RF AMPL)	1	PC	Q101
T8-DM62SAB-MAN	11-SD2012-0CX	TRANSISTOR 2SD2012	1	PC	Q203
T8-DM62SAB-MAN	11-SK2645-0AX	TRANSISTOR 2SK2645-01MR (POWER	1	PC	Q815
T8-DM62SAB-MAN	13-000040-52P	IC 4052	1	PC	IC901
T8-DM62SAB-MAN	13-000TL4-31T	IC TL431ACLP	1	PC	IC803
T8-DM62SAB-MAN	13-00M24C-08P	IC EEPROM 8K M24C08 (WRITE)	1	PC	IC001 (CP)
T8-DM62SAB-MAN	13-0HPC92-2CP	PHOTO COUPLER HPC922-C	1	PC	IC802
T8-DM62SAB-MAN	13-0L7805-CVS	+5V 1.5A IC L7805CV	1	PC	IC205
T8-DM62SAB-MAN	13-0LA769-33P	IC LA76933FLASH	1	PC	IC201 (CP)
T8-DM62SAB-MAN	13-LA4235-20S	IC LA42352	1	PC	IC601
T8-DM62SAB-MAN	13-STV817-2AS	IC STV8172A	1	PC	IC301
T8-DM62SAB-MAN	13-TEA150-6PP	TCL13-TEA150-6PP= IC TEA1506P R=N	1	PC	IC801
T8-DM62SAB-MAN	18-CB0100-JNX	RES. C.F. 10 OHM 1/6W +/-5%	1	PC	R814

T8-DM62SAB-MAN	18-CB0101-JNX	RES. C.F. 100 OHM 1/6W +/-5%	8	PC	R915;R274;R916;R261;R203;R202;R201;R255
T8-DM62SAB-MAN	18-CB0102-JNX	RES. C.F. 1K OHM 1/6W +/-5%	13	PC	R923;R922;R605;R475;R411;R221;R013;R020A;R107;R220;R620;R860;J220
T8-DM62SAB-MAN	18-CB0103-JNX	RES. C.F. 10K OHM 1/6W +/-5%	16	PC	R006;R004;R606;R003;R840;R851;R312;R017;R020;R021;R205;R311;R271;R604;R316;R010
T8-DM62SAB-MAN	18-CB0104-JNX	RES. C.F. 100K OHM 1/6W +/-5%	5	PC	R031;R238;R925;R924;R863
T8-DM62SAB-MAN	18-CB0105-JNX	TCL18-CB0105-JNX= RES. C.F. 1M OHM 1/6W	1	PC	R262
T8-DM62SAB-MAN	18-CB0121-JNX	RES. C.F. 120 OHM 1/6W +/-5%	1	PC	R253
T8-DM62SAB-MAN	18-CB0122-JNX	RES. C.F. 1.2K OHM 1/6W +/-5%	1	PC	R811
T8-DM62SAB-MAN	18-CB0151-JNX	RES. C.F. 150 OHM 1/6W +/-5%	2	PC	R109;R108
T8-DM62SAB-MAN	18-CB0181-JNX	RES. C.F. 180 OHM 1/6W +/-5%	2	PC	R217;R336
T8-DM62SAB-MAN	18-CB0184-JNX	RES. C.F. 180K OHM 1/6W +/-5%	1	PC	R213
T8-DM62SAB-MAN	18-CB0220-JNX	RES. C.F. 22 OHM 1/6W +/-5%	2	PC	R057;R058
T8-DM62SAB-MAN	18-CB0221-JNX	RES. C.F. 220 OHM 1/6W +/-5%	3	PC	R106;R919;R264
T8-DM62SAB-MAN	18-CB0222-JNX	RES. C.F. 2.2K OHM 1/6W +/-5%	5	PC	R222;R912;R917;R918;R926
T8-DM62SAB-MAN	18-CB0223-JNX	RES. C.F. 22K OHM 1/6W +/-5%	6	PC	R841;R846;R914;R927;R921;R913
T8-DM62SAB-MAN	18-CB0229-JNX	RES. C.F. 2.2 OHM 1/6W +/-5%	2	PC	R602;R603
T8-DM62SAB-MAN	18-CB0243-JNX	RES. C.F. 24K OHM 1/6W +/-5%	2	PC	R267;R268

T8-DM62SAB-MAN	18-CB0272-JNX	RES. C.F. 2.7K OHM 1/6W +/-5%	1	PC	R835
T8-DM62SAB-MAN	18-CB0274-JNX	TCL18-CB0274-JNX= RES. C.F. 270K OHM 1/6	2	PC	R471;R215
T8-DM62SAB-MAN	18-CB0302-JNX	RES. C.F. 3K OHM 1/6W +/-5%	4	PC	R080;R081;R252;R281
T8-DM62SAB-MAN	18-CB0331-JNX	RES. C.F. 330 OHM 1/6W +/-5%	2	PC	R224;R207
T8-DM62SAB-MAN	18-CB0332-JNX	RES. C.F. 3.3K OHM 1/6W +/-5%	1	PC	R812
T8-DM62SAB-MAN	18-CB0333-JNX	RES. C.F. 33K OHM 1/6W +/-5%	5	PC	R837;R818;R608;R609;R315
T8-DM62SAB-MAN	18-CB0334-JNX	RES. C.F. 330K OHM 1/6W +/-5%	1	PC	R819
T8-DM62SAB-MAN	18-CB0391-JNX	RES. C.F. 390 OHM 1/6W +/-5%	3	PC	R227;R228;R491
T8-DM62SAB-MAN	18-CB0392-JNX	RES. C.F. 3.9K OHM 1/6W +/-5%	3	PC	R011;R009;R473
T8-DM62SAB-MAN	18-CB0822-JNX	RES. C.F. 8.2K OHM 1/6W +/-5%	1	PC	R206
T8-DM62SAB-MAN	18-CB0394-JNX	TCL18-CB0394-JNX= RES. C.F. 390K OHM 1/6	2	PC	R822;R237
T8-DM62SAB-MAN	18-CB0470-JNX	RES. C.F. 47 OHM 1/6W +/-5%	1	PC	R002
T8-DM62SAB-MAN	18-CB0471-JNX	RES. C.F. 470 OHM 1/6W +/-5%	2	PC	R110;R821
T8-DM62SAB-MAN	18-CB0472-JNX	CARBON RES. C.F. 4.7K OHM 1/6W +/-5%	5	PC	R836;R406;R415;R607;R472
T8-DM62SAB-MAN	18-CB0473-JNX	RES. C.F. 47K OHM 1/6W +/-5%	3	PC	R218;R219;R245
T8-DM62SAB-MAN	18-CB0474-JNX	RES. C.F. 470K OHM 1/6W +/-5%	2	PC	R214;R266
T8-DM62SAB-MAN	18-CB0514-JNX	RES. C.F. 510k OHM 1/6W +/-5%	1	PC	R065
T8-DM62SAB-MAN	18-CB0560-JNX	RES. C.F. 56 OHM 1/6W +/-5%	1	PC	R204
T8-DM62SAB-MAN	18-CB0561-JNX	RES. C.F. 560 OHM 1/6W +/-5%	1	PC	R263
T8-DM62SAB-MAN	18-CB0562-JNX	RES. C.F. 5.6K OHM 1/6W +/-5%	2	PC	R474;R282
T8-DM62SAB-MAN	18-CB0682-JNX	RES. C.F. 6.8K OHM 1/6W +/-5%	1	PC	R216
T8-DM62SAB-MAN	18-CB0683-JNX	RES. C.F. 68K OHM 1/6W +/-5%	1	PC	R853

T8-DM62SAB-MAN	18-CB0684-JNX	RES. C.F. 680K OHM 1/6W +/-5%	1	PC	R226
T8-DM62SAB-MAN	18-CB0750-JNX	RES. C.F. 75 OHM 1/6W +/-5%	6	PC	R911;R910;R909;R920;R906;R904
T8-DM62SAB-MAN	18-CB0821-JNX	RES. C.F. 820 OHM 1/6W +/-5%	1	PC	R118
T8-DM62SAB-MAN	18-CD0101-JNX	RES. C.F. 100 OHM 1/4W +/-5%	1	PC	R813
T8-DM62SAB-MAN	18-CD0220-JNX	RES. C.F. 22 OHM 1/4W +/-5%	1	PC	R820
T8-DM62SAB-MAN	18-CD0222-JNX	RES. C.F. 2.2K OHM 1/4W +/-5%	1	PC	R817
T8-DM62SAB-MAN	18-CD0751-JNX	RES. C.F. 750 OHM 1/4W +/-5%	1	PC	R209
T8-DM62SAB-MAN	18-DB0123-FNX	TCL18-DB0123-FNX= RES. M.F. 12K OHM 1/6W	1	PC	R310
T8-DM62SAB-MAN	18-DB0182-FNX	RES. M.F 1.8K OHM 1/6W +/-1%	1	PC	R842
T8-DM62SAB-MAN	18-DB0222-FNX	TCL18-DB0222-FNX= RES. M.F. 2.2K OHM 1/6	1	PC	R251
T8-DM62SAB-MAN	18-DB0473-FNX	RES. M.F. 47K OHM 1/6W +/-1%	1	PC	R838
T8-DM62SAB-MAN	18-DB0472-FNX	RES. M.F. 4.7K OHM 1/6W +/-1%	2	PC	R234;R303
T8-DM62SAB-MAN	18-CB0820-JNX	RES. C.F. 82 OHM 1/6W +/-5%	2	PC	R235;R905
T8-DM62SAB-MAN	18-DE0823-FNX	RES. M.F. 82K OHM 1/2W +/-1%	1	PC	R839
T8-DM62SAB-MAN	18-EE0109-JNX	RES. FUS. 1 OHM 1/2W +/-5%	2	PC	R405;R409
T8-DM62SAB-MAN	18-EF0109-JGX	RES. FUS. 1 OHM 1W +/-5% (LS)	3	PC	R407A;R403;R208
T8-DM62SAB-MAN	18-EG0228-JHX	RES. FUS. 0.22 OHM 2W +/-5%	1	PC	R601
T8-DM62SAB-MAN	18-FF0101-JGX	RES. M.O. 100 OHM 1W +/-5%	1	PC	R032
T8-DM62SAB-MAN	18-FF0689-JGX	RES.O.F 6.8 OHM 1W +/-5%	1	PC	R431
T8-DM62SAB-MAN	18-FF0122-JGX	TCL18-FF0122-JGX= RES. M.O. 1.2K OHM 1W	1	PC	R441
T8-DM62SAB-MAN	18-FF0221-JGX	RES. M.O. 220 OHM 1W +/-5%	1	PC	R433
T8-DM62SAB-MAN	18-FF0472-JGX	RES. M.O. 4.7K OHM 1W +/-5%	1	PC	R408
T8-DM62SAB-MAN	18-FG0153-JHX	RES. M.O. 15K OHM 2W +/-5%	1	PC	R101

T8-DM62SAB-MAN	18-FG0334-JHX	RES. M.O. 330K OHM 2W +/-5%	1	PC	R804
T8-DM62SAB-MAN	18-FG0399-JHX	RES. M.O. 3.9 OHM 2W +/-5%	1	PC	R470
T8-DM62SAB-MAN	18-FG0683-JHX	RES. M.O. 68K OHM 2W +/-5%	1	PC	R810
T8-DM62SAB-MAN	18-KE0105-JNX	RES. GLASS GLAZE 1M OHM 1/2W +/-5%	1	PC	R802
T8-DM62SAB-MAN	18-KF0825-JHX	RES. GLASS GLAZE 8.2M OHM 1W	1	PC	R829
T8-DM62SAB-MAN	18-RF0109-JGX	RES. WIRE ROUND 1 OHM 1W +/-5%	1	PC	R314
T8-DM62SAB-MAN	18-RG0108-JHX	RES. WIRE ROUND 0.1 OHM 2W +/-5%	1	PC	R815
T8-DM62SAB-MAN	18-RG0159-JHX	RES. WIRE ROUND 1.5 OHM 2W +/-5%	1	PC	R313
T8-DM62SAB-MAN	22-NTC309-XX0	NTC 3D210 LC/LCS	1	PC	R803
T8-DM62SAB-MAN	22-PTC200-XX1	PTC 20 OHM +/-20%	1	PC	RT801
T8-DM62SAB-MAN	25-BCA102-M1X	CAP. ELEC 1000 UF 16V +/-20%	1	PC	C843
T8-DM62SAB-MAN	25-BCB100-M1X	CAP. ELEC 10 UF 16V +/-20%	12	PC	C936;C935;C934;C933;C932;C931;C930;C302;C227;C016;C612;C613
T8-DM62SAB-MAN	25-BFB109-M1X	CAP. ELEC 1 UF 50V +/-20%	7	PC	C903;C905;C263;C215;C860;C861;C862
T8-DM62SAB-MAN	25-BCB101-M1X	CAP. ELEC 100 UF 16V +/-20%	6	PC	C211;C232;C278;C279;C606;C950
T8-DM62SAB-MAN	25-BCB221-M1X	CAP. ELEC 220 UF 16V +/-20%	3	PC	C206;C208;C609
T8-DM62SAB-MAN	25-BCB470-M1X	CAP. ELEC 47 UF 16V +/-20%	4	PC	C202;C604;C614;C113
T8-DM62SAB-MAN	25-BCB471-M1X	CAP. ELEC 470 UF 16V +/-20%	2	PC	C602;C602A
T8-DM62SAB-MAN	25-BDA102-M1X	CAP. ELEC 1000 UF 25V +/-20%	3	PC	C601;C416;C413
T8-DM62SAB-MAN	25-BDB220-M1X	CAP. ELEC 22 UF 25V +/-20%	1	PC	C820
T8-DM62SAB-MAN	25-BDB470-M1X	CAP. ELEC 47 UF 25V +/-20%	1	PC	C850
T8-DM62SAB-MAN	25-BEA471-M1X	CAP. ELEC 470 UF 35V +/-20%	1	PC	C832

T8-DM62SAB-MAN	25-BEB101-M1X	CAP. ELEC 100 UF 35V +/- 20%	1	PC	C303
T8-DM62SAB-MAN	25-BEB470-M1X	CAP. ELEC 47 UF 35V +/- 20%	1	PC	C431
T8-DM62SAB-MAN	25-BFB229-M1X	CAP. ELEC 2.2 UF 50V +/- 20%	6	PC	C605A;C605;C292;C262;C242;C226
T8-DM62SAB-MAN	25-BFB478-M1X	CAP. ELEC 0.47 UF 50V +/- 20%	1	PC	C267
T8-DM62SAB-MAN	25-BFB479-M1X	CAP. ELEC 4.7 UF 50V +/- 20%	4	PC	C217;C108;C101;C491
T8-DM62SAB-MAN	25-BLA100-M1X	CAP. ELEC 10 UF 250V +/- 20%	1	PC	C408
T8-DM62SAB-MAN	25-BMJ221-M1S	CAP.ELEC 220UF 400V(30*30)	1	PC	C806
T8-DM62SAB-MAN	25-DFA479-M1XR	CAP.ELEC 4.7UF 50V +/-20%	1	PC	C470
T8-DM62SAB-MAN	25-DFB100-M1X	CAP. ELEC 10 UF 50V +/- 20%	1	PC	C834
T8-DM62SAB-MAN	25-DFB109-M1X	TCL25-DFB109-M1X= CAP. ELEC 1 UF 50V +/-	2	PC	C228;C911
T8-DM62SAB-MAN	25-GFB109-M1X	CAP. ELEC 1 UF 50V +/-20%	1	PC	C258
T8-DM62SAB-MAN	25-GFB478-M1X	CAP. ELEC 50V/0.47UF/+/- 20%	1	PC	C256
T8-DM62SAB-MAN	25-KJG101-M1X	CAP. ELEC 100 UF 160V +/- 20%	1	PC	C835
T8-DM62SAB-MAN	25-PJG101-M1X	CAP.CELE 100UF/160V/+/- 20%	1	PC	C411
T8-DM62SAB-MAN	26-ABC104-ZFX	CAP. CER 0.1 UF 50V +80-20% F	2	PC	C837;C814
T8-DM62SAB-MAN	26-ABC180-JCX	CAP. CER 18 PF 50V +/-5% NPO	2	PC	C021;C022
T8-DM62SAB-MAN	26-ABC470-JZX	CAP. CER 47 PF 50V +/-5% SL	1	PC	C433
T8-DM62SAB-MAN	26-AIC221-KBX	CAP. CER 220 PF 500V +/- 10% B	2	PC	C830;C841
T8-DM62SAB-MAN	26-AIC391-KBX	CAP. CER 390 PF 500V +/- 10% B	3	PC	C407;C412;C414
T8-DM62SAB-MAN	26-AIL103-KBX	CAP.CER 10NF 500V +/-10%	2	PC	C805;C826
T8-DM62SAB-MAN	26-AKA221-KRX	CAP. CER 220 PF 1KV +/- 10%	1	PC	C833
T8-DM62SAB-MAN	26-AKM221-KRX	CAP. CER 220 PF 1KV +/- 10%	1	PC	C809
T8-DM62SAB-MAN	26-AMM102-KRX	CAP. CER 1000 PF 2KV +/- 10% R	1	PC	C815
T8-DM62SAB-MAN	26-APK222-ME4	CAP. CER 2200PF 400VAC+/- 20% E	1	PC	C829

T8-DM62SAB-MAN	26-APK471-KBX	CAP. CER 470PF 400VAC +/-10% B	2	PC	C803;C804
T8-DM62SAB-MAN	26-AQK472-ZFX	CAP. CER 4700PF 250VAC +80%-20% F	2	PC	C807;C808
T8-DM62SAB-MAN	26-EBP100-JCS	TCL26-EBP100-JCS= CAP. CER 10 PF 50V +/-	3	PC	C106;C107;C304
T8-DM62SAB-MAN	26-EBP102-KBS	CAP. CER 1000 PF 50V +/-20%	3	PC	C914;C839;C112
T8-DM62SAB-MAN	26-EBP103-ZFS	CAP.CER 10NF 50V +80% -20%	25	PC	C311;C310;C280;C201;C842;C207;C212;C213;C276;C222;C216;C233;C432;C017;C004;C001;C020;C102;C104;C109;C110;C114;C831;C611;C610
T8-DM62SAB-MAN	26-EBP104-ZFS	CAP. CER 0.1UF 50V +80%/-20%	1	PC	C281
T8-DM62SAB-MAN	26-EBP180-JCS	CAP.CER18PF50V+/-5%	1	PC	C251
T8-DM62SAB-MAN	26-EBP221-JCS	CAP. CER 220 PF 50V +/-5%	1	PC	C821
T8-DM62SAB-MAN	26-EBP224-ZFX	TCL26-EBP224-ZFX= CAP. CER 0.22 UF 50V +	1	PC	C818
T8-DM62SAB-MAN	26-EBP390-JCS	CAP. CER 39PF 50V +/-5%	1	PC	C253
T8-DM62SAB-MAN	26-EBP473-ZFS	TCL26-EBP473-ZFS= CAP. CER 47NF 50V +80/	2	PC	C811;C265
T8-DM62SAB-MAN	27-AHP103-J06	TCL27-AHP103-J06= CAP.M.PP.10NF/400V/+/-	1	PC	C810
T8-DM62SAB-MAN	27-AQT224-MV3	CAP.M.PP 0.22UF 250VAC	1	PC	C801
T8-DM62SAB-MAN	27-MBC104-J0X	CAP. M.P.E 0.1 UF 63V +/-5%	4	PC	C615;C608;C607;C603
T8-DM62SAB-MAN	27-MBC224-J0X	CAP. M.P.E 0.22UF 63V +/-5%	1	PC	C309
T8-DM62SAB-MAN	27-MBC334-J0X	CAP. M.P.E 0.33UF 63V +/-5%	1	PC	C301
T8-DM62SAB-MAN	27-MBC474-J0X	CAP. M.P.E 0.47UF 63V +/-5%	3	PC	C255;C910;C912
T8-DM62SAB-MAN	27-MCC562-J0X	CAP. M.P.E 0.0056UF 100V+/-20%	1	PC	C422
T8-DM62SAB-MAN	27-MCC563-J0X	TCL27-MCC563-J0X= CAP M.P.E 0.056UF 100V	1	PC	C410
T8-DM62SAB-MAN	27-MHM104-K0X	CAP. M.P.E 0.1 UF 400V +/-10%	1	PC	C802

T8-DM62SAB-MAN	27-PBC103-J0X	CAP. P.E. 0.01UF 63V +/-5%	1	PC	C254
T8-DM62SAB-MAN	27-PBC152-J0X	TCL27-PBC152-J0X= CAP. P.E 0.0015UF 63V	1	PC	C204
T8-DM62SAB-MAN	27-PBC153-J0X	CAP. P.E 0.015UF 63V +/-5%	1	PC	C257
T8-DM62SAB-MAN	27-PBC223-J0X	CAP. P.E 0.022 UF 63V +/-5%	2	PC	C252;C260
T8-DM62SAB-MAN	27-PBC333-J0X	CAP. P.E 0.033UF 63V +/-5%	1	PC	C261
T8-DM62SAB-MAN	27-PBC473-J0X	CAP. P.E 0.047 UF 63V +/-5%	1	PC	C266
T8-DM62SAB-MAN	27-PBC682-J0X	CAP. P.E 0.0068UF 63V +/-5%	2	PC	C013;C306
T8-DM62SAB-MAN	34-A100K0-1IX	COIL CHOKE 10 UH +/-10%	1	PC	L212
T8-DM62SAB-MAN	34-A109K0-1IX	COIL CHOKE 1 UH +/-10%	1	PC	L103
T8-DM62SAB-MAN	34-A608K6-1BX	COIL CHOKE 0.6 UH +/-10%	1	PC	L402
T8-DM62SAB-MAN	34-R101J2-0EX	COIL PL - 100 UH +/-5%	1	PC	L403
T8-DM62SAB-MAN	34-R101K2-1BX	COIL CHOKE 100 UH +/-10%	1	PC	L804
T8-DM62SAB-MAN	34-R150J2-0EX	COIL PL - 15 UH +/-5%	1	PC	L208
T8-DM62SAB-MAN	34-R220J2-0EX	COIL PL - 22 UH +/-5%	3	PC	L104;L101;L105
T8-DM62SAB-MAN	34-R330J2-0EX	COIL PL - 33 UH +/-5%	1	PC	L213
T8-DM62SAB-MAN	35-LB1005-0IX	FERR BEAD H75 (3.5X1X5)	1	PC	L815
T8-DM62SAB-MAN	36-HDR020-XX0	TRANSFORMER HORIZ DRIVE BCT-1621	1	PC	T401
T8-DM62SAB-MAN	36-LIF005-XX1	LINE FILTER LCL-2826A	1	PC	T801
T8-DM62SAB-MAN	36-WID361-XX1	COIL WIDTH 360 UH LC-361-TCL	1	PC	L470
T8-DM62SAB-MAN	40-00SY33-MAE1XG	TV PCB MA BD R=Y	1	PC	
T8-DM62SAB-MAN	41-WJ0050-B00	TCL41-WJ0050-B00= WIRE BARE JUMPER 5MM R	19	PC	J980;J981;J982;J809;J226;J808;J414;J415;J416;J417;J413;J417A;J411;J411A;J411B;J413A;J413B;J830;J806
T8-DM62SAB-MAN	41-WJ0060-B00	光铜线6MM	7	PC	J915;J213;J602;J251;J201;J918;J032

T8-DM62SAB-MAN	41-WJ0075-B00	WIREBAREJUMPER7.5MM	18	PC	J207;J225;J215;J929;J913;J926;J928;J903;J902;J901;J805;J822;J605;J305;J250;J233;J812;J821
T8-DM62SAB-MAN	41-WJ0070-B00	WIREBAREJUMPER7MM	3	PC	J202;J255;J219
T8-DM62SAB-MAN	41-WJ0085-B00	WIREBAREJUMPER8.5MM	5	PC	J911;J210;J402;J209;J914
T8-DM62SAB-MAN	41-WJ0100-B00	WIREBAREJUMPER10MM	7	PC	J205;J206;J203;J401;J418;J208;J038
T8-DM62SAB-MAN	41-WJ0065-B00	1 R=N	2	PC	J221;J218
T8-DM62SAB-MAN	18-CB0182-JNX	RES. C.F. 1.8K OHM 1/6W +/-5%	1	PC	J912
T8-DM62SAB-MAN	41-WJ0130-B00	WIREBAREJUMPER13MM	4	PC	J917;J804;J919;J930
T8-DM62SAB-MAN	41-WJ0080-B00	WIREBAREJUMPER8MM	3	PC	J904;J601;J813
T8-DM62SAB-MAN	41-WJ0090-B00	WIRE BARE JUMPER 9MM	5	PC	J604;J801;J905;R938;J212
T8-DM62SAB-MAN	41-WJ0160-B00	WIREBAREJUMPER16MM	2	PC	J811;J927
T8-DM62SAB-MAN	41-WJ0110-B00	WIREBAREJUMPER11MM	4	PC	J925;J910A;J909;J257
T8-DM62SAB-MAN	41-WJ0150-B00	WIREBAREJUMPER15MM	6	PC	J816;J033;J906;J803;J802;J810
T8-DM62SAB-MAN	41-WJ0200-B00	WIREBAREJUMPER20MM	8	PC	J204;J817;J818;J307;J308;J819;J820;J256
T8-DM62SAB-MAN	41-WJ0120-B00	WIREBAREJUMPER12MM	1	PC	J907
T8-DM62SAB-MAN	41-WJ0125-B00	WIREBAREJUMPER12.5MM	1	PC	R830
T8-DM62SAB-MAN	45-OSC32K-7Y0	CRYSTAL 32.768KHZ	1	PC	X001
T8-DM62SAB-MAN	45-OSC4M4-3Y1	CRYSTAL 4.43MHZ	1	PC	X261
T8-DM62SAB-MAN	45-SAWF18-590	SAW FILTER F1859	1	PC	Z101
T8-DM62SAB-MAN	46-10962W-02XG	PIN BASE *2 TJC2-2A	1	PC	P803
T8-DM62SAB-MAN	46-33079W-02XG	PIN BASE *2 TJC3-2A	1	PC	P601(2-3)
T8-DM62SAB-MAN	46-12866W-02XG	PIN BASE *2 S11-02Y	1	PC	P602
T8-DM62SAB-MAN	46-33079W-04XG	PIN BASE *4 TJC3-4A	1	PC	P002

T8-DM62SAB-MAN	46-32535H-04XG	TCL46-32535H-04XG= HS 4P24 550 TJC3-4Y/S	1	PC	P003
T8-DM62SAB-MAN	46-30953H-05XG	HS 2468#24 420 TJC3-5Y/SCN-5Y	1	PC	FOR M. P201 TO P503 (CRT BD)
T8-DM62SAB-MAN	46-35063W-03XG	PIN BASE *3 VH-3A	1	PC	P802
T8-DM62SAB-MAN	46-30615H-04XG	HS 4P24 460 F/W TJC3-4Y/SCN-4	1	PC	FOR M. P402 TO P502 (CRT BD)
T8-DM62SAB-MAN	46-39402W-04XG	BASE	1	PC	S401
T8-DM62SAB-MAN	47-RCA233-XX0	RCA SOCKET AV-3.2-12W08	1	PC	P901
T8-DM62SAB-MAN	47-SVI002-XX0	Y/C SOCKET VERTICAL TYPE	1	PC	P902
T8-DM62SAB-MAN	50-03150D-1GSG	FUSE T 3.15A 250V 5X20MM	1	PC	F801
T8-DM62SAB-MAN	51-BC0180-0LN01G	POWER CORD	1	PC	FOR P802
T8-DM62SAB-MAN	63-B30100-AB4G	S/T SCREW B 3 X 10 AB	2	PC	FOR Q815;FOR IC301
T8-DM62SAB-MAN	64-B30080-104G	M/C SCREW B 3 X 8	2	PC	FOR IC601;FOR Q470
T8-DM62SAB-MAN	64-B30060-104G	M/C SCREW B 3 X 6	2	PC	FOR IC205;FOR Q203
T8-DM62SAB-MAN	64-P30100-104G	M/C SCREW P 3 X 10	1	PC	FOR Q402
T8-DM62SAB-MAN	65-Z30050-23MG	NUT M 3	1	PC	FOR Q402
T8-DM62SAB-MAN	66-20516X-0B0	FUSE HOLDER	2	PC	FOR F801
T8-DM62SAB-MAN	66-343730-0B0	HOLLOW RIVET 1.6MMX3.0MMX3.2MM	21	PC	FOR L412;FOR L804;FOR RT801;FOR L470;FOR C835;FOR T402 (1, 2, 9) ;FOR Q815 (D) ;"FOR Q402(C,E) ";FOR T804(1,8,9, 16)
T8-DM62SAB-MAN	66-343740-0B0	HOLLOW RIVET (2.3MMX4.0MMX3.5MM)	6	PC	FOR S401;FOR C806
T8-DM62SAB-MAN	67-H10918-4M2	HEAT SINK	1	PC	FOR IC205
T8-DM62SAB-MAN	67-H24249-3M2	RAW HEATSINK 3 04 00 R=N	1	PC	FOR Q203
T8-DM62SAB-MAN	67-H27292-1A0	HEAT SINK	1	PC	FOR Q470
T8-DM62SAB-MAN	67-H30752-4A0	HEAT SINK	1	PC	FOR Q402

T8-DM62SAB-MAN	67-H38012-UA0	RAW HEATSINK U 30 00 R=N	1	PC	FOR IC601
T8-DM62SAB-MAN	67-H40390-4A0	HEAT SINK	2	PC	FOR IC301
T8-DM62SAB-MAN	67-H40413-2A0	STANDARD HEAT SINK	1	PC	FOR Q815
T8-DM62SAB-MAN	67-M40068-1E4	HEAT SINK BRACKET	2	PC	FOR Q815;FOR IC301
T8-DM62SAB-MAN	71-DYP000-WX1	LABEL	1	PC	STICK ON H.SINK(Q815)
T8-DM62SAB-MAN	71-ICP000-WX1	TV PRI LABEL HEATSINK -- R=N	1	PC	FOR IC301
T8-DM62SAB-MAN	25-HFB479-M1X	CAP. ELEC 50V/4.7UF/+/-20%	1	PC	C305
T8-DM62SAB-MAN	26-ABC682-KBX	TCL26-ABC682-KBX= CAP. CER 6800 PF 50V +	2	PC	C621;C622
T8-DM62SAB-MAN	35-139730-00X	FERR. BEAD BF60	6	PC	FOR D830;FOR D841;FOR D833
T8-DM62SAB-MAN	41-WJ0190-B00	WIREBAREJUMPER19MM	1	PC	J303
T8-DM62SAB-MAN	36-TRF305-LX0	TRANSFORMER CONVERTER BCK-40-0386	1	PC	T804
T8-DM62SAB-MAN	26-EBP331-JCS	TCL26-EBP331-JCS= CAP. CER 330PF 50V +/-	1	PC	C264
T8-DM62SAB-MAN	41-WJ0180-B00	WIRE BARE JUMPER 18MM	1	PC	J035
T8-DM62SAB-MAN	18-CE0109-JNX	RES. C.F. 1 OHM 1/2W +/-5%	1	PC	R490
T8-DM62SAB-MAN	18-CB0154-JNX	TCL18-CB0154-JNX= RES. C.F. 150K OHM 1/6	1	PC	R337
T8-DM62SAB-MAN	10-79C20V-DBX	DIODE ZENER 20V 1/2W 5%	1	PC	D491
T8-DM62SAB-MAN	46-31790H-02XG	HS 2P22 540 TJC3-2Y/SCN-2Y	1	PC	P001 TO P1001 (KEY BD)
T8-DM62SAB-MAN	18-DB0273-FNX	RES. M.F. 27K OHM 1/6W +/-1%	1	PC	R950
T8-DM62SAB-MAN	18-CD0103-JNX	RES. C.F. 10K OHM 1/4W +/-5%	1	PC	R861
T8-DM62SAB-MAN	18-CB0124-JNX	RES. C.F. 120K OHM 1/6W +/-5%	1	PC	R862
T8-DM62SAB-MAN	18-CB0513-JNX	TCL18-CB0513-JNX= RES. C.F. 51K OHM 1/6W	1	PC	R864
T8-DM62SAB-MAN	10-79C3V3-DBX	DIODE ZENER 3.3V +/-5%	1	PC	D861
T8-DM62SAB-MAN	18-CB0152-JNX	RES. C.F. 1.5K OHM 1/6W +/-5%	1	PC	R265
T8-DM62SAB-MAN	41-WJ0055-B00	WIRE BARE JUMPER 5.5 MM	1	PC	J301
T8-DM62SAB-MAN	18-CB0183-JNX	RES. C.F. 18K OHM 1/6W +/-5%	1	PC	R210

03-DM62SAB-SC60S	T8-DM62SAB-PAN	ASS'Y - PACKING	1	PC	
T8-DM62SAB-PAN	75-DM62LL-CC0	POLYFOAM_LL	1	PC	
T8-DM62SAB-PAN	75-DM62LR-CC0	POLYFOAM_LR	1	PC	
T8-DM62SAB-PAN	75-DM62UL-CC0	POLYFOAM_UL	1	PC	
T8-DM62SAB-PAN	75-DM62UR-CC0	POLYFOAM_UR	1	PC	
T8-DM62SAB-PAN	T8-DM62SAB-PANZ	ASS'Y - PACKING(ART)	1	PC	
T8-DM62SAB-PANZ	72-D62SAB-E601A	OPERATION MANUAL	1	PC	
T8-DM62SAB-PANZ	74-104097-3WD	POLYBAG (104CMX97CM)	1	PC	
T8-DM62SAB-PANZ	76-445360-0AT	CARTON BOX	1	PC	
T8-DM62SAB-PANZ	74-022032-6WEAD	DEC BAG PE 220X320X0.06MM -- 00 00 R=N	1	PC	
T8-DM62SAB-PAN	49-382380-BAT	BATTERY 7# (R03P AAA SUM-4)	2	PC	
03-DM62SAB-SC60S	T8-DM62SAB-RCN	ASS'Y - REAR CABINET	1	PC	
T8-DM62SAB-RCN	54-427740-00X	FELT TAPE 294X6X0.3	4	PC	
T8-DM62SAB-RCN	63-B40150-AB4G	SCREW-ST 4MM 15MM ISO 62 R=Y	10	PC	MTG R.CAB & F.CAB
T8-DM62SAB-RCN	63-F30100-BT3G	SCREW-ST 3MM 10MM ISO 65 0 0 R=Y	4	PC	MTG M.BD & R.CAB
T8-DM62SAB-RCN	T8-DM62SAB-RCNZ	ASS'Y - REAR CABINET(ART)	1	PC	
T8-DM62SAB-RCNZ	55-DM62RC-1CL5C	REAR CABINET	1	PC	
T8-DM62SAB-RCNZ	58-D62SMP-JKT1A	PLATE MODEL NO.	1	PC	
T8-DM62SAB-RCNZ	58-DM62RI-1UI1A	TV DEC OVERLAY REAR AV -- 00 00 R=N	1	PC	