

Service Manual

LCD TV 15"

Model : DSL-15M1TC

Caution

: In this Manual, some parts can be changed for improving. their performance without notice in the parts list. So, if you need the latest parts information, please refer to PPL(Parts Price List)in Service Information Center.

DSL15M1TC SERVICE MANUAL

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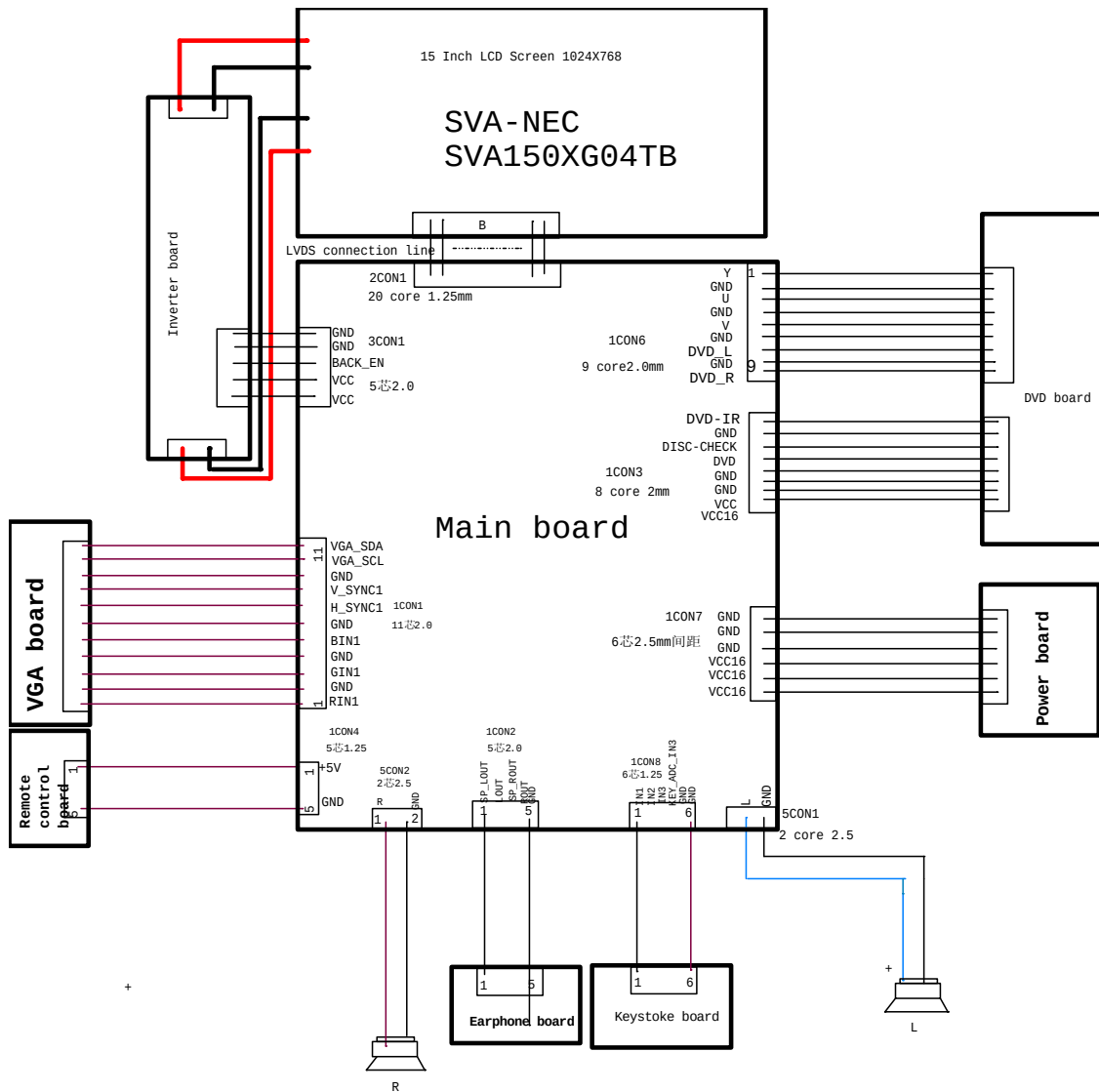
PART 3: Key Ics And Assemblies

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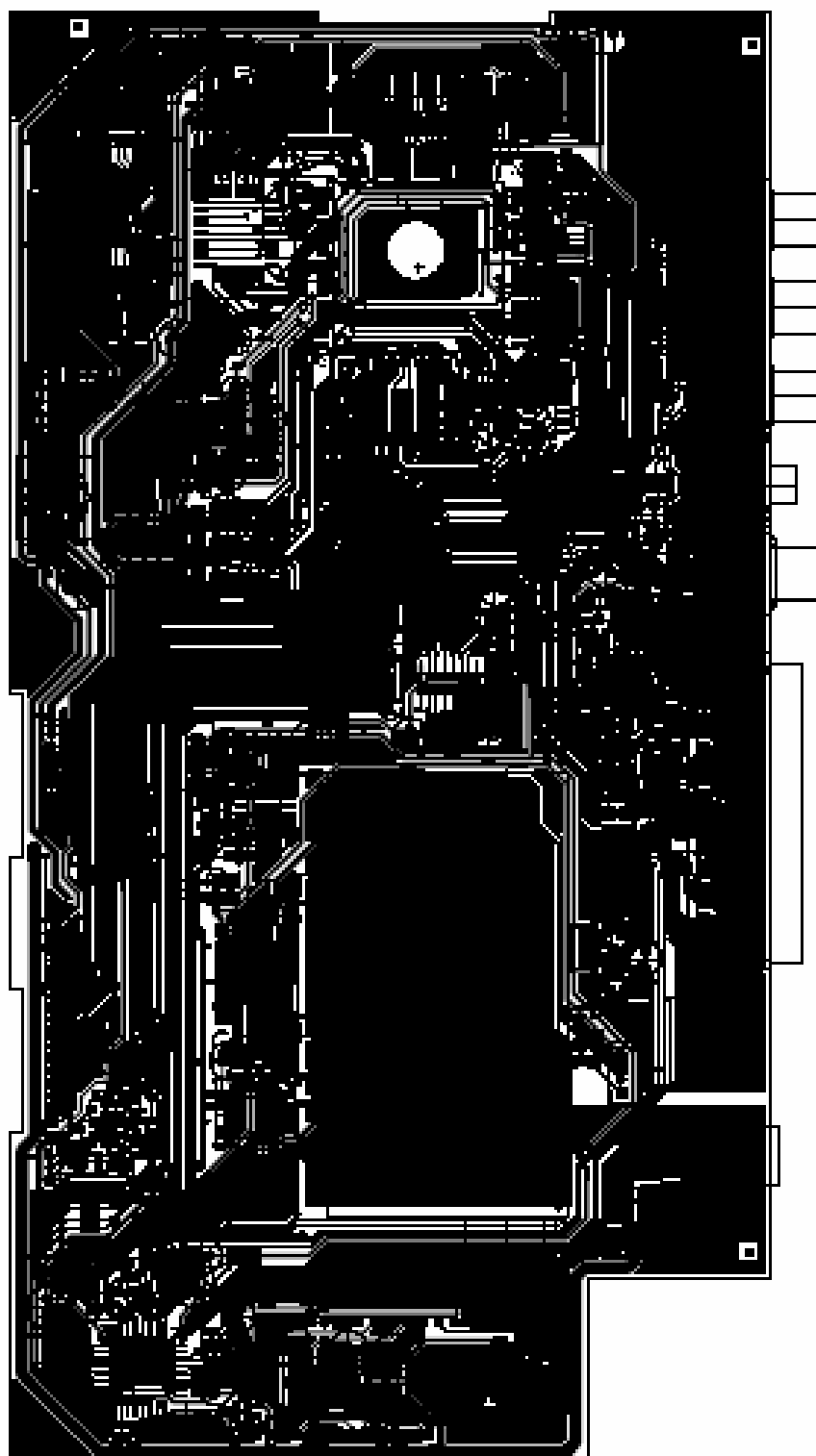
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PART 5: Parts List

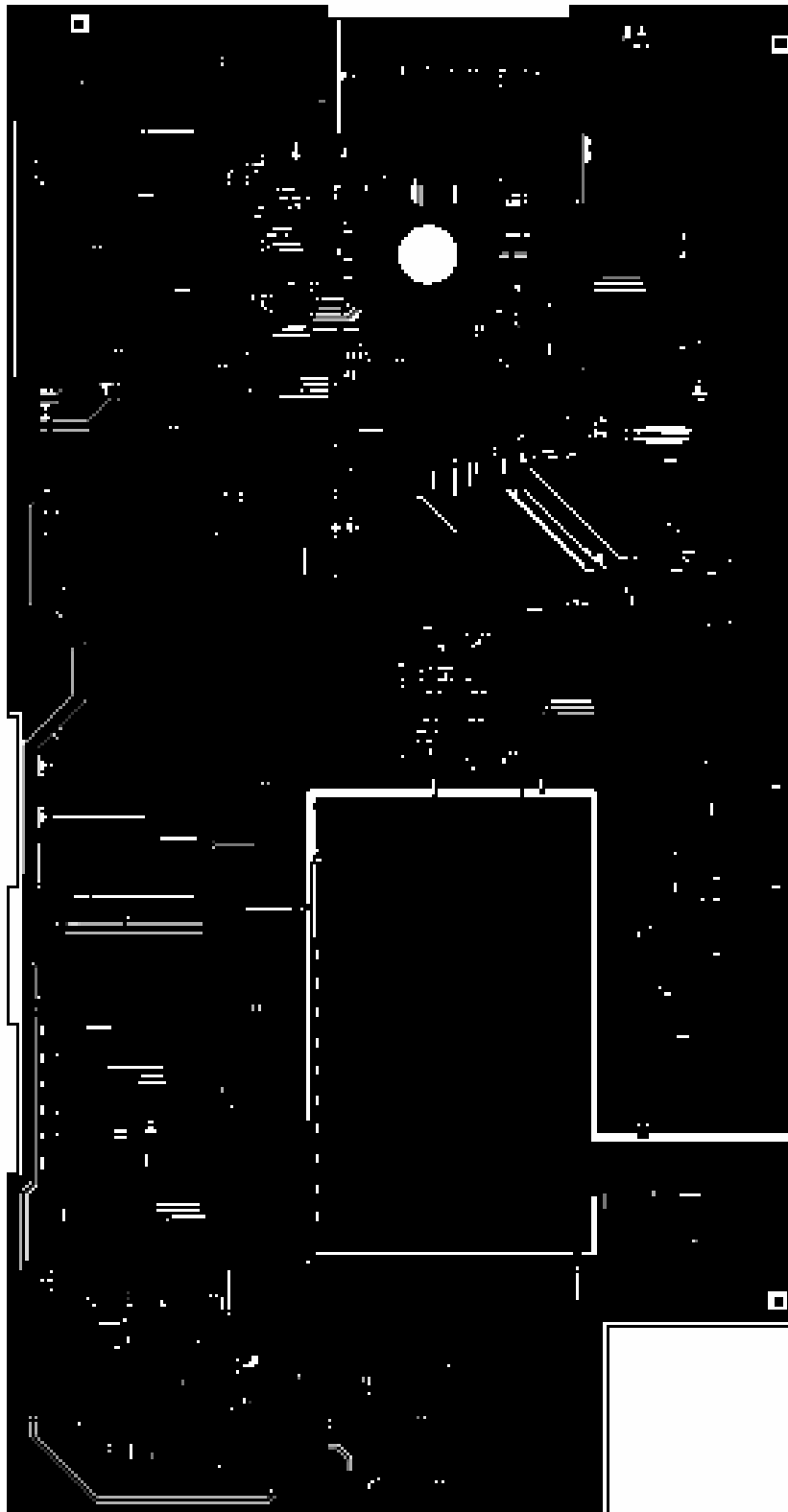
Part 1 Brief Introduction Of The DSL15M1TC Schematic Diagram



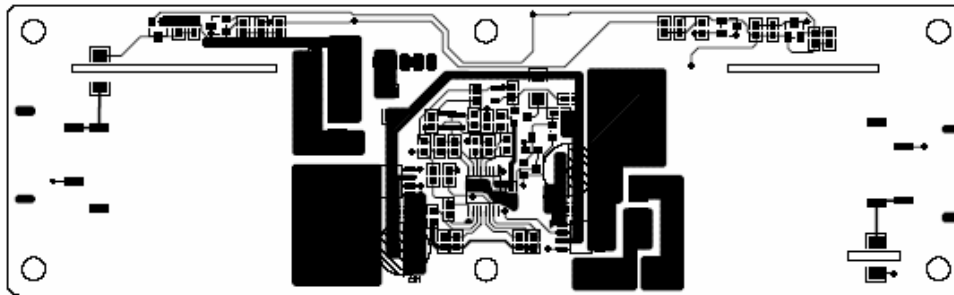
Main Board 3912C (Top View)



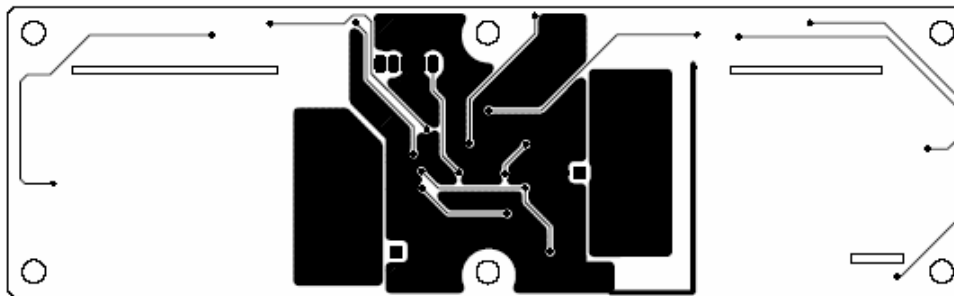
Main Board 3912C (Bottom view)



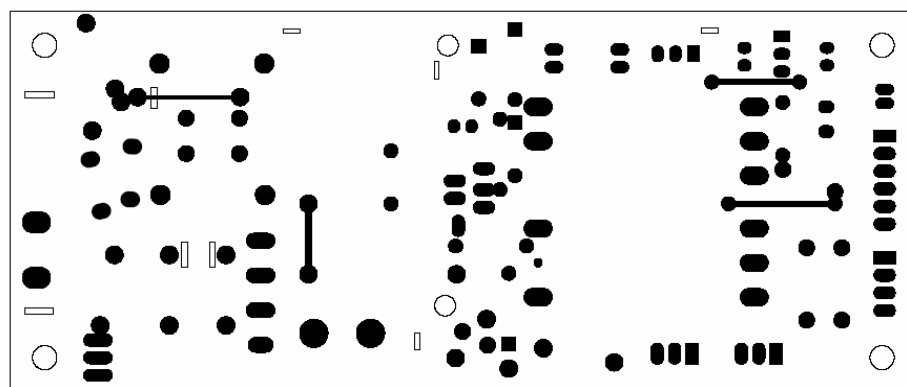
HI-voltage Board 3719C(top view)



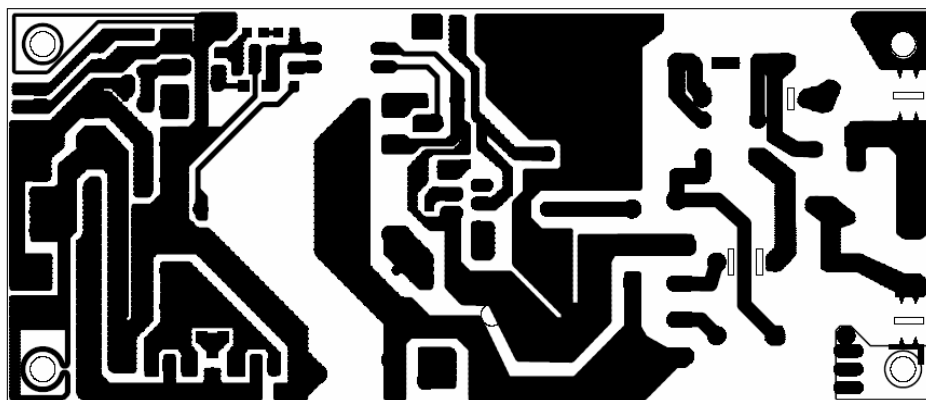
HI-voltage Board 3719C(Bottom view)



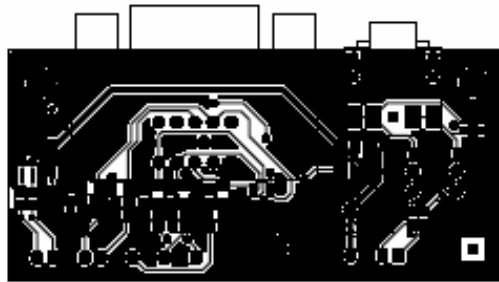
POWER Board 2956C (top view)



POWER Board 2956C (Bottom view)



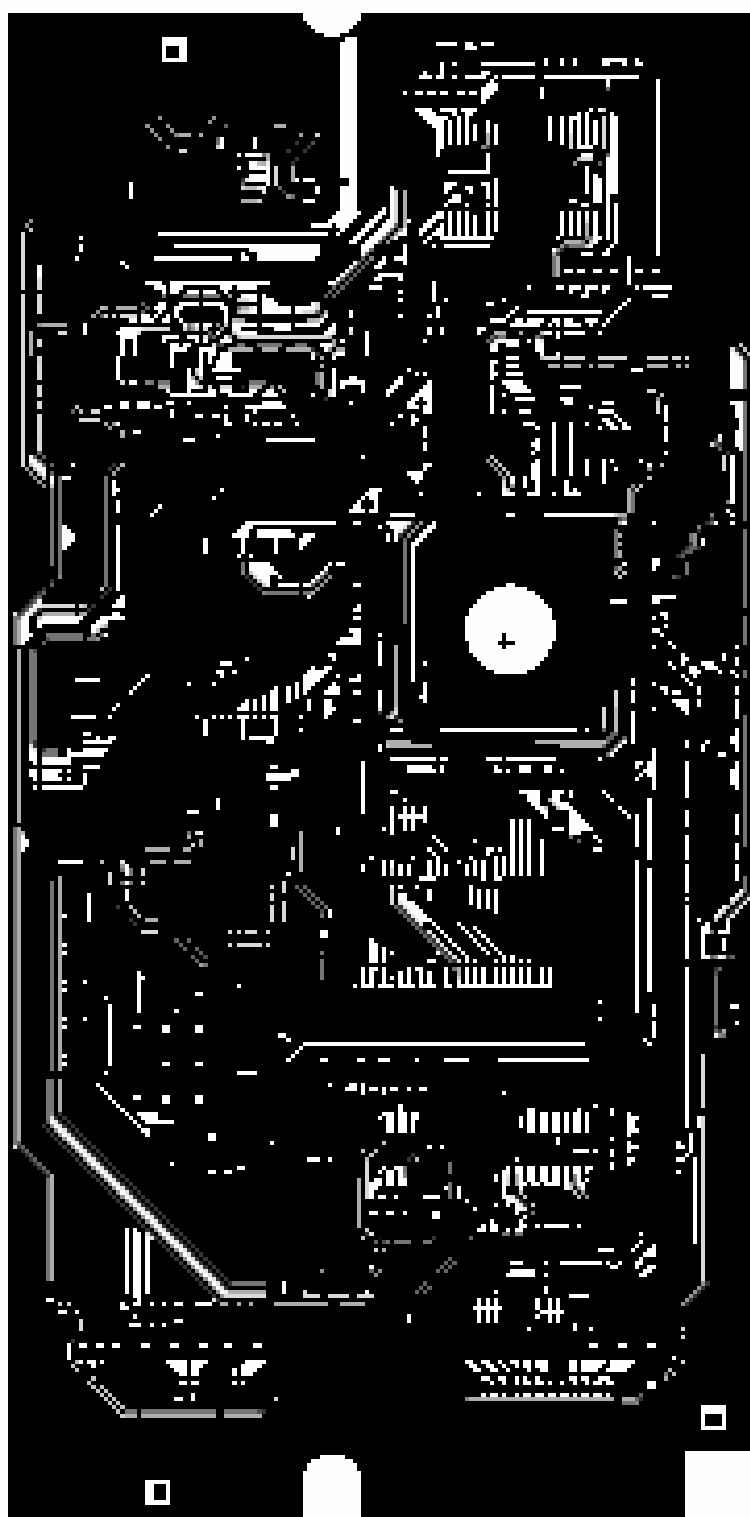
VGA Board 3915C(top view)



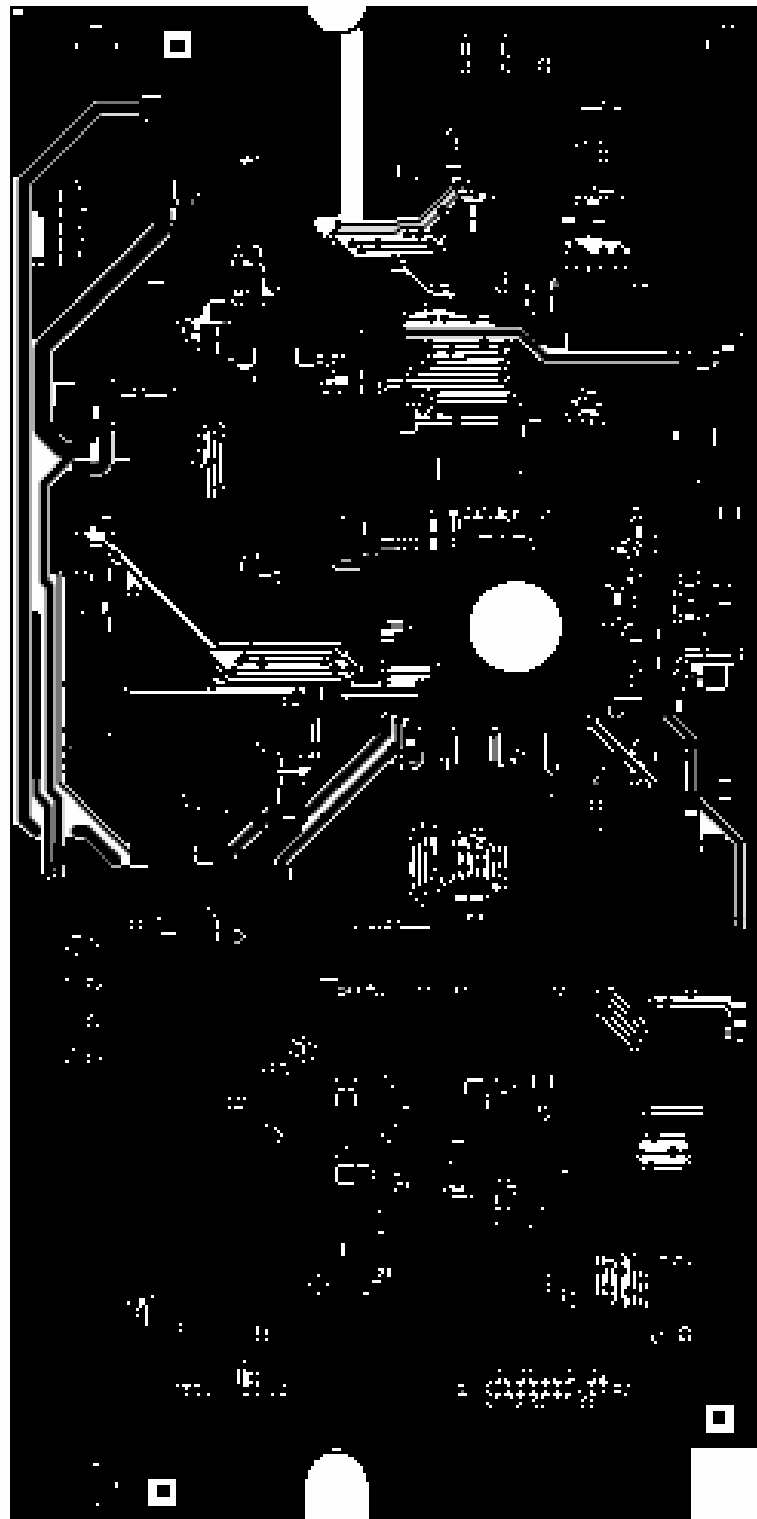
VGA Board 3915C(bottom view)



DVD Board 3738C(top view)



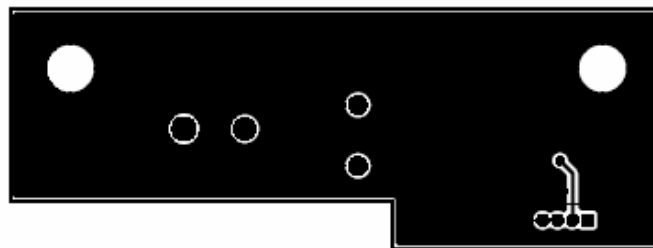
DVD Board 3738C(bottom view)



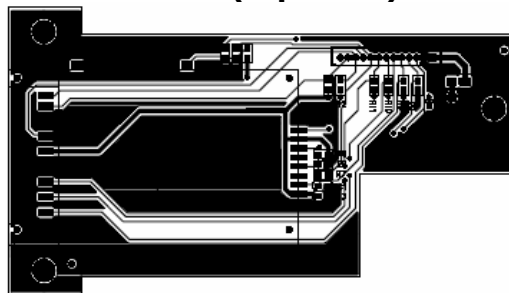
Remote Control Board 3848C(top view)



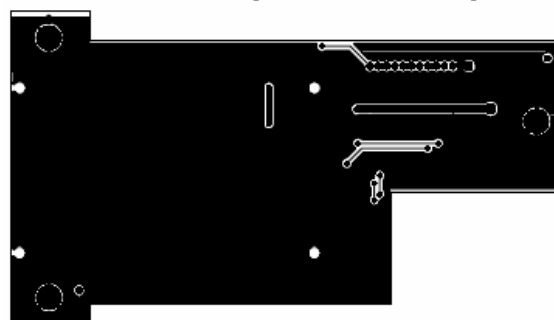
Remote Control Board 3848C(bottom view)



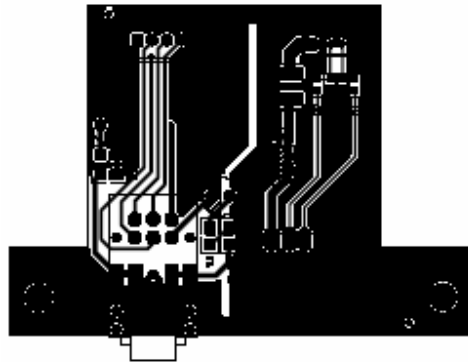
Card Board 3913C(top view)



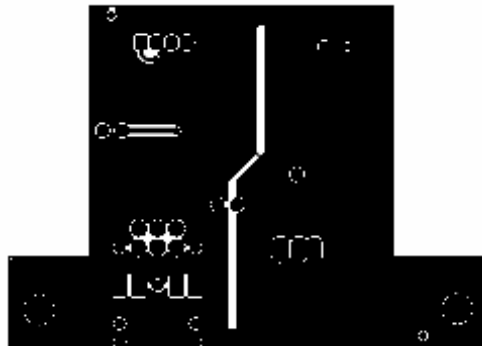
Card Board 3913C(bottom view)



USB earphone Board 3914C(top view)

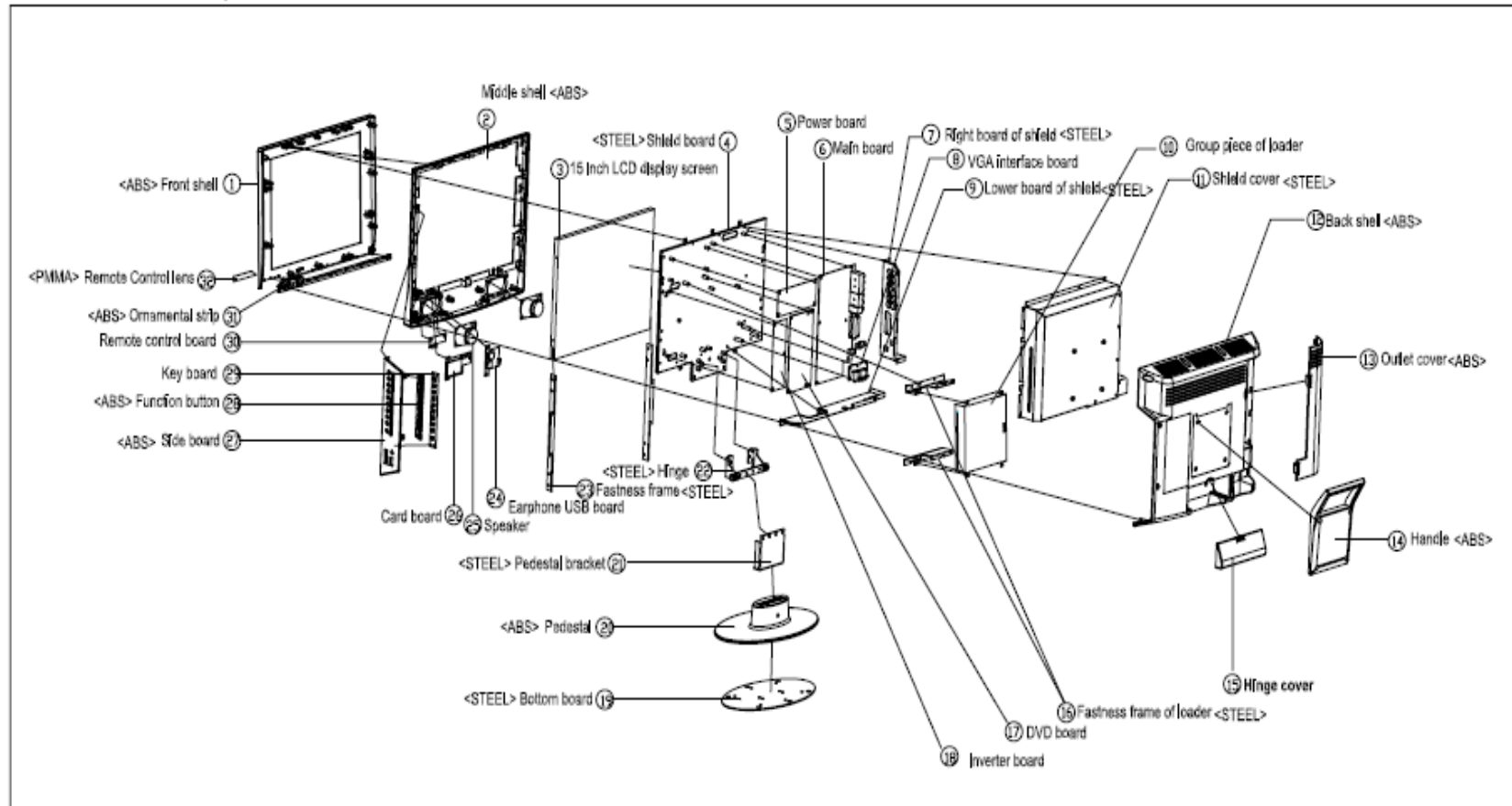


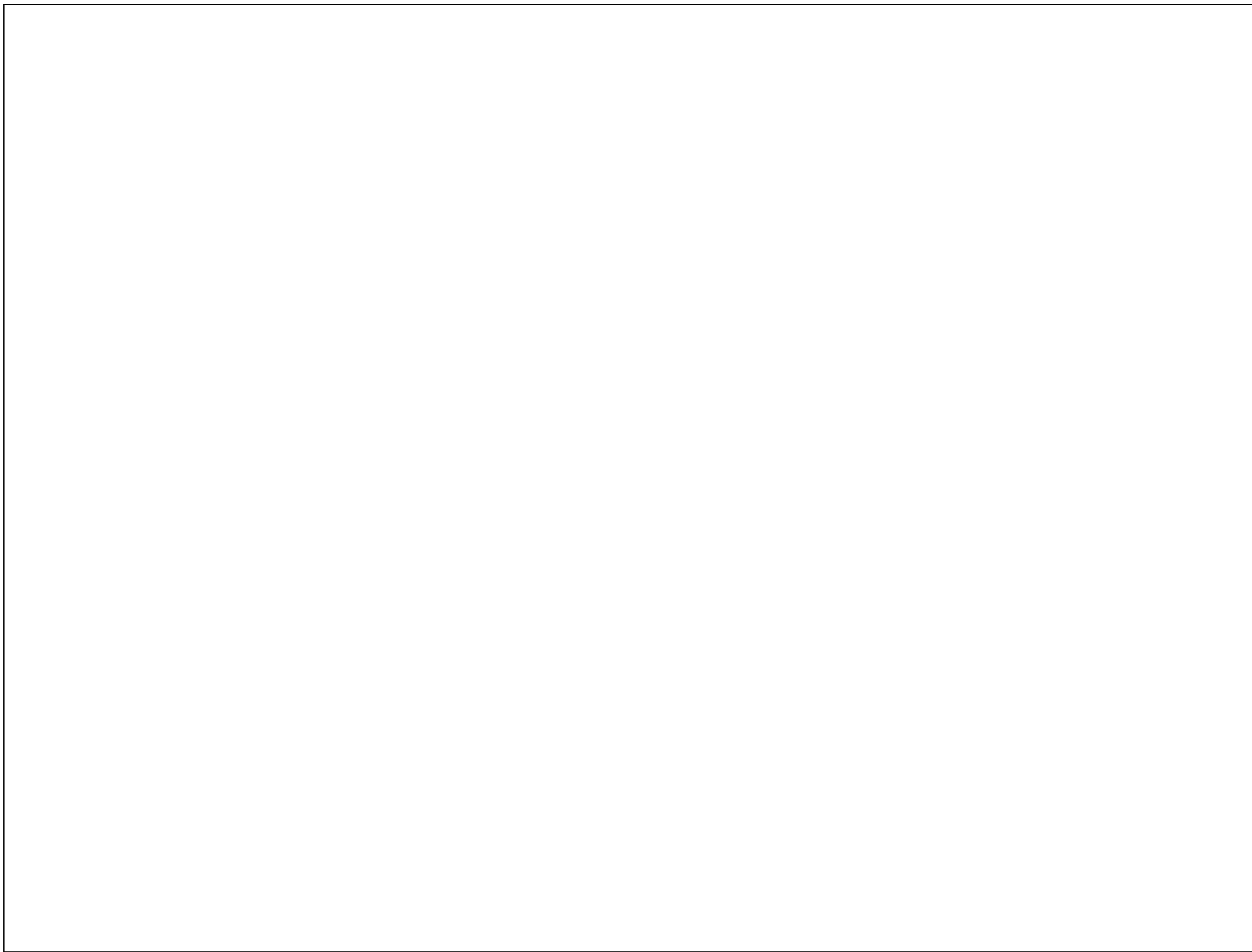
USB earphone Board 3914C(bottom view)



PART 2 Exploded view

DSL15M1TC Exploded view





Part 3 Key ICs And Assemblies

On Main Board			On DVD board		
Serial No	Position	Type	Serial no	Position	Type
1	1U1	FSAV330	1	1U1	AP1513
2	3U2	MSP3415G	2	U2	AZ1117H-ADJ
3	1U2	AP1510	3	U3	MT1389HD
4	1U3	AP1513S	4	U4	BA5954
5	1U4	AZ1117H-1.8	5	U5	BA6208F
6	1U5 1U7	FDS9435	6	U6	HY57V641620HGT
7	2U2	AT24C32AN	7	U7	MX29LV160BBTC-70
8	2U3	FLI8125-LF	8	U8	24C16
9	8U1	L7808C-V	9	U9	NJM4558
10	3U3	TDA1517P	10	U10	WM8714
11	2U1	AT49BV040B	11	U11	78L09
12	3U1	CD4052			
13	5U1 5U2 5U3 5U4	PESD5V0L5			
On HI-voltage Board					
1	U1	BIT3193			
2	Q2,Q6	AP4511M			

ICS ON MAIN BOARD

1. AP1513

■ Features

- Input voltage: 3.6V to 18V.
- Output voltage: 0.8V to V_{CC} .
- Duty ratio: 0% to 100% PWM control
- Oscillation frequency: 300KHz typ.
- Soft-start, Current limit, Enable function
- Thermal Shutdown function
- Built-in internal SW P-channel MOS
- SOP-8L **Pb-Free** Package.

■ Applications

- PC Motherboard
- LCD Monitor
- Graphic Card
- DVD-Video Player
- Telecom Equipment
- ADSL Modem
- Printer and other Peripheral Equipment
- Microprocessor core supply
- Networking power supply

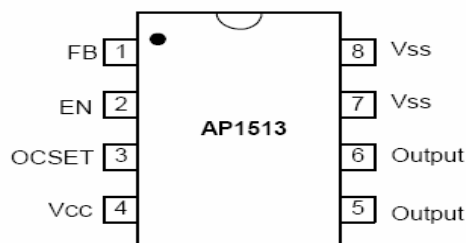
■ General Description

AP1513 consists of step-down switching regulator with PWM control. These devices include a reference voltage source, oscillation circuit, error amplifier, internal PMOS and etc.

AP1513 provides low-ripple power, high efficiency, and excellent transient characteristics. The PWM control circuit is able to vary the duty ratio linearly from 0 up to 100%. This converter also contains an error amplifier circuit as well as a soft-start circuit that prevents overshoot at startup. An enable function, an over current protect function and a short circuit protect function are built inside, and when OCP or SCP happens, the operation frequency will be reduced from 300KHz to 30KHz. Also, an internal compensation block is built in to minimum external component count.

With the addition of an internal P-channel Power MOS, a coil, capacitors, and a diode connected externally, these ICs can function as step-down switching regulators. They serve as ideal power supply units for portable devices when coupled with the SOP-8L mini-package, providing such outstanding features as low current consumption. Since this converter can accommodate an input voltage of up to 18V, it is also ideal when operating via an AC adapter.

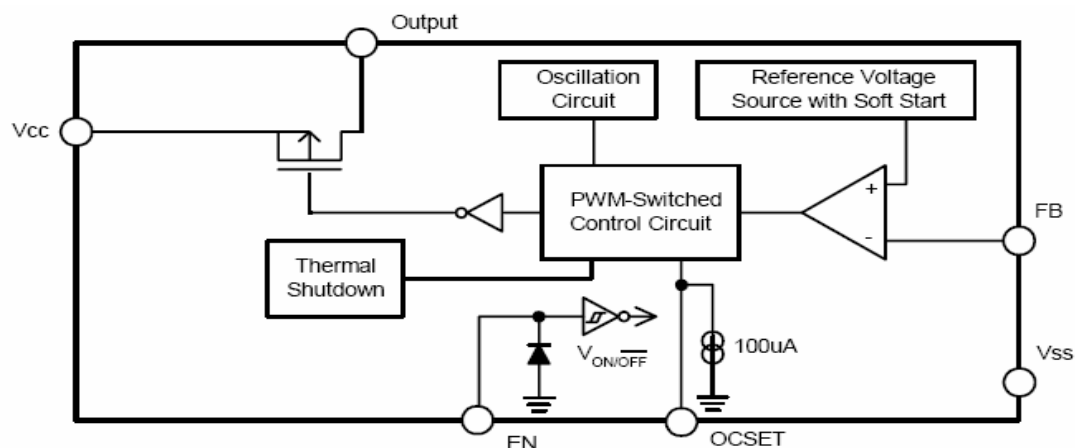
■ Pin Assignments



■ Pin Descriptions

Name	Pin	Description
FB	1	Feedback pin.
EN	2	Power-off pin H: Normal operation (Step-down operation) L: Step-down operation stopped (All circuits deactivated)
OCSET	3	Add an external resistor to set max output current.
Vcc	4	IC power supply pin
Output	5、6	Switch Pin. Connect external inductor/diode here. Minimize trace area at this pin to reduce EMI.
Vss	7、8	GND Pin

• Block Diagram



2. FDS9435A Single P-Channel Enhancement Mode Field Effect Transistor

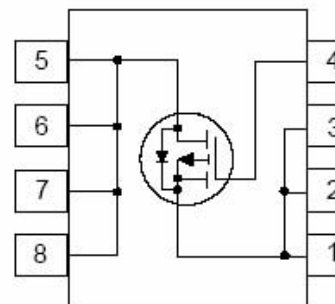
SO-8 P-Channel enhancement mode power field effect transistors are produced using Fairchild's proprietary, high cell density, DMOS technology. This very high density process is especially tailored to minimize on-state resistance and provide superior switching performance. These devices are particularly suited for low voltage applications such as notebook computer power management and other battery powered circuits where fast switching, low in-line power loss, and resistance to transients are needed.

• Features

-5.3 A, -30 V, $R_{DS(ON)} = 0.045 \Omega @ V_{GS} = -10 \text{ V}$,
 $R_{DS(ON)} = 0.075 \Omega @ V_{GS} = -4.5 \text{ V}$.

High density cell design for extremely low $R_{DS(ON)}$.

High power and current handling capability in a widely used surface mount package.



Absolute Maximum Ratings $T_A = 25^{\circ}\text{C}$ unless otherwise noted			
Symbol	Parameter	FDS9435A	Units
V_{DS}	Drain-Source Voltage	-30	V
V_{GS}	Gate-Source Voltage	-20	V
I_D	Drain Current - Continuous (Note 1a)	-5.3	A
	- Pulsed	-50	
P_D	Maximum Power Dissipation (Note 1a)	2.5	W
	(Note 1b)	1.2	
	(Note 1c)	1	
T_J, T_{STG}	Operating and Storage Temperature Range	-55 to 150	$^{\circ}\text{C}$
THERMAL CHARACTERISTICS			
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient (Note 1a)	50	$^{\circ}\text{C/W}$
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case (Note 1)	25	$^{\circ}\text{C/W}$

3. FLI8125

The FLI8125 is a cost-effective, highly-integrated, mixed signal solution for TV and Digital Video applications. It incorporates a multi-standard video decoder, high-speed triple 8-bit Analog-to-Digital Converter(ADC),and front end switching. An integrated VBI Slicer adds Closed Captioning(CC) and Teletext service support, and the built-in microprocessor enables full system control without external devices.

Features

INTEGRATED TRIPLE ADC ▪ RGB / YPbPr support up to 135MHz ▪ SCART – RGB + Fast Blank support ▪ Interlaced and progressive scan ▪ External OSD support DIGITAL INPUT PORT ▪ 24-bit re-configurable input port INTEGRATED 2D VIDEO DECODER ▪ Worldwide NTSC/PAL/SECAM support ▪ Macrovision / VCR trick mode support EMBEDDED MICROPROCESSOR ▪ Turbo 186 core ▪ Internal RAM / ROM ▪ Serial Flash / Parallel ROM support ▪ 2-wire slave controller, UART support ▪ Internal RESET Controller ▪ GPIOs , Low Bandwidth ADC – 6 input ▪ Infra-red Interface SCALING ENGINE ▪ Independent H & V scaling factors ▪ 4:2:2 YPbPr or 4:4:4 RGB scaling ▪ Anamorphic scaling (non-linear)	FAROUDJA DCDI – EDGE™ ▪ Edge Correction – Eliminates objectionable stair-casing – Enhances clarity and realism ▪ Horizontal Enhancement ▪ Adaptive Contrast and Color (ACC) ▪ Active Color Management - II (ACM-II) DIGITAL OUTPUT ▪ 18/24-bit 85Mhz TTL output ▪ Dual LVDS up to SXGA ▪ Energy Spectrum Management for reducing EMI ▪ Programmable CLUT for gamma correction OSD CONTROLLER ▪ Up to 4 windows: 1, 2 or 4-bits per pixel color ▪ Programmable Font scalar to meet Teletext requirements VBI SLICER ▪ V-Chip, Closed Captioning, XDS, CGMS, WSS decode ▪ Teletext 1.5 support JTAG SUPPORT ▪ Boundary Scan support
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- Pinout



• Pin List

I/O Legend: A = Analog, I = Input, O = Output, P = Power, G= Ground

Table 1: Analog Input Port

Pin Name	No.	I/O	Description
VDD18_A B	158	AP	Analog Power (1.8V) for A & B Channels. Must be bypassed with 0.1uF capacitor to the analog system ground plane.
NC	159		No Connection. Leave this pin open for normal operation.
GND18_C	160	AG	Analog Ground (1.8V Return) for C channel. Must be directly connected to the analog system ground plane on board.
VDD18_C	161	AP	Analog Power (1.8V) for C Channel. Must be bypassed with 0.1uF capacitor to the analog system ground plane.
ADC_TES T	162	O	Analog Front End Test O/P. Leave this Pin open. Used for factory testing purpose only.
AVDD_AD C	163	AP	Analog Power (3.3V) for ADC. Must be bypassed with 0.1uF capacitor to the analog system ground plane.
AGND	164	AG	Analog Ground. Must be directly connected to the analog system ground plane on board.
AGND	165	AG	Analog Ground. Must be directly connected to the analog system ground plane on board.
SV1P	166	AI	Positive analog sync input for channel 1. The input has to be AC coupled using a series 20 Ohm resistor and 0.1uF Capacitor network.
GNDS	167	AG	Analog Ground. Must be directly connected to the analog system ground plane on board.

A1P	168	AI	Positive analog input 'A' for channel 1. The input has to be AC coupled using a series 20 Ohm resistor and 0.1uF Capacitor network.
GNDS	169	AG	Analog Ground. Must be directly connected to the analog system ground plane on board.
B1P	170	AI	Positive analog input 'B' for channel 1. The input has to be AC coupled using a series 20 Ohm resistor and 0.1uF Capacitor network.
GNDS	171	AG	Analog Ground. Must be directly connected to the analog system ground plane on board.
C1P	172	AI	Positive analog input 'C' for channel 1. The input has to be AC coupled using a series 20 Ohm resistor and 0.1uF Capacitor network.
AVDD_A	173	AP	Analog Power (3.3V) for ADC of Channel-A. Must be bypassed with 0.1uF capacitor to the analog system ground plane.
AN	174	AI	Negative analog input 'A' for channels 1 through 4. This acts as the return Path for the Sources connected to Channel-A Inputs. This has to be AC coupled using a series 20 Ohm resistor and 0.1uF Capacitor network to Analog Ground Plane on board.
AGND	175	AG	Analog Ground. Must be directly connected to the analog system ground plane on board.
SV2P	176	AI	Positive analog sync input for channel 2. The input has to be AC coupled using a series 20 Ohm resistor and 0.1uF Capacitor network.
GNDS	177	AG	Analog Ground. Must be directly connected to the analog system ground plane on board.
A2P	178	AI	Positive analog input 'A' for channel 2. The input has to be AC coupled using a series 20 Ohm resistor and 0.1uF Capacitor network.
GNDS	179	AG	Analog Ground. Must be directly connected to the analog system ground plane on board.
B2P	180	AI	Positive analog input 'B' for channel 2. The input has to be AC coupled using a series 20 Ohm resistor and 0.1uF Capacitor network.
GNDS	181	AG	Analog Ground. Must be directly connected to the analog system ground plane on board.
C2P	182	AI	Positive analog input 'C' for channel 2. The input has to be AC coupled using a series 20 Ohm resistor and 0.1uF Capacitor network.
AVDD_B	183	AP	Analog Power (3.3V) for ADC of Channel-B. Must be bypassed with 0.1uF capacitor to the analog system ground plane.
BN	184	AI	Negative analog input 'B' for channels 1 through 4. This acts as the return Path for the Sources connected to Channel-B Inputs. This has to be AC coupled using a series 20 Ohm resistor and 0.1uF Capacitor network to Analog Ground Plane on board.
AGND	185	AG	Analog Ground. Must be directly connected to the analog system ground plane on board.
SV3P	186	AI	Positive analog sync input for channel 3. The input has to be AC coupled using a series 20 Ohm resistor and 0.1uF Capacitor network.
VDD18_AB	158	AP	Analog Power (1.8V) for A & B Channels. Must be bypassed with 0.1uF capacitor to the analog system ground plane.
GNDS	187	AG	Analog Ground. Must be directly connected to the analog system ground plane on board.
A3P	188	AI	Positive analog input 'A' for channel 3. The input has to be AC coupled using a series 20 Ohm resistor and 0.1uF Capacitor network.
GNDS	189	AG	Analog Ground. Must be directly connected to the analog system ground plane on board.
B3P	190	AI	Positive analog input 'B' for channel 3. The input has to be AC coupled using a series 20 Ohm resistor and 0.1uF Capacitor network.
GNDS	191	AG	Analog Ground. Must be directly connected to the analog system ground plane on board.
C3P	192	AI	Positive analog input 'C' for channel 3. The input has to be AC coupled using a series 20 Ohm resistor and 0.1uF Capacitor network.
AVDD_C	193	AP	Analog Power (3.3V) for ADC of Channel-C. Must be bypassed with 0.1uF capacitor to the analog system ground plane.
CN	194	AI	Negative analog input 'C' for channels 1 through 4. This acts as the return Path for the Sources connected to Channel-C Inputs. This has to be AC coupled using a series 20 Ohm resistor and 0.1uF Capacitor network to Analog Ground Plane on board.
AGND	195	AG	Analog Ground. Must be directly connected to the analog system ground plane on board.
SV4P	196	AI	Positive analog sync input for channel 4. The input has to be AC coupled using a series 20 Ohm resistor and 0.1uF Capacitor network.
GNDS	197	AG	Analog Ground. Must be directly connected to the analog system ground plane on board.
A4P	198	AI	Positive analog input 'A' for channel 4. The input has to be AC coupled using a series 20 Ohm resistor and 0.1uF Capacitor network.
GNDS	199	AG	Analog Ground. Must be directly connected to the analog system ground plane on board.
B4P	200	AI	Positive analog input 'B' for channel 4. The input has to be AC coupled using a series 20 Ohm resistor and 0.1uF Capacitor network.
GNDS	201	AG	Analog Ground. Must be directly connected to the analog system ground plane on board.
C4P	202	AI	Positive analog input 'C' for channel 4. The input has to be AC coupled using a series 20 Ohm resistor and 0.1uF Capacitor network.
AVDD_SC	203	AP	Analog Power (3.3V) for ADC of SYNC Channel. Must be bypassed with 0.1uF capacitor to the analog system ground plane.

SVN	204	AI	Negative analog sync input for channels 1 through 4. This acts as the return Path for the Sources connected to SV Channel Inputs. This has to be AC coupled using a series 20 Ohm resistor and 0.1uF Capacitor network to Analog Ground Plane on board.
VO_GND	205	AG	Analog Ground. Must be directly connected to the analog system ground plane on board.
VOOUT2	206	AO	Analog VOOUT signal This is the Analog Video Output from the Decoder in the Composite Video format. This can be amplified and be fed to any video display device.
VDD18_SC	207	AP	Analog Power (1.8V) for SYNC Channel. Must be bypassed with 0.1uF capacitor to the analog system ground plane.
GND18_SC	208	AG	Analog Ground (1.8V Return) for SYNC channel. Must be directly connected to the analog system ground plane on board.

Table 2: Low Bandwidth ADC Input Port

Pin Name	No	I/O	Description
VDDA33_LBADC	1	AP	Analog Power (3.3V) for Low Bandwidth ADC Block. Must be bypassed with 0.1uF capacitor.
LBADC_IN1	2	AI	Low Bandwidth Analog Input-1. The Input signal connected to this Pin, must be bypassed with a 0.1uF capacitor and could be in the range of 0V to 3.3V (peak to peak).
LBADC_IN2	3	AI	Low Bandwidth Analog Input-2. The Input signal connected to this Pin, must be bypassed with a 0.1uF capacitor and could be in the range of 0V to 3.3V (peak to peak).
LBADC_IN3	4	AI	Low Bandwidth Analog Input-3. The Input signal connected to this Pin, must be bypassed with a 0.1uF capacitor and could be in the range of 0V to 3.3V (peak to peak).
LBADC_IN4	5	AI	Low Bandwidth Analog Input-4. The Input signal connected to this Pin, must be bypassed with a 0.1uF capacitor and could be in the range of 0V to 3.3V (peak to peak).
LBADC_IN5	6	AI	Low Bandwidth Analog Input-5. The Input signal connected to this Pin, must be bypassed with a 0.1uF capacitor and could be in the range of 0V to 3.3V (peak to peak).
LBADC_IN6	7	AI	Low Bandwidth Analog Input-6. The Input signal connected to this Pin, must be bypassed with
LBADC_RTN	8	AG	This Pin provides the Return Path for LBADC inputs. Must be directly connected to the analog system ground plane on board.
VSSA33_LBADC	9	AG	Analog Ground for Low Bandwidth ADC Block. Must be directly connected to the analog system ground plane on board.

Table 3: RCLK PLL Pins

Pin Name	No	I/O	Description
GND_RPLL	11	DG	Digital GND for ADC clocking circuit. Must be directly connected to the digital system ground plane.
VDD_RPLL_18	12	DP	Digital power (1.8V) for ADC digital logic. Must be bypassed with capacitor to Ground Plane.
VBUFC_RPLL	13	O	Test Output. Leave this Pin Open. This is reserved for Factory Testing Purpose.
AGND_RPLL	14	AG	Analog ground for the Reference DDS PLL. Must be directly connected to the analog system ground plane.
XTAL	15	AO	Crystal oscillator output.
TCLK	16	AI	Reference clock (TCLK) from the 14.3MHz crystal oscillator.
AVDD_RPLL_33	17	AP	Analog Power (3.3V) for RCLK PLL. Must be bypassed with 0.1uF capacitor.

Table 4: Digital Video Input Port

Pin Name	No	I/O	Description
VID_CLK_1	153	I	Video port data clock input meant for Video Input – 1. Up to 75Mhz [Input, 5V-tolerant]
VIDIN_HS	122	I	When Video Input – 1 is in BT656 Mode, this Pin acts as Horizontal Sync Input for Video Input – 2. OR when Video Input – 1 is in 16 Bit Mode this Pin acts as Horizontal Sync Input for Video Input – 1. OR this Pin acts as Horizontal Sync Input for 24 Bit Video Input
VIDIN_VS	121	I	When Video Input – 1 is in BT656 Mode, this Pin acts as Vertical Sync Input for Video Input – 2. OR when Video Input – 1 is in 16 Bit Mode this Pin acts as Vertical Sync Input for Video Input – 1. OR this Pin acts as Vertical Sync Input for 24 Bit Video Input
VID_DATA_IN_0	135	IO	Input YUV data in 8-bit BT656 of Video Input – 1 [Bi-Directional, 5V-tolerant] OR Input Y Data in case of 16 Bit Video Input (CCIR601) of Video Input – 1 OR Input Red Data in case of 24 Bit Video Input
VID_DATA_IN_1	136		
VID_DATA_IN_2	137		
VID_DATA_IN_3	138		
VID_DATA_IN_4	139		
VID_DATA_IN_5	140		
VID_DATA_IN_6	141		
VID_DATA_IN_7	142		

Pin Name	No	I/O	Description
VID_DATA_IN_8	145	IO	Input Pr / Pb Data in case of 16 Bit Video Input (CCIR601) of Video Input – 1 OR Input Green Data in case of 24 Bit Video Input
VID_DATA_IN_9	146		
VID_DATA_IN_10	147		
VID_DATA_IN_11	148		
VID_DATA_IN_12	149		
VID_DATA_IN_13	150		
VID_DATA_IN_14	151		
VID_DATA_IN_15	152		
VID_DATA_IN_16	123	IO	Input Blue Data in case of 24 Bit Video Input OR Video Input – 2 in 8-bit with Embedded Sync / Separate Sync Sync in which case VID_DATA_IN_16 acts as the LSB of the 8-bit Video input and VID_DATA_IN_23 acts as the MSB of the 8-bit Video input.
VID_DATA_IN_17	124		
VID_DATA_IN_18	125		
VID_DATA_IN_19	128		
VID_DATA_IN_20	129		
VID_DATA_IN_21	130		
VID_DATA_IN_22	131		
VID_DATA_IN_23	132		
VID_CLK2	118	I	Video port data clock input meant for Video Input – 2. Up to 75Mhz [Input, 5V-tolerant]
VID_DE/FLD	115	I	Video Active Signal Input or the Field Signal Input from external Digital Video Source.

Note: In case of Multiple Digital Video Input Sources, only one source could be in 8-Bit with embedded Sync (BT656 mode) format.

Table 5: System Interface

Pin Name	No	I/O	Description
RESETn	10	I	Hardware Reset (active low) [Schmitt trigger, 5v-tolerant] Connect to ground with 0.01uF (or larger) capacitor.
TEST	20	I	For normal mode of operation connect this Pin to Ground.
GPIO15	21	IO	This pin is available as a general-purpose input/output port. Also it is optionally programmable to give out the external chip select signal meant for external SRAM. Refer to note below.
HSYNC2	22	I	Horizontal Sync signal Input-2. Used when Analog RGB component signal carries separate HSYNC signal.
VSNC2	23	I	Vertical Sync signal Input-2. Used when Analog RGB component signal carries separate VSYNC signal.
HOST_SCLK	24	IO	Host input clock or 186 UART Data In or JTAG clock signal. [Input, Schmitt trigger, 5V-tolerant]
HOST_SDATA	25	IO	Host input data or 186 UART Data Out or JTAG mode signal. [Bi-directional, Schmitt trigger, slew rate limited, 5V-tolerant]
DDC_SCLK	26	IO	DDC2Bi clock for VGA Port [internal 10K Ω pull-up resistor]
DDC_SDATA	27	IO	DDC2Bi data for VGA Port [internal 10K Ω pull-up resistor]
MSTR_SCLK	30	O	Clock signal from Master Serial 2 Wire Interface Controller
MSTR_SDATA	31	IO	Data signal meant for Master Serial 2 Wire interface Controller
TCK	34	IO	This Pin accepts the Input Clock signal in case of Boundary Scan Mode.
TDI	35	IO	This Pin accepts the Input Data signal in case of Boundary Scan Mode.
TMS	36	IO	This Pin accepts the Input Test Mode Select signal in case of Boundary Scan Mode.
TRST	37	IO	This Pin accepts the Boundary Scan Reset signal in case of Boundary Scan Mode.
GPIO6/IRin	38	IO	Input from Infra Red Decoder can be connected to this Pin. When not used, this pin is available as General Purpose Input/output Port.
GPIO7/IRQin	41	IO	Input Interrupt Request signal can be connected to this Pin. When not used, this pin is available as General Purpose Input/output Port.
GPIO8/IRQout	42	IO	This Pin will give out the Interrupt Signal to interrupt external Micro. When not used, this pin is available as General Purpose Input/output Port.
GPIO9/SIPC_SCLK	43	IO	This Pin accepts the Clock signal from External Serial 2 Wire interface Bus if FL18125 is programmed to be in Slave mode. When not used, this pin is available as General Purpose Input/output Port.
GPIO10/SIPC_SDATA/ A18	44	IO	This Pin acts as the Data I/O signal when used with External Serial 2 Wire interface Bus if FL18125 is programmed to be in Slave mode. Or this Pin is programmable to give out Address # 18 from the Internal Micro when used with 512K External Memory. When not used, this pin is available as General Purpose Input/output Port.
GPIO11/PWM0	47	IO	This Pin can be programmed to give out Pulse Width Modulated Output Pulses for external use. When not used, this pin is available as General Purpose Input/output Port.
GPIO12/PWM1	48	IO	This Pin can be programmed to give out Pulse Width Modulated Output Pulses for external use. When not used, this pin is available as General Purpose Input/output Port.
GPIO13/PWM2	51	IO	This Pin can be programmed to give out Pulse Width Modulated Output Pulses for external use. When not used, this pin is available as General Purpose Input/output Port.

Pin Name	No	I/O	Description
GPIO14/PWM3/SCART16	52	IO	This Pin can be programmed to give out Pulse Width Modulated Output Pulses for external use. Or it can be programmed to sense the Fast Blank Input signal from a SCART I/P source. When not used, this pin is available as General Purpose Input/output Port.
TDO	55	O	This Pin provides the Output Data in case of Boundary Scan Mode.
HSYNC1	156	I	Horizontal Sync signal Input-1. Used when Analog RGB component signal carries separate HSYNC signal.
VSYN1	157	I	Vertical Sync signal Input-1. Used when Analog RGB component signal carries separate VSYNC signal.
101		O	Clock Output meant for External OSD Controller
102		O	Horizontal Sync Output meant for External OSD Controller
XOSD_CLK	103	O	Vertical Sync Output meant for External OSD Controller
XOSD_HS	104	O	Field Signal Output meant for External OSD Controller
PD20/B4/GPIO0 PD21/B5/GPIO1 PD22/B6/GPIO2 PD23/B7/GPIO3	86 87 88 89	IO	These Pins provide the Panel Data as shown in the TTL Display Interface Table below. These are available as General Purpose Input / Output Pins when not used as Panel Data.

Table 6: LVDS Display Interface

Pin Name	No	I/O	Description
PBIAS	53	O	Panel Bias Control (backlight enable) [Tri-state output, 5V- tolerant]
PPWR	54	O	Panel Power Control [Tri-state output, 5V- tolerant]
AVDD_LV_33	56	DP	Digital Power for LVDS Block. Connect to digital 3.3V supply.
VCO_LV	57	O	Reserved. Output for Testing Purpose only at Factory.
AVSS_LV	58	G	Ground for LVDS outputs.
AVDD_OUT_LV_33	59	DP	Digital Power for LVDS outputs. Connect to digital 3.3V supply.
CH3P_LV_E	60	O	These form the Differential Data Output for Channel – 3 (Even).
CH3N_LV_E	61	O	
CLKP_LV_E	62	O	These form the Differential Clock Output Even Channel.
CLKN_LV_E	63	O	
CH2P_LV_E	64	O	These form the Differential Data Output for Channel – 2 (Even).
CH2N_LV_E	65	O	
CH1P_LV_E	66	O	These form the Differential Data Output for Channel – 1 (Even).
CH1N_LV_E	67	O	
CH0P_LV_E	68	O	These form the Differential Data Output for Channel – 0 (Even).
CH0N_LV_E	69	O	
AVSS_OUT_LV	70	G	Ground for LVDS outputs.
AVDD_OUT_LV_33	71	DP	Digital Power for LVDS outputs. Connect to digital 3.3V supply.
CH3P_LV_O	72	O	These form the Differential Data Output for Channel – 3 (Odd).
CH3N_LV_O	73	O	
CLKP_LV_O	74	O	These form the Differential Clock Output Odd Channel.
CLKN_LV_O	75	O	
CH2P_LV_O	76	O	These form the Differential Data Output for Channel – 2 (Odd).
CH2N_LV_O	77	O	
CH1P_LV_O	78	O	These form the Differential Data Output for Channel – 1 (Odd).
CH1N_LV_O	79	O	
CH0P_LV_O	80	O	These form the Differential Data Output for Channel – 0 (Odd).
CH0N_LV_O	81	O	
AVSS_OUT_LV	82	G	Ground for LVDS outputs.
AVDD_OUT_LV_33	83	DP	Digital Power for LVDS outputs. Connect to digital 3.3V supply.

Table 7: TTL Display Interface

Pin Name	No	I/O	Description For 8-bit panels	For 6-bit panels
PBIAS	53	O	Panel Bias Control (backlight enable) [Tri-state output, 5V- tolerant]	
PPWR	54	O	Panel Power Control [Tri-state output, 5V- tolerant]	
AVDD_LV_33	56	DP	Digital Power for TTL Block. Connect to digital 3.3V supply.	
VCO_LV	57	O	Reserved. Output for Testing Purpose only at Factory.	
AVSS_LV	58	G	Ground for TTL outputs.	
AVDD_OUT_LV_33	59	DP	Digital Power for TTL outputs. Connect to digital 3.3V supply.	
R0	60	O	Red channel bit 0 (Even)	Not used.
R1	61	O	Red channel bit 1 (Even)	Not used.
R2	62	O	Red channel bit 2 (Even)	Red channel bit 0 (Even)
R3	63	O	Red channel bit 3 (Even)	Red channel bit 1 (Even)
R4	64	O	Red channel bit 4 (Even)	Red channel bit 2 (Even)
R5	65	O	Red channel bit 5 (Even)	Red channel bit 3 (Even)
R6	66	O	Red channel bit 6 (Even)	Red channel bit 4 (Even)
R7	67	O	Red channel bit 7 (Even)	Red channel bit 5 (Even)
G0	68	O	Green channel bit 0 (Even)	Not used.
G1	69	O	Green channel bit 1 (Even)	Not used.
AVSS_OUT_LV	70	G	Ground for TTL outputs.	
AVDD_OUT_LV_33	71	DP	Digital Power for TTL outputs. Connect to digital 3.3V supply.	
G2	72	O	Green channel bit 2 (Even)	Green channel bit 0 (Even)
G3	73	O	Green channel bit 3 (Even)	Green channel bit 1 (Even)
G4	74	O	Green channel bit 4 (Even)	Green channel bit 2 (Even)
G5	75	O	Green channel bit 5 (Even)	Green channel bit 3 (Even)
G6	76	O	Green channel bit 6 (Even)	Green channel bit 4 (Even)
G7	77	O	Green channel bit 7 (Even)	Green channel bit 5 (Even)
B0	78	O	Blue channel bit 0 (Even)	Not used.
B1	79	O	Blue channel bit 1 (Even)	Not used.
B2	80	O	Blue channel bit 2 (Even)	Blue channel bit 0 (Even)
B3	81	O	Blue channel bit 3 (Even)	Blue channel bit 1 (Even)
AVSS_OUT_LV	82	G	Ground for TTL outputs.	
AVDD_OUT_LV_33	83	DP	Digital Power for TTL outputs. Connect to digital 3.3V supply.	
PD20/B4	86	O	Blue channel bit 4 (Even)	Blue channel bit 2 (Even)
PD21/B5	87	O	Blue channel bit 5 (Even)	Blue channel bit 3 (Even)
PD22/B6	88	O	Blue channel bit 6 (Even)	Blue channel bit 4 (Even)
PD23/B7	89	O	Blue channel bit 7 (Even)	Blue channel bit 5 (Even)
DEN	90	O	Display Data Enable	
DHS	91	O	Display Horizontal Sync.	
DVS	92	O	Display Vertical Sync.	
DCLK	93	O	Display Pixel Clock	
PD24	115	O	Red channel bit 0 (Odd)	Not used.
Pin Name	No	I/O	Description For 8-bit panels	For 6-bit panels
PD25	114	O	Red channel bit 1 (Odd)	Not used.
PD26	113	O	Red channel bit 2 (Odd)	Red channel bit 0 (Odd)
PD27	112	O	Red channel bit 3 (Odd)	Red channel bit 1 (Odd)
PD28	111	O	Red channel bit 4 (Odd)	Red channel bit 2 (Odd)
PD29	110	O	Red channel bit 5 (Odd)	Red channel bit 3 (Odd)
PD30	109	O	Red channel bit 6 (Odd)	Red channel bit 4 (Odd)
PD31	108	O	Red channel bit 7 (Odd)	Red channel bit 5 (Odd)
PD32	107	O	Green channel bit 0 (Odd)	Not used.
PD33	106	O	Green channel bit 1 (Odd)	Not used.
PD34	105	O	Green channel bit 2 (Odd)	Green channel bit 0 (Odd)
PD35	104	O	Green channel bit 3 (Odd)	Green channel bit 1 (Odd)
PD36	103	O	Green channel bit 4 (Odd)	Green channel bit 2 (Odd)
PD37	102	O	Green channel bit 5 (Odd)	Green channel bit 3 (Odd)
PD38	101	O	Green channel bit 6 (Odd)	Green channel bit 4 (Odd)
PD39	123	O	Green channel bit 7 (Odd)	Green channel bit 5 (Odd)
PD40	124	O	Blue channel bit 0 (Odd)	Not used.
PD41	125	O	Blue channel bit 1 (Odd)	Not used.
PD42	128	O	Blue channel bit 2 (Odd)	Blue channel bit 0 (Odd)
PD43	129	O	Blue channel bit 3 (Odd)	Blue channel bit 1 (Odd)
PD44	130	O	Blue channel bit 4 (Odd)	Blue channel bit 2 (Odd)
PD45	131	O	Blue channel bit 5 (Odd)	Blue channel bit 3 (Odd)

PD46	132	O	Blue channel bit 6 (Odd)	Blue channel bit 4 (Odd)
PD47	118	O	Blue channel bit 7 (Odd)	Blue channel bit 5 (Odd)

Note: In case of 24 Bit TTL Panels the RGB Odd Channel Outputs will not be used. In that case they can be made available for other purposes as Address & Data from On-Chip Micro or Digital Video Input Data.

Table 8: Parallel/Serial ROM Interface

Pin Name	No	I/O	Description
A17 A16 A15 A14 A13 A12 A11 A10 A9 A8 A7 A6 A5 A4 A3 A2 A1 A0	95 96 100 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115	O	256K x8 PROM Address. These pins also have bootstrap functionality. For serial SPI ROM interface: - ROM_ADDR17 will be Serial Clock (ROM_SCLK) - ROM_ADDR16 will be Serial Data Output (ROM_SDO) For 512K X 8 PROM, Address Signal A18 is available thru Pin # 44 which is GPIO10.
D7 D6 D5 D4 D3 D2 D1 D0	132 131 130 129 128 125 124 123	IO	External PROM data input.
ROM_OEN	118	O	External PROM data Output Enable.
ROM_SDI/ ROM_WEN	97	O	External PROM data Write Enable (for In-System-Programming of FLASH) or Serial Data Input (SDI) for SPI ROM interface.
ROM_SCSN/ ROM_CSN	94	O	External PROM data Chip Select or Serial PROM Chip Select (ROM_SCSN) for SPI ROM interface.

Table 9: Digital Power and Ground

Pin Name	No	I/O	Description
RVDD_3.3	32 49 98 116 154	P	Ring VDD. Connect to digital 3.3V.
CVDD_1.8	18 28 39 45 84 119 126 133 143	P	Core VDD. Connect to digital 1.8V.
CRVSS	19 29 33 40 46 50 85 99 117 120 127 134 144 155	G	Chip ground for core and ring.

Table 10: JTAG Boundary Scan

Pin Name	No	I/O	Description
TCK	34	I	JTAG Boundary Scan TCK signal
TDO	55	O	JTAG Boundary Scan TDO signal
TDI	35	I	JTAG Boundary Scan TDI signal. Pad has internal 50K pull-up resistor.
TMS	36	I	JTAG Boundary Scan RST signal. Pad has internal 50K pull-up resistor.
TRST	37	I	JTAG Boundary Scan TMS signal. Pad has internal 50K pull-up resistor.

4. CD4052B

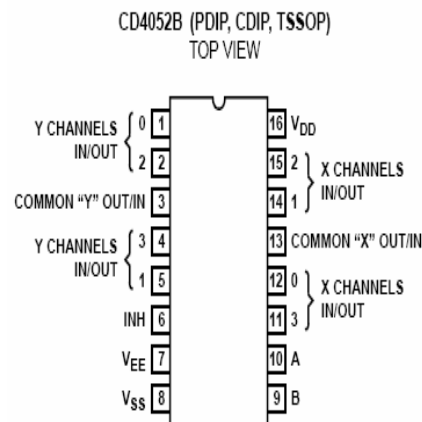
The CD4052B is a differential 4-Channel multiplexer having two binary control inputs, A and B, and an inhibit input. The two binary signals select 1 of 4 pairs of channels to be turned on and connect the analog inputs to the outputs.

Features

- Wide Range of Digital and Analog Signal Levels
 - Digital 3V to 20V
 - Analog $\leq 20V_{P-P}$
- Low ON Resistance, 125Ω (Typ) Over $15V_{P-P}$ Signal Input Range for $V_{DD}-V_{EE} = 18V$
- High OFF Resistance, Channel Leakage of $\pm 100pA$ (Typ) at $V_{DD}-V_{EE} = 18V$
- Logic-Level Conversion for Digital Addressing Signals of 3V to 20V ($V_{DD}-V_{SS} = 3V$ to $20V$) to Switch Analog Signals to $20V_{P-P}$ ($V_{DD}-V_{EE} = 20V$)
- Matched Switch Characteristics, $r_{ON} = 5\Omega$ (Typ) for $V_{DD}-V_{EE} = 15V$
- Very Low Quiescent Power Dissipation Under All Digital-Control Input and Supply Conditions, $0.2\mu W$ (Typ) at $V_{DD}-V_{SS} = V_{DD}-V_{EE} = 10V$
- Binary Address Decoding on Chip
- 5V, 10V and 15V Parametric Ratings
- 10% Tested for Quiescent Current at 20V
- Maximum Input Current of $1\mu A$ at 18V Over Full Package Temperature Range, $100nA$ at 18V and $25^\circ C$
- Break-Before-Make Switching Eliminates Channel Overlap

Applications

- Analog and Digital Multiplexing and Demultiplexing
- A/D and D/A Conversion
- Signal Gating
- **Pinouts**



5. TDA1517P 2 x 6 W stereo power amplifier

The TDA1517 is an integrated class-B dual output amplifier in a plastic single in-line medium power package with fin (SIL9MPF), a plastic rectangular-bent single in-line medium power package with fin (RBS9MPF) or a plastic heat-dissipating dual in-line package (HDIP18). The device is primarily developed for multi-media applications.

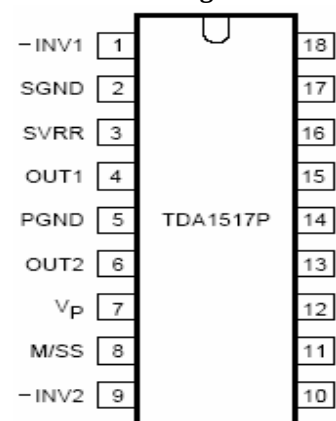
• Features

- Requires very few external components
- High output power
- Fixed gain
- Good ripple rejection
- Mute/standby switch
- AC and DC short-circuit safe to ground and VP
- Thermally protected
- Reverse polarity safe
- Capability to handle high energy on outputs (VP = 0 V)
- No switch-on/switch-off plop
- Electrostatic discharge protection

• Pin Description

SYMBOL	PIN	DESCRIPTION
-INV1	1	non-inverting input 1
SGND	2	signal ground
SVRR	3	supply voltage ripple rejection output
OUT1	4	output 1
PGND	5	power ground
OUT2	6	output 2
VP	7	supply voltage
M/SS	8	mute/standby switch input
-INV2	9	non-inverting input 2

• Pin Configuration



• DC Characteristics

VP = 14.4 V; Tamb = 25 °C; measured in Fig.6; unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Supply						
VP	supply voltage	note 1	6.0	14.4	18.0	V
Iq(tot)	total quiescent current		–	40	80	mA
VO	DC output voltage		–	6.95	–	V
Mute/standby switch						
V8	switch-on voltage level	see Fig.5	8.5	–	–	V
Mute condition						
VO	output signal in mute position	VI(max) = 1 V; fi = 20 Hz to 15 kHz	–	–	2	mV
Standby condition						
Isb	DC current in standby condition		–	–	100	μA
Vsw	switch-on current		–	12	40	μA

Note

The circuit is DC adjusted at VP = 6 to 18 V and AC operating at VP = 8.5 to 18 V.

6. AT24C32A 2-Wire Serial EEPROM 32K (4096 x 8)

Features

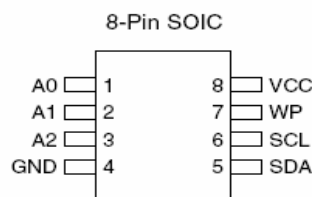
- Low-Voltage and Standard-Voltage Operation
 - 2.7 ($V_{CC} = 2.7V$ to 5.5V)
 - 1.8 ($V_{CC} = 1.8V$ to 5.5V)
- Low-Power Devices ($I_{SB} = 2 \mu A$ @ 5.5V) Available
- Internally Organized 4096 x 8, 8192 x 8
- 2-Wire Serial Interface
- Schmitt Trigger, Filtered Inputs for Noise Suppression
- Bidirectional Data Transfer Protocol
- 100 kHz (1.8V) and 400 kHz (2.5V) Clock Rate for AT24C32A
- 400 kHz (1.8V) Clock Rate for AT24C64A
- Write Protect Pin for Hardware Data Protection
- 32-Byte Page Write Mode (Partial Page Writes Allowed)
- Self-Timed Write Cycle (10 ms max)
- High Reliability
 - Endurance: 1 Million Write Cycles
 - Data Retention: 100 Years
- Automotive Grade and Extended Temperature Devices Available
- 8-Pin JEDEC PDIP and 8-Pin JEDEC SOIC Packages

Description

The AT24C32A/64A provides 32,768/65,536 bits of serial electrically erasable and programmable read only memory (EEPROM) organized as 4096/8192 words of 8 bits each. The device's cascadable feature allows up to 8 devices to share a common 2-wire bus. The device is optimized for use in many industrial and commercial applications where low power and low voltage operation are essential. The AT24C32A/64A is available in space saving 8-pin JEDEC PDIP and 8-pin JEDEC SOIC packages and is accessed via a 2-wire serial interface. In addition, the entire family is available in 2.7V (2.7V to 5.5V) and 1.8V (1.8V to 5.5V) versions.

Pin Configurations

Pin Name	Function
A0 - A2	Address Inputs
SDA	Serial Data
SCL	Serial Clock Input
WP	Write Protect



Pin Description

SERIAL CLOCK (SCL): The SCL input is used to positive edge clock data into each EEPROM device and negative edge clock data out of each device.

SERIAL DATA (SDA): The SDA pin is bidirectional for serial data transfer. This pin is open-drain driven and may be wire-ORed with any number of other open-drain or open collector devices.

DEVICE/PAGE ADDRESSES (A2, A1, A0): The A2, A1 and A0 pins are device address inputs that are hard wired or left not connected for hardware compatibility with AT24C16. When the pins are hardwired, as many as eight 32K/64K devices may be addressed on a single bus system (device addressing is discussed in detail under the Device Addressing section). When the pins are not hardwired, the default A₂, A₁, and A₀ are zero.

WRITE PROTECT (WP): The write protect input, when tied to GND, allows normal write operations. When WP is tied high to V_{CC}, all write operations to the memory are inhibited. If left unconnected, WP is internally pulled down to GND. Switching WP to V_{CC} prior to a write operation creates a software write protect function.

7. AT49BV040B

Features

- Single Supply for Read and Write: 2.7V to 5.5V
- Fast Read Access Time – 70 ns ($V_{CC} = 2.7V$ to 3.6V); 55 ns ($V_{CC} = 4.5V$ to 5.5V)
- Internal Program Control and Timer
- Flexible Sector Architecture
 - One 16K Bytes Boot Sector with Programming Lockout
 - Two 8K Bytes Parameter Sectors
 - Eight Main Memory Sectors (One 32K Bytes, Seven 64K Bytes)
- Fast Erase Cycle Time – 8 Seconds
- Byte-by-Byte Programming – 10 μ s/Byte Typical
- Hardware Data Protection
- $\overline{DATA}$ Polling or Toggle Bit for End of Program Detection
- Low Power Dissipation
 - 20 mA Active Current
 - 25 μ A CMOS Standby Current for $V_{CC} = 2.7V$ to 3.6V
 - 30 μ A CMOS Standby Current for $V_{CC} = 4.5V$ to 5.5V
- Minimum 100,000 Write Cycles

Description

The AT49BV040B is a 2.7V to 5.5V in-system reprogrammable Flash Memory. Its 4 megabits of memory is organized as 524,288 words by 8 bits. Manufactured with Atmel's advanced nonvolatile CMOS technology, the device offers an access time of 70 ns ($V_{CC} = 2.7V$ to 3.6V) and an access time of 55 ns ($V_{CC} = 4.5V$ to 5.5V). The power dissipation over the industrial temperature range with $V_{CC} = 2.7V$ to 3.6V is 72 mW and is 110 mW with $V_{CC} = 4.5V$ to 5.5V.

When the device is deselected, the CMOS standby current is less than 30 μ A. To allow for simple in-system reprogrammability, the AT49BV040B does not require high input voltages for programming. Reading data out of the device is similar to reading from an EPROM; it has standard $\overline{CE}$, $\overline{OE}$, and $\overline{WE}$ inputs to avoid bus contention. Reprogramming the AT49BV040B is performed by erasing a sector of data and then programming on a byte by byte basis. The byte programming time is a fast 10 μ s. The end of a program or erase cycle can be optionally detected by the $\overline{DATA}$ polling or toggle bit feature. Once the end of a byte program cycle has been detected, a new access for a read or program can begin. The typical number of program and erase cycles is in excess of 100,000 cycles.

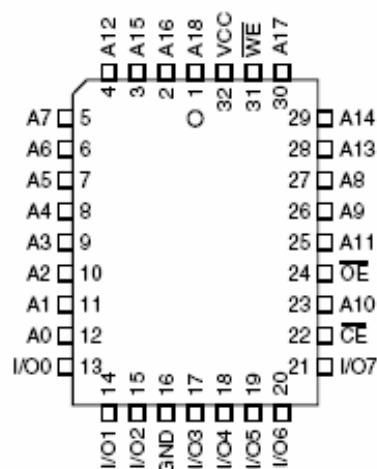
The device is erased by executing a chip erase or a sector erase command sequence; the device internally controls the erase operations. The memory array of the AT49BV040B is organized into two 8K byte parameter sectors, eight main memory sectors, and one boot sector.

The device has the capability to protect the data in the boot sector; this feature is enabled by a command sequence. The 16K-byte boot sector includes a reprogramming lock out feature to provide data integrity. The boot sector is designed to contain user secure code, and when the feature is enabled, the boot sector is permanently protected from being reprogrammed.

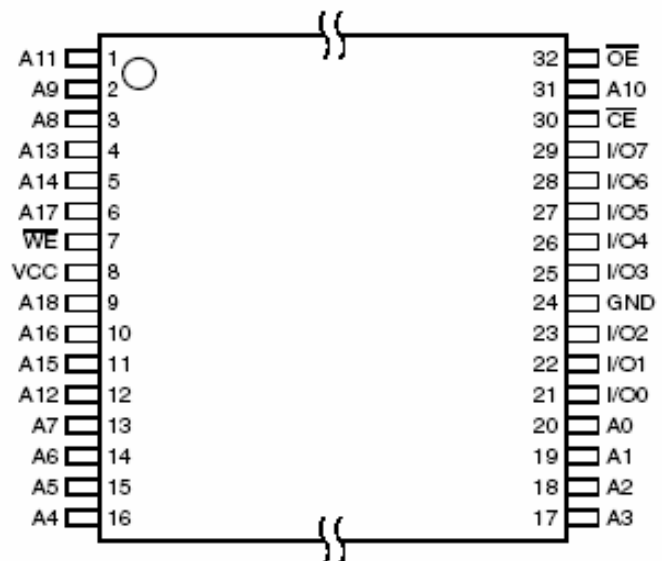
Pin Configurations

Pin Name	Function
A0 - A18	Addresses
$\overline{CE}$	Chip Enable
$\overline{OE}$	Output Enable
$\overline{WE}$	Write Enable
I/O0 - I/O7	Data Inputs/Outputs

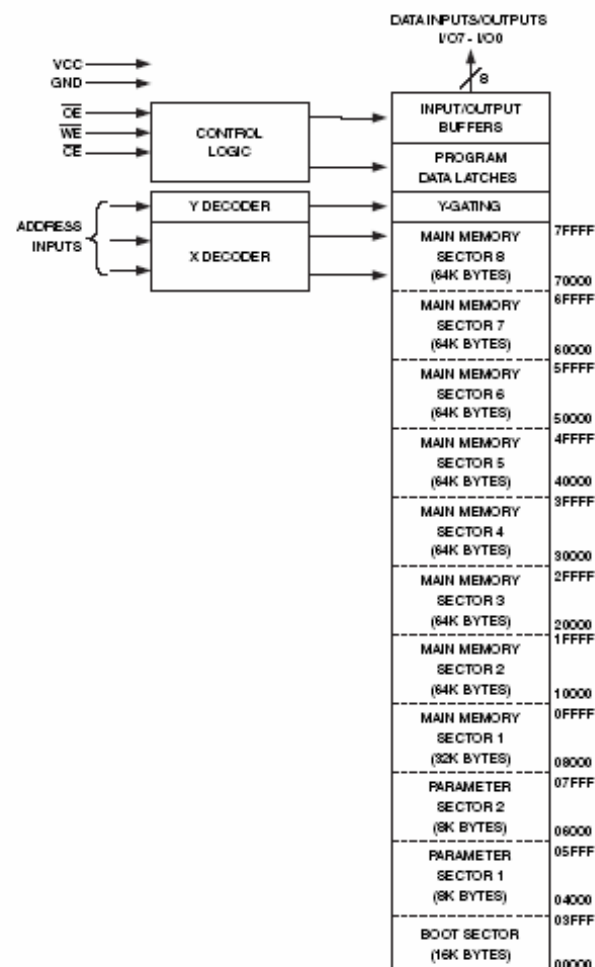
32-lead PLCC Top View



32-lead VSOP or 32-lead TSOP Top View – Type 1



Block Diagram



8. FSAV330

Low On Resistance Quad SPDT Wide Bandwidth Video Switch.

General Description

The Fairchild Video Switch FSAV330 is a quad single pole/double throw high-speed CMOS TTL-compatible video switch. The low On Resistance of the switch allows inputs to be connected to outputs without adding propagation delay or generating additional ground bounce noise.

When $\overline{OE}$ is LOW, the select pin connects the A Port to the selected B Port output. When $\overline{OE}$ is HIGH, the switch is OPEN and a high-impedance state exists between the two ports.

Features

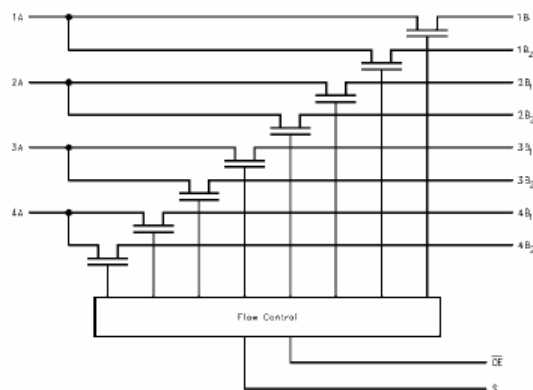
- Replacement for the P15V330
- Wide bandwidth 180 MHz
- 4Ω switch connection between two ports
- Minimal propagation delay through the switch
- Low I_{CC}
- Zero bounce in flow-through mode
- Control inputs compatible with TTL level

Ordering Code:

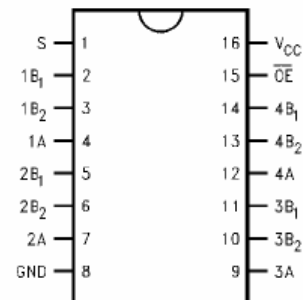
Order Number	Package Number	Package Description
FSAV330M	M16A	16-Lead Small Outline Integrated Circuit (SOIC), JEDEC MS-012, 0.150" Narrow
FSAV330QSC	MQA16	16-Lead Quarter Size Outline Package (QSOP), JEDEC MO-137, 0.150" Wide
FSAV330MTC	MTC16	16-Lead Thin Shrink Small Outline Package (TSSOP), JEDEC MO-153, 4.4mm Wide

Device also available in Tape and Reel. Specify by appending suffix letter "X" to the ordering code.

Logic Diagram



Connection Diagram



Pin Descriptions

Pin Name	Description
$\overline{OE}$	Bus Switch Enable
S	Select Input
A	Bus A
B ₁ -B ₂	Bus B

Truth Table

S	$\overline{OE}$	Function
X	H	Disconnect
L	L	A = B ₁
H	L	A = B ₂

ICS ON DVD BOARD

1. AP1513 (See Page 13)

2. LM1117 (See Page 14)

3. MT1389HD

Abbr. :

SR : Slew Rate

PU : Pull Up

PD : Pull Down

SMT : Schmitt Trigger

2MA~16MA : Output buffer driving strength.

Pin	Main	Alt.	Type	Description
RF Interface (26)				
231	RFGND18		Ground	Analog ground
232	RFVDD18		Power	Analog power 1.8V
252	OSP		Analog output	RF Offset cancellation capacitor connecting
253	OSN		Analog output	RF Offset cancellation capacitor connecting
254	RFGC		Analog output	RF AGC loop capacitor connecting for DVD-ROM
255	IREF		Analog Input	Current reference input. It generates reference current for RF path. Connect an external 15K resistor to this pin and AVSS.
256	AVDD3		Power	Analog power 3.3V
1	AGND		Ground	Analog ground
2	DVDA		Analog Input	AC coupled input path A
3	DVDB		Analog Input	AC coupled input path B
4	DVDC		Analog Input	AC coupled input path C
5	DVDD		Analog Input	AC coupled input path D
6	DVDRFIP		Analog Input	AC coupled DVD RF signal input RFIP
7	DVDRFIN		Analog Input	AC coupled DVD RF signal input RFIN
8	MA		Analog Input	DC coupled main-beam RF signal input A
9	MB		Analog Input	DC coupled main-beam RF signal input B
10	MC		Analog Input	DC coupled main-beam RF signal input C
11	MD		Analog Input	DC coupled main-beam RF signal input D
12	SA		Analog Input	DC coupled sub-beam RF signal input A
13	SB		Analog Input	DC coupled sub-beam RF signal input B
14	SC		Analog Input	DC coupled sub-beam RF signal input C
15	SD		Analog Input	DC coupled sub-beam RF signal input D
16	CDFON		Analog Input	CD focusing error negative input
17	CDFOP		Analog Input	CD focusing error positive input
18	TNI		Analog Input	3 beam satellite PD signal negative input
19	TPI		Analog Input	3 beam satellite PD signal positive input

ALPC (4)				
Pin	Main	Alt.	Type	Description

20	MDI1		Analog Input	Laser power monitor input	
21	MDI2		Analog Input	Laser power monitor input	
22	LDO2		Analog Output	Laser driver output	
23	LDO1		Analog Output	Laser driver output	
ADC Power (2)					
244	ADCVDD3		Power	Analog 3.3V Power for ADC	
245	ADCVSS		Ground	Analog ground for ADC	
VPLL (3)					
43	VPLLSS		Ground	Analog ground for VPLL	
44	CAPPAD		Analog Input	VPLL External Capacitance connection	
45	VPLLVDD3		Power	Analog 3.3V Power for VPLL	
Reference Voltage (3)					
28	V2REFO		Analog output	Reference voltage 2.8V	
29	V20		Analog output	Reference voltage 2.0V	
30	VREFO		Analog output	Reference voltage 1.4V	
Analog Monitor Output (7)					
24	SVDD3		Power	Analog power 3.3V	
25	CSO	RFOP	Analog output	1) 2)	Central servo Positive main beam summing output
26	RFLVL	RFON	Analog output	1) 2)	RFRP low pass, or Negative main beam summing output
27	SGND		Ground	Analog ground	
31	FEO		Analog output	Focus error monitor output	
32	TEO		Analog output	Tracking error monitor output	
33	TEZISLV		Analog output	TE Slicing Level	
Analog Servo Interface (6)					
246	RFVDD3		Power	Analog Power	
247	RFRPDC		Analog output	RF ripple detect output	
248	RFRPAC		Analog Input	RF ripple detect input(through AC-coupling)	
249	HRFZC		Analog Input	High frequency RF ripple zero crossing	
250	CRTPLP		Analog output	Defect level filter capacitor connecting	
251	RFGND		Ground	Analog Power	

RF Data PLL Interface (9)				
Pin	Main	Alt.	Type	Description
235	JITFO		Analog output	The output terminal of RF jitter meter.
236	JITFN		Analog Input	The input terminal of RF jitter meter.
237	PLLSS		Ground	Ground pin for data PLL and related analog circuitry.
238	IDACEXP		Analog output	Data PLL DAC Low-pass filter
239	PLLVDD3		Power	Power pin for data PLL and related analog circuitry.
240	LPFON		Analog Output	The negative output of loop filter amplifier
241	LPFIP		Analog Input	The positive input terminal of loop filter amplifier.
242	LPFIN		Analog Input	The negative input terminal of loop filter amplifier.
243	LPFOP		Analog Output	The positive output of loop filter amplifier
Motor and Actuator Driver Interface (10)				
34	OP_OUT		Analog output	Op amp output.
35	OP_INN		Analog input	Op amp negative input
36	OP_INP		Analog input	Op amp positive input
37	DMO		Analog Output	Disk motor control output. PWM output.
38	FMO		Analog Output	Feed motor control. PWM output.
39	TROPENP W M		Analog Output	Tray PWM output / Tray open output.
40	PWMOUT 1	V_ADIN9	Analog Output	1) 1st General PWM output, or 2) Version AD input 9
41	TRO		Analog Output	Tracking servo output. PDM output of tracking servo compensator.
42	FOO		Analog Output	Focus servo output. PDM output of focus servo compensator
50	FG (Diogital pin)	V_ADIN8	LVTTL 3.3V Input, Schmitt Input, pull up , with analog input path for V_ADIN8	1) Motor Hall sensor input, or 2) Version AD input 8
General Power/Ground (18)				
55,93, 142,160, 174, 213	DVDD18		Power	1.8V power pin for internal digital circuitry
81,178	DVSS		Ground	1.8V Ground pin for internal digital circuitry
65,96,11 8, 131,145, 156, 170, 208	DVDD3		Power	3.3V power pin for internal digital circuitry
90, 148	DVSS		Ground	3.3V Ground pin for internal digital circuitry
Micro Controller and Flash Interface (48)				
Pin	Main	Alt.	Type	Description

62	HIGHA0		Input 2~16MA, SR PU	Microcontroller address 8
74	HIGHA1		Input 2~16MA, SR PU	Microcontroller address 9
73	HIGHA2		Input 2~16MA, SR PU	Microcontroller address 10
72	HIGHA3		Input 2~16MA, SR PU	Microcontroller address 11
71	HIGHA4		Input 2~16MA, SR PU	Microcontroller address 12
70	HIGHA5		Input 2~16MA, SR PU	Microcontroller address 13
69	HIGHA6		Input 2~16MA, SR PU	Microcontroller address 14
68	HIGHA7		Input 2~16MA, SR PU	Microcontroller address 15
89	AD7		Input 2~16MA, SR	Microcontroller address/data 7
86	AD6		Input 2~16MA, SR	Microcontroller address/data 6
85	AD5		Input 2~16MA, SR	Microcontroller address/data 5
84	AD4		Input 2~16MA, SR	Microcontroller address/data 4
83	AD3		Input 2~16MA, SR	Microcontroller address/data 3
82	AD2		Input 2~16MA, SR	Microcontroller address/data 2
80	AD1		Input 2~16MA, SR	Microcontroller address/data 1
79	AD0		Input 2~16MA, SR	Microcontroller address/data 0

92	IOA0		Input 2~16MA, SR PU	Microcontroller address 0 / IO
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Pin	Main	Alt.	Type	Description
77	IOA1		Input 2~16MA, SR PU	Microcontroller address 1 / IO
56	IOA2		Input 2~16MA, SR PU	Microcontroller address 2 / IO
57	IOA3		Input 2~16MA, SR PU	Microcontroller address 3 / IO
58	IOA4		Input 2~16MA, SR PU	Microcontroller address 4 / IO
59	IOA5		Input 2~16MA, SR PU	Microcontroller address 5 / IO
60	IOA6		Input 2~16MA, SR PU	Microcontroller address 6 / IO
61	IOA7		Input 2~16MA, SR PU	Microcontroller address 7 / IO
67	A16		Output 2~16MA, SR	Flash address 16
91	A17		Output 2~16MA, SR	Flash address 17
63	IOA18		Input 2~16MA, SR SMT	Flash address 18 / IO
64	IOA19		Input 2~16MA, SR SMT	Flash address 19 / IO
75	IOA20		Input 2~16MA, SR SMT	Flash address 20 / IO

87	IOA21		Input 2~16MA, SR SMT	1) Flash address 21 / IO 2) While External FLASH size <= 2MB: I) GPIO
88	ALE		Input 2~16MA, SR PU, SMT	Microcontroller address latch enable

Pin	Main	Alt.	Type	Description
78	IOOE#		Input 2~16MA, SR SMT	Flash output enable, active low / IO
66	IOWR#		Input 2~16MA, SR SMT	Flash write enable, active low / IO
76	IOCS#		Input 2~16MA, SR PU, SMT	Flash chip select, active low / IO
94	UWR#		Input 2~16MA, SR PU, SMT	Microcontroller write strobe, active low
95	URD#		Input 2~16MA, SR PU, SMT	Microcontroller read strobe, active low
97	UP1_2		Input 4MA, SR PU, SMT	Microcontroller port 1-2
98	UP1_3		Input 4MA, SR PU, SMT	Microcontroller port 1-3
99	UP1_4		Input 4MA, SR PU, SMT	Microcontroller port 1-4
100	UP1_5		Input 4MA, SR PU, SMT	Microcontroller port 1-5
101	UP1_6	SCL	Input 4MA, SR PU, SMT	1) Microcontroller port 1-6 2) I ² C clock pin
102	UP1_7	SDA	Input 4MA, SR PU, SMT	1) Microcontroller port 1-7 2) I ² C data pin

103	UP3_0	RXD	Input 4MA, SR PU, SMT	1) Microcontroller port 3-0 2) 8032 RS232 RXD
104	UP3_1	TXD	Input 4MA, SR PU, SMT	1) Microcontroller port 3-1 2) 8032 RS232 TXD
105	UP3_4	RXD SCL	Input 4MA, SR PU, SMT	1) Microcontroller port 3-4 2) Hardwired RD232 RXD 3) I ² C clock pin
106	UP3_5	TXD SDA	Input 4MA, SR PU, SMT	1) Microcontroller port 3-5 2) Hardwired RD232 TXD 3) I ² C data pin
109	IR		Input SMT	IR control signal input
110	INTO#		Input 4MA, SR PU, SMT	Microcontroller external interrupt 0, active low

Audio interface (28)				
Pin	Main	Alt.	Type	Description
204	SPMCLK	SCLK0	Input Non-pull	1) Audio DAC master clock of SPDIF input 2) While SPDIF input is not used: I) Serial interface port 0 clock pin II) GPIO
205	SPDATA	SDIN0	Input Non-pull	1) Audio data of SPDIF input 2) While SPDIF input is not used: I) Serial interface port 0 data-in II) GPIO
206	SPLRCK	SDO0	Input Non-pull	1) Audio left/right channel clock of SPDIF input 2) While SPDIF input is not used: I) Serial interface port 0 data-out II) GPIO
207	SPBCK	SDCS0 ASDATA5	Input Non-pull	1) Audio bit clock of SPDIF input 2) While SPDIF input is not used: I) Serial interface port 0 chip select II) Audio serial data 5 part I : DSD data sub-woofer channel or Microphone output III) GPIO

209	ALRCK		Input 4MA, PD, SMT	1) Audio left/right channel clock 2) Trap value in power-on reset: I) 1 : use external 373 II) 0: use internal 373
210	ABCK	Fs64	Output 4MA Non-pull	1) Audio bit clock 2) Phase de-modulation
211	ACLK		Input 4MA Non-pull	Audio DAC master clock
197	ASDATA0		Input 4MA PD SMT	1) Audio serial data 0 (Front-Left/Front-Right) 2) DSD data left channel 3) Trap value in power-on reset : I) 1 : manufactory test mode II) 0 : normal operation 4) While using external channels: I) GPO_2
202	ASDATA1		Input 4MA PD SMT	1) Audio serial data 1 (Left-Surround/Right-Surround) 2) DSD data right channel 3) Trap value in power-on reset : I) 1 : manufactory test mode II) 0 : normal operation 4) While using external channels: I) GPO_1
203	ASDATA2		Input 4MA PD SMT	1) Audio serial data 2 (Center/LFE) DSD data left surround channel 2) Trap value in power-on reset : I) 1 : manufactory test mode II) 0 : normal operation 3) While using external channels: I) GPO_0 4)
212	ASDATA3		Input 4MA PD SMT	1) Audio serial data 3 (Center-back/Center-left-back/Center-right-back, in 6.1 or 7.1 mode) 2) DSD data right surround channel 3) Trap value in power-on reset : I) 1 : manufactory test mode II) 0 : normal operation 4) While only 2 channels output: I) GPO_0
214	ASDATA4	INT1#	Input 4MA PD SMT	1) Audio serial data 4 (Down-mixed Left/Right) 2) DSD data center channel 3) Trap value in power-on reset : I) 1 : manufactory test mode II) 0 : normal operation 4) While only 2 channels output: I) Microcontroller external interrupt 1 II) GPO_0
215	MC_DATA	INT2#	Input PD SMT	1) Microphone serial input 2) While not support Microphone: I) Microcontroller external interrupt 2 II) GPO_0

216	SPDIF		Output 2~16MA, SR : ON/OFF Non-pull	SPDIF output
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217	APLLVDD3		Power	3.3V Power pin for audio clock circuitry
218	APLLCAP		Analog Input	APLL External Capacitance connection
219	APLLVSS		Ground	Ground pin for audio clock circuitry
220	ADACVSS2		Ground	Ground pin for AUDIO DAC circuitry
221	ADACVSS1		Ground	Ground pin for AUDIO DAC circuitry
222	ARF	GPIO	Output	1) AUDIO DAC Sub-woofer channel output While internal 2) AUDIO DAC not used: GPIO
223	ARS	GPIO	Output	1) AUDIO DAC Right Surround channel output 2) While internal AUDIO DAC not used: a. SDATA3 b. GPIO
224	AR	GPIO	Output	1) AUDIO DAC Right channel output 2) While internal AUDIO DAC not used: a. SDATA1 b. GPIO
225	AVCM		Analog	AUDIO DAC reference voltage
226	AL	GPIO	Output	1) AUDIO DAC Left Surround channel output 2) While internal AUDIO DAC not used: a. SDATA2 b. GPIO
227	ALS	GPIO	Output	1) AUDIO DAC Left Surround channel output 2) While internal AUDIO DAC not used: a. SDATA0 b. GPIO
228	ALF	GPIO	Output	1) AUDIO DAC Center channel output 2) While internal AUDIO DAC not used:GPIO
229	ADACVDD1		Power	3.3V power pin for AUDIO DAC circuitry
230	ADACVDD2		Power	3.3V power pin for AUDIO DAC circuitry

Video Interface (18)				
196	DACVDDC		Power	3.3V power pin for VIDEO DAC circuitry
195	VREF		Analog	Bandgap reference voltage
194	FS		Analog	Full scale adjustment
193	YUV0	CIN	Output 4MA, SR	1) Video data output bit 0 2) Compensation capacitor
192	DACVSSC		Ground	Ground pin for VIDEO DAC circuitry
191	YUV1	Y	Output 4MA, SR	1) Video data output bit 1 2) Analog Y output
190	DACVDDB		Power	3.3V power pin for VIDEO DAC circuitry
189	YUV2	C	Output 4MA, SR	1) Video data output bit 2 2) Analog chroma output
188	DACVSSB		Ground	Ground pin for VIDEO DAC circuitry
187	YUV3	CVBS	Output 4MA, SR	1) Video data output bit 3 2) Analog composite output

186	DACVDDA		Power	3.3V power pin for VIDEO DAC circuitry
185	YUV4	Y/G	Output 4MA, SR	1) Video data output bit 4 2) Green or Y
184	DACVSSA		Ground	Ground pin for VIDEO DAC circuitry
183	YUV5	B/Cb/Pb	Output 4MA, SR	1) Video data output bit 5 2) Blue or CB
182	YUV6	R/Cr/Pr	Output 4MA, SR	1) Video data output bit 6 2) Red or CR
181	VSYN	V_ADIN1	Input 4MA, SR SMT Non-pull	1) Vertical sync input/output 2) While no External TV-encoder: I) Vertical sync for video-input II) Version AD input port 1 III) GPIO
180	YUV7	INT3# ASDATA5	Input 4MA, SR SMT Non-pull	1) Video data output bit 7 2) While no External TV-encoder: I) Microcontroller external interrupt 3 II) Audio serial data 5 part II : DSD data sub-woofer channel or Microphone output III) GPIO
179	HSYN	INT4# V_ADIN2	Input 4MA, SR SMT Non-pull	1) Horizontal sync input/output 2) While no External TV-encoder: I) Horizontal sync for video-input II) Microcontroller external interrupt 4 III) Version AD input port 2 IV) GPIO

MISC (12)

46	USB_VSS		USB Ground	USB ground pin
47	USBP		Analog Input	USB port DPLUS analog pin
48	USBM		Analog Input	USB port DMINUS analog pin
49	USB_VDD3		USB Power	USB Power pin 3.3V
108	PRST#		Input PU, SMT	Power on reset input, active low
107	ICE		Input PD, SMT	Microcontroller ICE mode enable
233	XTALO		Output	27M crystal out
234	XTALI		Input	27M crystal in
201	GPIO_3		Input Pull-Down	GPIO
200	GPIO_4		Input Pull-Down	GPIO
199	RCLKB	GPIO_5	Input Pull-Up	GPIO
198	RVREF	GPIO_6	Input Pull-Up	GPIO

Dram Interface (58) (Sorted by position)

176	C_0	IO_0 (RD16)	Input Non-pull	1) Digital Video output C bit 0 2) GPIO
175	C_1	IO_1 (RD17)	Input Non-pull	1) Digital Video output C bit 1 2) GPIO

173	C_2	IO_2 (RD18)	Input Non-pull	1) Digital Video output C bit 2 2) GPIO
172	C_3	IO_3 (RD19)	Input Non-pull	1) Digital Video output C bit 3 2) GPIO
171	C_4	IO_4 (RD20)	Input Non-pull	1) Digital Video output C bit 4 2) GPIO
169	C_5	IO_5 (RD21)	Input Non-pull	1) Digital Video output C bit 5 2) GPIO
168	C_6	IO_6 (RD22)	Input Non-pull	1) Digital Video output C bit 6 2) GPIO
167	C_7	IO_7 (RD23)	Input Non-pull	1) Digital Video output C bit 7 2) GPIO

177	IO_17	(DQM2)	Input Non-pull	GPIO
166	YUVCLK	IO_8 (DQM3)	Input Non-pull	1) Digital Video output Clock 2) GPIO
165	Y_0	IO_9 (RD24)	Input Non-pull	1) Digital Video output Y bit 0 2) GPIO
164	Y_1	IO_10 (RD25)	Input Non-pull	1) Digital Video output Y bit 1 2) GPIO
163	Y_2	IO_11 (RD26)	Input Non-pull	1) Digital Video output Y bit 2 2) GPIO
162	Y_3	IO_12 (RD27)	Input Non-pull	1) Digital Video output Y bit 3 2) GPIO
161	Y_4	IO_13 (RD28)	Input Non-pull	1) Digital Video output Y bit 4 2) GPIO
159	Y_5	IO_14 (RD29)	Input Non-pull	1) Digital Video output Y bit 5 2) GPIO
158	Y_6	IO_15 (RD30)	Input Non-pull	1) Digital Video output Y bit 6 2) GPIO
157	Y_7	IO_16 (RD31)	Input Non-pull	1) Digital Video output Y bit 7 2) GPIO

155	RA4		Input	DRAM address 4
154	RA5		Input	DRAM address 5
153	RA6		Input	DRAM address 6
152	RA7		Input	DRAM address 7

151	RA8		Input	DRAM address 8
150	RA9		Input	DRAM address 9
149	RA11		Input Pull-Down	DRAM address bit 11
147	CKE		output	DRAM clock enable
146	RCLK		Input	Dram clock
144	RA3		Input	DRAM address 3
143	RA2		Input	DRAM address 2
141	RA1		Input	DRAM address 1
140	RA0		Input	DRAM address 0

139	RA10		Input	DRAM address 10
138	BA1		Input	DRAM bank address 1
137	BA0		Input	DRAM bank address 0
136	RCS#		output	DRAM chip select, active low
135	RAS#		output	DRAM row address strobe, active low
134	CAS#		output	DRAM column address strobe, active low
133	RWE#		output	DRAM Write enable, active low
132	DQM1		Input	Data mask 1
130	IO_18	(DQS1)	Input Non-pull	GPIO
129	RD8		Input	DRAM data 8
128	RD9		Input	DRAM data 9

127	RD10		Input	DRAM data 10
126	RD11		Input	DRAM data 11
125	RD12		Input	DRAM data 12
124	RD13		Input	DRAM data 13
123	RD14		Input	DRAM data 14
122	RD15		Input	DRAM data 15
121	RD0		Input	DRAM data 0
120	RD1		Input	DRAM data 1
119	RD2		Input	DRAM data 2
117	RD3		Input	DRAM data 3
116	RD4		Input	DRAM data 4
115	RD5		Input	DRAM data 5
114	RD6		Input	DRAM data 6
113	RD7		Input	DRAM data 7
112	IO_19	(DQS0)	Input Non-pull	GPIO
111	DQM0		Input	Data mask 0

JTAG Interface(4)					
51	TDI	V_ADIN4	Input Non-pull	1) 2) 3)	Serial interface port 3 data-out Version AD input port 4 GPIO
52	TMS	V_ADIN5	Input Non-pull	1) 2) 3)	Serial interface port 3 data-in Version AD input port 5 GPIO
53	TCK	V_ADIN6	Input Non-pull	1) 2) 3)	Serial interface port 3 clock pin Version AD input port 6 GPIO
54	TDO	V_ADIN7	Input Non-pull	1) 2) 3)	Serial interface port 3 chip-select Version AD input port 7 GPO

Note:

1. The Main column is the main function, Alt. Means alternative function.
2. The multi-function GPIO pins are set to green characters.
3. The video input port and external TV encoder mode can not both use CCIR-601 mode, at least one of them should be in CCIR-656 mode.
4. Following is a summary of modified pins.
 - (a) Pin 48, 49, 50, 51 are no longer for JTAG functions.
 - (b) V_ADIN0 and V_ADIN3 is not available.

4. BA5494

The AM5954 is a four-channel BTL driver IC for driving the motors and actuators such as used in CD-ROM drives. Two of the channels use current feedback to minimize the current phase shift caused by the influence of loading inductance.

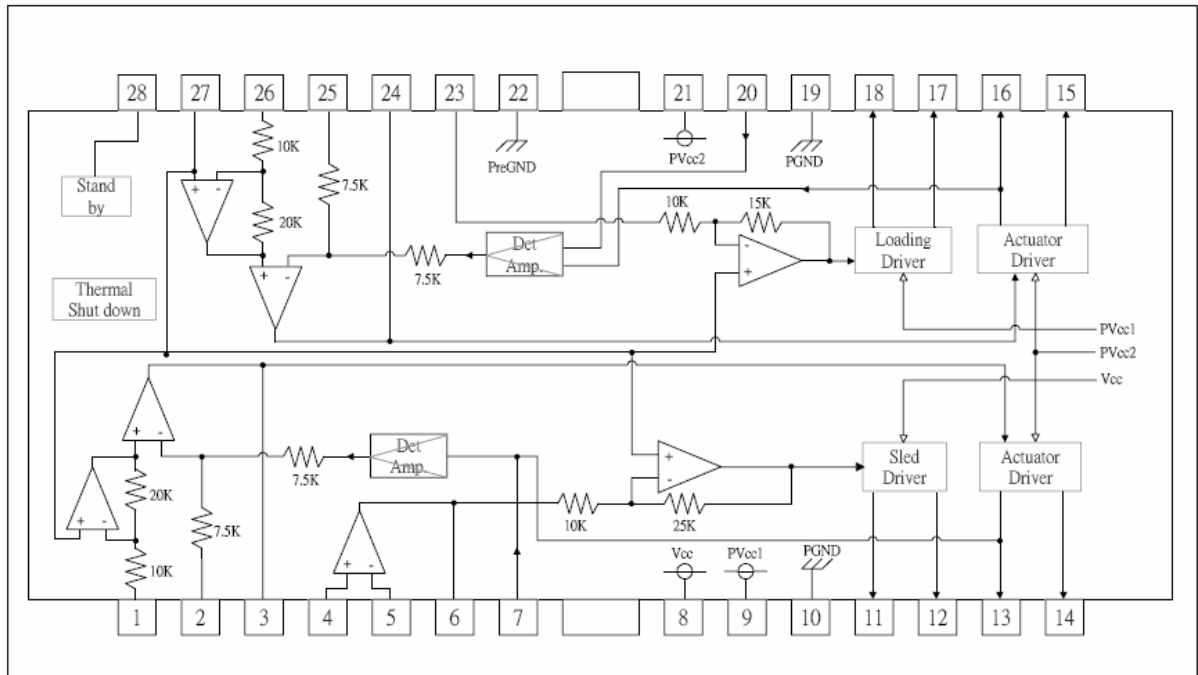
● Applications

BTL driver for CD, CD-ROM and DVD.

● Features

- 1) Two channels are current-type BTL drivers for actuators for tracking and focus, two channels are voltage-type BTL driver for sled and loading motors.
- 2) Wide dynamic range [9.0V(*typ*) when $V_{cc}=PV_{cc}=12V$, at $R_L=8\Omega$ load].
- 3) Separating power of V_{cc} and PV_{cc} to improve power efficiency by a low supply voltage for tracking and focus.
- 4) Level shift circuit built-in.
- 5) Thermal shut down circuit built-in.
- 6) Standby mode built-in.
- 7) **Dual actuator drivers:**
The drivers use current feedback to minimize the current phase shift caused by the influence of the load inductance. The output structure are two power OPAMPS in bridge configuration.
- 8) **Sled motor driver:**
A general purpose input OP provides differential input for signal addition. The output structure are two power OPAMPS in bridge configuration.
- 9) **Loading driver:**
Single input linear BTL driver. The output structure are two power OPAMPS in bridge configuration.

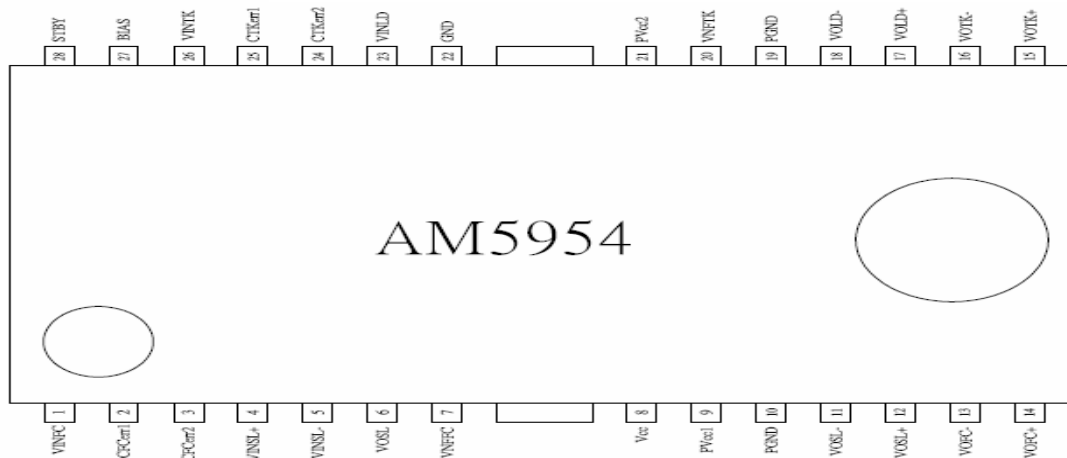
● Block diagram



● **Pin description**

PIN No	Pin Name	Function
1	VINFC	Input for focus driver
2	CFCerr1	Connection of capacitor for the error amp filter
3	CFCerr2	Connection of capacitor for the error amp filter
4	VINSL+	OPAMP input (+) for the sled driver
5	VINSL-	OPAMP input (-) for the sled driver
6	VOSL	OPAMP output for the sled driver
7	VNFFC	Focus driver feedback pin
8	Vcc	Vcc for pre-drive block and power block of sled
9	PVcc1	Vcc for power block of loading
10	PGND	GND for power block
11	VOSL-	Sled driver output (-)
12	VOSL+	Sled driver output (+)
13	VOFC-	Focus driver output (-)
14	VOFC+	Focus driver output (+)
15	VOTK+	Tracking driver output (+)
16	VOTK-	Tracking driver output (-)
17	VOLD+	Loading driver output (+)
18	VOLD-	Loading driver output (-)
19	PGND	GND for power block
20	VNFTK	Feedback for tracking driver
21	PVcc2	Vcc for power block of tracking and focus
22	GND	GND for pre-drive block
23	VINLD	Input for loading driver
24	CTKerr2	Connection of capacitor for the error amp filter
25	CTKerr1	Connection of capacitor for the error amp filter
26	VINTK	Input for tracking driver
27	BIAS	Input for reference voltage
28	STBY	Input for standby control

● **Pin configuration**



5. BA6208F

The BA6208F is monolithic ICs used for driving reversible motors. It allows control of reversible motors in cassette players and other electrical equipment by using TTL-level logic signals. The IC contains a logic section, which controls forward and reverse rotations as well as forced stop, and an output power section, which can supply an output current of up to 100mA (typical) according to the logic control.

●Features

- 1) Motor driving power transistors are built in (100mA typically).
- 2) Brake is applied when stopping the motor (when inputs A and B are both HIGH level).
- 3) Built-in diode to absorb surge currents.
- 4) Very low standby circuit current when inputs A and B are both LOW level.
- 5) Wide range of operating supply voltage (4.5 ~ 15.0V).
- 6) Direct control with the TTL logic.

●Absolute maximum ratings (Ta = 25°C)

Parameter		Symbol	Limits	Unit
Power supply voltage		V _{CC}	18	V
Power dissipation	BA6208	P _d	700*1	mW
	BA6208F	P _d	450*2	
Operating temperature		T _{opr}	-20~+60	°C
Storage temperature		T _{stg}	-55~+125	°C
Maximum output current		I _{OUT}	500	mA

* 1 Reduced by 7 mW for each increase in Ta of 1°C over 25°C.

* 2 Reduced by 4.5 mW for each increase in Ta of 1°C over 25°C.

●Recommended operating conditions (Ta = 25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit
Power supply voltage	V _{CC}	4.5	—	15	V

●Input truth table

3pin (Ain)	2pin (Bin)	8pin (Aout)	7pin (Bout)
H	L	H	L
L	H	L	H
H	H	L	L
L	L	OPEN	OPEN

Note : HIGH level input is 2.0 V or more.

LOW level input is 0.8 V or less.

●Electrical characteristics (unless otherwise noted, Ta = 25°C and V_{CC} = 9V)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Output current	I _O	200	—	—	mA	
Output saturation voltage	V _{CE}	—	—	1.6	V	I _O =100mA
Input high level voltage	V _{IH}	2.0	—	—	V	
Input low level voltage	V _{IL}	—	—	0.8	V	
Standby supply current	I _{ST}	—	—	0.4	mA	When inputs A and B are both LOW level
Input high level current	I _{IH}	—	—	400	μA	V _{IH} =4.5V

A diode that absorbs at least 500 mA is built in to give protection against surge currents with a pulse width of 10 ms and a duty ratio of 10% or less.

6. MX29LV160BT

16M-BIT[2Mx8/1Mx16]CMOS SINGLE VOLTAGE 3V ONLY FLASHMEMORY

FEATURES

- Extended single - supply voltage range 2.7V to 3.6V
- 2,097,152 x 8/1,048,576 x 16 switchable
- Single power supply operation
 - 3.0V only operation for read, erase and program operation
- **Fully compatible with MX29LV160A device**
- Fast access time: 55/70ns
- Low power consumption
 - 30mA maximum active current
 - 0.2uA typical standby current
- Command register architecture
 - Byte/word Programming (9us/11us typical)
 - Sector Erase (Sector structure 16K-Bytex1, 8K-Bytex2, 32K-Bytex1, and 64K-Byte x31)
- Auto Erase (chip & sector) and Auto Program
 - Automatically erase any combination of sectors with Erase Suspend capability.
 - Automatically program and verify data at specified address
- Erase Suspend/Erase Resume
 - Suspends sector erase operation to read data from, or program data to, any sector that is not being erased, then resumes the erase.
- Status Reply
 - Data polling & Toggle bit for detection of program and erase operation completion.
- Ready/Busy pin (RY/BY)
 - Provides a hardware method of detecting program or erase operation completion.
- Sector protection
 - Hardware method to disable any combination of sectors from program or erase operations
 - Temporary sector unprotect allows code changes in previously locked sectors.
- CFI (Common Flash Interface) compliant
 - Flash device parameters stored on the device and provide the host system to access
- 100,000 minimum erase/program cycles
- Latch-up protected to 100mA from -1V to VCC+1V
- Boot Sector Architecture
 - T = Top Boot Sector
 - B = Bottom Boot Sector
- Low VCC write inhibit is equal to or less than 1.4V
- Package type:
 - 44-pin SOP
 - 48-pin TSOP
 - 48-ball CSP
- Compatibility with JEDEC standard
 - Pinout and software compatible with single-power supply Flash

GENERAL DESCRIPTION

The MX29LV160BT/BB is a 16-mega bit Flash memory organized as 2M bytes of 8 bits or 1M words of 16 bits. MXIC's Flash memories offer the most cost-effective and reliable read/write non-volatile random access memory. The MX29LV160BT/BB is packaged in 44-pin SOP, 48-pin TSOP and 48-ball CSP. It is designed to be reprogrammed and erased in system or in standard EPROM programmers.

The standard MX29LV160BT/BB offers access time as fast as 55ns, allowing operation of high-speed microprocessors without wait states. To eliminate bus contention, the MX29LV160BT/BB has separate chip enable ($\overline{\text{CE}}$) and output enable ($\overline{\text{OE}}$) controls.

MXIC's Flash memories augment EPROM functionality with in-circuit electrical erasure and programming. The MX29LV160BT/BB uses a command register to manage this functionality. The command register allows for

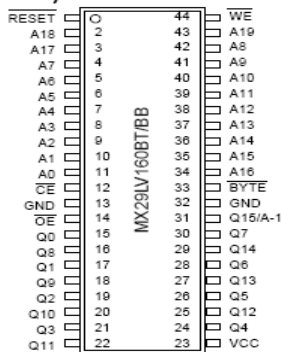
100% TTL level control inputs and fixed power supply levels during erase and programming, while maintaining maximum EPROM compatibility.

MXIC Flash technology reliably stores memory contents even after 100,000 erase and program cycles. The MXIC cell is designed to optimize the erase and programming mechanisms. In addition, the combination of advanced tunnel oxide processing and low internal electric fields for erase and program operations produces reliable cycling. The MX29LV160BT/BB uses a 2.7V~3.6V VCC supply to perform the High Reliability Erase and auto Program/Erase algorithms.

The highest degree of latch-up protection is achieved with MXIC's proprietary non-epi process. Latch-up protection is proved for stresses up to 100 milliamps on address and data pin from -1V to VCC + 1V.

PIN CONFIGURATIONS

44 SOP(500 mil)



PIN DESCRIPTION

SYMBOL	PIN NAME
A0~A19	Address Input
Q0~Q14	Data Input/Output
Q15/A-1	Q15(Word mode)/LSB addr(Byte mode)
CE	Chip Enable Input
WE	Write Enable Input
BYTE	Word/Byte Selection input
RESET	Hardware Reset Pin/Sector Protect Unlock
OE	Output Enable Input
RY/BY	Ready/Busy Output
VCC	Power Supply Pin (2.7V~3.6V)
GND	Ground Pin

48 TSOP (Standard Type) (12mm x 20mm)



DC CHARACTERISTICS TA = -40°C TO 85°C, VCC = 2.7V~3.6V

Symbol	PARAMETER	MIN.	TYP	MAX.	UNIT	CONDITIONS
ILI	Input Leakage Current			± 1	uA	VIN = VSS to VCC, VCC=VCC max
ILIT	A9 Input Leakage Current			35	uA	VCC=VCC max; A9=12.5V
ILO	Output Leakage Current			± 1	uA	VOUT = VSS to VCC, VCC=VCC max
ICC1	VCC Active Read Current		9	16	mA	CE=VIL, OE=VIH @5MHz
			2	4	mA	(Byte Mode) @1MHz
			9	16	mA	CE=VIL, OE=VIH @5MHz
			2	4	mA	(Word Mode) @1MHz
ICC2	VCC Active write Current		20	30	mA	CE=VIL, OE=VIH, WE=VIL
ICC3	VCC Standby Current		0.2	5	uA	CE, RESET=VCC ± 0.3V
ICC4	VCC Standby Current During Reset (See Conditions)		0.2	5	uA	RESET=VSS ± 0.3V
ICC5	Automatic sleep mode		0.2	5	uA	VIH=VCC ± 0.3V; VIL=VSS ± 0.3V
VIL	Input Low Voltage (Note 1)	-0.5		0.8	V	
VIH	Input High Voltage	0.7xVCC		VCC+ 0.3	V	
VID	Voltage for Automatic Select and Temporary Sector Unprotect	11.5		12.5	V	VCC=3.3V
VOL	Output Low Voltage			0.45	V	IOL = 4.0mA, VCC= VCC min
VOH1	Output High Voltage (TTL)	0.85xVCC				IOH = -2mA, VCC=VCC min
VOH2	Output High Voltage (CMOS)	VCC-0.4				IOH = -100uA, VCC min
VLKO	Low VCC Lock-out Voltage	1.4		2.1	V	

NOTES:

- VIL min. = -1.0V for pulse width is equal to or less than 50 ns.
VIL min. = -2.0V for pulse width is equal to or less than 20 ns.
- VIH max. = VCC + 1.5V for pulse width is equal to or less than 20 ns.
If VIH is over the specified maximum value, read operation cannot be guaranteed.
- Automatic sleep mode enable the low power mode when addresses remain stable for tACC +30ns.

7. AT24C16

2-Wire Serial CMOS E²PROM 16k (2048 x 8)

The AT24C16 provides 16384 bits of serial electrically erasable and programmable read only memory (EEPROM) organized as 2048 words of 8 bits each. The device is optimized for use in many industrial and commercial applications where low power and low voltage operation are essential. The AT24C16 is available in space saving 8-pin PDIP, 8-pin and 14-pin SOIC packages and is accessed via a 2-wire serial interface. In addition, the entire family is available in 5.0V(4.5V to 5.5V), 2.7V(2.7V to 5.5V) and 1.8V(1.8V to 5.5V) versions.

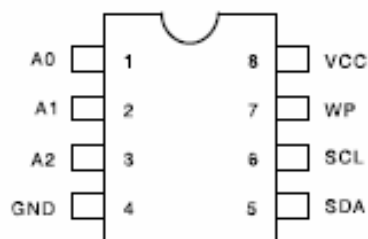
Features

- Low Voltage and Standard Voltage Operation
 - 5.0 (V_{CC} = 4.5V to 5.5V)
 - 2.7 (V_{CC} = 2.7V to 5.5V)
 - 2.5 (V_{CC} = 2.5V to 5.5V)
 - 1.8 (V_{CC} = 1.8V to 5.5V)
- Internally Organized 128 x 8 (1K), 256 x 8 (2K), 512 x 8 (4K), 1024 x 8 (8K) or 2048 x 8 (16K)
- 2-Wire Serial Interface
- Bidirectional Data Transfer Protocol
- 100 kHz (1.8V, 2.5V, 2.7V) and 400 kHz (5V) Compatibility
- Write Protect Pin for Hardware Data Protection
- 8-Byte Page (1K, 2K), 16-Byte Page (4K, 8K, 16K) Write Modes
- Partial Page Writes Are Allowed
- Self-Timed Write Cycle (10 ms max)
- High Reliability
 - Endurance: 1 Million Cycles
 - Data Retention: 100 Years
- Automotive Grade and Extended Temperature Devices Available
- 8-Pin and 14-Pin JEDEC SOIC and 8-Pin PDIP Packages

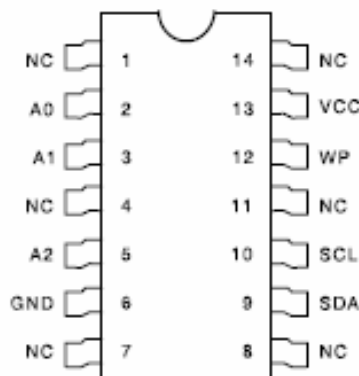
Pin Configurations

Pin Name	Function
A ₀ to A ₂	Address Inputs
SDA	Serial Data
SCL	Serial Clock Input
WP	Write Protect
NC	No Connect

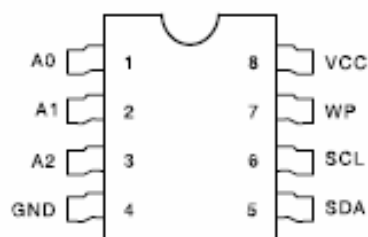
8-Pin PDIP



14-Pin SOIC



8-Pin SOIC



Pin Capacitance ⁽¹⁾

Applicable over recommended operating range from $T_A = 25^\circ\text{C}$, $f = 1.0\text{ MHz}$, $V_{CC} = +1.8\text{V}$.

Symbol	Test Condition	Max	Units	Conditions
$C_{I/O}$	Input/Output Capacitance (SDA)	8	pF	$V_{I/O} = 0\text{V}$
C_{IN}	Input Capacitance ($A_0, A_1, A_2, \text{SCL}$)	6	pF	$V_{IN} = 0\text{V}$

Note: 1. This parameter is characterized and is not 100% tested.

DC Characteristics

Applicable over recommended operating range from: $T_A = -40^\circ\text{C}$ to $+85^\circ\text{C}$, $V_{CC} = +1.8\text{V}$ to $+5.5\text{V}$, $T_{AC} = 0^\circ\text{C}$ to $+70^\circ\text{C}$, $V_{CC} = +1.8\text{V}$ to $+5.5\text{V}$ (unless otherwise noted).

Symbol	Parameter	Test Condition	Min	Typ	Max	Units
V_{CC1}	Supply Voltage		1.8		5.5	V
V_{CC2}	Supply Voltage		2.5		5.5	V
V_{CC3}	Supply Voltage		2.7		5.5	V
V_{CC4}	Supply Voltage		4.5		5.5	V
I_{CC}	Supply Current $V_{CC} = 5.0\text{V}$	READ at 100 kHz		0.4	1.0	mA
I_{CC}	Supply Current $V_{CC} = 5.0\text{V}$	WRITE at 100 kHz		2.0	3.0	mA
I_{SB1}	Standby Current $V_{CC} = 1.8\text{V}$	$V_{IN} = V_{CC}$ or V_{SS}		0.6	3.0	μA
I_{SB2}	Standby Current $V_{CC} = 2.5\text{V}$	$V_{IN} = V_{CC}$ or V_{SS}		1.4	4.0	μA
I_{SB3}	Standby Current $V_{CC} = 2.7\text{V}$	$V_{IN} = V_{CC}$ or V_{SS}		1.6	4.0	μA
I_{SB4}	Standby Current $V_{CC} = 5.0\text{V}$	$V_{IN} = V_{CC}$ or V_{SS}		8.0	18.0	μA
I_{LI}	Input Leakage Current	$V_{IN} = V_{CC}$ or V_{SS}		0.10	3.0	μA
I_{LO}	Output Leakage Current	$V_{OUT} = V_{CC}$ or V_{SS}		0.05	3.0	μA
V_{IL}	Input Low Level ⁽¹⁾		-1.0		$V_{CC} \times 0.3$	V
V_{IH}	Input High Level ⁽¹⁾		$V_{CC} \times 0.7$		$V_{CC} + 0.5$	V
V_{OL2}	Output Low Level $V_{CC} = 3.0\text{V}$	$I_{OL} = 2.1\text{ mA}$			0.4	V
V_{OL1}	Output Low Level $V_{CC} = 1.8\text{V}$	$I_{OL} = 0.15\text{ mA}$			0.2	V

Note: 1. V_{IL} min and V_{IH} max are reference only and are not tested.

AC Characteristics

Applicable over recommended operating range from $T_A = -40^\circ\text{C}$ to $+85^\circ\text{C}$, $V_{CC} = +1.8\text{V}$ to $+5.5\text{V}$, $C_L = 1\text{ TTL Gate}$ and 100 pF (unless otherwise noted).

Symbol	Parameter	2.7-, 2.5-, 1.8-volt		5.0-volt		Units
		Min	Max	Min	Max	
f_{SCL}	Clock Frequency, SCL		100		400	kHz
t_{LOW}	Clock Pulse Width Low	4.7		1.2		μs
t_{HIGH}	Clock Pulse Width High	4.0		0.6		μs
t_i	Noise Suppression Time ⁽¹⁾		100		50	ns
t_{AA}	Clock Low to Data Out Valid	0.1	4.5	0.1	0.9	μs
t_{BUF}	Time the bus must be free before a new transmission can start ⁽¹⁾	4.7		1.2		μs
$t_{HD,STA}$	Start Hold Time	4.0		0.6		μs
$t_{SU,STA}$	Start Set-up Time	4.7		0.6		μs
$t_{HD,DAT}$	Data In Hold Time	0		0		μs
$t_{SU,DAT}$	Data In Set-up Time	200		100		ns
t_R	Inputs Rise Time ⁽¹⁾		1.0		0.3	μs
t_F	Inputs Fall Time ⁽¹⁾		300		300	ns
$t_{SU,STO}$	Stop Set-up Time	4.7		0.6		μs
t_{DH}	Data Out Hold Time	100		50		ns
t_{WR}	Write Cycle Time		10		10	ms

Note: 1. This parameter is characterized and is not 100% tested.

8. NJM4558 DUAL OPERATIONAL AMPLIFIER

■ GENERAL DESCRIPTION

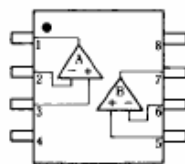
The NJM4558/4559 integrated circuit is a dual high-gain operational amplifier internally compensated and constructed on a single silicon chip using an advanced epitaxial process.

Combining the features of the NJM741 with the close parameter matching and tracking of a dual device on a monolithic chip results in unique performance characteristics. Excellent channel separation allow the use of the dual device in single NJM741 operational amplifier applications providing density. It is especially well suited for applications in differential-in, differential-out as well as in potentiometric amplifiers and where gain and phase matched channels are mandatory.

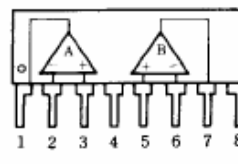
■ FEATURES

- Operating Voltage ($\pm 4V \sim \pm 18V$)
- High Voltage Gain (100dB typ.)
- High Input Resistance ($5M\Omega$ typ.)
- Package Outline DIP8, DMP8, SIP8, SSOP8
- Bipolar Technology

■ PIN CONFIGURATION



NJM4558D, NJM4558M, NJM4558V
NJM4559D, NJM4559M, NJM4559V



NJM4558L
NJM4559L

PIN FUNCTION

1. A OUTPUT
2. A -INPUT
3. A +INPUT
4. V⁻
5. B +INPUT
6. B -INPUT
7. B OUTPUT
8. V⁺

■ PACKAGE OUTLINE



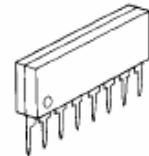
NJM4558D
NJM4559D



NJM4558M
NJM4559M



NJM4558V
NJM4559V



NJM4558L
NJM4559L

■ ELECTRICAL CHARACTERISTICS

($V^+V^- = \pm 15V, T_a = 25^\circ C$)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Input Offset Voltage	V_{IO}	$R_L \leq 10k\Omega$	-	0.5	6	mV
Input Offset Current	I_{IO}		-	5	200	nA
Input Bias Current	I_B		-	25	500	nA
Input Resistance	R_{IN}		0.3	5	-	$M\Omega$
Large Signal Voltage Gain	A_V	$R_L \geq 2k\Omega, V_O = \pm 10V$	86	100	-	dB
Maximum Output Voltage Swing 1	V_{OM1}	$R_L \geq 10k\Omega$	± 12	± 14	-	V
Maximum Output Voltage Swing 2	V_{OM2}	$R_L \geq 2k\Omega$	± 10	± 13	-	V
Input Common Mode Voltage Range	V_{ICM}		± 12	14	-	V
Common Mode Rejection Ratio	CMR	$R_L \leq 10k\Omega$	70	90	-	dB
Supply Voltage Rejection Ratio	SVR	$R_L \leq 10k\Omega$	76.5	90	-	dB
Operating Current	I_{CC}		-	3.5	5.7	mA
Slew Rate						
NJM4558	SR		-	1	-	V/ μs
NJM4559	SR		-	2	-	V/ μs
Equivalent Input Noise Voltage	V_{NI}	$R_{IAA}, R_G = 2.2k\Omega, 30kHz$ LPF	-	1.4	-	μV_{rms}
Gain Bandwidth Product	GB					
NJM4558				3		MHz
NJM4559				6		MHz

9. WM8714 24-bit, 96kHz Stereo DAC

The WM8714 is a high performance stereo DAC designed for audio applications such as DVD, home theatre systems, and digital TV. The WM8714 supports data input word lengths from 16 to 24-bits and sampling rates up to 96kHz. The WM8714 consists of a serial interface port, digital interpolation filters, multi-bit sigma delta modulators and stereo DAC in a 14-pin SOIC package.

The WM8714 has a hardware control interface for selection of audio data interface format, mute and de-emphasis. The WM8714 supports I²S, and right Justified audio data interfaces.

The WM8714 is an ideal device to interface to AC-3TM, DTSTM, and MPEG audio decoders for surround sound applications, or for use in DVD players.

• FEATURES

- Stereo DAC
- Audio Performance
 - 95dB SNR ('A' weighted @ 48kHz) DAC

Boxes

- -90dB THD
- DAC Sampling Frequency: 8kHz – 96kHz
- Pin Selectable Audio Data Interface Format
 - I²S, Right Justified or DSP
- 3-5V Supply Operation
- 14-pin SOIC Package
- Pin Compatible with WM8725

• APPLICATIONS

- DVD Players
- Digital TV
- Digital Set Top

• Pin Description

PIN	NAME	TYPE	DESCRIPTION
1	LRCIN	Digital input	Sample rate clock input
2	DIN	Digital input	Serial audio data input
3	BCKIN	Digital input	Bit clock input
4	NC	No connect	No internal connection
5	CAP	Analogue output	Analogue internal reference
6	VOUTR	Analogue output	Right channel DAC output
7	GND	Supply	Negative supply
8	VDD	Supply	Positive supply
9	VOUTL	Analogue output	Left channel DAC output
10	MUTE	Digital input	Soft mute control, Internal pull down High = Mute ON Low = Mute OFF
11	NC	No connect	No internal connection
12	DEEMPH	Digital input	De-emphasis select, Internal pull up High = de-emphasis ON Low = de-emphasis OFF
13	FORMAT	Digital input	Data input format select, Internal pull up Low = 16-bit right justified High = 16-24-bit I ² S
14	MCLK	Digital input	System clock input

ICS ON HI-VOLTAGE BOARD

1. BIT3193 High Performance PWM Controller

BIT3193 integrated circuit provides the essential features for general purpose PWM controller in a small low cost 16-pin package. BIT3193 has built-in a low frequency PWM generator for any specified application. BIT3193 includes latched off protection feature may make the system more reliable while compare to other similar products.

• Features

- 4.5V ~ 8V operation
- Fixed High Frequency, Voltage Mode PWM Control
- Latched Off Protection
- Build-In Low Frequency PWM Generator
- Build-in UVLO
- Low Power CMOS Process
- Totem Pole Output
- 16 Pin Package

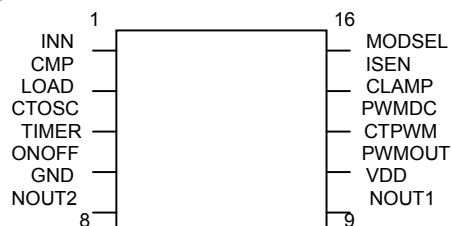
• Applications

- DC/DC Converters
- LCD TV
- LCD Monitor
- Notebook Computer
- Tablet PC
- Personal Digital Assistants
- Navigation Phone/ Door Phone
- Portable consumer product

• Recommended Operating Condition:

Supply Voltage	4.5~8V
Operating Ambient Temperature	0~70 ° C
Operating Frequency	50K~400K Hz

• Pin Layout:



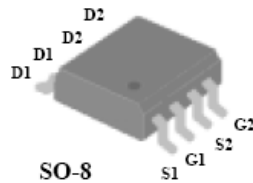
• Pin Description

Pin No.	Symbol	I/O	Descriptions
1	INN	I/O	The inverting input of the error amplifier.
2	CMP	O	Output of the error amplifier.
3	LOAD	I/O	A switch that connected to the high frequency triangle wave generator. This switch is open while ISEN pin <1.3V. An external resistor connected here may change the operation frequency of CTOSC in open load situation.

4	CTOSC	I/O	An external capacitor connected here can set the frequency of high frequency PWM controller.
5	TIMER	I/O	With internal reference current and an external capacitor connected here can set the required period of starting and the timing of initialization. The controller is forced to reset mode while $TIMER < 0.3V$. During reset mode, a $\sim 60\mu A$ current will flow into the INN pin to reduce the output level of the error amplifier CMP to turn off the controller. The latched off protection function will be enable after this node is charged to $> 2.5V$. System is latched off if any abnormal operation is detected if pin $TIMER > 2.5V$. The output current of this pin is $20\mu A$ when $TIMER < 0.3V$. The output current becomes to $1\mu A$ when $TIMER > 0.3V$.
6	ONOFF	I	The control pin of turning on or off the IC. $1V$ threshold with an internal $80K \pm 15\%$ ohm pull-low resistor.
7	GND	I/O	The ground pin of the device.
8	NOUT2	O	The number 2 output driver for driving the NMOSFET switch.
9	NOUT1	O	The number 1 output driver for driving the NMOSFET switch.
10	VDD	I	The power supplies pin of the device.
11	PWMOUT	O	The output pin of low frequency PWM generator. A $2.5V$ or floating two state output is provided through this pin. The internal circuit limits the max. Duty-cycle to $\sim 92\%$.
12	CTPWM	I/O	With the internal reference current and an external capacitor connected here can set the operation frequency of low frequency PWM generator with $1.0V \sim 2.5V$ triangle wave output.
13	PWMDC	I	Low frequency PWM controlling input. A PWM output comes out by comparing this DC input and the $1.0 \sim 2.5V$ triangle wave that is generated by CTPWM.
14	CLAMP	I	Over voltage clamping. If $a > 2.0V$ voltage is detected. A $\sim 60\mu A$ current will flow into the INN pin to reduce the output of the error amplifier pin CMP to regulate the output voltage.
15	ISEN	I	Load current detection pin, the open load situation is detected if a less than $1.3V$ input is sensed.
16	MODSEL	O	To set the output polarity of the low frequency PWM controller.

2. AP4511M N AND P-CHANNEL ENHANCEMENT MODE POWER MOSFET

- ▼ Simple Drive Requirement
- ▼ Low On-resistance
- ▼ Fast Switching Performance

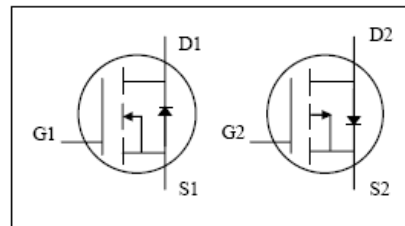


N-CH	BV_{DSS}	35V
	$R_{DS(ON)}$	25m Ω
	I_D	7A
P-CH	BV_{DSS}	-35V
	$R_{DS(ON)}$	40m Ω
	I_D	-6.1A

Description

The Advanced Power MOSFETs from APEC provide the designer with the best combination of fast switching, ruggedized device design, low on-resistance and cost-effectiveness.

The SO-8 package is universally preferred for all commercial-industrial surface mount applications and suited for low voltage applications such as DC/DC converters.



Absolute Maximum Ratings

Symbol	Parameter	Rating		Units
		N-channel	P-channel	
V_{DS}	Drain-Source Voltage	35	-35	V
V_{GS}	Gate-Source Voltage	± 20	± 20	V
$I_D@T_A=25^\circ\text{C}$	Continuous Drain Current ³	7	-6.1	A
$I_D@T_A=70^\circ\text{C}$	Continuous Drain Current ³	5.7	-5	A
I_{DM}	Pulsed Drain Current ¹	30	-30	A
$P_D@T_A=25^\circ\text{C}$	Total Power Dissipation	2.0		W
	Linear Derating Factor	0.016		W/ $^\circ\text{C}$
T_{STG}	Storage Temperature Range	-55 to 150		$^\circ\text{C}$
T_J	Operating Junction Temperature Range	-55 to 150		$^\circ\text{C}$

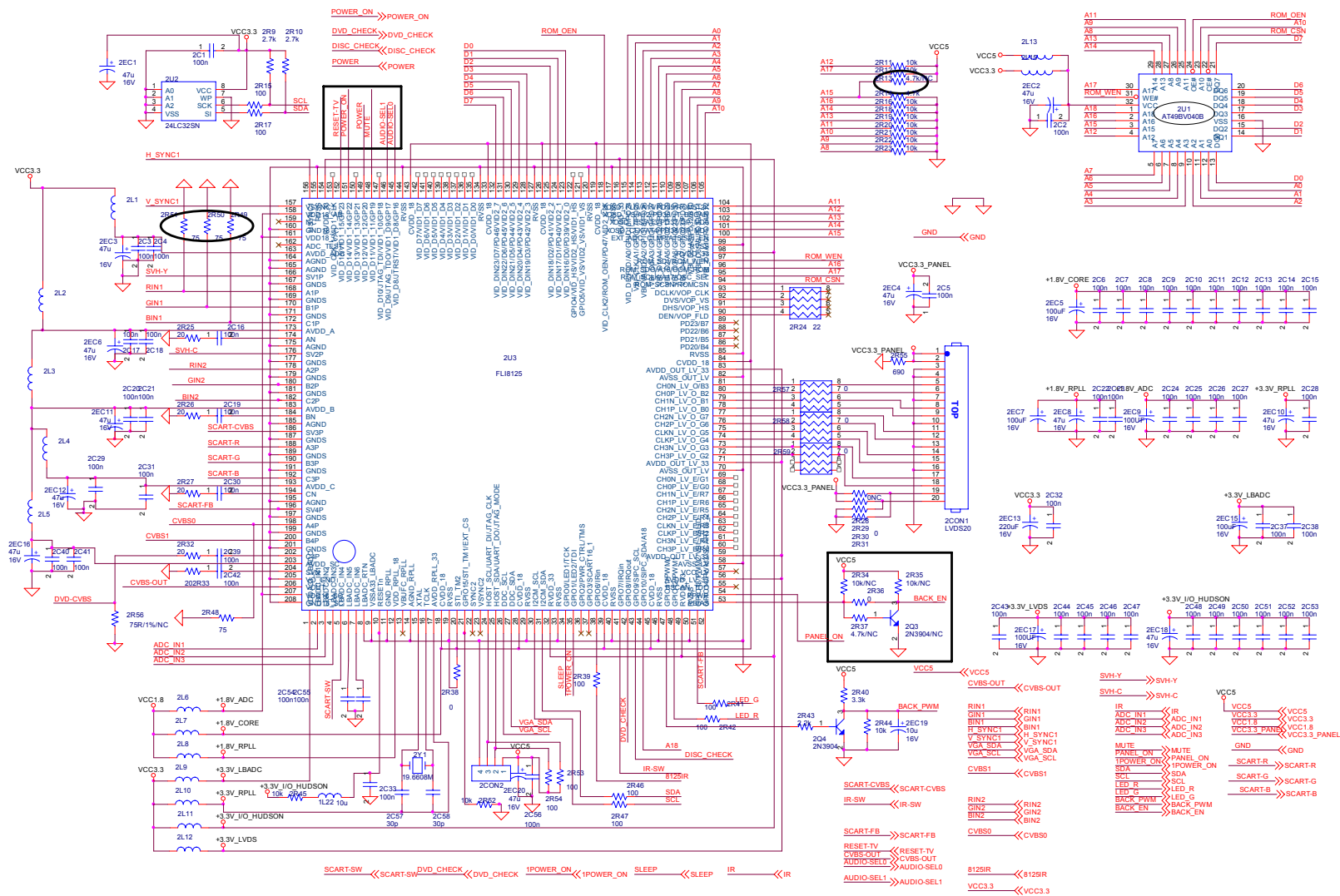
Thermal Data

Symbol	Parameter	Value	Unit
R_{thj-a}	Thermal Resistance Junction-ambient ³	Max. 62.5	$^\circ\text{C}/\text{W}$

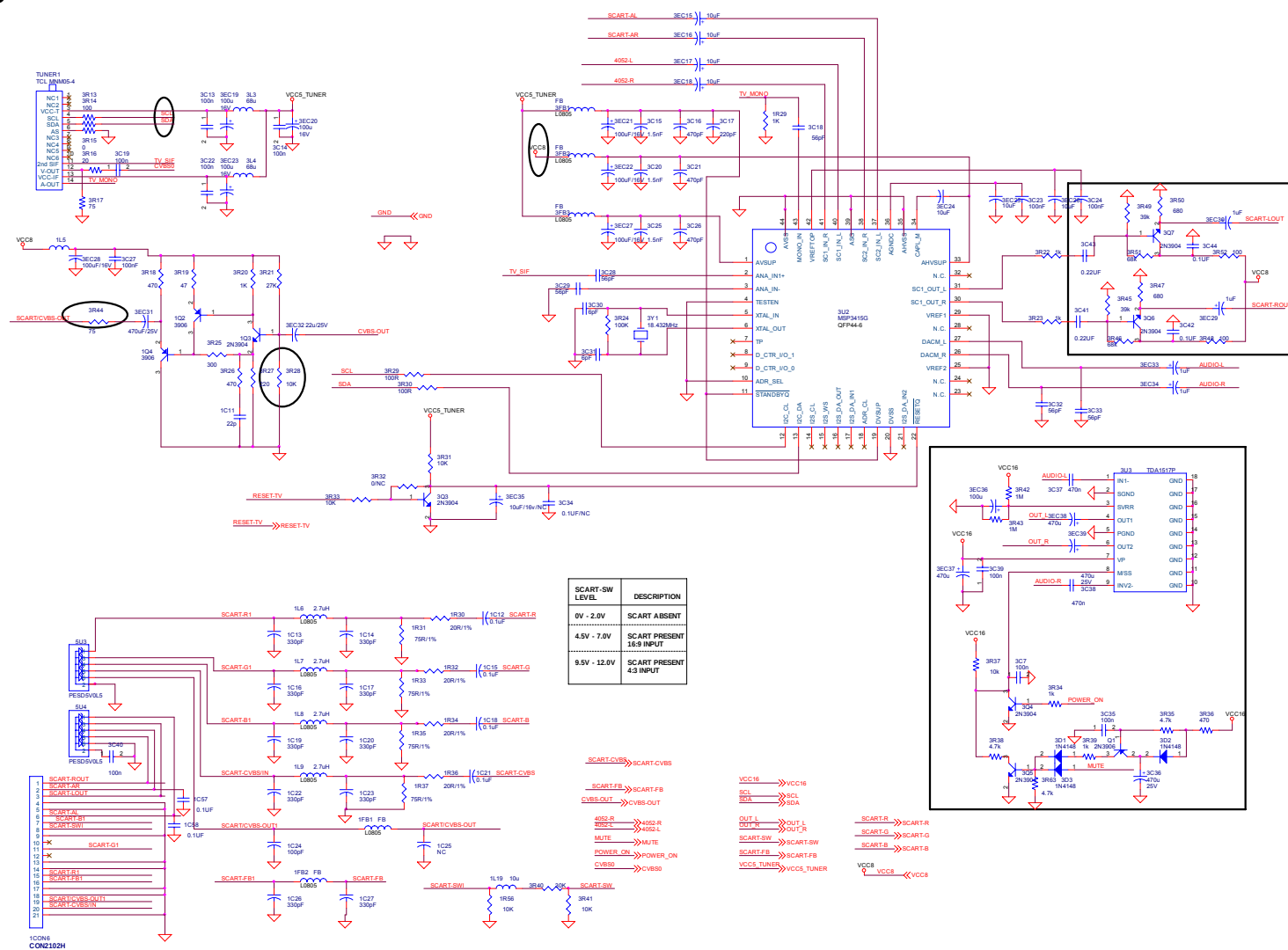
1. Interface



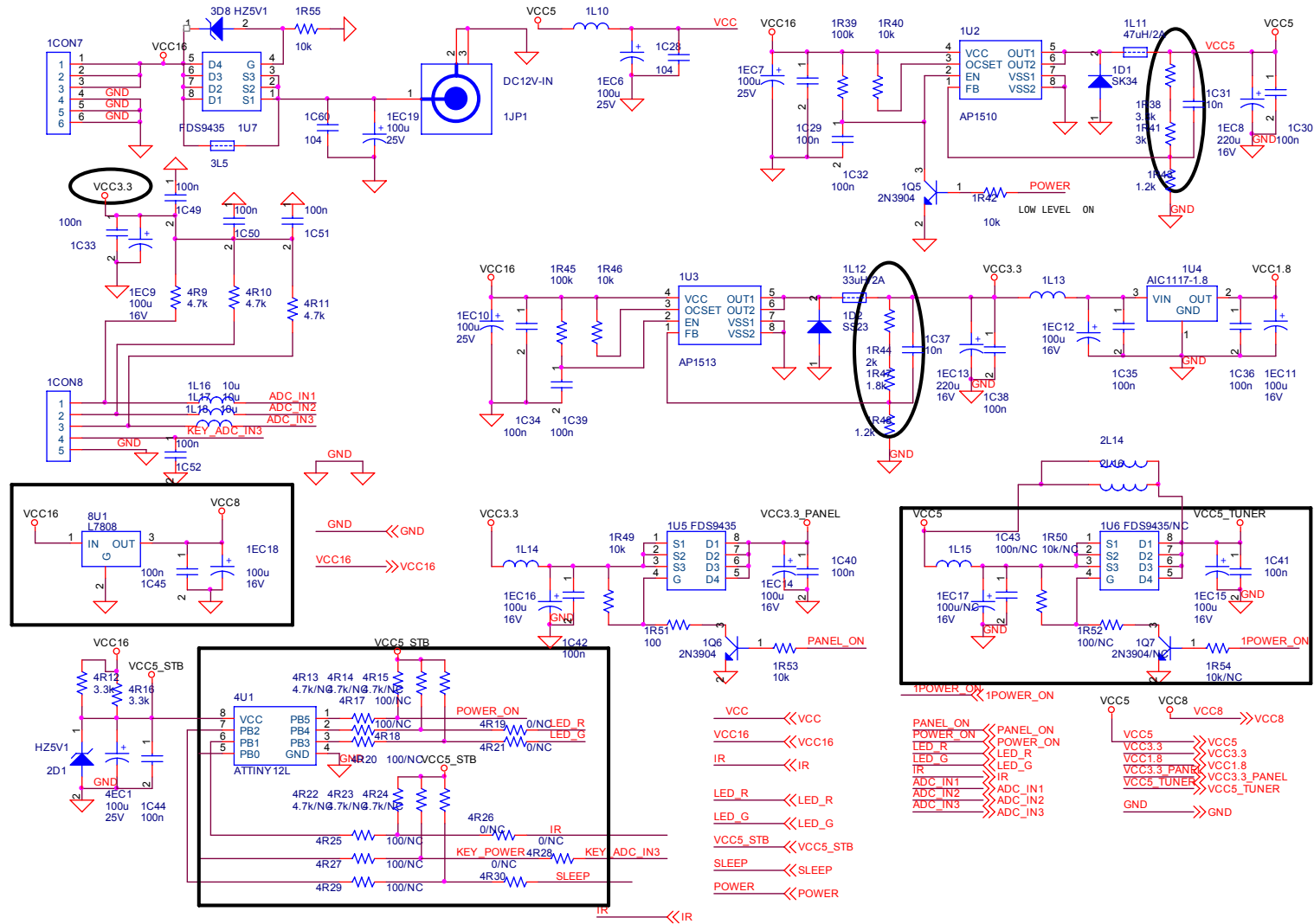
2. Hundson



3. Audio



4. Power



DVD BOARD

1. INDEX

SLOTIN1389HD_TOHEI_HD62_V1

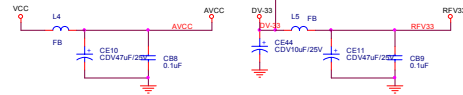
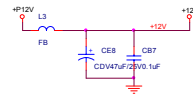
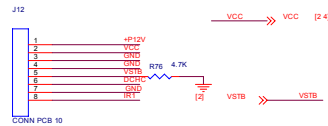
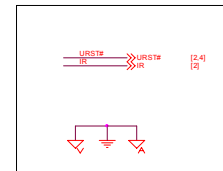
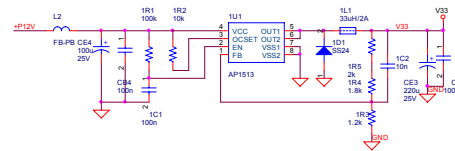
MT1389HD(LQFP256) DVD MP Board for SANYO HD62 PUH (Small Size)

MDxxx

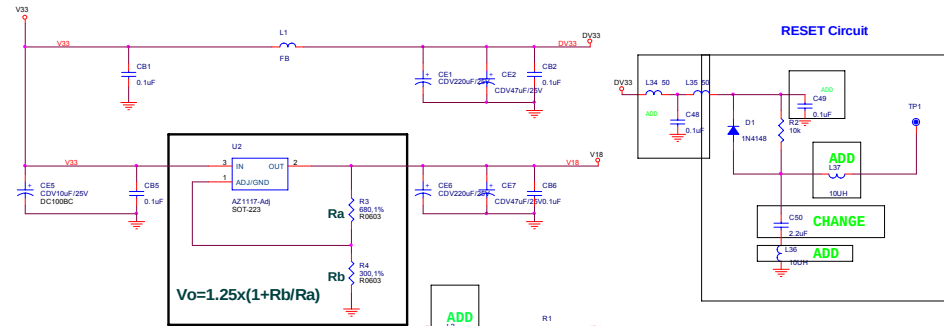
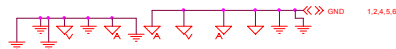
- 1 INDEX & POWER, RESET
- 2 MT1389HD
- 3 SDRAM & FLASH
- 4 VIDEO OUT & AV-CON
- 5 AUDIO OUT - WM8766

NAME	TYPE	DEVICE
VCC	Digital 5V	SUPPLY
DV33	Digital 3.3V	MT1389HD
RFV33	Servo 3.3V	MT1389HD
AV33	Laser Diode 3.3V	MT1389HD
V18	Digital 1.8V	MT1389HD
SD33	Digital 3.3V	SDRAM
+12V	Audio +12V	OP AMP.
-12V	Audio -12V	OP AMP.
AVDD5	Audio 5V	Audio DAC
DVDD3	Audio 3.3V	Audio DAC

Rev	History	P#	Date
V1	The original released. (modified from 3-SY1389P3-V1) Supports 1389HD & Memory Card Interface		2005/10/08



AVCC [2 4]

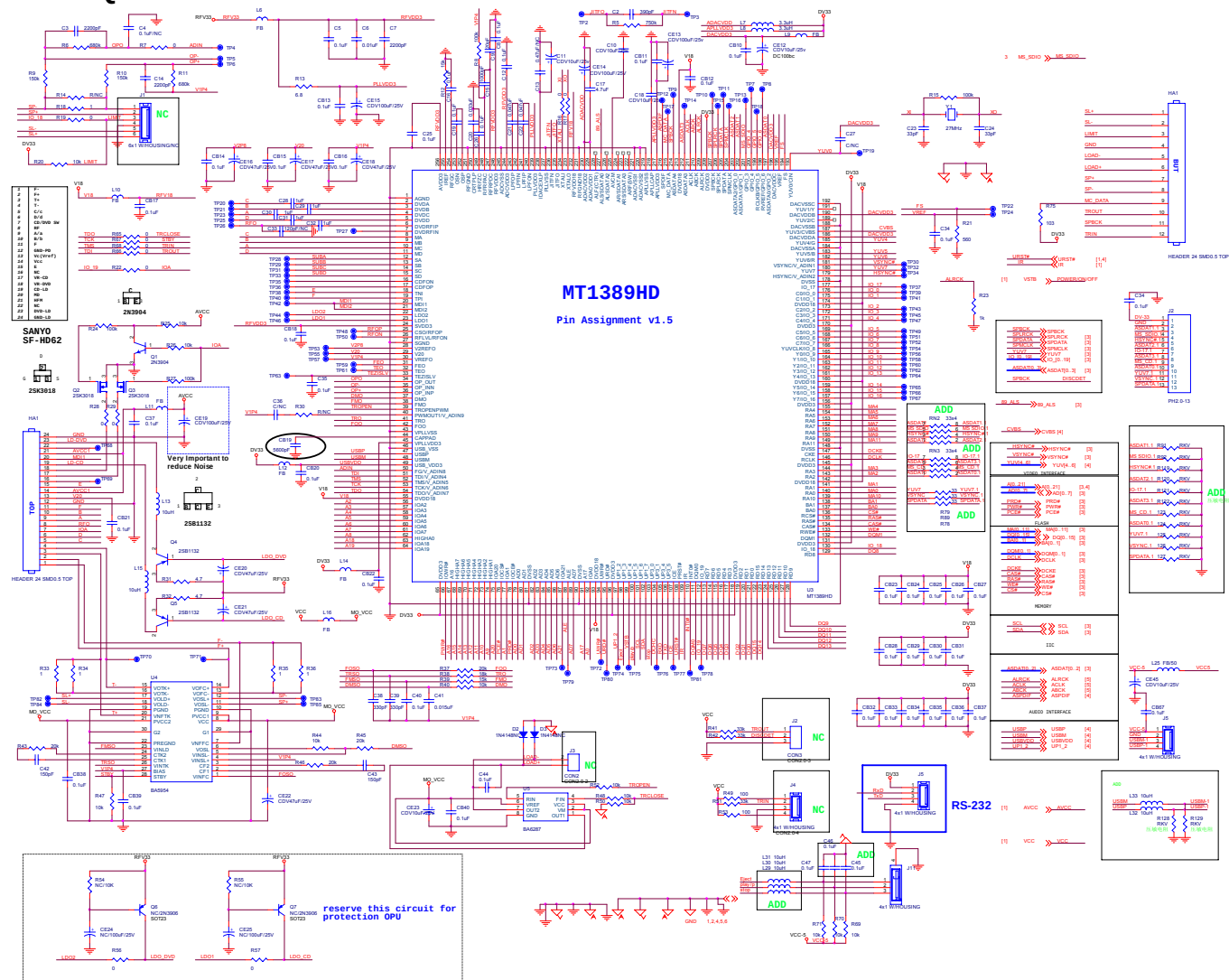


AZ1117	Rb	Ra
Fix regulator	0 ohm	OFF
Adj regulator	300 1%	680 1%

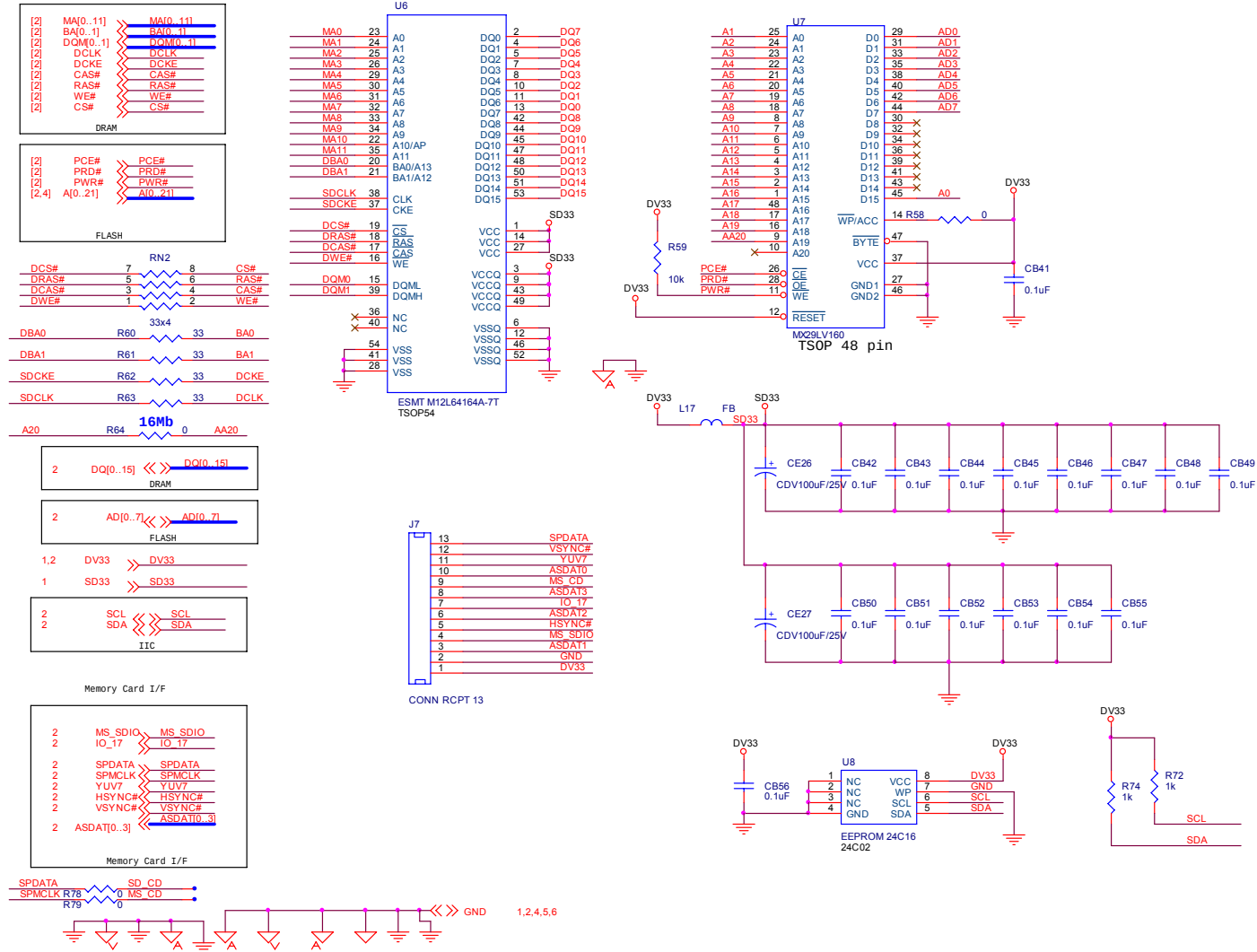
Note for Fix or Adj Regulator

Ra = 680 FOR 1.8V
Ra = 560 FOR 1.92V

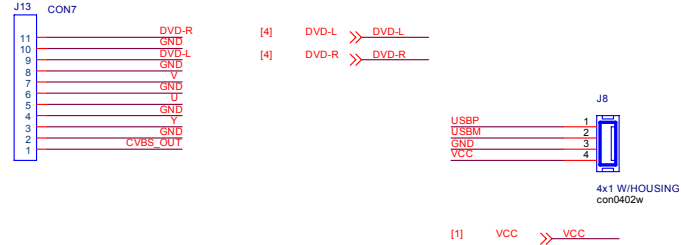
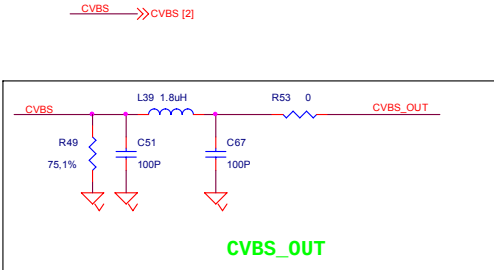
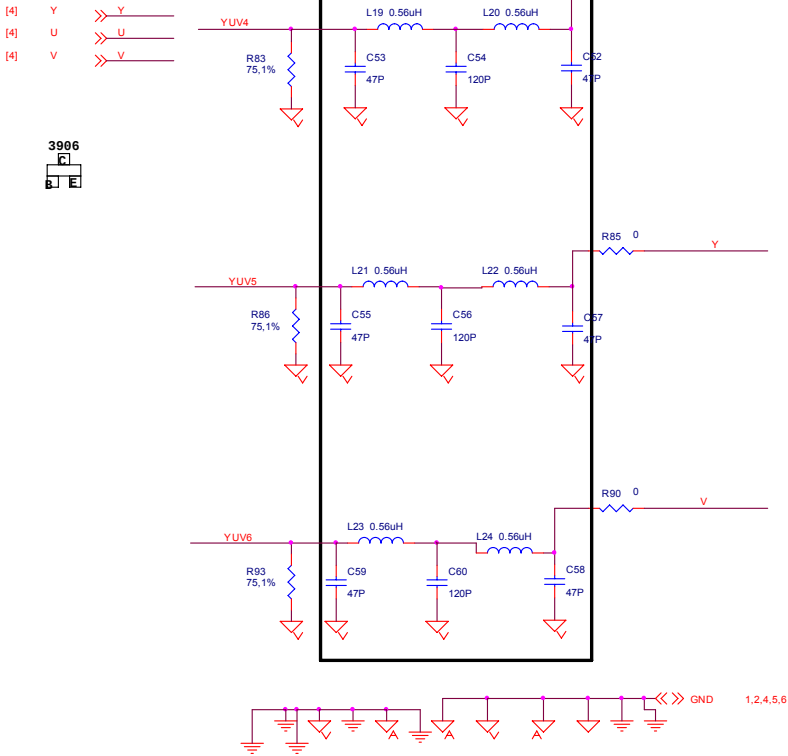
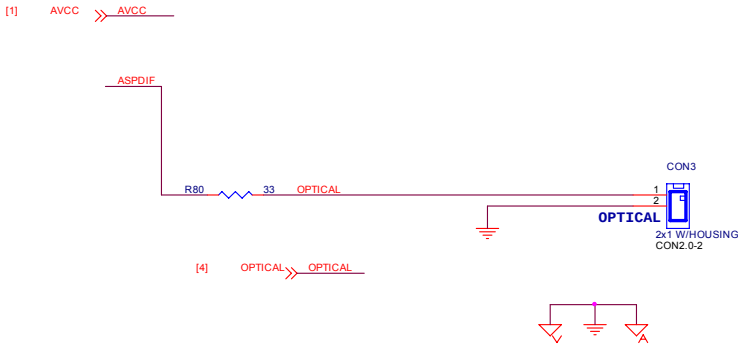
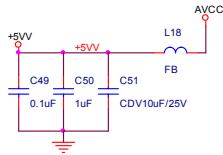
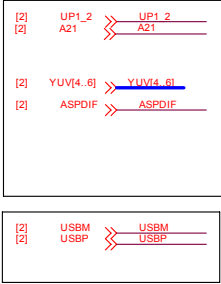
2. MT1389HD TQFP 256



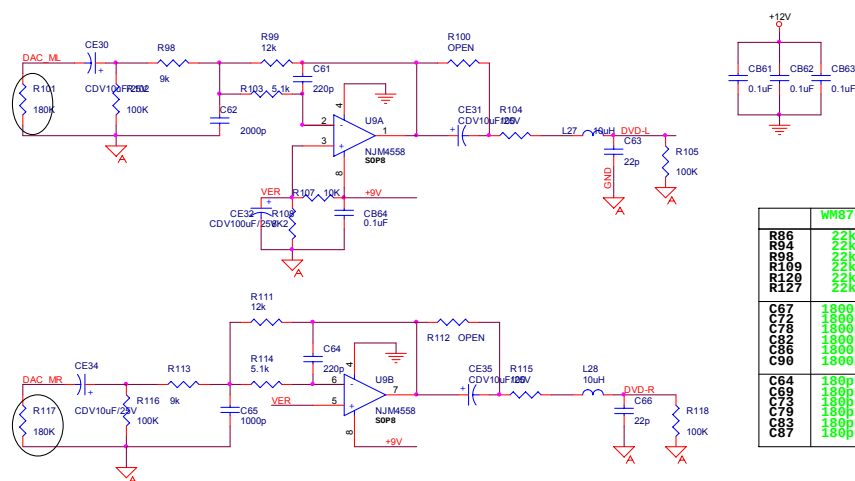
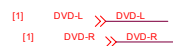
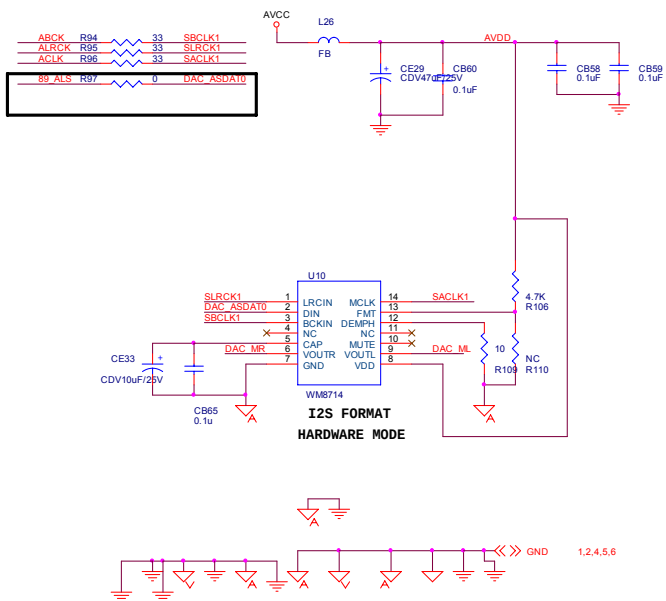
3. SDRAM & FLASH



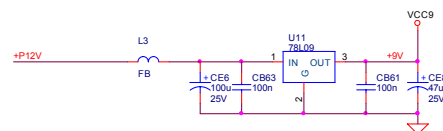
4. VIDEO OUT & AV-CONNECTOR



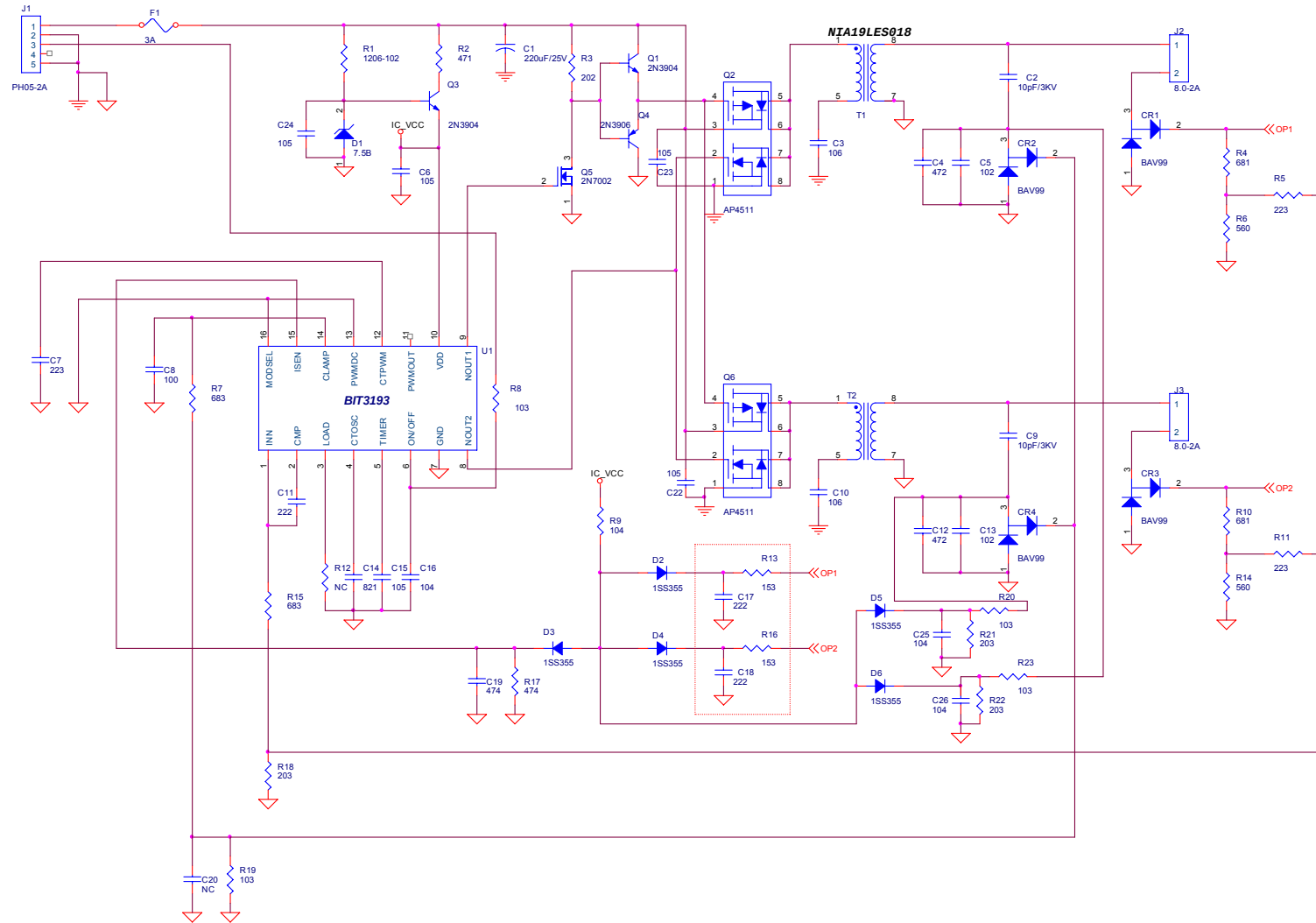
[2] ACLK >>> ACLK
 [2] ABCK >>> ABCK
 [2] ALRCK >>> ALRCK
 [1] AVCC >>> AVCC
 [2] 89_ALS >>> 89_ALS



	WM8766	Int. DAC
R86	22k	31k
R94	22k	31k
R98	22k	31k
R109	22k	31k
R120	22k	31k
R127	22k	31k
C67	1800pF	1000pF
C75	1800pF	1000pF
C82	1800pF	1000pF
C86	1800pF	1000pF
C90	1800pF	1000pF
C64	180pF	100pF
C69	180pF	100pF
C79	180pF	100pF
C83	180pF	100pF
C87	180pF	100pF



HI-VOLTAGE BOAD



Part 5 Part list of DSL15M1TC

Bom No	Part No	Part Name	QTY	
LTD06M-3912C01	02.11.LTD06M3912C01	Main board	1	
Part No	Name	Specification	QTY	LOCA No
01.57.R.2.E000J	SMD resistor	0603-0Ω ±5%	8	2R7 2R31 2R30 2R36 2R38 2R52 3R15 1L22
01.57.R.2.E200F	SMD resistor	0603-20Ω± 1%	4	1R30 1R32 1R34 1R36
01.57.R.2.E200J	SMD resistor	0603-20Ω±5%	12	1R1 1R2 1R3 1R12 1R14 1R15 2R25 2R26 2R27 2R32 2R33 3R16
01.57.R.2.E470J	SMD resistor	0603-47Ω±5%	1	3R19
01.57.R.2.E750F	SMD resistor	0603-75Ω±1%	19	1R4 1R5 1R6 1R31 1R33 1R35 1R37 1R13 1R16 1R17 1R18 1R19 1R20 3R17 3R44 1C26 2R49 2R50 2R51
01.57.R.2.E101J	SMD resistor	0603-100Ω±5%	19	2R1 2R4 1R51 2R15 2R17 2R39 2R41 2R42 2R46 2R47 3R13 3R14 2R8 3R11 3R12 3R29 3R30 3R48 3R52
01.57.R.2.E221J	SMD resistor	0603-220Ω±5%	1	3R27
01.57.R.2.E301J	SMD resistor	0603-300Ω±5%	1	3R25
01.57.R.2.E471J	SMD resistor	0603-470Ω±5%	3	3R18 3R26 3R36
01.57.R.2.E681J	SMD resistor	0603-680Ω±5%	4	3R47 3R50 4R1 2R55
01.57.R.2.E102J	SMD resistor	0603-1KΩ±5%	10	4R3 4R4 4R7 4R8 3R20 3R22 3R23 3R34 3R39 4R5
01.57.R.2.E222J	SMD resistor	0603-2.2KΩ±5%	1	2R43
01.57.R.2.E272J	SMD resistor	0603-2.7KΩ±5%	8	2R9 1R21 1R22 1R23 1R24 2R10 2R53 2R54
01.57.R.2.E332J	SMD resistor	0603-3.3KΩ±5%	1	2R40
01.57.R.2.E472J	SMD resistor	0603-4.7KΩ±5%	8	2R2 2R5 2R14 3R35 3R38 4R9 4R10 4R11
01.57.R.2.E103J	SMD resistor	0603-10KΩ±5%	47	2R3 2R6 3R5 3R6 3R7 3R8 3R9 4R2 4R6 1R10 1R11 1R40 1R46 1R49 1R53 2R11 2R12 2R16 2R18 2R19 2R20 2R21 2R22 2R23 2R44 2R45 3R10 3R31 3R33 3R37 3R41 1R55 3R28 3R53 3R54 3R55 3R56 3R1 3R2 3R3 3R4 3R57 3R58 3R59 3R60 3R60 3R62
01.57.R.2.E273J	SMD resistor	0603-27KΩ±5%	1	3R21
01.57.R.2.E303J	SMD resistor	0603-30KΩ±5%	1	3R40
01.57.R.2.E393J	SMD resistor	0603-39KΩ±5%	2	3R45 3R49
01.57.R.2.E473J	SMD resistor	0603-47KΩ±5%	4	1R25 1R26 1R27 1R28

01.57.R.2.E683J	SMD resistor	0603-68K Ω ±5%	2	3R46 3R51
01.57.R.2.E104J	SMD resistor	0603-100K Ω ±5%	3	1R39 1R45 3R24
01.57.R.2.E105J	SMD resistor	0603-1M Ω ±5%	2	3R42 3R43
01.57.R.3.E122J	SMD resistor	0805-1.2K±5%	2	1R48 1R43
01.57.R.3.E182J	SMD resistor	0805-1.8K±5%	1	1R47
01.57.R.3.E202J	SMD resistor	0805-2K Ω ±5%	1	1R44
01.57.R.3.E302J	SMD resistor	0805-3K Ω ±5%	1	1R41
01.57.R.3.E332J	SMD resistor	0805-3.3K±5%	3	1R38 4R12 4R16
01.57.R.8.EP2204	SMD row resistor	22 Ω *4 ±5%	1	2R24
01.57.R.8.EP3304	SMD row resistor	33 Ω *4 ±5%	3	2R57 2R58 2R59
01.54.CS.2.E6P0N	SMD capacitor	0603-6P NPO±0.25%/50V	2	3C31 3C30
01.54.CS.2.E220N	SMD capacitor	0603-22P NPO±5%/50V	3	1C11 2C34 2C35
01.54.CS.2.E300N	SMD capacitor	0603-30P NPO±5%/50V	2	2C58 2C57
01.54.CS.2.E560N	SMD capacitor	0603-56P NPO±5%/50V	2	3C28 3C29
01.54.CS.2.E101N	SMD capacitor	0603-100P NPO±5%/50V	7	3C5 3C6 3C8 3C9 1C24 3C10 3C11
01.54.CS.2.E221N	SMD capacitor	0603-220P NPO±5%/50V	1	3C17
01.54.CS.2.E331X	SMD capacitor	0603-330P X7R±10%/50V	9	1C13 1C14 1C16 1C17 1C19 1C20 1C22 1C23 1C27
01.54.CS.2.E471X	SMD capacitor	0603-470P X7R±10%/50V	3	3C16 3C21 3C26
01.54.CS.2.E152X	SMD capacitor	0603-152 X7R±10%/50V	3	3C15 3C20 3C25
01.54.CS.2.E102X	SMD capacitor	0603-102 X7R±10%/50V	2	3C32 3C33
01.54.CS.2.E103Y	SMD capacitor	0603-103 Y5V-20+80%/50V	2	1C31 1C37
01.54.CS.2.E104Y	SMD capacitor	0603-104 Y5V-20+80%/50V	88	2C1 2C2 2C3 2C4 2C5 2C6 2C7 2C8 2C9 5C1 5C2 1C29 1C30 1C32 1C33 1C34 1C35 1C36 1C38 1C39 1C40 1C41 1C42 1C44 1C45 2C10 2C11 2C12 2C13 2C14 2C15 2C17 2C18 2C20 2C21 2C22 2C23 2C24 2C25 2C26 2C27 2C28 2C29 2C31 2C32 2C37 2C38 2C40 2C41 2C43 2C44 2C45 2C46 2C47 2C48 2C49 2C50 2C51 2C52 2C53 2C54 2C55 2C56 3C13 3C14 3C22 3C35 3C39 3C40 1C1 3C1 3C3

				3C4 3C23 3C24 3C27 3C34 1C28 1C46 1C47 1C48 3C42 3C44 1C49 1C50 1C51 1C52 1C60
01.54.CS.2.E104X	SMD capacitor	0603-104 X7R±10%/50V	16	1C8 1C9 1C10 1C2 1C3 1C4 3C19 2C16 2C19 2C30 2C39 2C42 1C12 1C15 1C18 1C21
01.54.CS.2.E224Y	SMD capacitor	0603-224 Y5V-20+80%/16V	5	3C38 3C37 3C41 3C43 3C18
01.34.CL.D.E1U16VC	Electrolyse capacitor	CD110-1UF/16V 5*11	2	3EC33 3EC34
01.34.CL.D.E2U216VC	Electrolyse capacitor	CD110-2.2UF/16V 5*11	4	1EC2 1EC3 1EC4 1EC5
01.34.CL.D.E10U16VC	Electrolyse capacitor	CD110-10UF/16V 5*11	16	3EC5 3EC6 3EC9 3EC10 3EC12 3EC14 3EC15 3EC16 3EC17 3EC18 3EC24 3EC25 3EC26 2EC19 3EC29 3EC30
01.34.CL.D.E22U25V0C	Electrolyse capacitor	CD110-22UF/25V 5*11	1	3EC32
01.34.CL.D.E47U16VC	Electrolyse capacitor	CD110-47UF/16V 5*11	12	2EC1 2EC2 2EC3 2EC4 2EC6 2EC8 2EC10 2EC11 2EC12 2EC16 2EC18 2EC20
01.34.CL.D.E100U16VC	Electrolyse capacitor	CD110-100UF/16 V 5*11	22	1EC1 1EC9 1EC11 1EC12 1EC14 1EC15 1EC16 1EC18 3EC19 3EC20 3EC23 2EC5 2EC7 2EC9 2EC15 2EC17 3EC1 3EC4 3EC21 3EC22 3EC27 3EC28
01.34.CL.D.E220U16VD	Electrolyse capacitor	CD110-220UF/16 V 6.3*12	4	1EC6 1EC8 1EC13 2EC13
01.34.CL.D.E100U25VD	Electrolyse capacitor	CD110-100UF/25 V 6.3*12	6	1EC7 1EC10 3EC3 4EC1 3EC36 1EC19
01.34.CL.D.E470U25VE	Electrolyse capacitor	CD110-470UF/25 V 8*14	5	3C36 3EC37 3EC38 3EC39 3EC31
01.13.L.Z.ESB50	SMD magnetism bead	0805-50Ω	9	1FB1 1FB2 3FB1 3FB2 3FB3 1L2 1L4 1L5 1L19
01.13.L.Z.ESB50P	SMD magnetism bead	0805-50Ω PB	14	1L10 1L13 2L1 2L2 2L3 2L4 2L5 2L6 2L7 2L8 2L9 2L10 2L11 2L12
01.13.L.Z.ESA50	SMD magnetism bead	0603-50Ω	1	1L1
01.13.L.Z.ESC50	SMD magnetism bead	1206-50Ω	4	1L14 2L14 2L15 2L16
01.13.L.Z.ED50A	DIP magnetism bead	50Ω (3.5*6.0*0.8)	3	3L1 3L2 3L5
01.13.L.L.S.E002	SMD inductor	0603-10UH	3	1L16 1L17 1L18
01.13.L.L.S.E010	SMD inductor	0805-2.7UH	4	1L6 1L7 1L8 1L9
01.13.L.L.S.E085	SMDjar install inductor	SLF12575T-470M 2R7	2	1L11 1L20
01.13.L.L.D.E150	DIP inductor	LH0608-33UH	1	1L12

01.13.L.L.D.E038	Color code inductor	33UH DIP	2	3L4 3L3
01.41.D.WS.E5V1	SMD zener diode	5.1V	2	3D8 2D1
01.41.D.PS.ELL4148	Diode	LL4148 SMD	3	3D1 3D2 3D3
01.41.D.PS.EBAV99	Diode	BAV99LT1 SMD	1	5D1
01.42.Q.S.E2N3904	Audion	2N3904 SMD	16	1Q1 1Q3 1Q5 1Q6 2Q1 2Q2 2Q4 3Q1 3Q2 3Q3 3Q4 3Q5 3Q6 3Q7 4Q2 4Q4
01.42.Q.S.E2N3906	Audion	2N3906 SMD	5	Q1 4Q1 4Q3 1Q2 1Q4
01.41.D.PS.ESS24	Diode	SS24 SMD	1	1D2
01.41.D.PS.ESK34	Diode	SK34 SMD	1	1D1
01.00.JZ.E18432A	DIP oscillator	18.432MHZ-49S-1 2P	1	3Y1
01.00.JZ.E196608A	DIP oscillator	19.6608MHZ-49S- 20P	1	2Y1
01.44.IC.S.EV330	IC	FSAV330 SMD	1	1U1
01.44.IC.S.E3415	IC	MSP3415G SMD	1	3U2
01.44.IC.S.EAP1510	IC	AP1510 SMD	1	1U2
01.44.IC.S.E1513S	IC	AP1513S SMD	1	1U3
01.44.IC.S.EA11171V8	IC	AZ1117H-1.8 SMD	1	1U4
01.44.IC.S.ES9435	IC	FDS9435 SMD	2	1U5 1U7
01.44.IC.S.E24C32	IC	AT24C32AN SMD	1	2U2
01.44.IC.S.E8125	IC	FLI8125-LF SMD	1	2U3
01.44.IC.D.EL7808	IC	L7808C-V DIP	1	8U1
01.44.IC.D.ETDA1517P	IC	TDA1517P DIP	1	3U3
01.46.IC.EAT49BV	IC	AT49BV040B SMD	1	2U1
01.44.IC.S.E4052	IC	CD4052 SMD	1	3U1
01.44.IC.S.EPESD5V0L5	IC	PESD5V0L5 SMD	4	5U1 5U2 5U3 5U4
01.31.GPT.E063	Tuner	MPE05-1-E DIP	1	TUNER1
01.40.CON.DCZ.E001	Jack	DASW-8 DIP	1	1CN1
01.40.CON.DCZ.E331	SCART Jack	CS112 DIP	1	1CON6
01.40.CON.DCZ.E347	Same core jack	AV5-8.4-13/PB-27	1	1CN2
01.40.CON.DCZ.E167	Same core jack	AV2-8.4-13/PB	1	1CN3
01.40.CON.DCZ.E018	Power jack	DDK2.5 DIP	1	1JP1
01.40.CON.DPH.E005	Jack	PH-11A	2	1CON1 1CON5
01.40.CON.DPH.E035	Jack	PH-8A	1	CON7-2
01.40.CON.DPH.E024	Jack	PH-5A	2	1CON2 3CON1
01.40.CON.DPH.E020	Jack	PH-4A	2	1CON3 2CON2
01.40.CON.DTJ.E004	Jack	TJC3-2A	2	5CON1 5CON2
01.40.CON.DTJ.E012	Jack	TJC3-6A	1	1CON7
01.40.CON.S13.AY1.001	Jack	1.25-5A(vertical)D IP	1	1CON4

01.40.CON.S13.AY1.002	Jack	1.25-6A(vertical)D IP	1	1CON8
01.40.CON.S13.AY.E002	SMD jack	1.25-20A(lie paste)	1	2CON1
01.37.PCB.2.E3912C1	Circuit board	Main board 3912C-V1.0	1	
Bom No	Part No	Part Name	QTY	
LTD06I-3913C01	02.14.LTD06I3913C01	Card board	1	
Part No	Name	Specification	QTY	LOCA No
01.57.R.2.E000J	SMD resistor	0603-0Ω ±5%	3	R1 R7 R4
01.57.R.2.E103J	SMD resistor	0603-10KΩ±5%	9	R5 R2 R6 R12 R8 R10 R3 R11 R9
01.54.CS.2.E104Y	SMD capacitor	0603-104 Y5V-20+80%/50V	2	C3 C4
01.54.CS.2.E470N	SMD capacitor	0603-47P NPO±5%/50V	1	C1
01.13.L.Z.ESB50	SMD magnetism bead	0805-50Ω	1	FB1
01.34.CL.D.E100U16VC	Electrolyse capacitor	CD110-100UF/16 V 5*11	1	C2
01.40.CON.DCZ.E234	Card seat	143-1300300920	1	J2
01.40.CON.S13.AY1.003	Jack	1.25-13A(vertical) DIP	1	J1
01.37.PCB.2.E3913C2	Circuit board	Card board3913C-V2.0	1	
Bom No	Part No	Part Name	QTY	
LTD06I-3914C01	02.14.LTD06I3914C01	Earphone USB board	1	
Part No	Name	Specification	QTY	LOCA No
01.57.R.3.E301J	SMD resistor	0805-300Ω±5%	2	1R1 1R2
01.57.R.2.E330J	SMD resistor	0603-33Ω±5%	2	R1 R2
01.57.R.2.E153J	SMD resistor	0603-15KΩ±5%	2	R3 R4
01.54.CS.2.E104Y	SMD capacitor	0603-104 Y5V-20+80%/50V	1	CB1
01.13.L.Z.ESB50	SMD magnetism bead	0805-50Ω	1	L1
01.34.CL.D.E47U16VC	Electrolyse capacitor	CD110-47UF/16V 5*11	3	1EC1 1EC2 EC1
01.13.L.L.S.E188	SMD inductor	0805-47UH	2	1L1 1L2
01.38.FUSE.S.E075	Fuse	1812-075	1	F1
01.40.CON.S13.AY1.004	Jack	1.25-4A(vertical)DI P	1	J1
01.40.CON.DPH.E024	Jack	PH-5A	1	CN1

01.40.CON.DCZ.E066	Horizontal double row(earphone)jack	CKX-3.5-02K(with switch) DIP	1	1CN1
01.37.PCB.2.E3914C2	Circuit board	USB earphone board3914C-V2.0	1	
Bom No	Part No	Part Name	QTY	
LTD06I-3915C01	02.14.LTD06I3915C01	VGA interface board	1	
Part No	Name	Specification	QTY	LOCA No
01.57.R.2.E000J	SMD resistor	0603-0Ω ±5%	6	1R1 1R2 1R3 1C1 1C2 1C3
01.57.R.2.E101J	SMD resistor	0603-100Ω±5%	6	1R4 1R5 5R1 5R2 5R3 5R4
01.57.R.2.E222J	SMD resistor	0603-2.2KΩ±5%	2	(5R8) (5R9)
01.57.R.2.E272J	SMD resistor	0603-2.7KΩ±5%	4	1R6 1R7 (5R10) (5R11)
01.57.R.2.E473J	SMD resistor	0603-47KΩ±5%	2	1R8 1R9
01.57.R.3.E000J	SMD resistor	0805-0Ω ±5%	5	5L1 5L2 5L3 5L4 5L5
01.54.CS.2.E104Y	SMD capacitor	0603-104 Y5V-20+80%/50V	3	(1C4) 5C5 (5C6)
01.34.CL.D.E2U216VC	Electrolyse capacitor	CD110-2.2UF/16V 5*11	2	1EC1 1EC2
01.34.CL.D.E100U16VC	Electrolyse capacitor	CD110-100UF/16 V 5*11	1	1EC3
01.41.D.PS.ELL4148	Diode	LL4148 SMD	2	5D2 5D1
01.40.CON.DPH.E005	Jack	PH-11A	1	1CON1
01.40.CON.DPH.E020	Jack	PH-4A	1	1CON2
01.40.CON.DCZ.E007	VGA Jack	EV-015FC/15pin DIP	1	5CON1
01.40.CON.DCZ.E102	Perch earphone jack	CKX-3.5-02(without switch) DIP	1	5CON2
01.46.IC.E24C02	IC	24C02 SMD	1	5U2
01.44.IC.S.EPESD5V0L5	IC	PESD5V0L5 SMD	2	5U1 5U3
01.37.PCB.2.E3915C2	Circuit board	VGA interface board3915C-V2.0	1	
Bom No	Part No	Part Name	QTY	
LTD06K-3916C01	02.15.LTD06K3916C01	Key board	1	
Part No	Name	Specification	QTY	LOCA No
01.57.R.2.E102J	SMD resistor	0603-1KΩ±5%	4	4R7 4R8 4R9 4R2
01.57.R.2.E202J	SMD resistor	0603-2KΩ±5%	3	4R1 4R4 4R3
01.57.R.2.E332J	SMD resistor	0603-3.3KΩ±5%	2	4R5 4R6
01.39.SW.QC.ED665	Touch switch	6*6*5(DIP 300g)	10	4S1 4S2 4S3 4S4 4S5 4S6 4S7 4S8 4S9 4S10

01.40.CON.S13.AY1.001	Jack	1.25-5A(vertical)D IP	1	1CON1
01.40.CON.S13.AY1.002	Jack	1.25-6A(vertical)DI P	1	1CON2
01.37.PCB.2.E3916C1	Circuit board	Key board3916C-V1.0	1	
Bom No	Part No	Part Name	QTY	
LTD06P-2956C01	02.19.LTD06P2956C01	Power board	1	
Part No	Name	Specification	QTY	LOCA No
01.57.R.3.E681J	SMD resistor	0805-680Ω±5%	1	R9
01.57.R.3.E472J	SMD resistor	0805-4.7KΩ±5%	1	R13
01.57.R.3.E222J	SMD resistor	0805-2.2KΩ±5%	1	R12
01.57.R.3.E123J	SMD resistor	0805-12KΩ±5%	2	R3 R11
01.57.R.4.E4R7J	SMD resistor	1206-4.7Ω±5%	1	R6
01.57.R.4.E390J	SMD resistor	1206-39Ω±5%	2	R7 R8
01.57.R.4.E222J	SMD resistor	1206-2.2KΩ±5%	1	R10
01.57.R.4.E514J	SMD resistor	1206-510KΩ±5%	2	R1 R2
01.57.R.4.E392J	SMD resistor	1206-3.9KΩ±5%	1	R15
01.57.R.C.EC105	Carbon film resistor	RT1/6W-1MΩ	1	R4
01.57.R.C.EG563	Carbon film resistor	RT2W-56KΩ	1	R5
01.57.R.R.E5D11	Hot agile resistor	NTC-5D-11	1	TH1
01.57.R.Y.E10K	Press agile resistor	10K.471	1	VR1
01.54.CS.3.E104X	SMD capacitor	0805-104 X7R±10%/50V	2	C13 C10
01.54.CS.3.E473X	SMD capacitor	0805-473 X7R±10%/50V	1	C5
01.54.CS.4.E102X200V	SMD capacitor	1206-102 X7R±10%/200V	1	C6
01.34.CL.D.E150U400V	Electrolyse capacitor	150uF/400V 18*36 ±20% 105℃ Low ESR	1	C1
01.34.CL.D.E1000U25V	Electrolyse capacitor	1000uF/25V 10*20 ±20% 105℃ Low ESR	2	C7 C8
01.34.CL.D.E470U25V	Electrolyse capacitor	470uF/25V 8*20 ±20% 105℃ Low ESR	1	C9
01.00.CD.CP.E1031KV	Ceramic capacitor	103/1KV	1	C2
01.00.CD.CP.E2221KVA	Ceramic capacitor	222/1KV	1	C3
01.00.CD.GY.E104275V	Hi-voltage capacitor	104/275V X2	1	CX2
01.00.CD.GY.E224275V	Hi-voltage capacitor	224/275V X2	1	CX1

01.00.CD.GY.E471400V	Hi-voltage capacitor	471/400V Y1	2	CY1 CY2
01.00.CD.GY.E222400V	Hi-voltage capacitor	222/400V Y1	1	CY3
01.34.CL.D.E22U35VB	Electrolyse capacitor	CD11X-22UF/35V 5*7(105℃)	1	C4
01.13.L.L.D.E155	Filter	LCL-401	1	Lc1
01.13.L.L.D.E180	Filter	LCL-203B DIP	1	Lc2
01.13.L.L.D.E181	Inductor	L620-3uH DIP	1	L1
01.13.L.Z.ED50B	DIP magnetism bead	50Ω (3.5*4.7*0.8)	1	L2
01.41.D.PD.E1U08	Diode	1U08 DIP	1	D1
01.41.D.PD.EFR107	Diode	FR107 DIP	1	D1
01.41.D.PD.EFR104	Diode	FR104 DIP	1	D2
01.41.D.PD.ESF20NC15	Diode	SF20NC15M DIP	2	D3 D4
01.41.D.PD.E2015CT	Diode	MBRF20150CT DIP	2	D3 D4
01.41.D.WD.E10V	DIP zener diode	10V	1	ZD1
01.41.D.WD.E20V	DIP zener diode	20V	1	ZD2
01.44.IC.D.EM0765	IC	FSCM0765RGWD TU DIP	1	U5
01.44.IC.D.EPC817	IC	PC817 DIP	1	U2
01.44.IC.D.EKA431A	IC	KA431AZ DIP	1	U3
01.41.D.PD.EUS4K80	Diode	US4K 80R DIP	1	BD1
01.41.D.PD.EGBU406	Diode	GBU406 DIP	1	BD1
01.41.D.PD.EGBU408	Diode	GBU408 DIP	1	BD1
01.41.D.PD.EPQ322001	Transformer	BCK-PQ3220-01 DIP	1	TR1
01.40.CON.DCZ.E129	Linker	VH	1	CN1
01.40.CON.DTJ.E008	Jack	TJC3-4A	1	CN3
01.40.CON.DTJ.E012	Jack	TJC3-6A	1	CN4
01.38.FUSE.D.E3K315	Fuse	3K 3.15A 250V DIP	1	F1
01.38.FUSE.D.E32S315	Fuse	32S 3.15A 250V DIP	1	F1
01.38.FUSE.D.E315A250 V	Fuse	ICP 3.15A250V	1	F1
01.00.FZ.ZZ.E010	J line	15mm	2	J1 J5
01.00.FZ.ZZ.E003	J line	10mm	2	J2 J3
01.00.FZ.ZZ.E007	J line	12.5mm	1	J4
01.37.PCB.1.E2956C2	Circuit board	Power board2956C-V2.0	1	

Bom No	Part No	Part Name	QTY	
LTD06V-3738C01	02.23.LTD06V3738C01	DVD board	1	
Part No	Name	Specification	QTY	LOCA No
01.57.R.2.E000J	SMD resistor	0603-0Ω ±5%	15	R7 R19 R22 R56 R57 R58 R64 R65 R66 R67 R68 R82 R85 R90 R97
01.57.R.2.E1R0J	SMD resistor	0603-1Ω±5%	5	R18 R33 R34 R35 R36
01.57.R.2.E4R7J	SMD resistor	0603-4.7Ω±5%	2	R31 R32
01.57.R.2.E6R8J	SMD resistor	0603-6.8Ω±5%	1	R13
01.57.R.2.E100J	SMD resistor	0603-10Ω±5%	4	R109 R1 R28 R29
01.57.R.2.E330J	SMD resistor	0603-33Ω±5%	9	R60 R61 R80 R94 R95 R96 R78 R89 R79
01.57.R.2.E101J	SMD resistor	0603-100Ω±5%	2	R104 R115
01.57.R.2.E750F	SMD resistor	0603-75Ω±1%	4	R83 R86 R93 R49
01.57.R.2.E301F	SMD resistor	0603-300Ω±1%	1	R4
01.57.R.2.E102J	SMD resistor	0603-1KΩ±5%	3	R23 R72 R74
01.57.R.2.E561J	SMD resistor	0603-560Ω±5%	1	R21
01.57.R.2.E681F	SMD resistor	0603-680Ω± 1%	1	R3
01.57.R.3.E122J	SMD resistor	0805-1.2K±5%	1	1R3
01.57.R.3.E182J	SMD resistor	0805-1.8K±5%	1	1R4
01.57.R.3.E202J	SMD resistor	0805-2KΩ±5%	1	1R5
01.57.R.2.E472J	SMD resistor	0603-4.7KΩ±5%	1	R106
01.57.R.2.E512J	SMD resistor	0603-5.1KΩ±5%	2	R114 R103
01.57.R.3.E822F	SMD resistor	0805-8.2K ±1%	1	R108
01.57.R.2.E912J	SMD resistor	0603-9.1KΩ±5%	2	R113 R98
01.57.R.2.E103J	SMD resistor	0603-10KΩ±5%	17	R2 R20 R25 R26 R40 R44 R47 R48 R50 R52 R59 R69 R70 R71 R75 1R2 R76
01.57.R.2.E123J	SMD resistor	0603-12KΩ±5%	2	R111 R99
01.57.R.2.E153J	SMD resistor	0603-15KΩ±5%	2	R12 R39
01.57.R.2.E183J	SMD resistor	0603-18KΩ±5%	1	R38
01.57.R.2.E203J	SMD resistor	0603-20KΩ±5%	4	R37 R43 R45 R46
01.57.R.2.E333J	SMD resistor	0603-33KΩ±5%	3	R41 R42 R51
01.57.R.2.E104J	SMD resistor	0603-100KΩ±5%	9	R8 R15 R24 R27 R102 R105 R116 R118 1R1
01.57.R.2.E154J	SMD resistor	0603-150KΩ±5%	2	R10 R9

01.57.R.2.E184J	SMD resistor	0603-180KΩ±5%	2	(R101) (R117)
01.57.R.2.E684J	SMD resistor	0603-680KΩ±5%	2	R11 R6
01.57.R.2.E754J	SMD resistor	0603-750KΩ±5%	1	(R5)
01.57.R.3.E103J	SMD resistor	0805-10KΩ±5%	1	R107
01.57.R.8.EP3304	SMD row resistor	33Ω*4 ±5%	3	RN1 RN2 RN3
01.54.CS.2.E100N	SMD capacitor	0603-10P NPO±5%/50V	1	R121
01.54.CS.2.E200N	SMD capacitor	0603-20P NPO±5%/50V	1	C9
01.54.CS.2.E220N	SMD capacitor	0603-22P NPO±5%/50V	12	C63 C66 R91 R92 R119 R120 R122 R123 R124 R125 R126 R127
01.54.CS.2.E330N	SMD capacitor	0603-33P NPO±5%/50V	2	C23 C24
01.54.CS.2.E470N	SMD capacitor	0603-47P NPO±5%/50V	3	C53 C55 C59
01.54.CS.2.E101N	SMD capacitor	0603-100P NPO±5%/50V	3	C1 C51 C67
01.54.CS.2.E121N	SMD capacitor	0603-120P NPO±5%/50V	3	C54 C56 C60
01.54.CS.2.E151N	SMD capacitor	0603-150P NPO±5%/50V	2	C43 C42
01.54.CS.2.E221N	SMD capacitor	0603-220P NPO±5%/50V	2	C64 C61
01.54.CS.2.E331X	SMD capacitor	0603-330P X7R±10%/50V	2	C39 C38
01.54.CS.2.E391N	SMD capacitor	0603-390P NPO±5%/50V	1	C2
01.54.CS.2.E102X	SMD capacitor	0603-102 X7R±10%/50V	5	C15 C65 C45 C46 C47
01.54.CS.2.E202X	SMD capacitor	0603-202 X7R±10%/50V	4	C62 CB45 CB46 CB47
01.54.CS.2.E222X	SMD capacitor	0603-222 X7R±10%/50V	3	C3 C7 C14
01.54.CS.2.E224Y50V	SMD capacitor	0603-224 Y5V-20+80%/50V	1	C50
01.54.CS.2.E562X	SMD capacitor	0603-562 X7R±10%/50V	1	CB19
01.54.CS.2.E103X	SMD capacitor	0603-103 X7R±10%/50V	2	C6 1C2
01.54.CS.2.E153Y	SMD capacitor	0603-153 Y5V-20+80%/50V	1	C41
01.54.CS.2.E333X	SMD capacitor	0603-333 X7R±10%/50V	1	C20
01.54.CS.2.E473Y	SMD capacitor	0603-473 Y5V-20+80%/50V	2	C21 C22

01.54.CS.2.E474Y	SMD capacitor	0603-474 Y5V+80-20%/50V	1	C17
01.54.CS.2.E104Y	SMD capacitor	0603-104 Y5V-20+80%/50V	70	CB1 CB2 CB6 CB8 CB7 C8 CB9 CB10 CB11 CB12 C12 CB13 CB14 CB15 1C1 CB16 C16 CB17 CB18 C19 CB20 CB21 CB22 CB24 CB25 C25 CB26 C26 CB27 CB28 CB29 CB30 CB31 CB32 CB33 CB34 C34 CB35 C35 CB36 CB37 C37 CB38 CB39 CB40 C40 CB41 CB43 C44 CB48 CB49 C5 CB51 CB55 CB56 CB58 CB59 CB60 CB61 CB62 CB63 CB64 CB3 CB4 CB57 CB65 CB67 CB66 C48 C49
01.54.CS.2.E105Y16V	SMD capacitor	0603-105 Y5V-20+80%/16V	5	C28 C29 C30 C31 C32
01.34.CL.D.E10U16VA	Electrolyse capacitor	CDV-10UF/16V 4*5	6	C10 C18 C11 CE12 CE23 CE33
01.34.CL.D.E10U25VA	Electrolyse capacitor	CDV-10UF/25V 4*5	6	CE30 CE31 CE34 CE35 CE44 CE45
01.34.CL.D.E47U25VA	Electrolyse capacitor	CDV-47UF/25V 6*5	13	CE11 CE16 CE17 CE18 CE20 CE21 CE10 CE22 CE29 CE2 CE7 CE8 CE40
01.34.CL.D.E100U25VA	Electrolyse capacitor	CDV-100UF/25V 8*5	8	CE13 CE15 CE19 CE27 CE14 CE5 CE6 CE32
01.34.CL.D.EV220U25VB	Electrolyse capacitor	CDV-220UF/25V 8*7	3	CE3 CE4 CE1
01.13.L.Z.ESA50	SMD magnetism bead	0603-50Ω	1	(L10)
01.13.L.Z.ESA120	SMD magnetism bead	0603-120Ω	2	(R16)(R17)
01.13.L.Z.ESA100	SMD magnetism bead	0603-100Ω	2	R62 R63
01.13.L.Z.ESB50	SMD magnetism bead	0805-50Ω	16	L1 L2 L3 L4 L5 L6 L9 L11 L12 L14 L16 L17 L26 L18 L25 L38
01.13.L.L.D.E150	DIP inductor	LH0608-33UH	1	1L1
01.13.L.L.S.E209	SMD inductor	0805-0.56UH	6	L19 L20 L21 L22 L23 L24
01.13.L.L.S.E006	SMD inductor	0805-1.8UH	1	L39
01.13.L.L.S.E011	SMD inductor	0805-3.3UH	2	(L8) (L7)
01.13.L.L.S.E002	SMD inductor	0603-10UH	7	L29 L30 L31 L32 L33 L36 L37
01.13.L.L.S.E007	SMD inductor	0805-10UH	6	L13 L15 L27 L28 L34 L35

01.41.D.PS.ELL4148	Diode	LL4148 SMD	1	D1
01.41.D.PS.ESS24	Diode	SS24 SMD	1	1D1
01.42.Q.S.E2N3904	Audion	2N3904 SMD	1	Q1
01.42.Q.S.E1132	Audion	2SB1132 SMD	2	Q5 Q4
01.42.Q.S.E3018	Transistor	2SK3018T106 SMD	2	Q2 Q3
01.00.JZ.E27000	DIP oscillator	27.000MHZ-49S-20P	1	Y1
01.44.IC.D.E78L09	IC	78L09 DIP	1	U11
01.44.IC.S.E1513S	IC	AP1513S SMD	1	1U1
01.44.IC.S.E1117	IC	AZ1117H-ADJ SMD	1	U2
01.46.IC.EMT1389DEH	IC	MT1389DE/H SMD	1	U3
01.44.IC.S.EBA5954FP	IC	BA5954FP SMD	1	U4
01.44.IC.S.E6287A	IC	6287 SMD	1	U5
01.46.IC.E641620	IC	HY57V641620HGT SMD	1	U6
01.46.IC.E24C16	IC	24C16 SMD	1	U8
01.46.IC.E29LV160BBTC	IC	MX29LV160BBTC-70 SMD	1	U7
01.44.IC.S.E4558	IC	NJM4558 SMD	1	U9
01.44.IC.S.E8714	IC	WM8714ED SMD	1	U10
01.40.CON.S13.AY1.006	Jack	1.25-4A(Horizontal)DIP	1	J8
01.40.CON.S13.AY1.005	Jack	1.25-5A(Horizontal)DIP	1	J11
01.40.CON.S13.AY1.007	Jack	1.25-13A(Horizontal)DIP	1	J7
01.40.CON.DPH.E020	Jack	PH-4A	1	J5
01.40.CON.DPH.E072	Jack	PH-8A Horizontal	1	J12
01.40.CON.DPH.E059	Jack	PH-11A Horizontal	1	J13
01.40.CON.S05.E008	SMD jack	FPC-0.5-24P	1	HA1
01.40.CON.S10.FPC1.E016	SMD jack	FPC-1.0-12P	1	J10
01.37.PCB.2.E3738C13	Circuit board	DVD board3738C-V1.3	1	
Bom No	Part No	Part Name	QTY	

LTD06T-3848C01	02.22.LTD06T3848C01	Remote control receiving board	1	
Part No	Name	Specification	QTY	LOCA No
01.57.R.2.E100J	SMD resistor	0603-10Ω±5%	1	4R1
01.54.CS.2.E104Y	SMD capacitor	0603-104 Y5V-20+80%/50V	1	4C1
01.41.D.FD.E4RB	radiation diode	φ4	1	2D1
01.44.IC.D.E0038B	IC	HS0038B DIP	1	4U1
01.40.CON.S13.AY1.001	Jack	1.25-5A(vertical)D IP	1	1CON1
01.37.PCB.2.E3848C3	Circuit board	Remote control receiving board3848C-V3.0	1	
Bom No	Part No	Part Name	QTY	
MINV15-07SVA1B02	02.07.MINV1507SVA1B02	inverter	1	
Part No	Name	Specification	QTY	LOCA No
01.57.R.4.E471J	SMD resistor	1206-470Ω±5%	1	R2
01.57.R.2.E152J	SMD resistor	0603-1.5KΩ±5%	1	R1
01.57.R.2.E561F	SMD resistor	0603-560Ω±1%	2	R6 R14
01.57.R.2.E681J	SMD resistor	0603-680Ω±5%	2	R4 R10
01.57.R.2.E202J	SMD resistor	0603-2KΩ±5%	1	R3
01.57.R.2.E103J	SMD resistor	0603-10KΩ±5%	2	R19 R8
01.57.R.2.E153J	SMD resistor	0603-15KΩ±5%	2	R13 R16
01.57.R.2.E203J	SMD resistor	0603-20KΩ±5%	1	R18
01.57.R.2.E223J	SMD resistor	0603-22KΩ±5%	2	R5 R11
01.57.R.2.E683J	SMD resistor	0603-68KΩ±5%	2	R7 R15
01.57.R.2.E104J	SMD resistor	0603-100KΩ±5%	1	R9
01.57.R.2.E474J	SMD resistor	0603-470KΩ±5%	1	R17
01.54.CS.2.E101N	SMD capacitor	0603-100P NPO±5%/50V	1	C8
01.54.CS.2.E821N	SMD capacitor	0603-820P NPO±5%/50V	1	C14
01.54.CS.2.E222X	SMD capacitor	0603-222 X7R±10%/50V	3	C11 C17 C18
01.54.CS.2.E472X	SMD capacitor	0603-472 X7R±10%/50V	2	C12 C4
01.54.CS.2.E102X	SMD capacitor	0603-102 X7R±10%/50V	2	C5 C13

01.54.CS.2.E223X	SMD capacitor	0603-223 X7R±10%/50V	1	C7
01.54.CS.2.E104X	SMD capacitor	0603-104 X7R±10%/50V	1	C16
01.54.CS.2.E474Y	SMD capacitor	0603-474 Y5V+80-20%/50V	1	C19
01.54.CS.2.E105Y16V	SMD capacitor	0603-105 Y5V-20+80%/16V	4	C6 C15 C22 C23
01.54.CS.2.E225Y	SMD capacitor	0603-225 Y5V-20+80%/10V	1	C24
01.35.CC.E121010U25VX	SMD ceramic capacitor	C3225X5R1E106 KT	2	C10 C3
01.54.CS.6.E100	SMD capacitor	1808-10P/3KV NPO±5%	2	C2 C9
01.34.CL.D.EKW220U25V O	Electrolyse capacitor	KW-220UF/25V 8*9	2	C1 C21
01.41.D.WS.EUDZ7V5B	Diode	UDZ7V5B(7.5V)	1	D1
01.41.D.PS.E1SS355	Diode	1SS355 SMD	3	D2 D3 D4
01.41.D.PS.EBAV99	Diode	BAV99LT1 SMD	4	CR1 CR2 CR3 CR4
01.42.Q.S.E2N3904	Audion	2N3904 SMD	2	Q3 Q1
01.42.Q.S.E2N3906	Audion	2N3906 SMD	1	Q4
01.42.Q.S.E2N7002	Transistor	2N7002 SMD	1	Q5
01.44.IC.S.EAP4511GM	Transistor	AP4511GM SMD	2	Q2 Q6
01.13.L.R.E114	Transformer	NIA19LES021	2	T1 T2
01.00.YS.TZ.T.E747	Transformer label	Label001	2	label
01.38.FUSE.S.EF1206HI3 000	Fuse	F1206HI-3000 SMD	1	F1
01.38.FUSE.S.E66002	Fuse	0466002.NR	1	F1
01.44.IC.S.E3193	IC	Bit3193 SMD	1	U1
01.40.CON.DPH.E058	Jack	PH-5A	1	CN1
01.40.CON.S80.E001	SMD hi-voltage jack	BHR-2VS	2	CN2 CN3
01.37.PCB.2.E3719C1	Circuit board	Inverter board3719C-V1.0	1	