

SERVICE MANUAL

Model:

FL32xx(9E19 SOLUTION)

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Enter Factory Menu

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

IMPORTANT SAFETY INSTRUCTIONS



This symbol indicates " dangerous voltage " inside the product that presents a risk of electric shock or personal injury.



This symbol indicates important instructions accompanying the product.

Please read this manual carefully before using this product.

- Before connecting the AC power cord to the DC adapter outlet, make sure the voltage designation of the LCD TV corresponds to the local electrical supply . If you are unsure of your power supply , ask your local power company .
- Never insert anything metallic into the cabinet openings of the liquid crystal display LCD TV/monitor; otherwise it may create the danger of electric shock.
- To avoid electric shock, Never touch the inside of the LCD TV/monitor and adapter. Only a qualified technician should open the case of the LCD TV/monitor/adapter.
- Never use your LCD TV/monitor/adapter if the power cord has been damaged . Do not allow anything to rest on the power cord, and keep the cord away from place where people can trip over it .
- Be sure to hold the plug, not the cord, when disconnecting the adapter from an electric socket.
- Openings in the LCD TV/monitor/adapter cabinet are provided for ventilation. To prevent overheating, these openings should not be blocked or covered. Also, avoid using the LCD TV/monitor on a bed, sofa, rug, or other soft surface. Doing so may block the ventilation openings in the bottom of the cabinet. If you put the LCD TV/monitor in a bookcase or some other enclosed space, be sure to provide adequate ventilation.
- Do not expose the LCD TV/monitor to extreme temperature conditions or to extreme humidity conditions.
- The apparatus shall not be exposed to dripping or splashing and that no objects filled with liquids, such as vases, shall be placed on the apparatus.

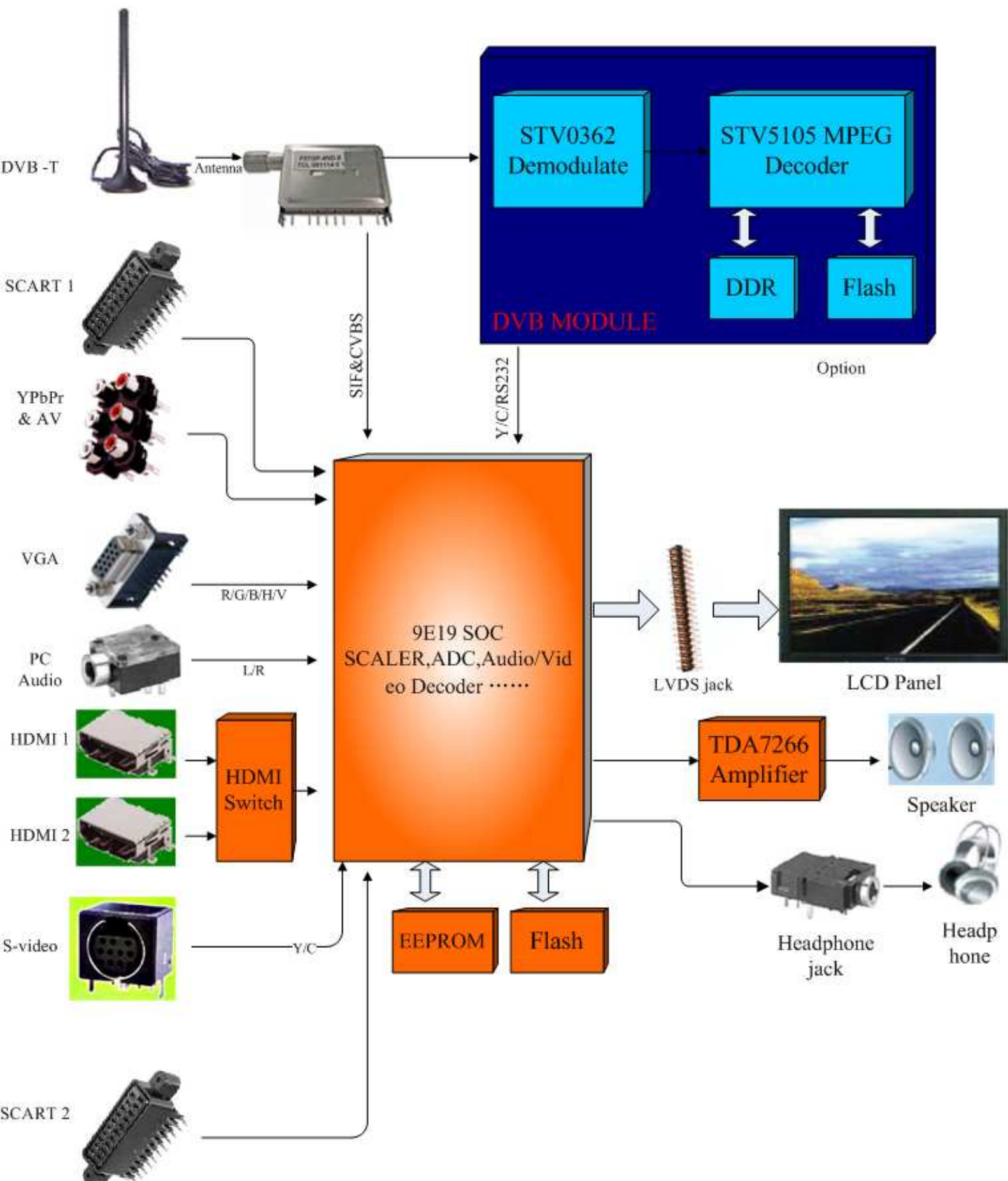
IMPORTANT SAFETY INSTRUCTIONS

- Do not place the LCD TV/monitor on an unstable cart, stand, tripod, bracket, table, or floor where it can fall. It is damaged if dropped, hit or scratched. Do not clean the front with keton-type materials (e.g. Acetone), ethyl alcohol, toluene, ethyl acid, methyl, or chloride—these may damage the panel.
- Locate your DC adapter near an easily accessible AC outlet.
- If your LCD TV/monitor does not operate normally in particular, if there are any unusual sounds or smells coming from it, unplug it immediately and contact an authorized dealer or service center.
- High temperature can cause problems. Don't use your LCD TV/monitor in direct sunlight, and keep it away from heaters, stoves, fireplaces, and other sources of heat.
- Unplug the DC adapter when it is going to be left unused for an extended period of time.
- To reduce the risk of fire or electric shock, and annoying interference, use the recommended accessories only.
- If the LCD TV/monitor is broken, do not try to repair it yourself. Contact qualified service personnel.
- Unplug your DC adapter from the AC outlet before any service.
- Be sure the service technician uses authorized replacement parts or their equivalents. Unauthorized parts may cause fire, electrical shock, or other hazards.
- Following any service or repair, be sure the service technician performs safety checks to certify that your TFT-LCD TV/monitor is in safe operating order.
- The apparatus with CLASS I construction shall be connected to a MAINS socket outlet with a protective earthing connection.

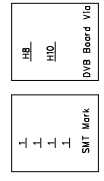
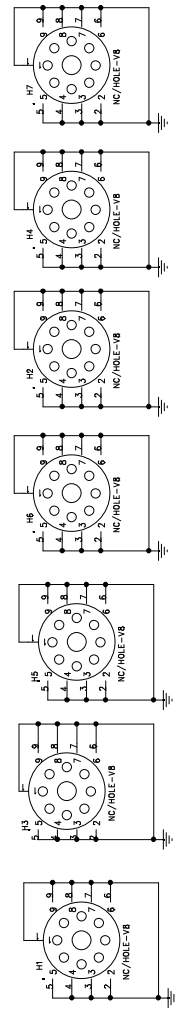
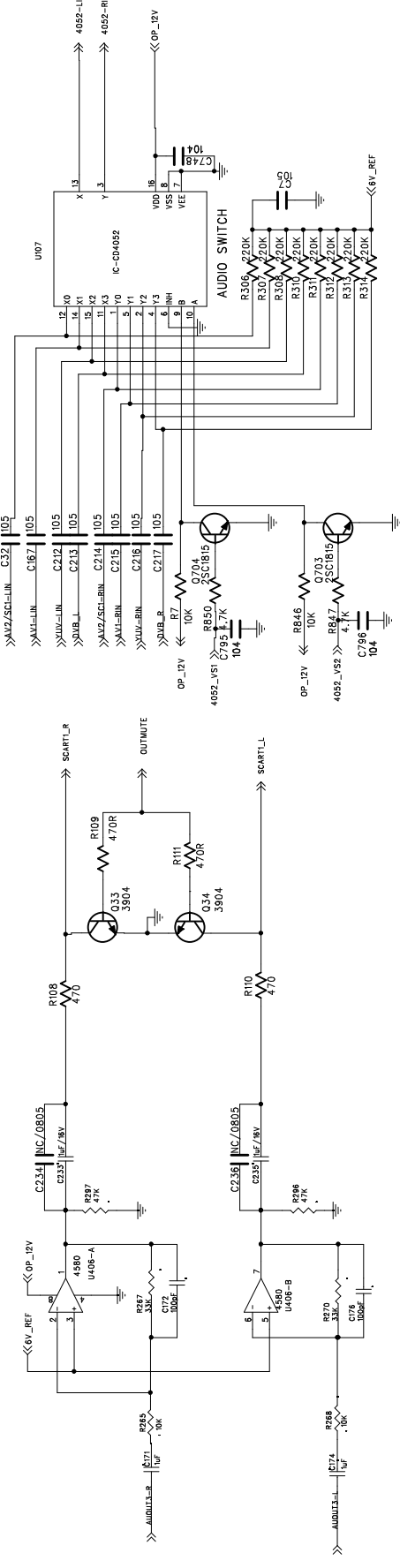
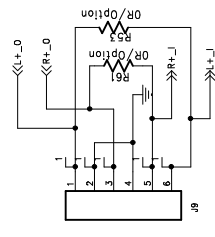
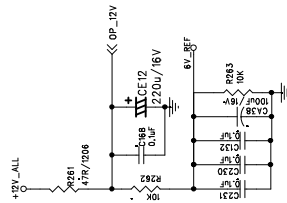
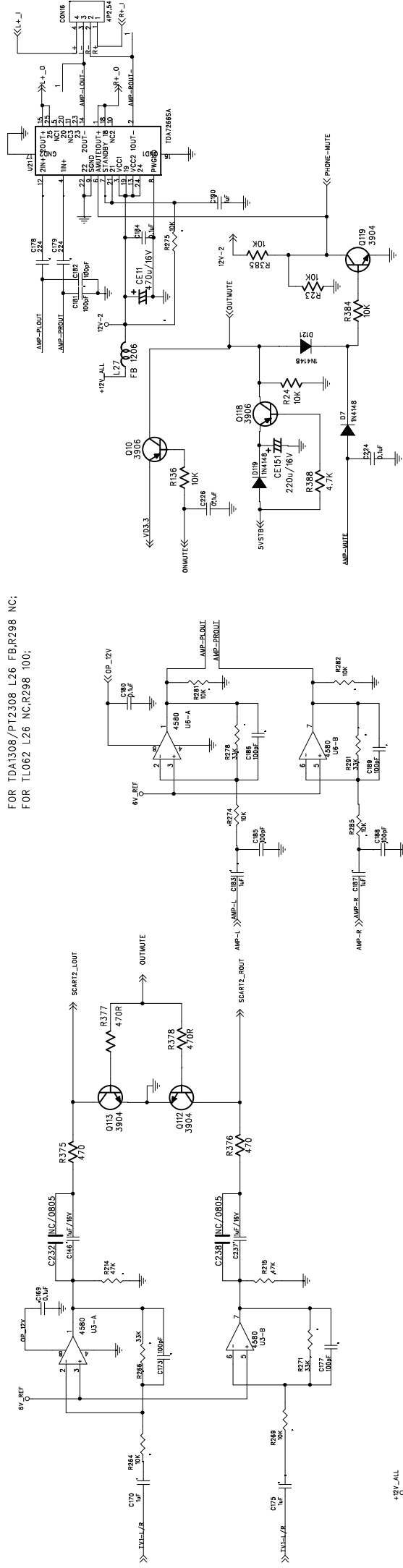
PRODUCT DESCRIPTION OF 32" LCD TV

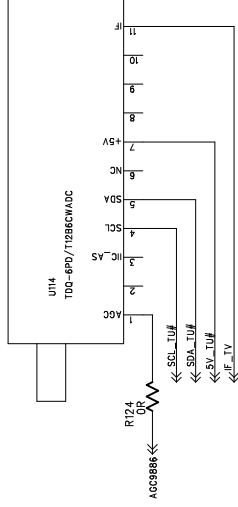
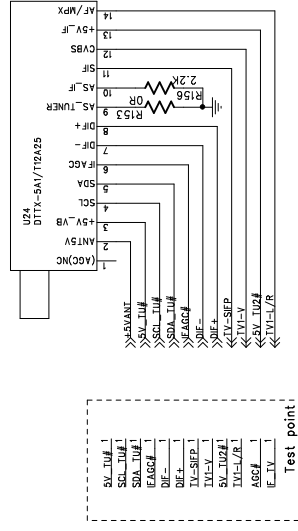
Model No.	32" LCD TV (MST9E19B Solution)
Panel	LGLCDLC320WX1-SLA1 / CMO V320B1 - L06
Face color	White/Dark blue
Screen size	32"
Resolution	1366(H) x 7680(V) pixels
Aspect ratio	16:9
Contrast Ratio	1000:1
Response Time(grey to grey)	10ms
Center Luminance of White	500cd/m ²
Viewing Angle(L/R/U/D)	88/88/88/88(CR≥20)
Power supply	AC:(100-250)V 50/60Hz
Power Consumption	≤150W
Standby Power Consumption	≤1W
Broadcast	PAL/SECAM BG/DK/I SECAM L/L'
Canal Plus	Optional
Tuning system	FST
Antenna impedance	VHF/CATV/UHF 75 Ω unbalanced
Teletext	200 pages
Number of channel	100
Sound	
Nicam/A2	YES
Bass	YES
Treble	YES
Balance	YES
Speakers	2
Audio power	≥2×5W
Connection jack	
PC In (VGA)	D-sub 15Pin × 1
Y/Pb/Pr Input	RCA×3
Video Input	×1
S-video Input	×1
Audio In(For Y/Pb/Pr and Video)	RCA×2
Audio In(For VGA and S-video)	Φ3.5×1
Full Scart	×1
Half Scart	×1
RF	×1
HDMI Input	x2
DVB-T Section (Optional)	
DVB-T Channel Coverage	47MHz---862MHz
Constellation	QPSK,16QAM,64QAM
Transmission Mode	2K,8K
Transport stream	MPEG-2 ISO/IEC 13818
RF Bandwidth	7MHz or 8MHz
Input Rate	Max. 15M/bits
Common interface	Optional
Others	
Last Channel recall	YES
Automatic tuning	YES
Sleep timer	YES
OSD Menu	Multi-language
Comb filter	2D
Mounting interface	Vesa Standard
Standard Accessories	
User Manual	1
Remote control	1
Optional Accessories	
Wall mounting holder	1

BLOCK DIAGRAM OF 9E19 SOLUTION



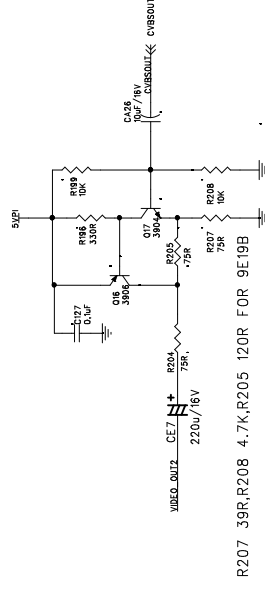
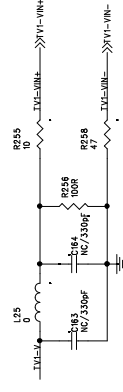
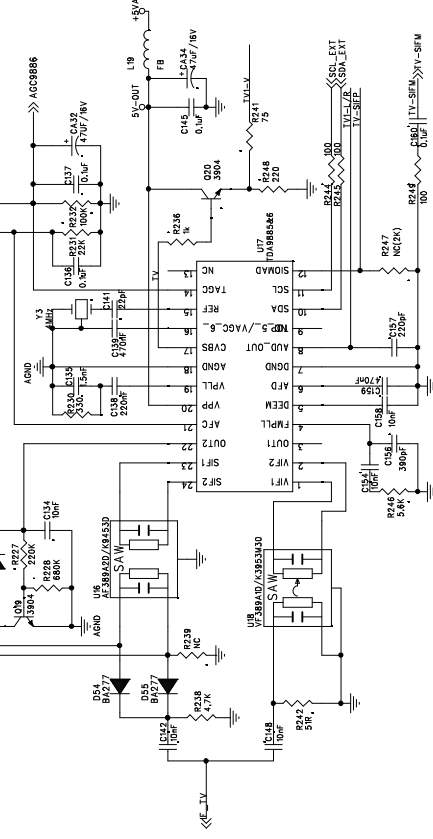
FOR TDA1308/PT2308 L26 FB,R298 NC;
FOR TL062 L26 NC,R298 100;



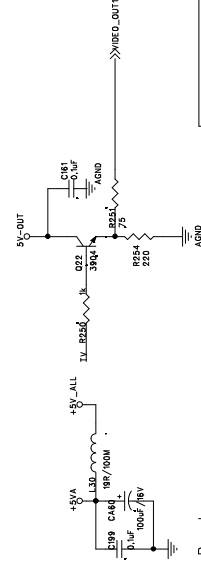


U23 PIN2 connected to PIN1 B/G,DK,I,L
U23 PIN2 connected to GND L'

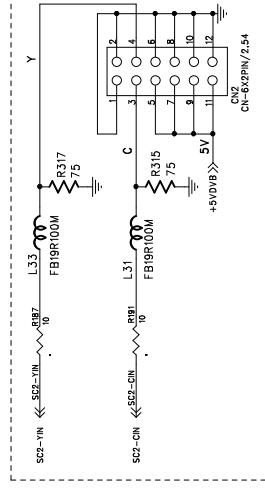
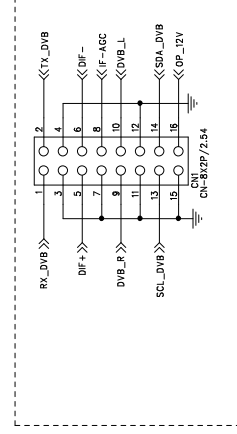
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I2C ADDRESS(R263 NC):
READ is 0X87
WRITE is 0X86
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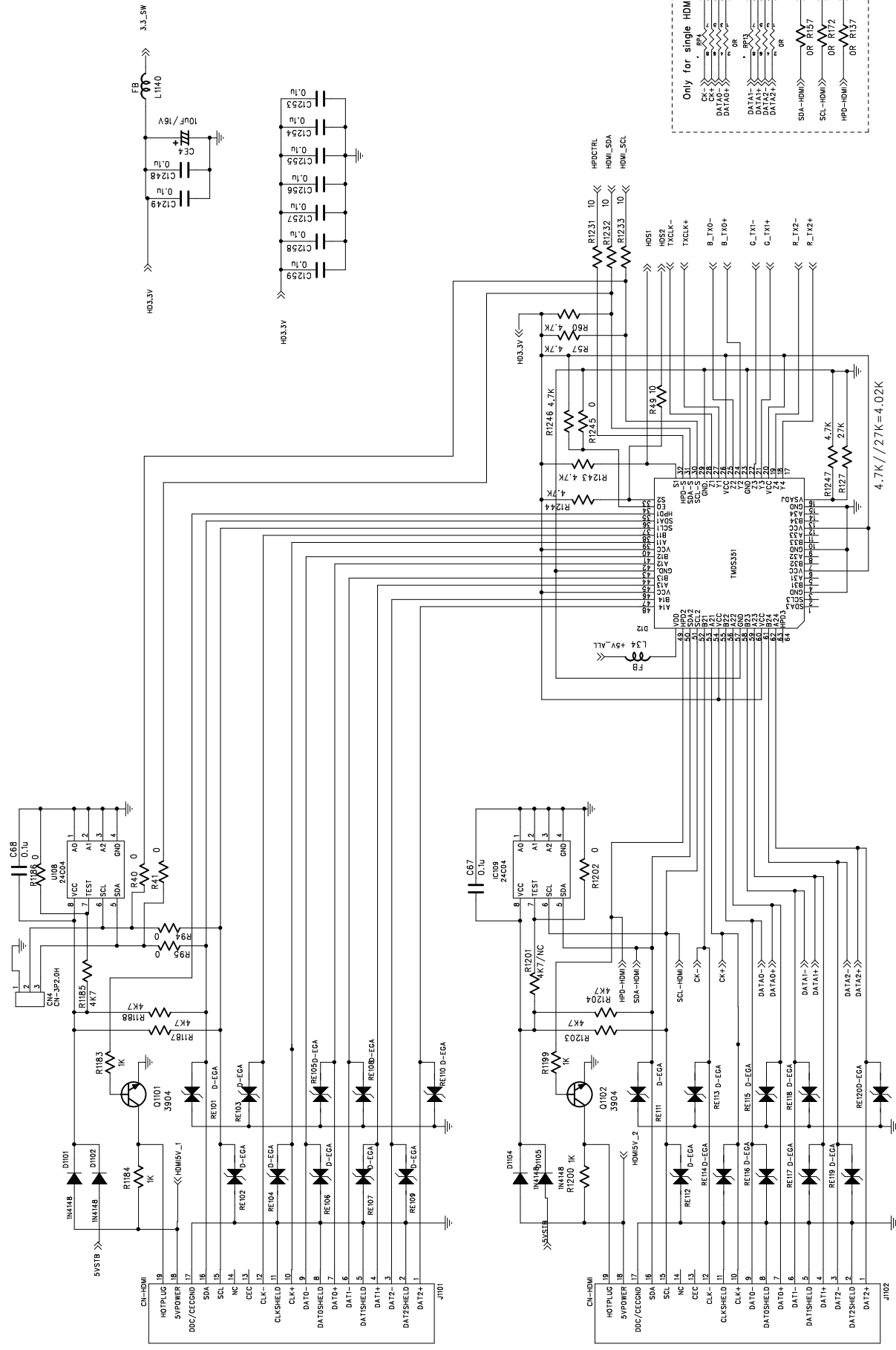


R207 39R.R208 4.7K R205



Panel
VCC=5V,L30=NC,U24=1117-5,0R
L30=FB,U24=NC





Only for single HDMI model

RP4

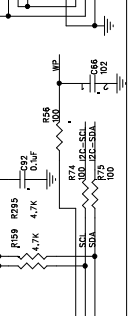
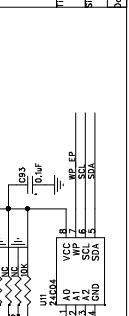
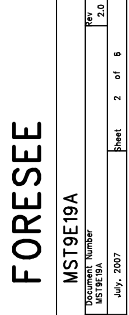
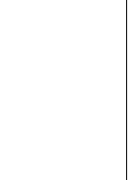
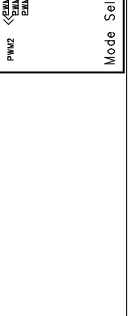
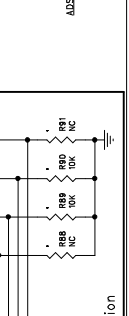
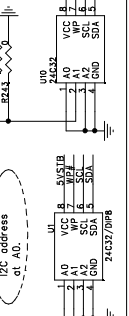
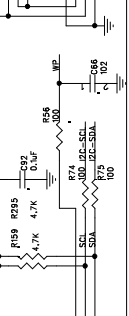
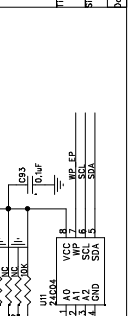
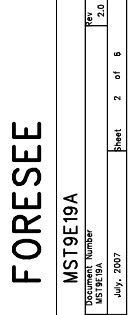
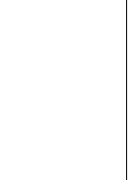
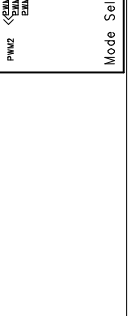
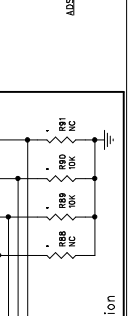
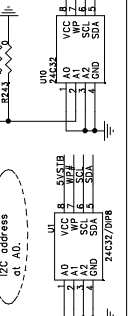
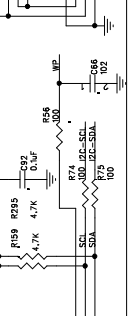
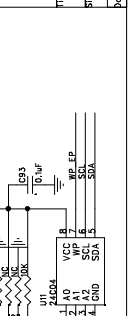
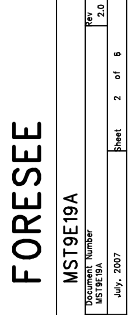
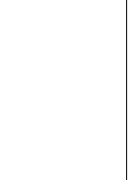
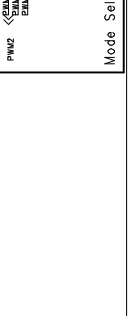
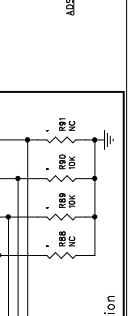
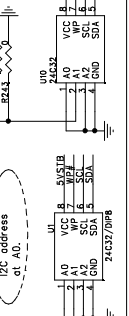
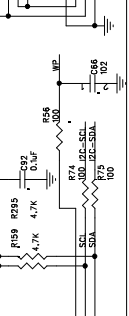
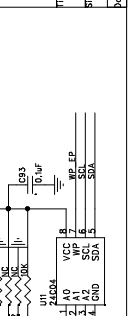
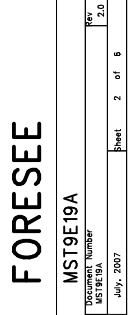
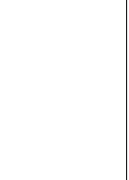
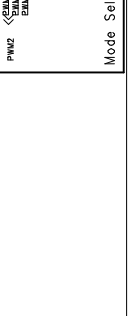
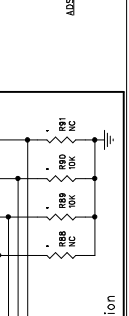
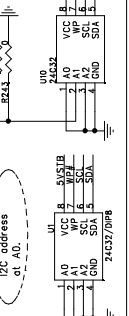
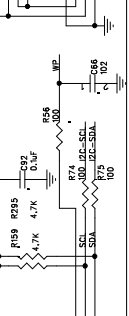
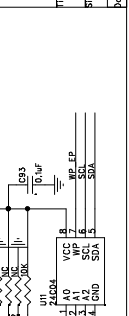
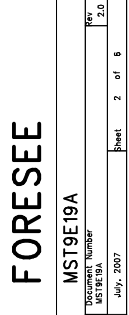
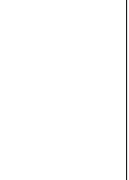
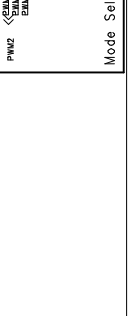
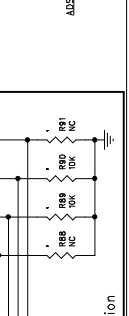
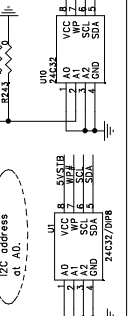
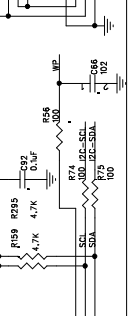
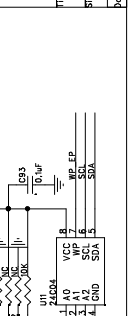
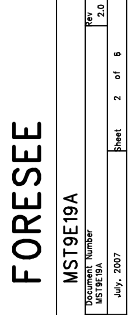
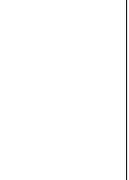
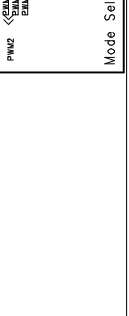
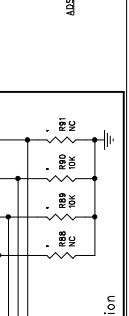
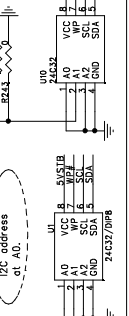
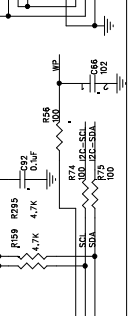
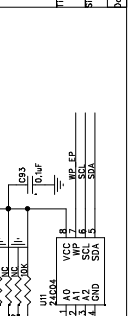
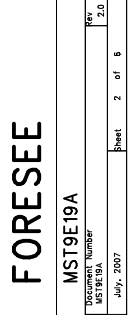
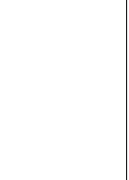
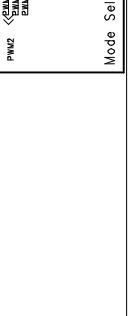
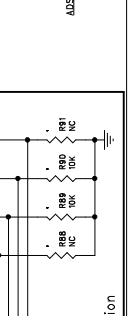
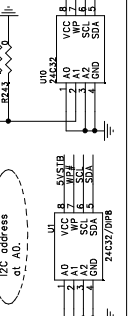
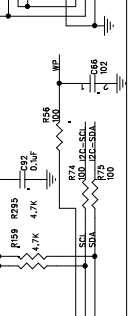
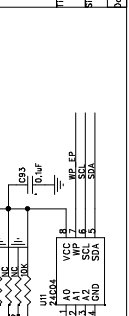
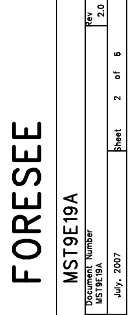
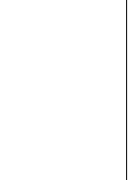
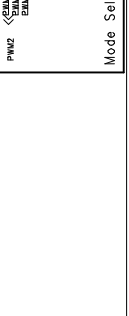
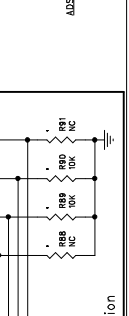
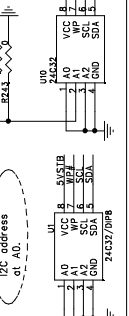
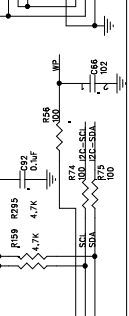
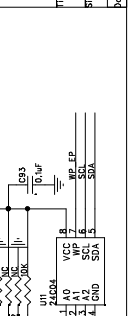
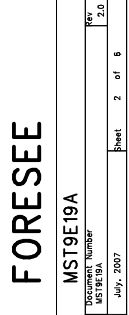
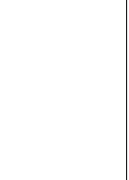
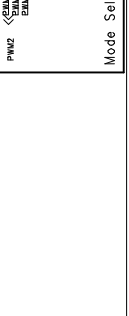
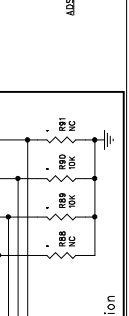
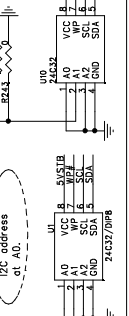
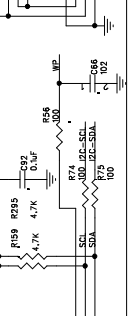
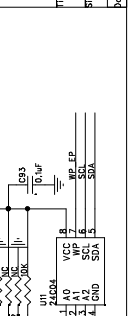
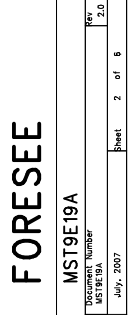
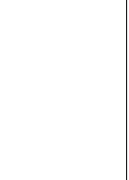
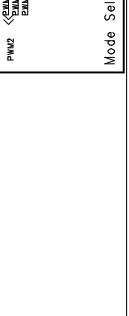
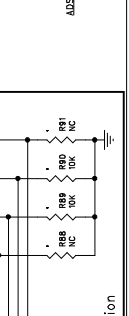
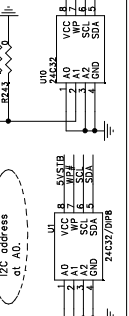
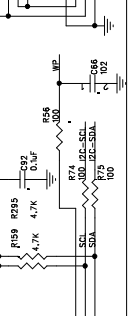
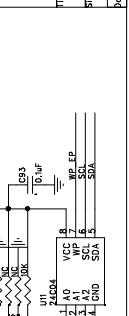
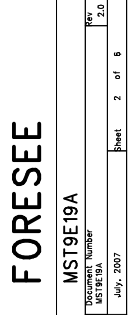
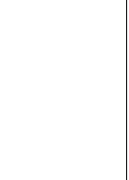
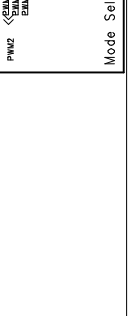
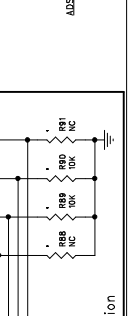
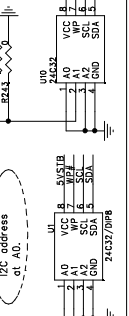
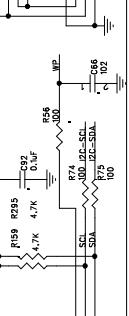
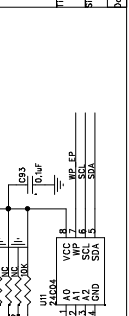
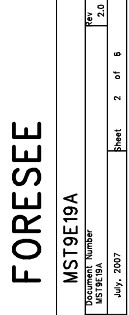
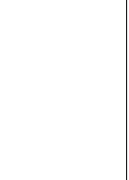
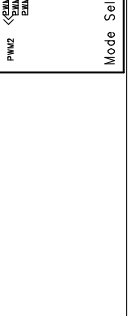
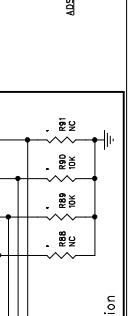
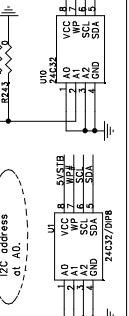
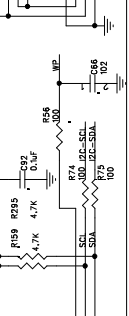
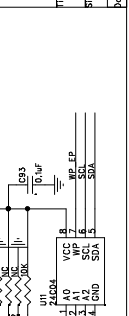
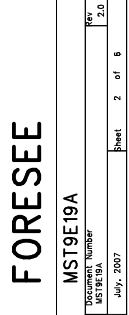
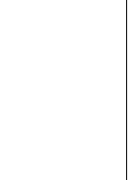
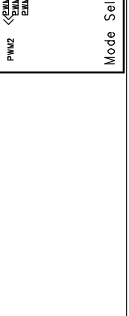
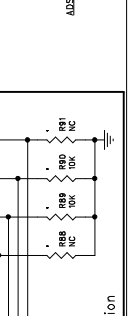
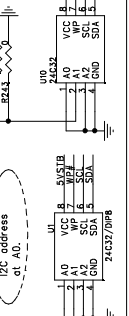
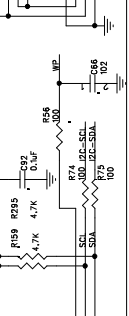
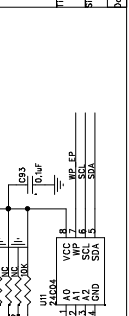
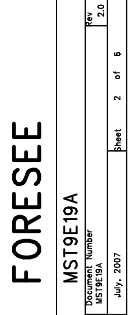
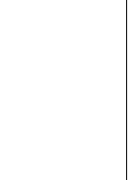
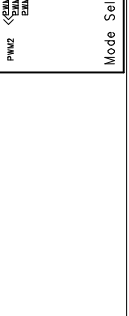
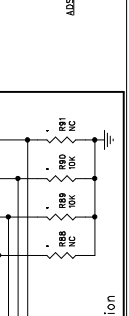
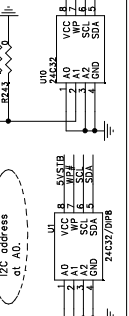
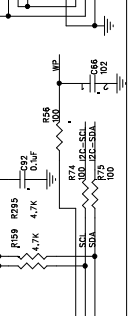
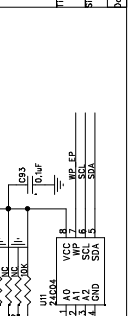
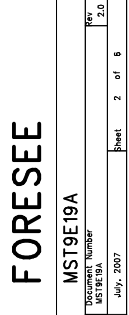
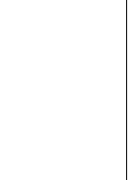
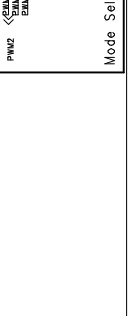
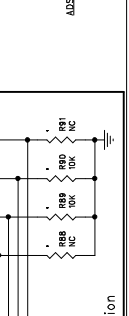
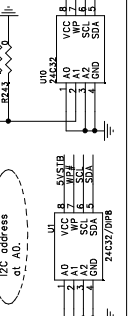
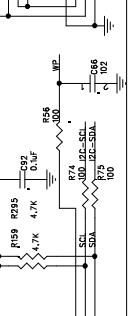
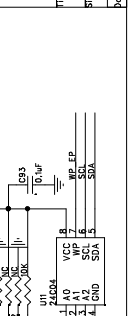
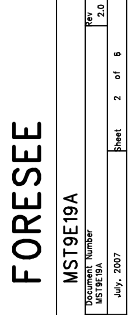
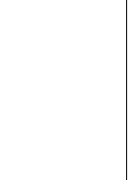
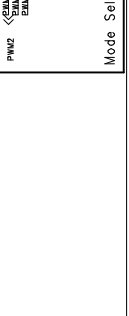
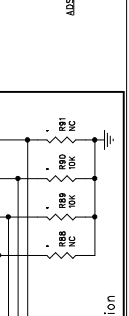
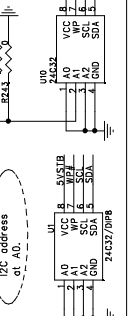
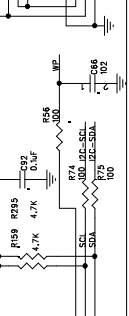
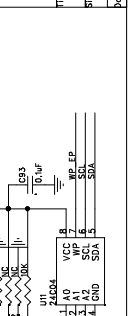
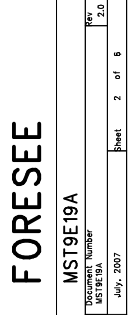
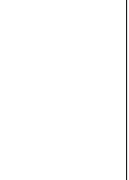
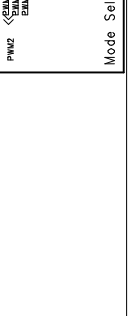
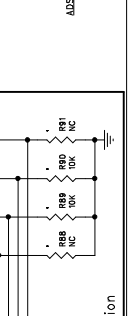
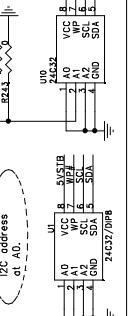
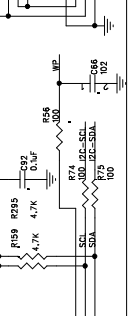
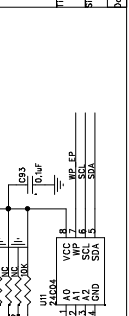
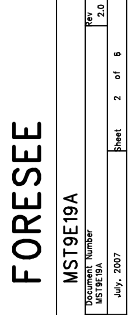
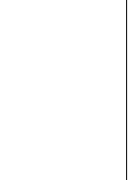
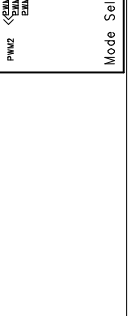
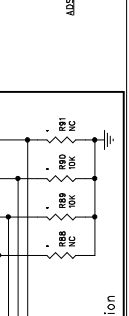
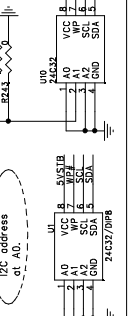
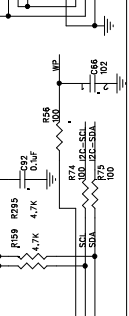
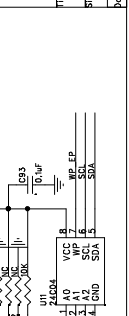
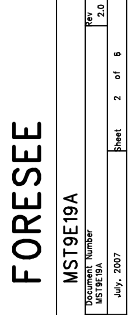
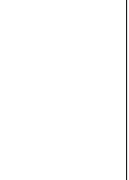
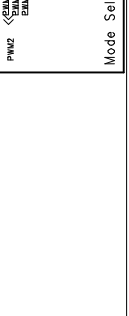
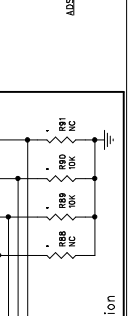
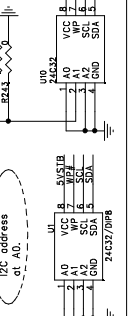
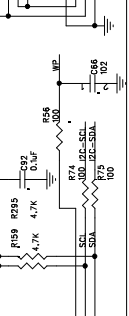
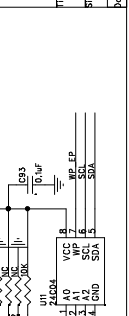
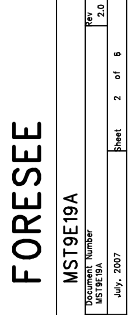
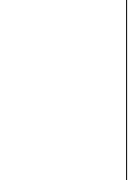
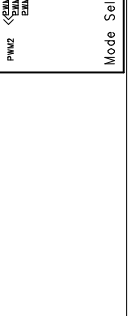
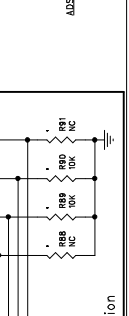
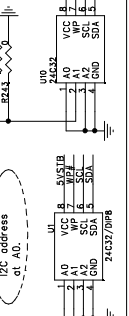
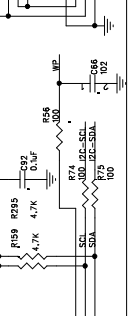
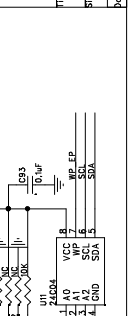
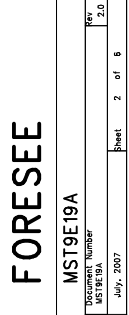
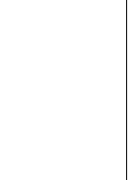
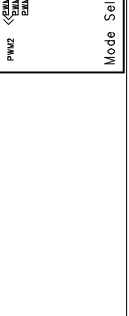
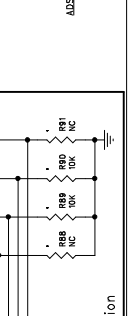
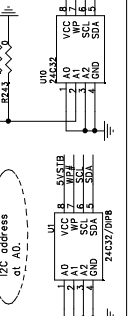
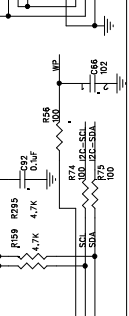
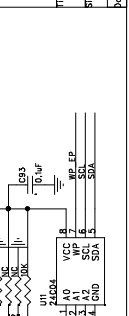
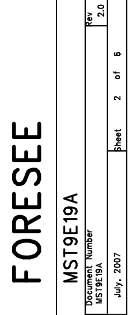
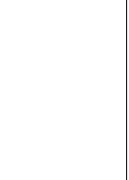
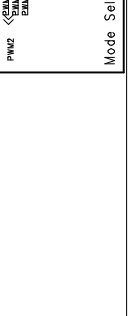
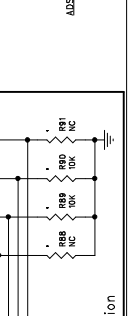
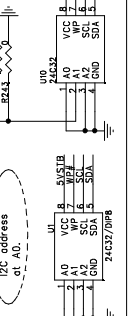
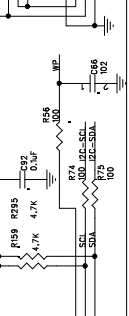
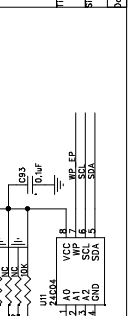
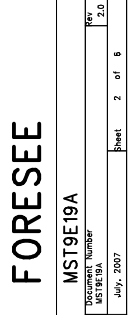
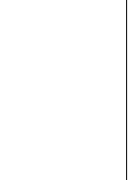
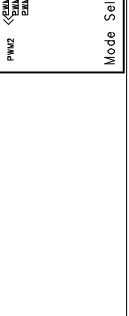
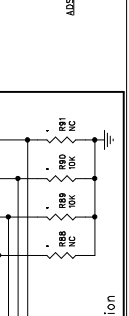
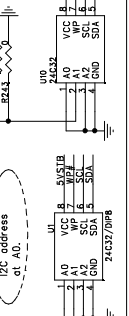
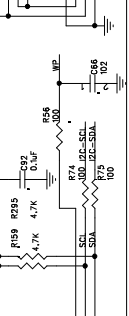
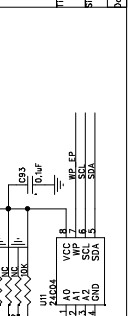
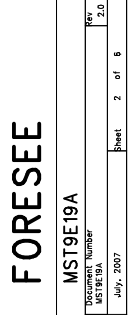
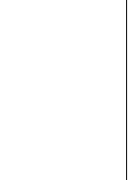
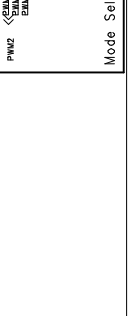
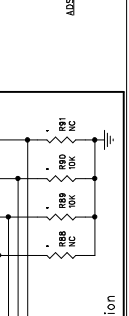
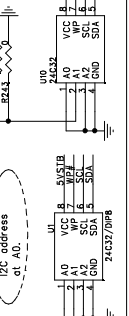
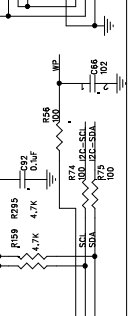
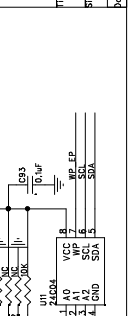
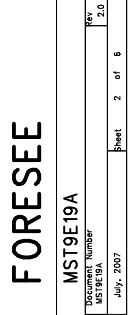
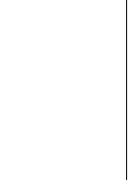
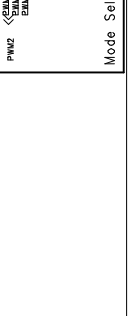
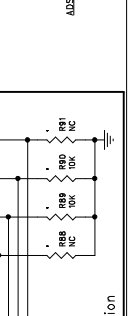
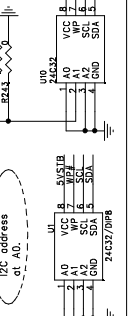
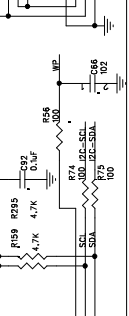
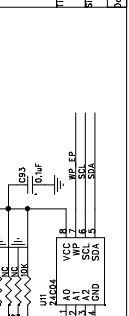
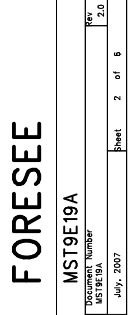
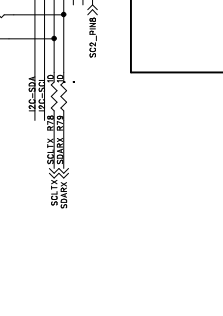
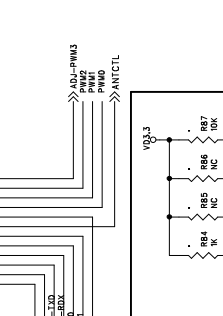
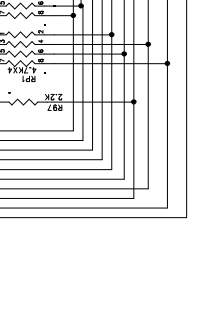
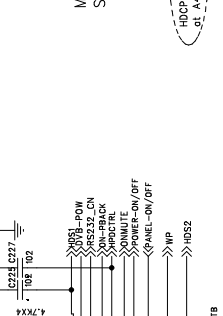
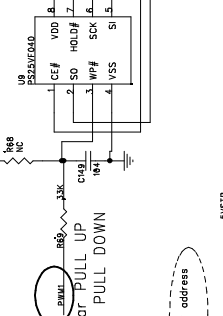
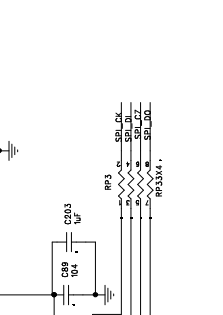
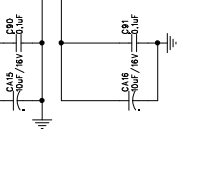
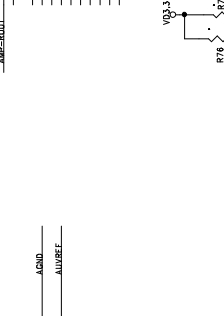
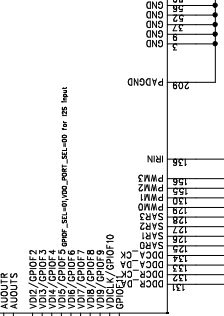
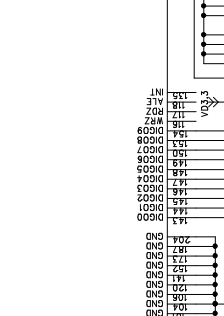
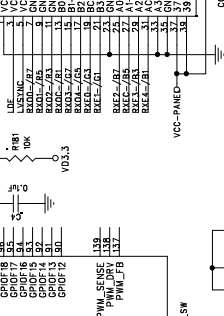
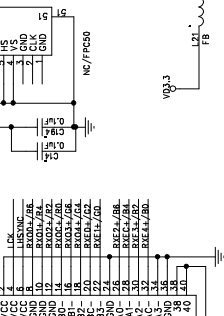
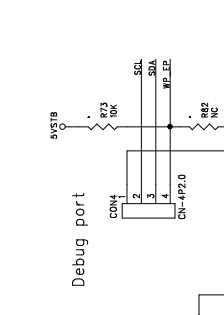
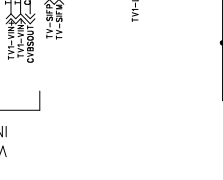
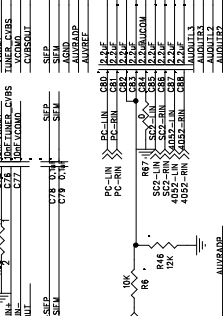
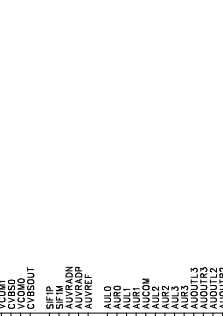
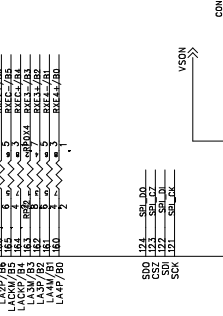
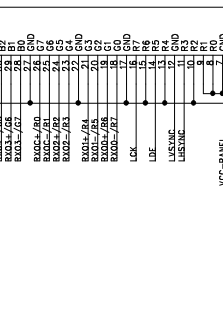
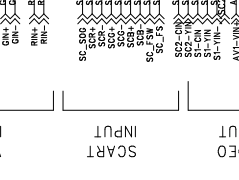
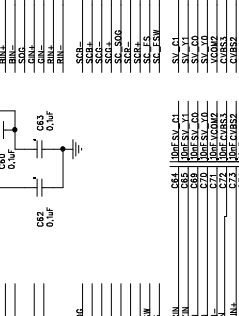
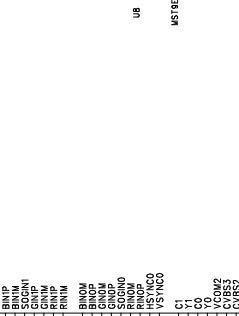
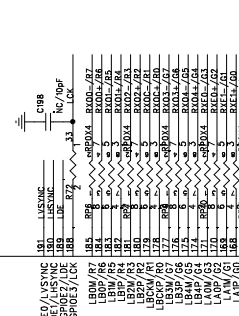
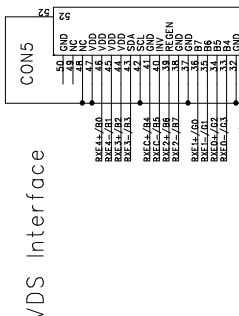
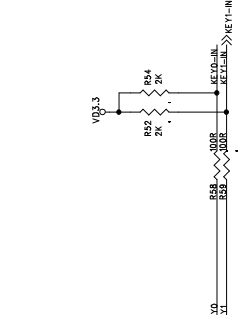
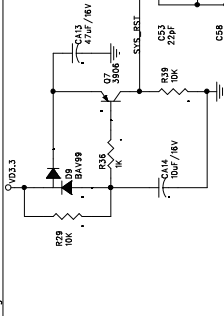
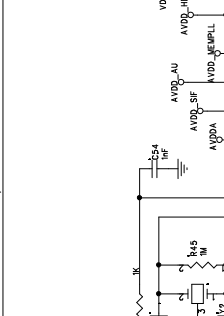
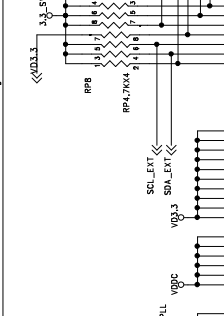
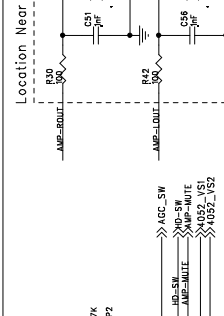
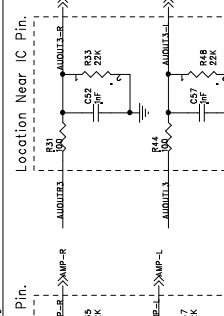
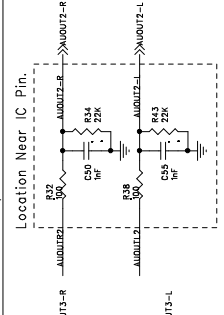
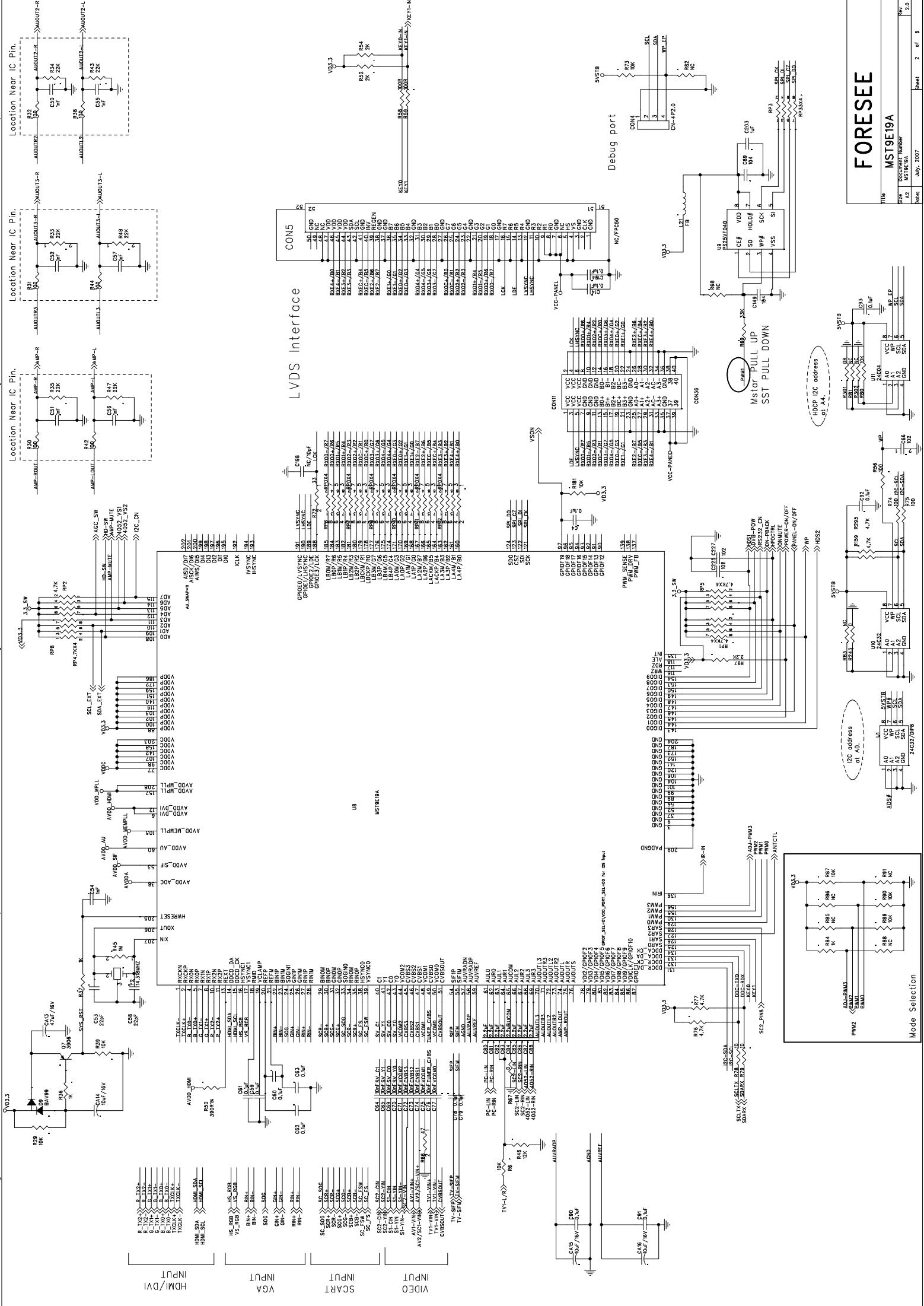
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RP3

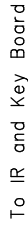
DATA1+ DATA1- DATA2+ DATA2-

RP1

HDMI_SDA HDMI_SCL HDMI_CTL



H: on L: standby



T0 Inverter Board

MST9E19A_Power

PIN DESCRIPTION

MCU Interface

Pin Name	Pin Type	Function	Pin
HWRESET	Schmitt Trigger Input w/ 5V-tolerant	Hardware Reset, active high	205
ALE	I/O w/ 5V-tolerant	MCU Bus ALE, active high / General Purpose Input/Output (GPIOC[10])	118
RDZ	I/O w/ 5V-tolerant	MCU Bus RDZ, active low / General Purpose Input/Output (GPIOC[9])	117
WRZ	I/O w/ 5V-tolerant	MCU Bus WDZ, active low / General Purpose Input/Output (GPIOC[8])	116
INT	I/O w/ 5V-tolerant	MCU Bus Interrupt; 4mA driving strength / General Purpose Output (GPIOD[12])	135
AD[7:0]	I/O w/ 5V-tolerant	8051 bus AD[7:0]; 4mA driving strength / External Flash/RAM Data Bus (FLSHD[7:0]) / General Purpose Input/Output (GPIOC[7:0])	115-108

Analog Interface

Pin Name	Pin Type	Function	Pin
RMID		Mid-Scale Voltage Bypass	18
VCLAMP		CVBS/YC Mode Clamp Voltage Bypass	19
REFP		Internal ADC Top De-coupling Pin	20
REFM		Internal ADC Bottom De-coupling Pin	21
REXT	Analog Input	External Resister 390 ohm to AVDD_DVI	13
HSYNC0	Schmitt Trigger Input w/ 5V-tolerant	Analog HSYNC Input from Channel 0 / Function Select Switch Input from Channel 0 (FSSW0)	38
VSNC0	Schmitt Trigger Input w/ 5V-tolerant	Analog VSYNC Input from Channel 0 / Fast Blanking Input from Channel 0 (FBLK0)	39
BIN0M	Analog Input	Reference Ground for Analog Blue Input from Channel 0	29
BIN0P	Analog Input	Analog Blue Input from Channel 0	30
GIN0M	Analog Input	Reference Ground for Analog Green Input from Channel 0	31
GIN0P	Analog Input	Analog Green Input from Channel 0	32
SOGINO	Analog Input	Sync On Green Input from Channel 0	33
RIN0M	Analog Input	Reference Ground for Analog Red Input from Channel 0	34
RIN0P	Analog Input	Analog Red Input from Channel 0	35
HSYNC1	Schmitt Trigger Input	Analog HSYNC Input from Channel 1 /	16

Pin Name	Pin Type	Function	Pin
	w/ 5V-tolerant	Function Select Switch Input from Channel 1 (FSSW1)	
/VSYNC1	Schmitt Trigger Input w/ 5V-tolerant	Analog VSYNC Input from Channel 1 / Fast Blanking Input from Channel 1 (FBLK1)	17
BIN1M	Analog Input	Reference Ground for Analog Blue Input from Channel 1	23
BIN1P	Analog Input	Analog Blue Input from Channel 1	22
SOGIN1	Analog Input	Sync On Green Input from Channel 1	24
GIN1M	Analog Input	Reference Ground for Analog Green Input from Channel 1	26
GIN1P	Analog Input	Analog Green Input from Channel 1	25
RIN1M	Analog Input	Reference Ground for Analog Red Input from Channel 1	28
RIN1P	Analog Input	Analog Red Input from Channel 1	27

Analog Video Input/Output Interface

Pin Name	Pin Type	Function	Pin
C1	Analog Input	Chroma Video Input 1 / CVBS Input Channel 7 (CVBS7)	40
Y1	Analog Input	Luma Video Input 1 / CVBS Input Channel 5 (CVBS5)	41
C0	Analog Input	Chroma Video Input 0 / CVBS Input Channel 6 (CVBS6)	42
Y0	Analog Input	Luma Video Input 0 / CVBS Input Channel 4 (CVBS4)	43
VCOM2	Analog Input	YC Video Input Reference Ground	44
VCOM1	Analog Input	CVBS1, CVBS2, CVBS3 Video Input Reference Ground	48
VCOM0	Analog Input	CVBS0 Video Input Reference Ground	50
CVBS3	Analog Input	CVBS (Composite) Video Input Channel 3	45
CVBS2	Analog Input	CVBS (Composite) Video Input Channel 2	46
CVBS1	Analog Input	CVBS (Composite) Video Input Channel 1	47
CVBS0	Analog Input	CVBS (Composite) Video Input Channel 0	49
CVBSOUT	Analog Output	CVBS (Composite) Video Output	51

Analog Audio Input/Output Interface

Pin Name	Pin Type	Function	Pin
SIF1M	Analog Input	Reference Ground for SIF Audio Input	55
SIF1P	Analog Input	SIF Audio Input	54
AUVRADN		Negative Reference Ground for Audio ADC	57

Pin Name	Pin Type	Function	Pin
AUVRADP		Positive Reference Voltage for Audio ADC	58
AUVREF		Reference Voltage for Audio Common Mode	59
AUL0	Analog Input	Audio Line Input Left Channel 0	61
AUR0	Analog Input	Audio Line Input Right Channel 0	62
AUL1	Analog Input	Audio Line Input Left Channel 1	63
AUR1	Analog Input	Audio Line Input Right Channel 1	64
AUCOM	Analog Input	Reference Ground for Audio Line Input	65
AUL2	Analog Input	Audio Line Input Left Channel 2	66
AUR2	Analog Input	Audio Line Input Right Channel 2	67
AUL3	Analog Input	Audio Line Input Left Channel 3	68
AUR3	Analog Input	Audio Line Input Right Channel 3	69
AUOUTL3	Analog Output	Main Audio Output Left Channel 3	70
AUOUTR3	Analog Output	Main Audio Output Right Channel 3	71
AUOUTL2	Analog Output	Main Audio Output Left Channel 2	72
AUOUTR2	Analog Output	Main Audio Output Right Channel 2	73
AUOUTL	Analog Output	Main Audio Output Left Channel	74
AUOUTR	Analog Output	Main Audio Output Right Channel	75
AUOUTS	Analog Output	Main Audio Sub-Woofer Channel	76

DVI/HDMI Interface

Pin Name	Pin Type	Function	Pin
RX0N	Analog Input	DVI/HDMI Channel 0 Negative Data Input	4
RX0P	Analog Input	DVI/HDMI Channel 0 Positive Data Input	5
RX1N	Analog Input	DVI/HDMI Channel 1 Negative Data Input	7
RX1P	Analog Input	DVI/HDMI Channel 1 Positive Data Input	8
RX2N	Analog Input	DVI/HDMI Channel 2 Negative Data Input	10
RX2P	Analog Input	DVI/HDMI Channel 2 Positive Data Input	11
RXCKN	Analog Input	DVI/HDMI Negative Clock Input	1
RXCKP	Analog Input	DVI/HDMI Positive Clock Input	2

LVDS Interface ^{Note 1}

Pin Name	Pin Type	Function	Pin
LVA0M	Output	LVDS A-Link Channel 0 Negative Data Output	171
LVA0P	Output	LVDS A-Link Channel 0 Positive Data Output	170
LVA1M	Output	LVDS A-Link Channel 1 Negative Data Output	169

Pin Name	Pin Type	Function	Pin
LVA1P	Output	LVDS A-Link Channel 1 Positive Data Output	168
LVA2M	Output	LVDS A-Link Channel 2 Negative Data Output	167
LVA2P	Output	LVDS A-Link Channel 2 Positive Data Output	166
LVA3M	Output	LVDS A-Link Channel 3 Negative Data Output	163
LVA3P	Output	LVDS A-Link Channel 3 Positive Data Output	162
LVA4M	Output	LVDS A-Link Channel 3 Negative Data Output	161
LVA4P	Output	LVDS A-Link Channel 3 Positive Data Output	160
LVACKM	Output	LVDS A-Link Negative Clock Output	165
LVACKP	Output	LVDS A-Link Positive Clock Output	164
LVB0M	Output	LVDS B-Link Channel 0 Negative Data Output	185
LVB0P	Output	LVDS B-Link Channel 0 Positive Data Output	184
LVB1M	Output	LVDS B-Link Channel 1 Negative Data Output	183
LVB1P	Output	LVDS B-Link Channel 1 Positive Data Output	182
LVB2M	Output	LVDS B-Link Channel 2 Negative Data Output	181
LVB2P	Output	LVDS B-Link Channel 2 Positive Data Output	180
LVB3M	Output	LVDS B-Link Channel 3 Negative Data Output	177
LVB3P	Output	LVDS B-Link Channel 3 Positive Data Output	176
LVB4M	Output	LVDS B-Link Channel 3 Negative Data Output	175
LVB4P	Output	LVDS B-Link Channel 3 Positive Data Output	174
LVBCKM	Output	LVDS B-Link Negative Clock Output	179
LVBCKP	Output	LVDS B-Link Positive Clock Output	178

Note 1: Please see the Output Type vs. Pin Configuration at the end of Pin Description section.

TTL Interface ^{Note 1}

Pin Name	Pin Type	Function	Pin
LCK	Output w/ Pull-down Resistor	LCD Output Clock; 6mA driving strength	188
LDE	Output w/ Pull-down Resistor	LCD Output Data Enable; 6mA driving strength	189
LHSYNC	Output w/ Pull-down Resistor	LCD HSYNC; 6mA driving strength	190
LVSYSNC	Output w/ Pull-down Resistor	LCD VSYNC; 6mA driving strength	191
RA[7:0]	Output w/ Pull-down Resistor	Port A Red Channel Bit[7:0]; 6mA driving strength	185-178
GA[7:0]	Output w/ Pull-down Resistor	Port A Green Channel Bit[7:0]; 6mA driving	177-174,

Pin Name	Pin Type	Function	Pin
	Resistor	strength	171-168
BA[7:0]	Output w/ Pull-down Resistor	Port A Blue Channel Bit[7:0]; 6mA driving strength	167-160

Note 1: Please see the Output Type vs. Pin Configuration at the end of Pin Description section.

Serial Flash Interface

Pin Name	Pin Type	Function	Pin
SCK	I/O w/ 5V-tolerant	SPI Flash Serial Clock / General Purpose Input/Output (GPIO[14])	121
SDI	I/O w/ 5V-tolerant	SPI Flash Serial Data Input (Output Pin) / General Purpose Input/Output (GPIO[15])	122
CSZ	I/O w/ 5V-tolerant	SPI Flash Chip select / General Purpose Input/Output (GPIO[16])	123
SDO	I/O w/ 5V-tolerant	SPI Flash Serial Data Output (Input Pin) / General Purpose Input/Output (GPIO[17])	124

GPIO Interface ^{Note 2}

Pin Name	Pin Type	Function	Pin
SAR3	I/O (not 5V-tolerant)	SAR Low Speed ADC Input 3 / General Purpose Input/Output (GPIO[3])	128
SAR2	I/O (not 5V-tolerant)	SAR Low Speed ADC Input 2 / General Purpose Input/Output (GPIO[2])	127
SAR1	I/O (not 5V-tolerant)	SAR Low Speed ADC Input 1 / General Purpose Input/Output (GPIO[1])	126
SAR0	I/O (not 5V-tolerant)	SAR Low Speed ADC Input 0 / General Purpose Input/Output (GPIO[0])	125
PWM3	I/O w/ 5V-Tolerant	Pulse Width Modulation Output 3; 4mA driving strength / General Purpose Output (GPIO[7])	156
PWM2	I/O w/ 5V-Tolerant	Pulse Width Modulation Output 2; 4mA driving strength / General Purpose Output (GPIO[6])	155
PWM1	I/O w/ 5V-Tolerant	Pulse Width Modulation Output 1; 4mA driving strength / General Purpose Output (GPIO[5])	130
PWM0	I/O w/ 5V-Tolerant	Pulse Width Modulation Output 0; 4mA driving strength / General Purpose Output (GPIO[4])	129

Pin Name	Pin Type	Function	Pin
IRIN	I/O w/ 5V-tolerant	IR Receiver Input / General Purpose Output (GPIOD[13])	136
DIGO[9:6]	I/O w/ 5V-tolerant	General Purpose Input/Output (GPIOB[9:6])	154, 153, 150, 149
DIGO[5]	I/O w/ 5V-tolerant	General Purpose Input/Output (GPIOB[5]) / Universal Asynchronous Transmitter 1 (UART1_TX)	148
DIGO[4]	I/O w/ 5V-tolerant	General Purpose Input/Output (GPIOB[4]) / Universal Asynchronous Receiver 1 (UART1_RX)	147
DIGO[3]	I/O w/ 5V-tolerant	General Purpose Input/Output (GPIOB[3]) / Programmable as Audio Serial Data Output 0 (AU2SD0)	146
DIGO[2]	I/O w/ 5V-tolerant	General Purpose Input/Output (GPIOB[2]) / Programmable as Audio Serial Clock Output (AU2SCK)	145
DIGO[1]	I/O w/ 5V-tolerant	General Purpose Input/Output (GPIOB[1]) / Programmable as Word Select Output (AU2WS)	144
DIGO[0]	I/O w/ 5V-tolerant	General Purpose Input/Output (GPIOB[0]) / Programmable as Audio Master Clock Output (AU2MCKO)	143
ICLK	I/O w/ 5V-tolerant	Digital Input Clock / Universal Asynchronous Receiver 0 (UART0_RX) / General Purpose Input/Output (GPIOA[24])	192
IHSYNC	I/O w/ 5V-tolerant	Digital Input HSYNC / Universal Asynchronous Receiver 1 (UART1_RX) / General Purpose Input/Output (GPIOA[26])	193
IVSYNC	I/O w/ 5V-tolerant	Digital Input VSYNC / Universal Asynchronous Transmitter 1 (UART1_TX) / General Purpose Input/Output (GPIOA[27])	194
DI[7:0]	I/O w/ 5V-tolerant	Video Digital Input Port / Digital Audio Port / General Purpose Input/Output (GPIOA[15:0])	202-195
GPIOE[3:0]	I/O w/ 5V-tolerant	General Purpose Input/Output (GPIOE[3:0])	188-191
GPIOF[19:2]	I/O w/ 5V-tolerant	General Purpose Input/Output (GPIOF[2:19])	97-90, 87-78

Note 2: Please see Pin Configuration vs. Function at the end of Pin Description section.

PWM Regulator Interface

Pin Name	Pin Type	Function	Pin
PWM_FB	Analog Input	Step-down PWM Feedback	137
PWM_DRV	I/O	Step-down PWM Drive	138

Pin Name	Pin Type	Function	Pin
PWM_SENSE	Analog Input	Step-down PWM Sense	139

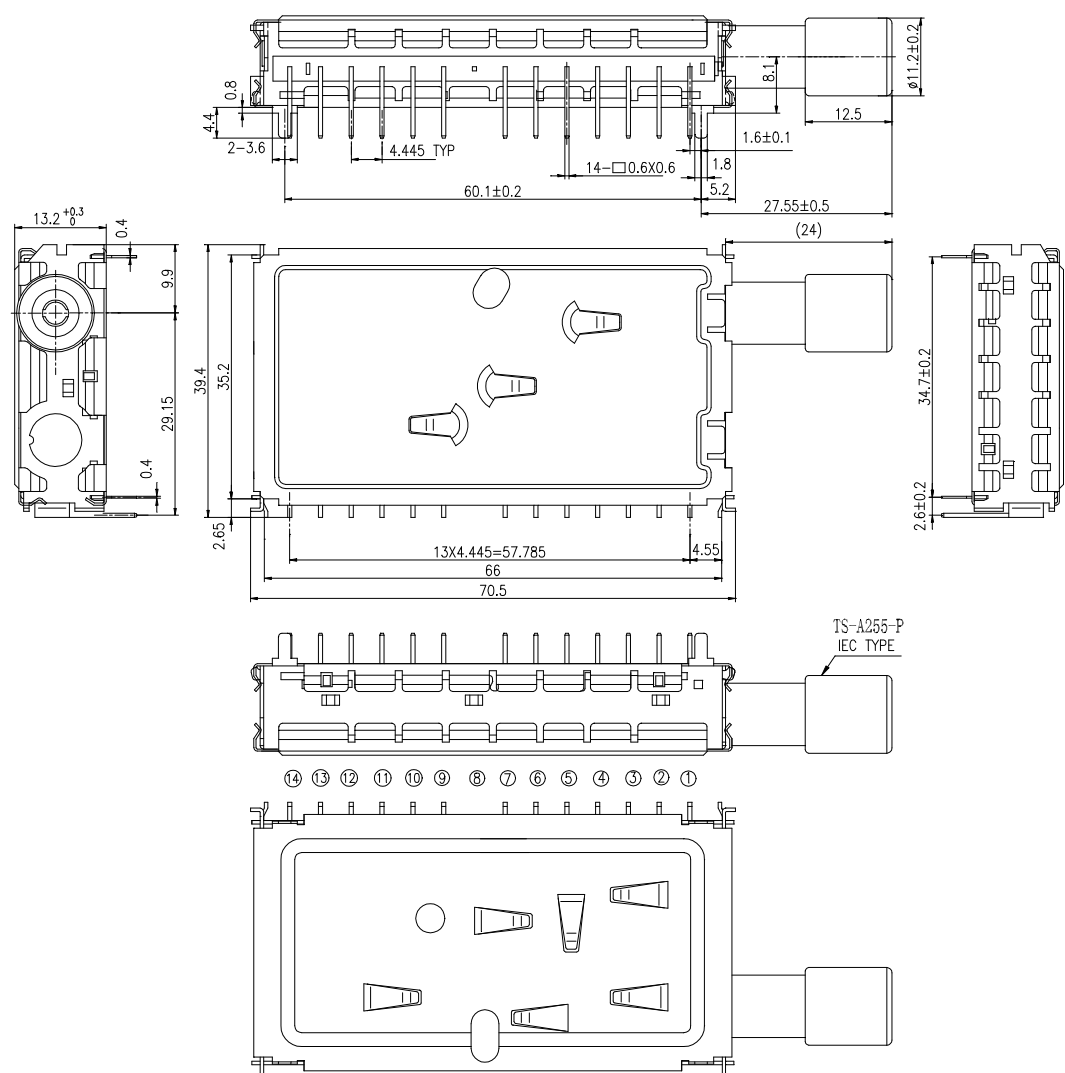
Misc. Interface

Pin Name	Pin Type	Function	Pin
DDCD_DA	I/O w/ 5V-tolerant	HDCP Serial Bus Data / DDC Data of DVI Port	14
DDCD_CLK	Input w/ 5V-tolerant	HDCP Serial Bus Clock / DDC Clock of DVI Port	15
DDCA_CLK	I/O w/ 5V-tolerant	DDC Clock for Analog port / Universal Asynchronous Receiver 0 (UART0_RX)/ General Purpose Output (GPIO[11])	134
DDCA_DA	I/O w/ 5V-tolerant	DDC Data for Analog port / Universal Asynchronous Transmitter 0 (UART0_TX) / General Purpose Output (GPIO[10])	133
DDCR_CLK	I/O w/ 5V-tolerant	DDC Clock for ROM / General Purpose Output (GPIO[9])	132
DDCR_DA	I/O w/ 5V-tolerant	DDC Data for ROM / General Purpose Output (GPIO[8])	131
XIN	Crystal Oscillator Input	Crystal Oscillator Input	207
XOUT	Crystal Oscillator Output	Crystal Oscillator Output	206

Power Pins

Pin Name	Pin Type	Function	Pin
AVDD_DVI	3.3V Power	DVI Power	6, 12
AVDD_ADC	3.3V Power	ADC Power	36
AVDD_SIF	3.3V Power	SIF Power	53
AVDD_AU	3.3V Power	Audio Power	60
AVDD_MEMPLL	3.3V Power	PLL Power	105
AVDD_MPLL	3.3V Power	PLL Power	157, 208
VDDP	3.3V Power	Digital Output Power	88, 100, 102, 103, 119, 140, 151, 159, 172, 186
VDDC	1.8V Power	Digital Core Power	77, 98, 107, 142, 158, 203
GND	Ground	Ground	3, 9, 37, 52, 56, 89, 99, 101, 104, 106, 120, 141, 152, 173, 187, 204

Dimension Diagram



Terminals Name

Pin No	Pin Name	Description
1	NC	-----
2	BT	OPEN
3	VCC2	5.0V (MAX 150mA)
4	SCL	-----
5	SDA	-----
6	AS	-----
7	AFC	-----
8	NC	-----
9	NC	-----
10	NC	-----
11	2nd SIF Output	-----
12	Video Output	-----
13	VCC3	5.0V (MAX 170mA)
14	Audio Output	

Low On-Resistance Wideband/Video Quad 2-Channel Mux/DeMux

Features

- High-performance solution to switch between video sources
- Wide bandwidth: 200 MHz
- Low On-Resistance: 3Ω
- Low crosstalk at 10 MHz: -58dB
- Ultra-low quiescent power ($0.1\mu\text{A}$ typical)
- Single supply operation: $+5.0\text{V}$
- Fast switching: 10ns
- High-current output: 100mA
- Packaging (Pb-free & Green Available):
 - 16-pin 300-mil wide plastic SOIC (S)
 - 16-pin 150-mil wide plastic SOIC (W)
 - 16-pin 150-mil wide plastic QSOP (Q)

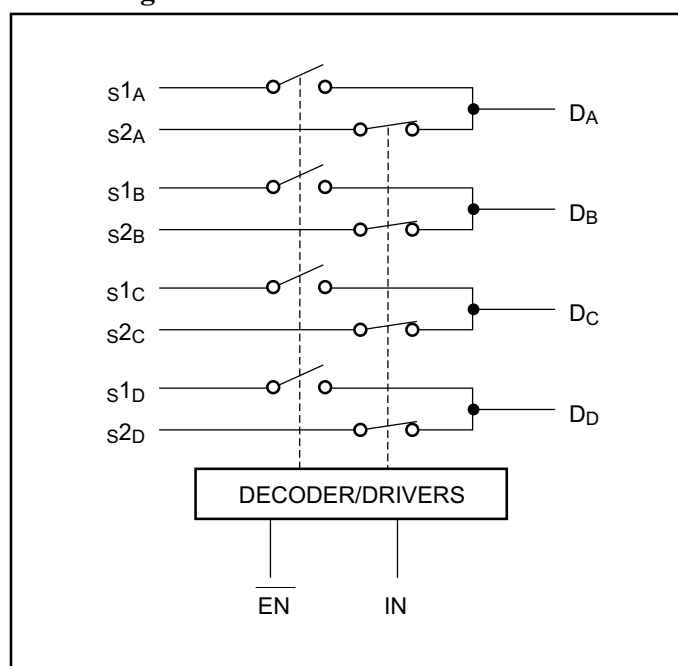
Description

Pericom Semiconductor's PI5V330 is a true bidirectional Quad 2-channel multiplexer/demultiplexer recommended for both RGB and composite video switching applications. The video switch can be driven from a current output RAMDAC or voltage output composite video source.

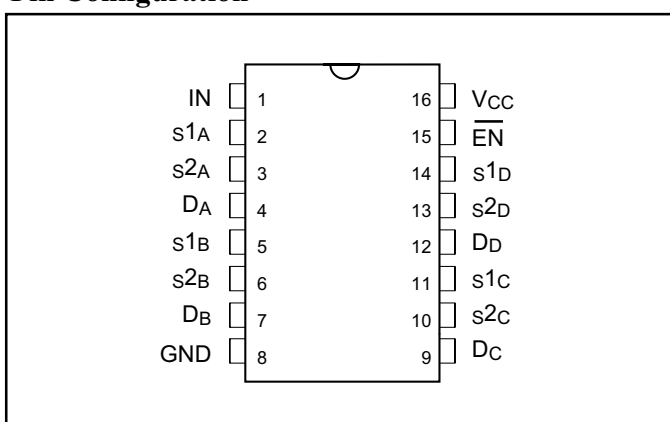
Low On-Resistance and wide bandwidth make it ideal for video and other applications. Also this device has exceptionally high current capability which is far greater than most analog switches offered today. A single 5V supply is all that is required for operation.

The PI5V330 offers a high-performance, low-cost solution to switch between video sources. The application section describes the PI5V330 replacing the HC4053 multiplier and buffer/amplifier.

Block Diagram



Pin Configuration



Pin Description

Pin Name	Description
s1A, s1B, s1C, s1D s2A, s2B, s2C, s2D	Analog Video I/O
IN	Select Input
$\overline{\text{EN}}$	Enable
DA, DB DC, DD	Analog Video I/O
GND	Ground
VCC	Power

Truth Table

$\overline{\text{EN}}$	IN	ON Switch
0	0	s1A, s1B, s1C, s1D
0	1	s2A, s2B, s2C, s2D
1	X	Disabled

Maximum Ratings

(Above which the useful life may be impaired. For user guidelines, not tested.)

Storage Temperature	-65°C to +150°C
Ambient Temperature with Power Applied	-40°C to +85°C
Supply Voltage to Ground Potential (Inputs & V _{CC} Only)....	-0.5V to +7.0V
Supply Voltage to Ground Potential (Outputs & D/O Only)	-0.5V to +7.0V
DC Input Voltage	-0.5V to +7.0V
DC Output Current.....	120mA
Power Dissipation	0.5W

Note:

Stresses greater than those listed under MAXIMUM RATINGS may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these or any other conditions above those indicated in the operational sections of this specification is not implied. Exposure to absolute maximum rating conditions for extended periods may affect reliability.

DC Electrical Characteristics (Over the Operating Range, T_A = -40°C to +85°C, V_{CC} = 5V ±5%)

Parameters	Description	Test Conditions ⁽¹⁾	Min.	Typ. ⁽²⁾	Max.	Units
V _{ANALOG}	Analog Signal Range		0	-	2.0	V
V _{IH}	Input HIGH Voltage	Guaranteed Logic HIGH Level	2.0	-	-	
V _{IL}	Input LOW Voltage	Guaranteed Logic LOW Level	-0.5	-	0.8	
I _{IH}	Input HIGH Current	V _{CC} = Max., V _{IN} = V _{CC}	-	-	±1	μA
I _{IL}	Input LOW Current	V _{CC} = Max., V _{IN} = GND	-	-	±1	
I _O	Analog Output Leakage Current	0 ≤ S1, S2 or D ≤ V _{CC} , Switch OFF	-	-	±1	
V _{IK}	Clamp Diode Voltage	V _{CC} = Min., I _{IN} = -18mA	-0.7	-1.2		V
I _{OS}	Short Circuit Current ⁽³⁾	S1, S2, D = 0V V _{CC}	100	-	-	mA
V _H	Input Hysteresis at Control Pins		-	150	-	mV
R _{ON}	Switch On-Resistance ⁽⁴⁾	V _{CC} = Min., V _{IN} = 1.0V, R _L = 75Ω, I _{ON} = 13mA	-	3	7	Ω
		V _{CC} = Min., V _{IN} = 2.0V, R _L = 75Ω, I _{ON} = 26mA	-	7	10	

Notes:

- For Max. or Min. conditions, use appropriate value specified under Electrical Characteristics for the applicable device type.
- Typical values are at V_{CC} = 5.0V, T_A = 25°C ambient and maximum loading.
- Not more than one output should be shorted at one time. Duration of the test should not exceed one second.
- Measured by the voltage drop between S1, S2, and D I/O pins at indicated current through the switch. On-Resistance is determined by the lower of the voltages on the S1, S2, and D I/O pins.

Dual 4-channel analog multiplexer, demultiplexer

74HC4052; 74HCT4052

FEATURES

- Wide analog input voltage range from -5 V to $+5\text{ V}$
- Low ON-resistance:
 - $80\ \Omega$ (typical) at $V_{CC} - V_{EE} = 4.5\text{ V}$
 - $70\ \Omega$ (typical) at $V_{CC} - V_{EE} = 6.0\text{ V}$
 - $60\ \Omega$ (typical) at $V_{CC} - V_{EE} = 9.0\text{ V}$
- Logic level translation: to enable 5 V logic to communicate with $\pm 5\text{ V}$ analog signals
- Typical “break before make” built in
- Complies with JEDEC standard no. 7A
- ESD protection:
 - HBM EIA/JESD22-A114-B exceeds 2000 V
 - MM EIA/JESD22-A115-A exceeds 200 V .
- Specified from $-40\text{ }^{\circ}\text{C}$ to $+85\text{ }^{\circ}\text{C}$ and $-40\text{ }^{\circ}\text{C}$ to $+125\text{ }^{\circ}\text{C}$.

APPLICATIONS

- Analog multiplexing and demultiplexing
- Digital multiplexing and demultiplexing
- Signal gating.

DESCRIPTION

The 74HC4052 and 74HCT4052 are high-speed Si-gate CMOS devices and are pin compatible with the HEF4052B. They are specified in compliance with JEDEC standard no. 7A.

The 74HC4052 and 74HCT4052 are dual 4-channel analog multiplexers or demultiplexers with common select logic. Each multiplexer has four independent inputs/outputs (pins nY0 to nY3) and a common input/output (pin nZ). The common channel select logics include two digital select inputs (pins S0 and S1) and an active LOW enable input (pin $\bar{E}$). When pin $\bar{E} = \text{LOW}$, one of the four switches is selected (low-impedance ON-state) with pins S0 and S1. When pin $\bar{E} = \text{HIGH}$, all switches are in the high-impedance OFF-state, independent of pins S0 and S1.

V_{CC} and GND are the supply voltage pins for the digital control inputs (pins S0, S1, and $\bar{E}$). The V_{CC} to GND ranges are 2.0 V to 10.0 V for 74HC4052 and 4.5 V to 5.5 V for 74HCT4052. The analog inputs/outputs (pins nY0 to nY3 and nZ) can swing between V_{CC} as a positive limit and V_{EE} as a negative limit. $V_{CC} - V_{EE}$ may not exceed 10.0 V .

For operation as a digital multiplexer/demultiplexer, V_{EE} is connected to GND (typically ground).

FUNCTION TABLE

INPUT ⁽¹⁾			CHANNEL BETWEEN
$\bar{E}$	S1	S0	
L	L	L	nY0 and nZ
L	L	H	nY1 and nZ
L	H	L	nY2 and nZ
L	H	H	nY3 and nZ
H	X	X	none

Note

1. H = HIGH voltage level
L = LOW voltage level
X = don't care.

Dual 4-channel analog multiplexer, demultiplexer

74HC4052; 74HCT4052

QUICK REFERENCE DATA

 $V_{EE} = GND = 0\text{ V}$; $T_{amb} = 25\text{ °C}$; $t_r = t_f = 6\text{ ns}$.

SYMBOL	PARAMETER	CONDITIONS	TYPICAL		UNIT
			74HC4052	74HCT4052	
t_{PZH}/t_{PZL}	turn-on time $\bar{E}$ or Sn to V_{OS}	$C_L = 15\text{ pF}$; $R_L = 1\text{ k}\Omega$; $V_{CC} = 5\text{ V}$	28	18	ns
t_{PHZ}/t_{PLZ}	turn-off time $\bar{E}$ or Sn to V_{OS}	$C_L = 15\text{ pF}$; $R_L = 1\text{ k}\Omega$; $V_{CC} = 5\text{ V}$	21	13	ns
C_I	input capacitance		3.5	3.5	pF
C_{PD}	power dissipation capacitance per switch	notes 1 and 2	57	57	pF
C_S	maximum switch capacitance	independent (Y)	5	5	pF
		common (Z)	12	12	pF

Notes

- C_{PD} is used to determine the dynamic power dissipation (P_D in μW).

 $P_D = C_{PD} \times V_{CC}^2 \times f_i \times N + \Sigma[(C_L + C_S) \times V_{CC}^2 \times f_o]$ where:

 f_i = input frequency in MHz;

 f_o = output frequency in MHz;

 C_L = output load capacitance in pF;

 C_S = maximum switch capacitance in pF;

 V_{CC} = supply voltage in Volts;

 N = number of inputs switching;

 $\Sigma[(C_L + C_S) \times V_{CC}^2 \times f_o]$ = sum of the outputs.

- For 74HC4052 the condition is $V_I = GND$ to V_{CC}

For 74HCT4052 the condition is $V_I = GND$ to $V_{CC} - 1.5\text{ V}$.

ORDERING INFORMATION

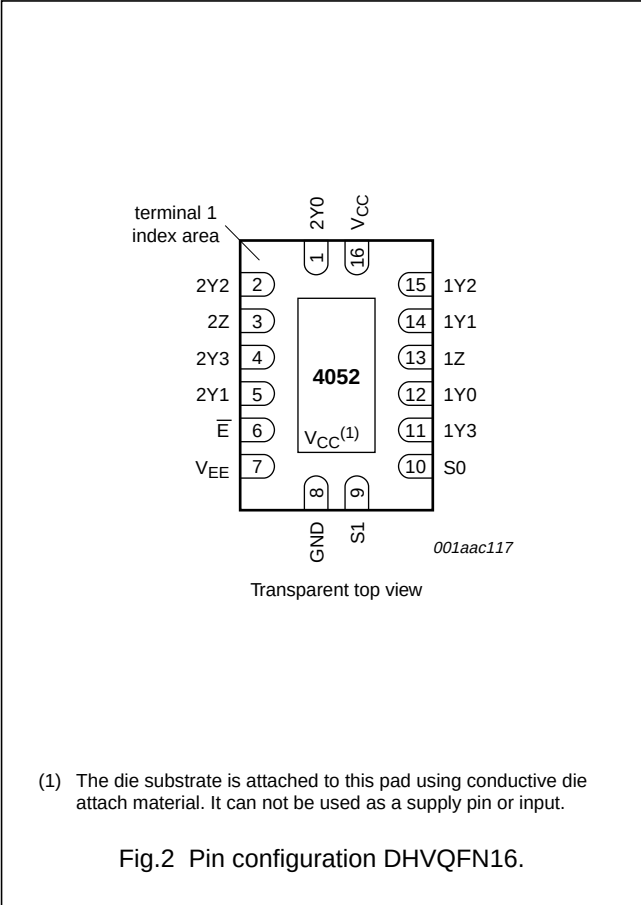
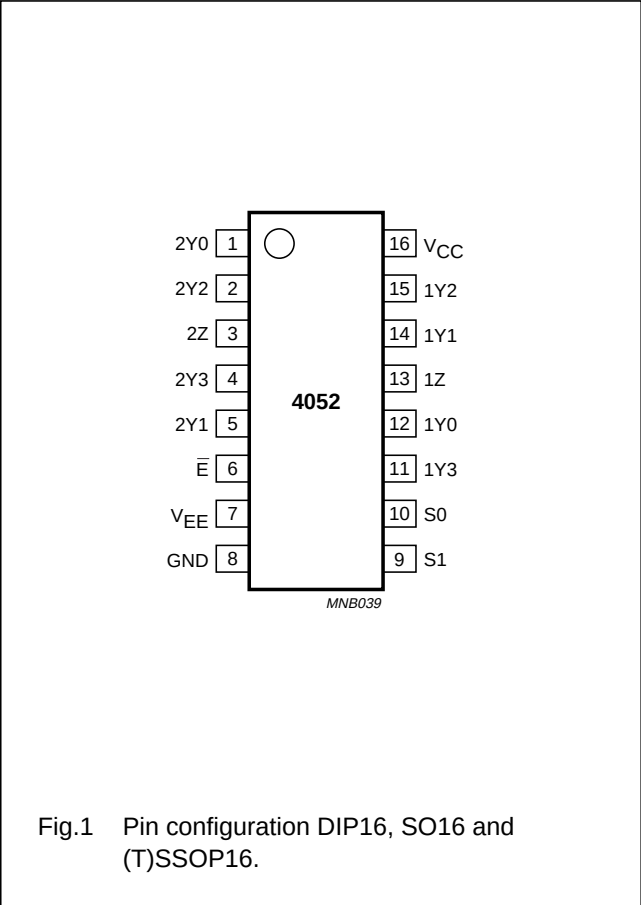
TYPE NUMBER	PACKAGE				
	TEMPERATURE RANGE	PINS	PACKAGE	MATERIAL	CODE
74HC4052D	-40 °C to +125 °C	16	SO16	plastic	SOT109-3
74HCT4052D	-40 °C to +125 °C	16	SO16	plastic	SOT109-3
74HC4052DB	-40 °C to +125 °C	16	SSOP16	plastic	SOT338-1
74HCT4052DB	-40 °C to +125 °C	16	SSOP16	plastic	SOT338-1
74HC4052N	-40 °C to +125 °C	16	DIP16	plastic	SOT38-9
74HCT4052N	-40 °C to +125 °C	16	DIP16	plastic	SOT38-9
74HC4052PW	-40 °C to +125 °C	16	TSSOP16	plastic	SOT403-1
74HC4052BQ	-40 °C to +125 °C	16	DHVQFN16	plastic	SOT763-1
74HCT4052BQ	-40 °C to +125 °C	16	DHVQFN16	plastic	SOT763-1

Dual 4-channel analog multiplexer,
demultiplexer

74HC4052; 74HCT4052

PINNING

PIN	SYMBOL	DESCRIPTION
1	2Y0	independent input or output
2	2Y2	independent input or output
3	2Z	common input or output
4	2Y3	independent input or output
5	2Y1	independent input or output
6	$\overline{E}$	enable input (active LOW)
7	V _{EE}	negative supply voltage
8	GND	ground (0 V)
9	S1	select logic input
10	S0	select logic input
11	1Y3	independent input or output
12	1Y0	independent input or output
13	1Z	common input or output
14	1Y1	independent input or output
15	1Y2	independent input or output
16	V _{CC}	positive supply voltage



Dual 4-channel analog multiplexer, demultiplexer

74HC4052; 74HCT4052

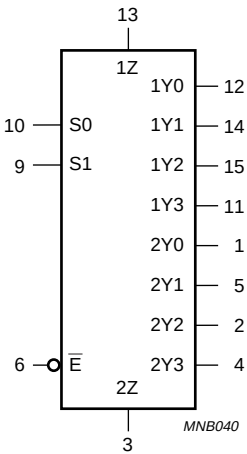


Fig.3 Logic symbol.

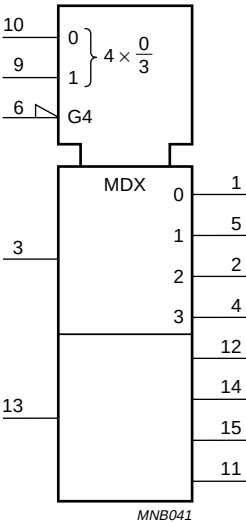


Fig.4 IEC logic symbol.

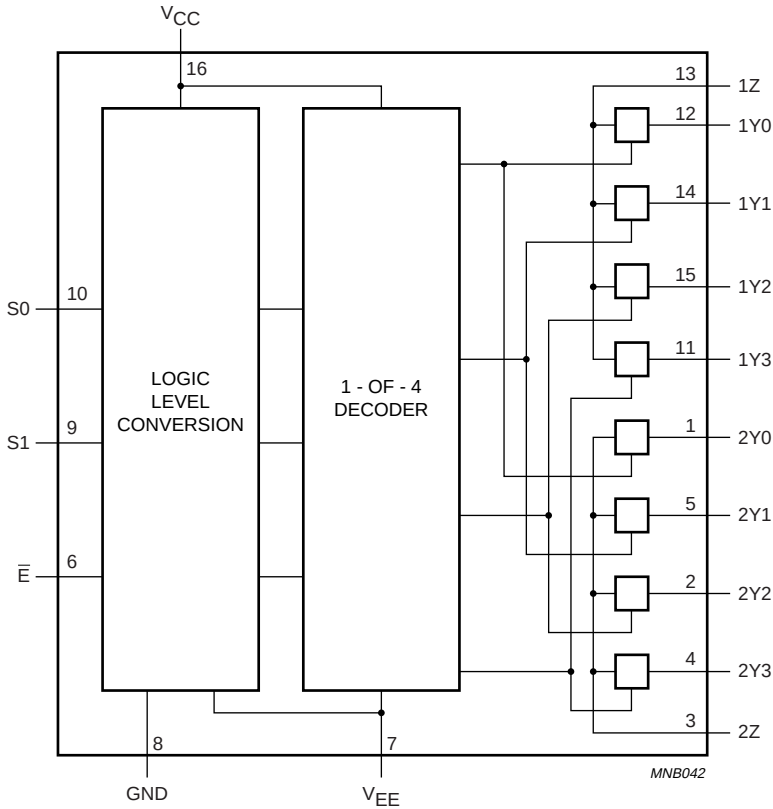
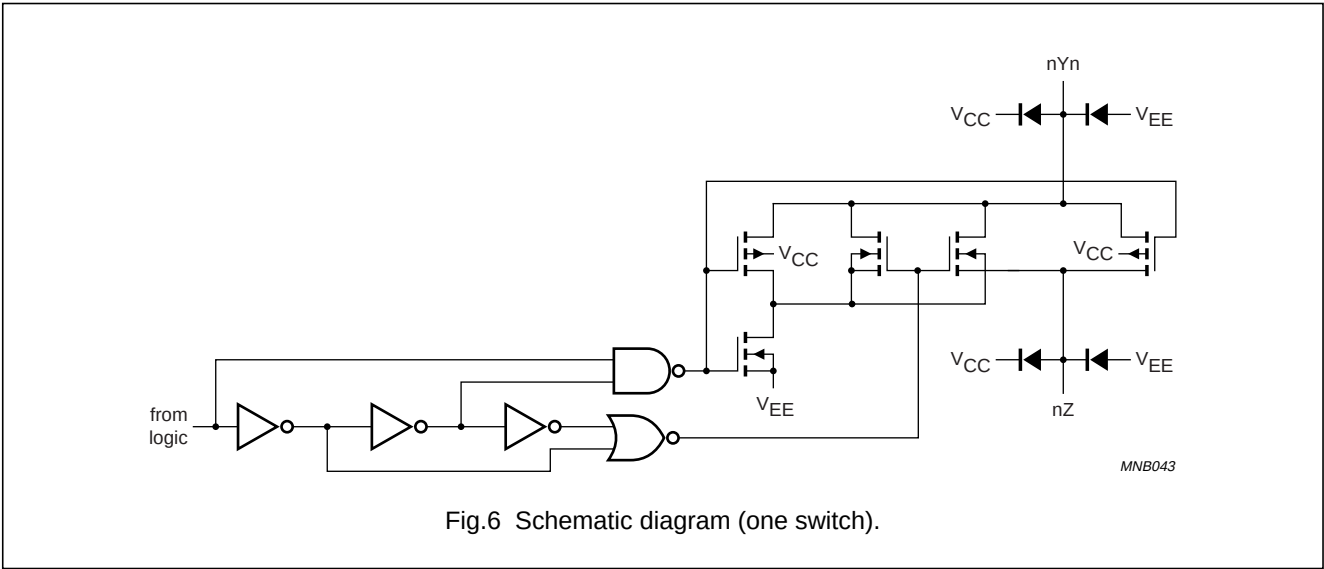


Fig.5 Functional diagram.

Dual 4-channel analog multiplexer,
demultiplexer

74HC4052; 74HCT4052



LIMITING VALUES

In accordance with the Absolute Maximum Rating System (IEC 60134); voltages are referenced to $V_{EE} = \text{GND}$ (ground = 0 V); note 1.

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_{CC}	supply voltage		-0.5	+11.0	V
I_{IK}	input diode current	$V_I < -0.5 \text{ V}$ or $V_I > V_{CC} + 0.5 \text{ V}$	–	± 20	mA
I_{SK}	switch diode current	$V_S < -0.5 \text{ V}$ or $V_S > V_{CC} + 0.5 \text{ V}$	–	± 20	mA
I_S	switch current	$-0.5 \text{ V} < V_S < V_{CC} + 0.5 \text{ V}$	–	± 25	mA
I_{EE}	V_{EE} current		–	± 20	mA
$I_{CC}; I_{GND}$	V_{CC} or GND current		–	± 50	mA
T_{stg}	storage temperature		-65	+150	°C
P_{tot}	power dissipation	$T_{amb} = -40 \text{ °C to } +125 \text{ °C}$; note	–	500	mW
P_S	power dissipation per switch		–	100	mW

Notes

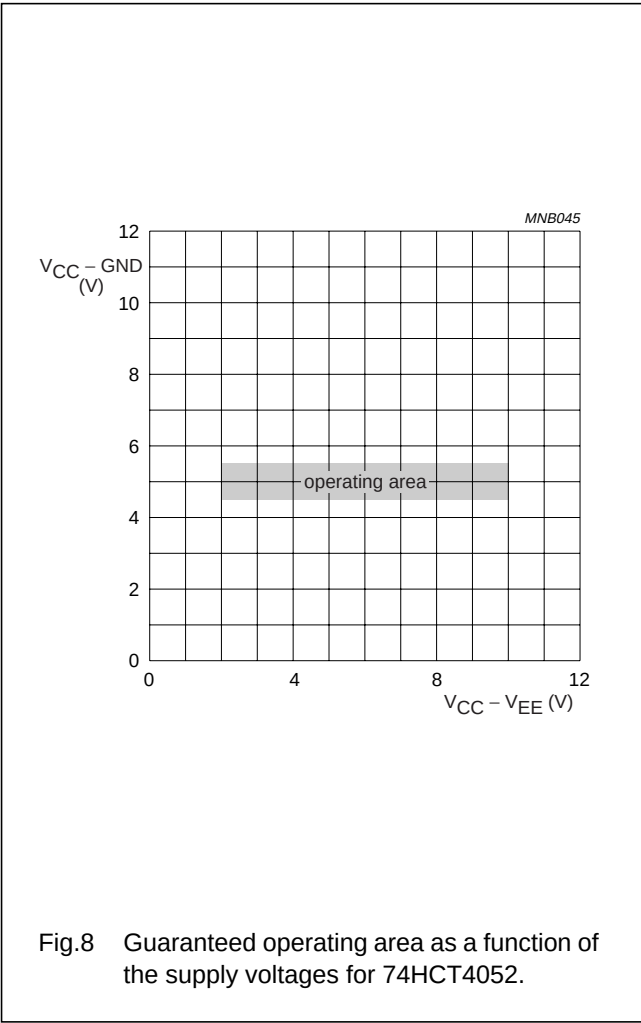
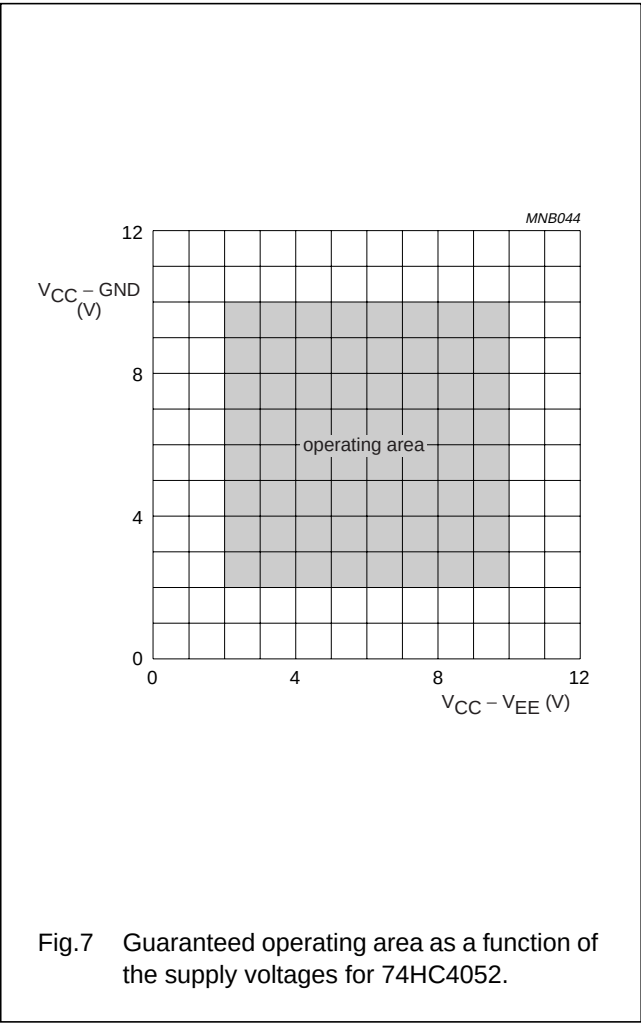
1. To avoid drawing V_{CC} current out of pins nZ, when switch current flows in pins nYn, the voltage drop across the bidirectional switch must not exceed 0.4 V. If the switch current flows into pins nZ, no V_{CC} current will flow out of pins nYn. In this case there is no limit for the voltage drop across the switch, but the voltages at pins nYn and nZ may not exceed V_{CC} or V_{EE} .
2. For DIP16 packages: above 70 °C derate linearly with 12 mW/K.
For SO16 packages: above 70 °C derate linearly with 8 mW/K.
For SSOP16 and TSSOP16 packages: above 60 °C derate linearly with 5.5 mW/K.
For DHVQFN16 packages: above 60 °C derate linearly with 4.5 mW/K.

Dual 4-channel analog multiplexer,
demultiplexer

74HC4052; 74HCT4052

RECOMMENDED OPERATING CONDITIONS

SYMBOL	PARAMETER	CONDITIONS	74HC4052			74HCT4052			UNIT
			MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	
V _{CC}	supply voltage	see Figs 7 and 8 V _{CC} – GND	2.0	5.0	10.0	4.5	5.0	5.5	V
		V _{CC} – V _{EE}	2.0	5.0	10.0	2.0	5.0	10.0	V
V _I	input voltage		GND	–	V _{CC}	GND	–	V _{CC}	V
V _S	switch voltage		V _{EE}	–	V _{CC}	V _{EE}	–	V _{CC}	V
T _{amb}	operating ambient temperature	see DC and AC characteristics per device	–40	+25	+85	–40	+25	+85	°C
			–40	–	+125	–40	–	+125	°C
t _r , t _f	input rise and fall times	V _{CC} = 2.0 V	–	6.0	1000	–	6.0	500	ns
		V _{CC} = 4.5 V	–	6.0	500	–	6.0	500	ns
		V _{CC} = 6.0 V	–	6.0	400	–	6.0	500	ns
		V _{CC} = 10.0 V	–	6.0	250	–	6.0	500	ns



Dual 4-channel analog multiplexer,
demultiplexer

74HC4052; 74HCT4052

DC CHARACTERISTICS

Family 74HC4052

V_{IS} is the input voltage at pins nYn or nZ, whichever is assigned as an input; V_{OS} is the output voltage at pins nZ or nYn, whichever is assigned as an output; voltages are referenced to GND (ground = 0 V).

SYMBOL	PARAMETER	TEST CONDITIONS			MIN.	TYP.	MAX.	UNIT
		OTHER	V _{CC} (V)	V _{EE} (V)				
T _{amb} = −40 °C to +85 °C; note 1								
V _{IH}	HIGH-level input voltage		2.0	–	1.5	1.2	–	V
			4.5	–	3.15	2.4	–	V
			6.0	–	4.2	3.2	–	V
			9.0	–	6.3	4.7	–	V
V _{IL}	LOW-level input voltage		2.0	–	–	0.8	0.5	V
			4.5	–	–	2.1	1.35	V
			6.0	–	–	2.8	1.8	V
			9.0	–	–	4.3	2.7	V
I _{LI}	input leakage current	V _I = V _{CC} or GND	6.0	0	–	–	±1.0	μA
			10.0	0	–	–	±2.0	μA
I _{S(OFF)}	analog switch OFF-state current	V _I = V _{IH} or V _{IL} ; V _S = V _{CC} – V _{EE} ; see Fig.9 per channel all channels	10.0	0	–	–	±1.0	μA
			10.0	0	–	–	±2.0	μA
I _{S(ON)}	analog switch ON-state current	V _I = V _{IH} or V _{IL} ; V _S = V _{CC} – V _{EE} ; see Fig.10	10.0	0	–	–	±2.0	μA
I _{CC}	quiescent supply current	V _I = V _{CC} or GND; V _{is} = V _{EE} or V _{CC} ; V _{os} = V _{CC} or V _{EE}	6.0	0	–	–	80.0	μA
			10.0	0	–	–	160.0	μA

Dual 4-channel analog multiplexer,
demultiplexer

74HC4052; 74HCT4052

SYMBOL	PARAMETER	TEST CONDITIONS			MIN.	TYP.	MAX.	UNIT
		OTHER	V _{CC} (V)	V _{EE} (V)				
T _{amb} = −40 °C to +125 °C								
V _{IH}	HIGH-level input voltage		2.0	–	1.5	–	–	V
			4.5	–	3.15	–	–	V
			6.0	–	4.2	–	–	V
			9.0	–	6.3	–	–	V
V _{IL}	LOW-level input voltage		2.0	–	–	–	0.5	V
			4.5	–	–	–	1.35	V
			6.0	–	–	–	1.8	V
			9.0	–	–	–	2.7	V
I _{LI}	input leakage current	V _I = V _{CC} or GND	6.0	0	–	–	±1.0	μA
			10.0	0	–	–	±2.0	μA
I _{S(OFF)}	analog switch OFF-state current	V _I = V _{IH} or V _{IL} ; V _S = V _{CC} – V _{EE} ; see Fig.9 per channel all channels	10.0	0	–	–	±1.0	μA
			10.0	0	–	–	±2.0	μA
I _{S(ON)}	analog switch ON-state current	V _I = V _{IH} or V _{IL} ; V _S = V _{CC} – V _{EE} ; see Fig.10	10.0	0	–	–	±2.0	μA
I _{CC}	quiescent supply current	V _I = V _{CC} or GND; V _{IS} = V _{EE} or V _{CC} ; V _{OS} = V _{CC} or V _{EE}	6.0	0	–	–	160	μA
			10.0	0	–	–	320.0	μA

Note

1. All typical values are measured at T_{amb} = 25 °C.

Dual 4-channel analog multiplexer,
demultiplexer

74HC4052; 74HCT4052

Family 74HCT4052

V_{IS} is the input voltage at pins nYn or nZ, whichever is assigned as an input; V_{OS} is the output voltage at pins nZ or nYn, whichever is assigned as an output; voltages are referenced to GND (ground = 0 V).

SYMBOL	PARAMETER	TEST CONDITIONS			MIN.	TYP.	MAX.	UNIT
		OTHER	V _{CC} (V)	V _{EE} (V)				
T _{amb} = −40 °C to +85 °C; note 1								
V _{IH}	HIGH-level input voltage		4.5 to 5.5	−	2.0	1.6	−	V
V _{IL}	LOW-level input voltage		4.5 to 5.5	−	−	1.2	0.8	V
I _{LI}	input leakage current	V _I = V _{CC} or GND	5.5	0	−	−	±1.0	μA
I _{S(OFF)}	analog switch OFF-state current	V _I = V _{IH} or V _{IL} ; V _S = V _{CC} − V _{EE} ; see Fig.9 per channel all channels	10.0	0	−	−	±1.0	μA
			10.0	0	−	−	±2.0	μA
I _{S(ON)}	analog switch ON-state current	V _I = V _{IH} or V _{IL} ; V _S = V _{CC} − V _{EE} ; see Fig.10	10.0	0	−	−	±2.0	μA
I _{CC}	quiescent supply current	V _I = V _{CC} or GND; V _{is} = V _{EE} or V _{CC} ; V _{os} = V _{CC} or V _{EE}	5.5	0	−	−	80.0	μA
			5.0	−5.0	−	−	160.0	μA
ΔI _{CC}	additional quiescent supply current per input	V _I = V _{CC} − 2.1 V; other inputs at V _{CC} or GND	4.5 to 5.5	0	−	45	202.5	μA
T _{amb} = −40 °C to +125 °C								
V _{IH}	HIGH-level input voltage		4.5 to 5.5	−	2.0	−	−	V
V _{IL}	LOW-level input voltage		4.5 to 5.5	−	−	−	0.8	V
I _{LI}	input leakage current	V _I = V _{CC} or GND	5.5	0	−	−	±1.0	μA
I _{S(OFF)}	analog switch OFF-state current	V _I = V _{IH} or V _{IL} ; V _S = V _{CC} − V _{EE} ; see Fig.9 per channel all channels	10.0	0	−	−	±1.0	μA
			10.0	0	−	−	±2.0	μA
I _{S(ON)}	analog switch ON-state current	V _I = V _{IH} or V _{IL} ; V _S = V _{CC} − V _{EE} ; see Fig.10	10.0	0	−	−	±2.0	μA
I _{CC}	quiescent supply current	V _I = V _{CC} or GND; V _{is} = V _{EE} or V _{CC} ; V _{os} = V _{CC} or V _{EE}	5.5	0	−	−	160.0	μA
			5.0	−5.0	−	−	320.0	μA
ΔI _{CC}	additional quiescent supply current per input	V _I = V _{CC} − 2.1 V; other inputs at V _{CC} or GND	4.5 to 5.5	0	−	−	220.5	μA

Note

1. All typical values are measured at $T_{amb} = 25\text{ °C}$.

Dual 4-channel analog multiplexer,
demultiplexer

74HC4052; 74HCT4052

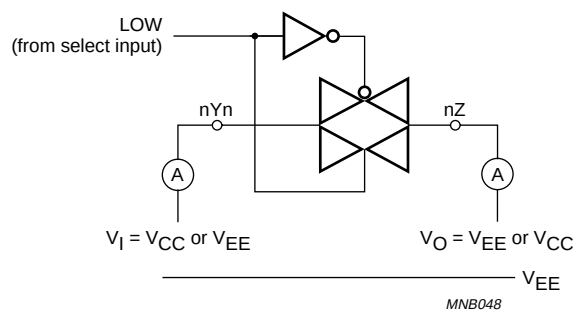


Fig.9 Test circuit for measuring OFF-state current.

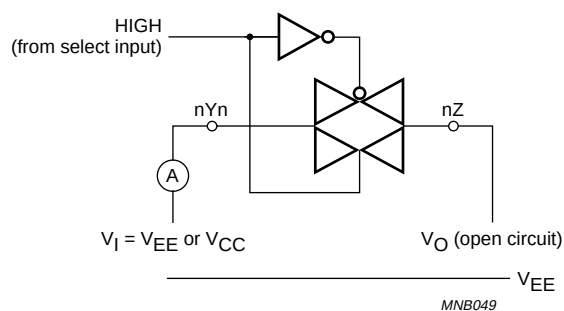


Fig.10 Test circuit for measuring ON-state current.

Dual 4-channel analog multiplexer,
demultiplexer

74HC4052; 74HCT4052

Resistance R_{ON} for 74HC4052 and 74HCT4052 V_{IS} is the input voltage at pins nYn or nZ, whichever is assigned as an input; see notes 1 and 2; see Fig.11.

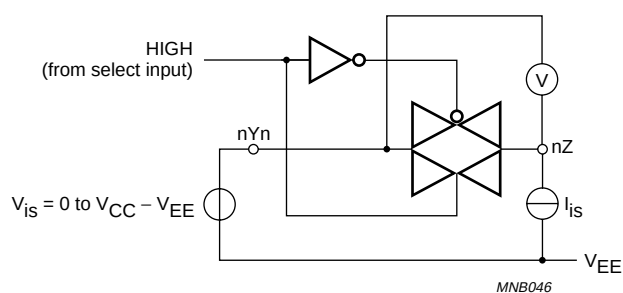
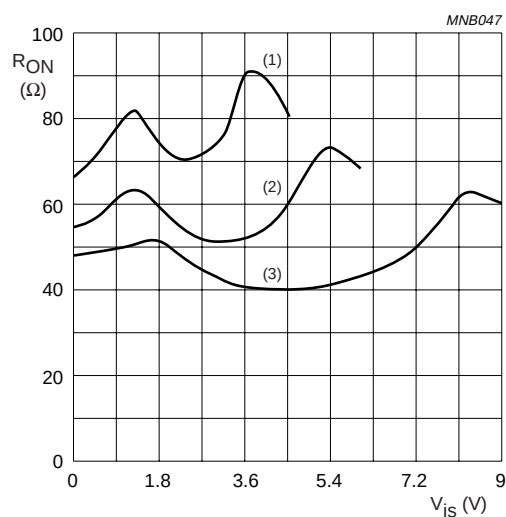
SYMBOL	PARAMETER	TEST CONDITIONS				MIN.	TYP.	MAX.	UNIT
		OTHER	V _{CC} (V)	V _{EE} (V)	I _S (μA)				
T _{amb} = −40 °C to +85 °C; note 3									
R _{ON(peak)}	ON-resistance (peak)	V _{IS} = V _{CC} to V _{EE} ; V _I = V _{IH} or V _{IL}	2.0	0	100	—	—	—	Ω
			4.5	0	1000	—	100	225	Ω
			6.0	0	1000	—	90	200	Ω
			4.5	−4.5	1000	—	70	165	Ω
R _{ON(rail)}	ON-resistance (rail)	V _{IS} = V _{EE} ; V _I = V _{IH} or V _{IL}	2.0	0	100	—	150	—	Ω
			4.5	0	1000	—	80	175	Ω
			6.0	0	1000	—	70	150	Ω
			4.5	−4.5	1000	—	60	130	Ω
		V _{IS} = V _{CC} ; V _I = V _{IH} or V _{IL}	2.0	0	100	—	150	—	Ω
			4.5	0	1000	—	90	200	Ω
			6.0	0	1000	—	80	175	Ω
			4.5	−4.5	1000	—	65	150	Ω
ΔR _{ON}	maximum ON-resistance difference between any two channels	V _{IS} = V _{CC} to V _{EE} ; V _I = V _{IH} or V _{IL}	2.0	0	—	—	—	—	Ω
			4.5	0	—	—	9	—	Ω
			6.0	0	—	—	8	—	Ω
			4.5	−4.5	—	—	6	—	Ω
T _{amb} = −40 °C to +125 °C									
R _{ON(peak)}	ON-resistance (peak)	V _{IS} = V _{CC} to V _{EE} ; V _I = V _{IH} or V _{IL}	2.0	0	100	—	—	—	Ω
			4.5	0	1000	—	—	270	Ω
			6.0	0	1000	—	—	240	Ω
			4.5	−4.5	1000	—	—	195	Ω
R _{ON(rail)}	ON-resistance (rail)	V _{IS} = V _{EE} ; V _I = V _{IH} or V _{IL}	2.0	0	100	—	—	—	Ω
			4.5	0	1000	—	—	210	Ω
			6.0	0	1000	—	—	180	Ω
			4.5	−4.5	1000	—	—	160	Ω
		V _{IS} = V _{CC} ; V _I = V _{IH} or V _{IL}	2.0	0	100	—	—	—	Ω
			4.5	0	1000	—	—	240	Ω
			6.0	0	1000	—	—	210	Ω
			4.5	−4.5	1000	—	—	180	Ω

Notes

- For 74HC4052: $V_{CC} - \text{GND}$ or $V_{CC} - V_{EE} = 2.0, 4.5, 6.0$ and 9.0 V; for 74HCT4052: $V_{CC} - \text{GND} = 4.5$ and 5.5 V, $V_{CC} - V_{EE} = 2.0, 4.5, 6.0$ and 9.0 V.
- When supply voltages ($V_{CC} - V_{EE}$) near 2.0 V the analog switch ON-resistance becomes extremely non-linear. When using a supply of 2 V, it is recommended to use these devices only for transmitting digital signals.
- All typical values are measured at $T_{amb} = 25\text{ }^{\circ}\text{C}$.

Dual 4-channel analog multiplexer,
demultiplexer

74HC4052; 74HCT4052

Fig.11 Test circuit for measuring R_{ON} .
 $V_{IS} = 0 \text{ V to } V_{CC} - V_{EE}$
(1) $V_{CC} = 4.5 \text{ V}$ (2) $V_{CC} = 6 \text{ V}$ (3) $V_{CC} = 9 \text{ V}$ Fig.12 Typical R_{ON} as a function of input voltage V_{IS} .

Dual 4-channel analog multiplexer,
demultiplexer

74HC4052; 74HCT4052

AC CHARACTERISTICS

Type 74HC4052

GND = 0 V; $t_r = t_f = 6$ ns; $C_L = 50$ pF.

SYMBOL	PARAMETER	TEST CONDITIONS			MIN.	TYP.	MAX.	UNIT
		OTHER	V _{CC} (V)	V _{EE} (V)				
T _{amb} = −40 °C to +85 °C; note 1								
t _{PHL} /t _{PLH}	propagation delay V _{is} to V _{os}	R _L = ∞; see Fig.19	2.0	0	−	14	75	ns
			4.5	0	−	5	15	ns
			6.0	0	−	4	13	ns
			4.5	−4.5	−	4	10	ns
t _{PZH} /t _{PZL}	turn-on time $\bar{E}$, Sn to V _{os}	R _L = ∞; see Figs 20, 22 and 21	2.0	0	−	105	405	ns
			4.5	0	−	38	81	ns
			6.0	0	−	30	69	ns
			4.5	−4.5	−	26	58	ns
t _{PHZ} /t _{PLZ}	turn-off time $\bar{E}$, Sn to V _{os}	R _L = 1 kΩ; see Figs 20, 22 and 21	2.0	0	−	74	315	ns
			4.5	0	−	27	63	ns
			6.0	0	−	22	54	ns
			4.5	−4.5	−	22	48	ns
T _{amb} = −40 °C to +125 °C								
t _{PHL} /t _{PLH}	propagation delay V _{is} to V _{os}	R _L = ∞; see Fig.19	2.0	0	−	−	90	ns
			4.5	0	−	−	18	ns
			6.0	0	−	−	15	ns
			4.5	−4.5	−	−	12	ns
t _{PZH} /t _{PZL}	turn-on time $\bar{E}$, Sn to V _{os}	R _L = ∞; see Figs 20, 22 and 21	2.0	0	−	−	490	ns
			4.5	0	−	−	98	ns
			6.0	0	−	−	83	ns
			4.5	−4.5	−	−	69	ns
t _{PHZ} /t _{PLZ}	turn-off time $\bar{E}$, Sn to V _{os}	R _L = 1 kΩ; see Figs 20, 22 and 21	2.0	0	−	−	375	ns
			4.5	0	−	−	75	ns
			6.0	0	−	−	64	ns
			4.5	−4.5	−	−	57	ns

Note

1. All typical values are measured at $T_{amb} = 25$ °C.

Dual 4-channel analog multiplexer, demultiplexer

74HC4052; 74HCT4052

Type 74HCT4052GND = 0 V; $t_r = t_f = 6$ ns; $C_L = 50$ pF.

SYMBOL	PARAMETER	TEST CONDITIONS			MIN.	TYP.	MAX.	UNIT
		OTHER	V _{CC} (V)	V _{EE} (V)				
T _{amb} = −40 °C to +85 °C; note 1								
t _{PHL} /t _{PLH}	propagation delay V _{IS} to V _{OS}	R _L = ∞; see Fig.19	4.5	0	–	5	15	ns
			4.5	−4.5	–	4	10	ns
t _{PZH} /t _{PZL}	turn-on time $\bar{E}$, Sn to V _{OS}	R _L = 1 kΩ; see Figs 20, 22 and 21	4.5	0	–	41	88	ns
			4.5	−4.5	–	28	60	ns
t _{PHZ} t _{PLZ}	turn-off time $\bar{E}$, Sn to V _{OS}	R _L = 1 kΩ; see Figs 20, 22 and 21	4.5	0	–	26	63	ns
			4.5	−4.5	–	21	48	ns
T _{amb} = −40 °C to +125 °C								
t _{PHL} /t _{PLH}	propagation delay V _{IS} to V _{OS}	R _L = ∞; see Fig.19	4.5	0	–	–	18	ns
			4.5	−4.5	–	–	12	ns
t _{PZH} /t _{PZL}	turn-on time $\bar{E}$, Sn to V _{OS}	R _L = 1 kΩ; see Figs 20, 22 and 21	4.5	0	–	–	105	ns
			4.5	−4.5	–	–	72	ns
t _{PHZ} /t _{PLZ}	turn-off time $\bar{E}$, Sn to V _{OS}	R _L = 1 kΩ; see Figs 20, 22 and 21	4.5	0	–	–	75	ns
			4.5	−4.5	–	–	57	ns

Note

1. All typical values are measured at $T_{amb} = 25$ °C.

Dual 4-channel analog multiplexer,
demultiplexer

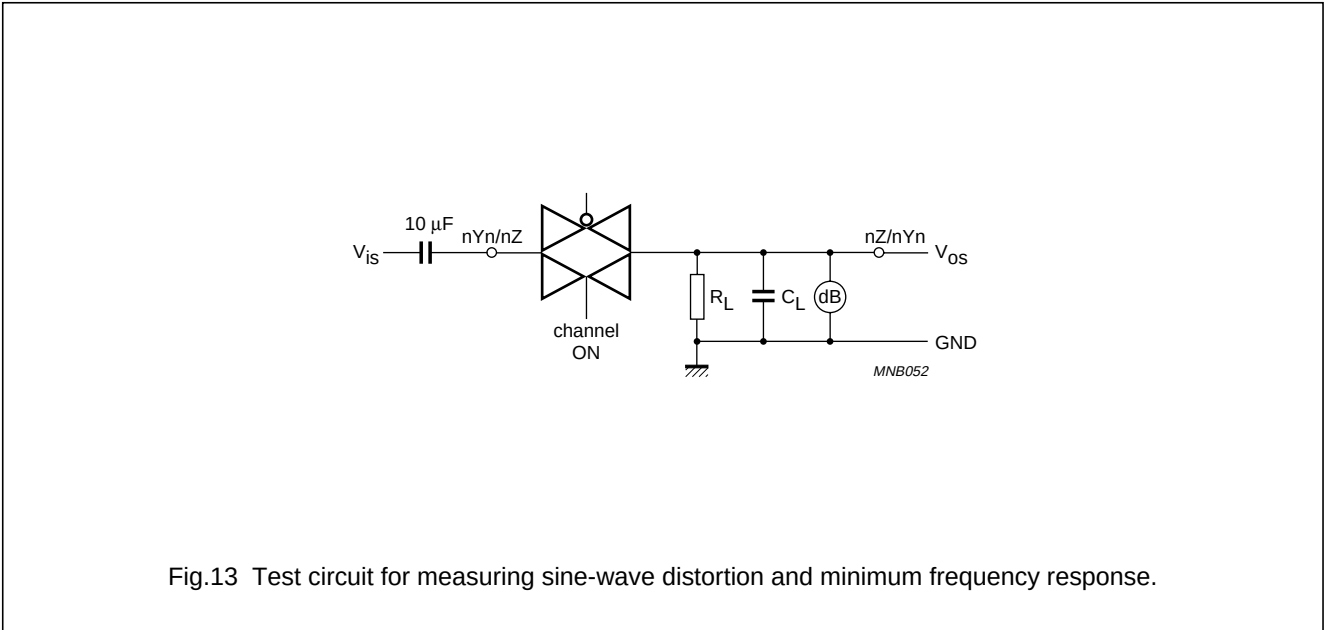
74HC4052; 74HCT4052

Type 74HC4052 and 74HCT4052
Recommended conditions and typical values; GND = 0 V; T_{amb} = 25 °C; C_L = 50 pF. V_{is} is the input voltage at pins nYn or nZ, whichever is assigned as an input. V_{os} is the output voltage at pins nYn or nZ, whichever is assigned as an output.

SYMBOL	PARAMETER	TEST CONDITIONS				TYP.	UNIT
		OTHER	V _{is(p-p)} (V)	V _{CC} (V)	V _{EE} (V)		
d _{sin}	sine-wave distortion	f = 1 kHz; R _L = 10 kΩ; see Fig.13	4.0	2.25	−2.25	0.04	%
			8.0	4.5	−4.5	0.02	%
		f = 10 kHz; R _L = 10 kΩ; see Fig.13	4.0	2.25	−2.25	0.12	%
			8.0	4.5	−4.5	0.06	%
α _{OFF(feedthr)}	switch OFF signal feed-through	R _L = 600 Ω; f = 1 MHz; see Figs 14 and 15	note 1	2.25	−2.25	−50	dB
				4.5	−4.5	−50	dB
α _{ct(s)}	crosstalk between two switches/multiplexers	R _L = 600 Ω; f = 1 MHz; see Fig.16	note 1	2.25	−2.25	−60	dB
				4.5	−4.5	−60	dB
V _{ct(p-p)}	crosstalk voltage between control and any switch (peak-to-peak value)	R _L = 600 Ω; f = 1 MHz; $\bar{E}$ or Sn, square-wave between V _{CC} and GND, t _r = t _f = 6 ns; see Fig.17	–	4.5	0	110	mV
				4.5	−4.5	220	mV
f _{max}	minimum frequency response (−3dB)	R _L = 50 Ω; see Figs 13 and 18	note 2	2.25	−2.25	170	MHz
				4.5	−4.5	180	MHz
C _S	maximum switch capacitance	independent (Y)	–	–	–	5	pF
		common (Z)	–	–	–	12	pF

Notes

1. Adjust input voltage V_{is} to 0 dBm level (0 dBm = 1 mW into 600 Ω).
2. Adjust input voltage V_{is} to 0 dBm level at V_{os} for 1 MHz (0 dBm = 1 mW into 50 Ω).



Dual 4-channel analog multiplexer, demultiplexer

74HC4052; 74HCT4052

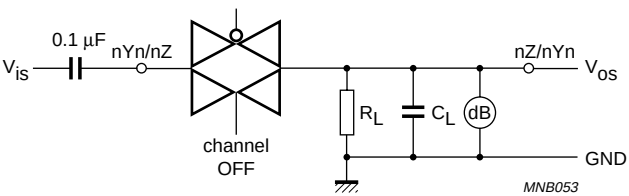
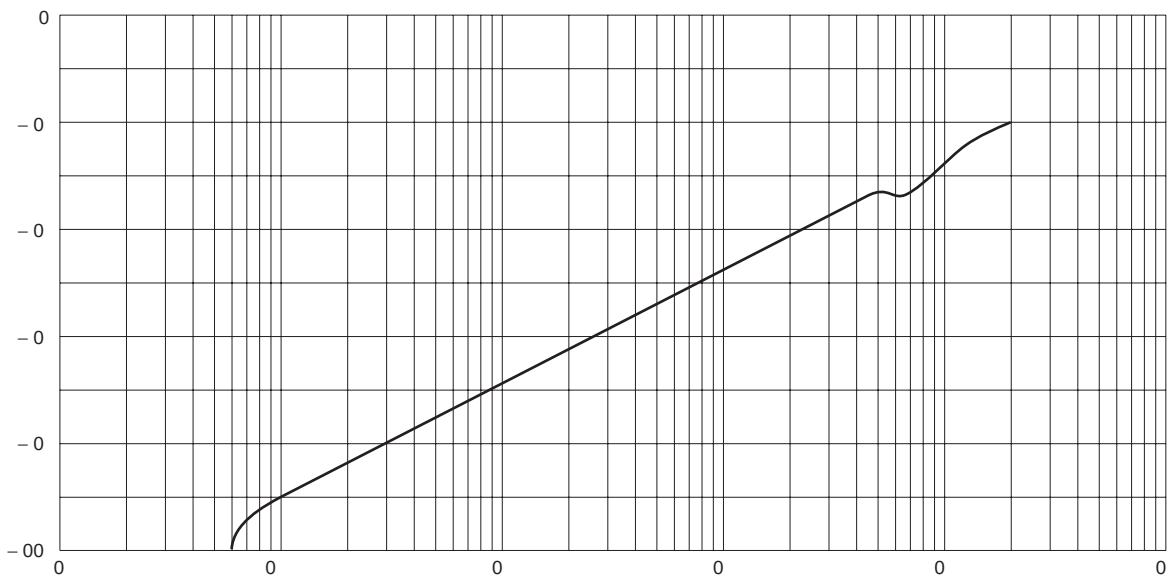


Fig.14 Test circuit for measuring switch OFF signal feed-through.



Test conditions: $V_{CC} = 4.5\text{ V}$; $GND = 0\text{ V}$; $V_{EE} = -4.5\text{ V}$; $R_L = 50\text{ }\Omega$; $R_{source} = 1\text{ k}\Omega$.

Fig.15 Typical switch OFF signal feed-through as a function of frequency.

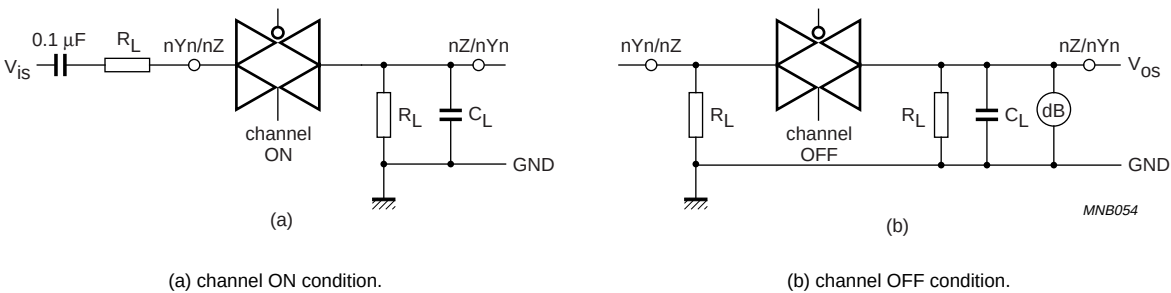


Fig.16 Test circuits for measuring crosstalk between any two switches/multiplexers.

Dual 4-channel analog multiplexer, demultiplexer

74HC4052; 74HCT4052

The crosstalk is defined as follows (oscilloscope output):

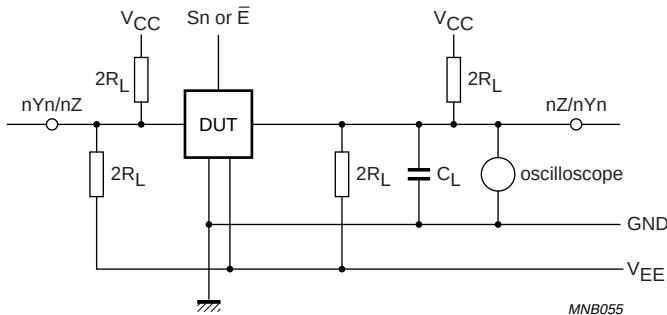
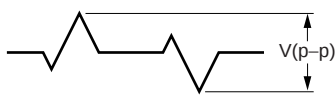
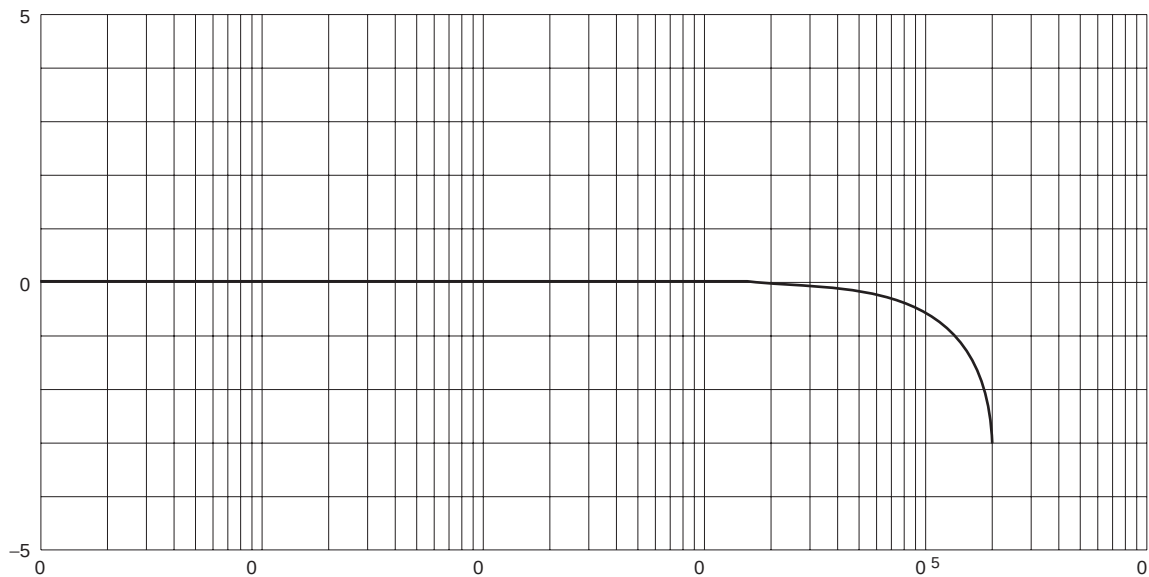


Fig.17 Test circuit for measuring crosstalk between control and any switch.



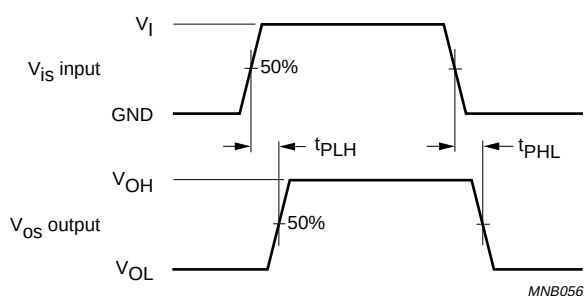
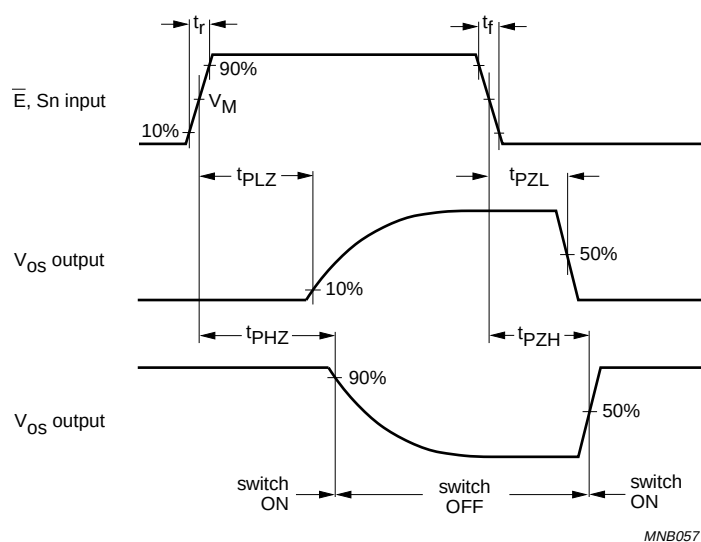
Test conditions: $V_{CC} = 4.5\text{ V}$; $GND = 0\text{ V}$; $V_{EE} = -4.5\text{ V}$; $R_L = 50\text{ }\Omega$; $R_{source} = 1\text{ k}\Omega$.

Fig.18 Typical frequency response.

Dual 4-channel analog multiplexer,
demultiplexer

74HC4052; 74HCT4052

AC WAVEFORMS

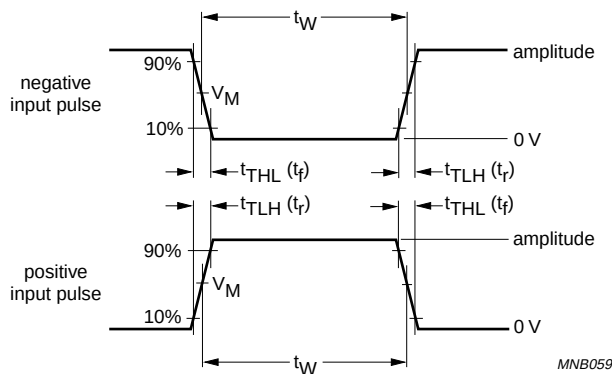
Fig.19 Waveforms showing the input (V_{IS}) to output (V_{OS}) propagation delays.

For 74HC4052: $V_M = 50\%$; $V_I = \text{GND to } V_{CC}$.
 For 74HCT4052: $V_M = 1.3 \text{ V}$; $V_I = \text{GND to } 3 \text{ V}$.

Fig.20 Waveforms showing the turn-on and turn-off times.

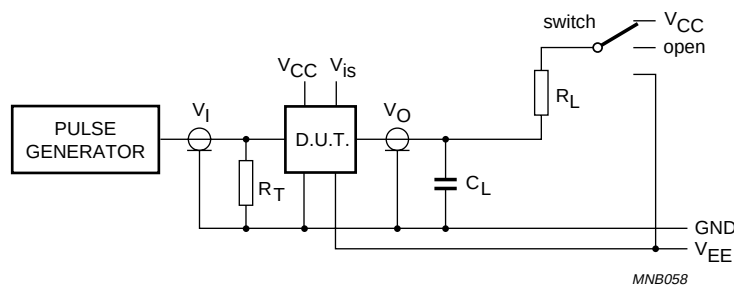
Dual 4-channel analog multiplexer,
demultiplexer

74HC4052; 74HCT4052



FAMILY	AMPLITUDE	V_M	t_r and t_f	
			f_{max} ; PULSE WIDTH	OTHER
74HC4052	V_{CC}	50 %	< 2 ns	6 ns
74HCT4052	3.0 V	1.3 V	< 2 ns	6 ns

Fig.21 Input pulse definitions.



TEST	SWITCH	V_{is}
t_{PZH}	V_{EE}	V_{CC}
t_{PZL}	V_{CC}	V_{EE}
t_{PHZ}	V_{EE}	V_{CC}
t_{PLZ}	V_{CC}	V_{EE}
other	open	pulse

Definitions for test circuit:
 R_L = load resistance
 C_L = load capacitance including jig and probe capacitance.
 R_T = termination resistance should be equal to the output impedance Z_O of the pulse generator.
 $t_r = t_f = 6$ ns; when measuring f_{max} , there is no constraint to t_r and t_f with 50 % duty factor.

Fig.22 Test circuit for measuring AC performance.

TDA7266S

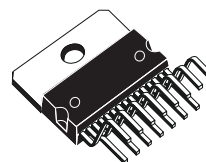
5+5W DUAL BRIDGE AMPLIFIER

- WIDE SUPPLY VOLTAGE RANGE (3-18V)
- MINIMUM EXTERNAL COMPONENTS
 - NO SWR CAPACITOR
 - NO BOOTSTRAP
 - NO BOUCHEROT CELLS
 - INTERNALLY FIXED GAIN
- STAND-BY & MUTE FUNCTIONS
- SHORT CIRCUIT PROTECTION
- THERMAL OVERLOAD PROTECTION

DESCRIPTION

The TDA7266S is a dual bridge amplifier specially designed for TV and Portable Radio applications.

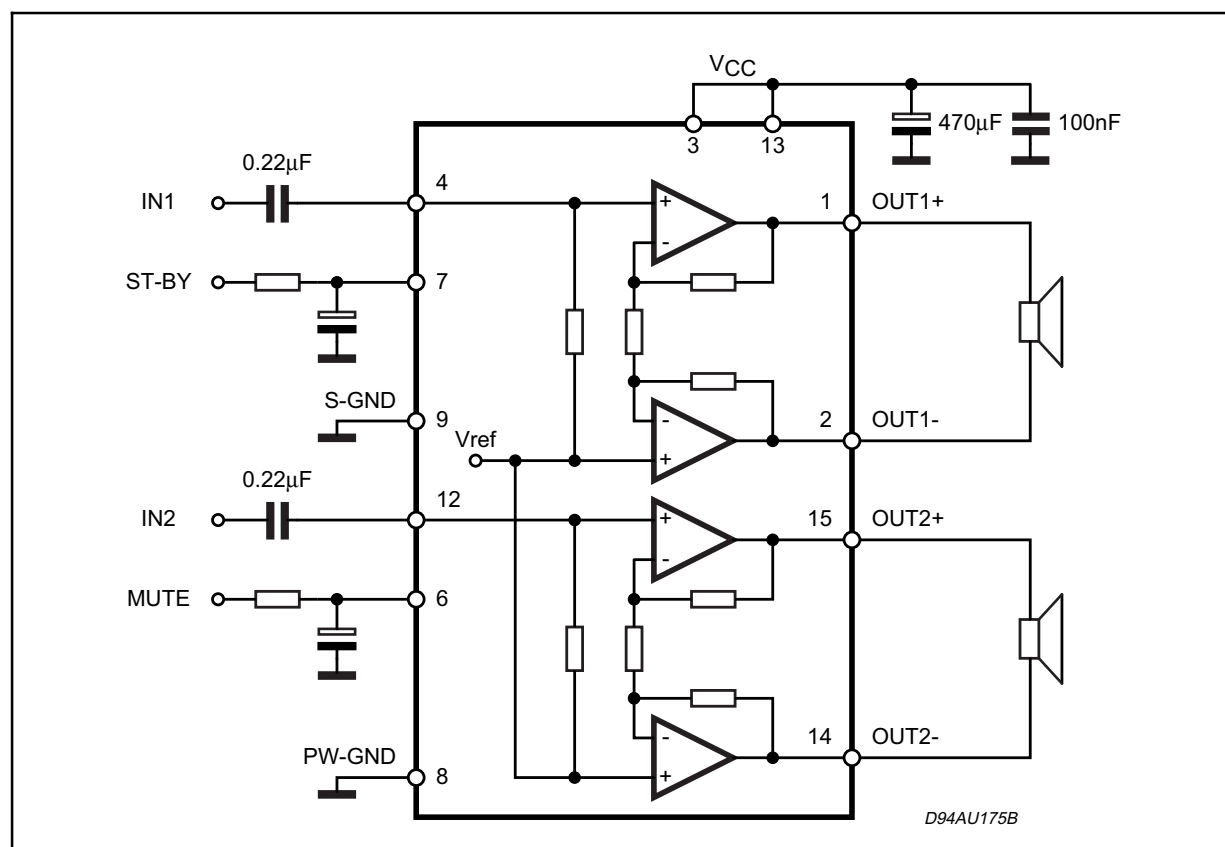
TECHNOLOGY BI20II



Multiwatt 15

ORDERING NUMBER: TDA7266S

BLOCK AND APPLICATION DIAGRAM



FSAV433

High-Bandwidth (550MHz) Three-Channel 3:1 Video Switch

Features

- Ground between channels to optimize isolation and reduce hostile crosstalk
- -70dB non-adjacent channel crosstalk at 30MHz
- 6.5Ω typical On Resistance (R_{ON})
- -3dB bandwidth: 550MHz
- Low power consumption (1μA max)

Applications

- RGB Video Switch in LCD, Plasma, and Projection displays
- DVD-RW, notebook

Description

The FSAV433 is an ultra-low power, high-bandwidth video switch specially designed for switching three analog video signals, including computer RGB and high-definition YPbPr signals. The wide bandwidth (550MHz) of the switch allows signal passage with minimum edge and phase distortion, while -70dB non-adjacent channel crosstalk generates negligible image noise between active channels. Optimized differential gain and phases maintain the image integrity of video applications, while low On Resistance offers low signal insertion loss.

The Fairchild switch family derives from and embodies Fairchild's proven switch technology used for years in its 74LVX3L384 (FST3384) bus switch product.

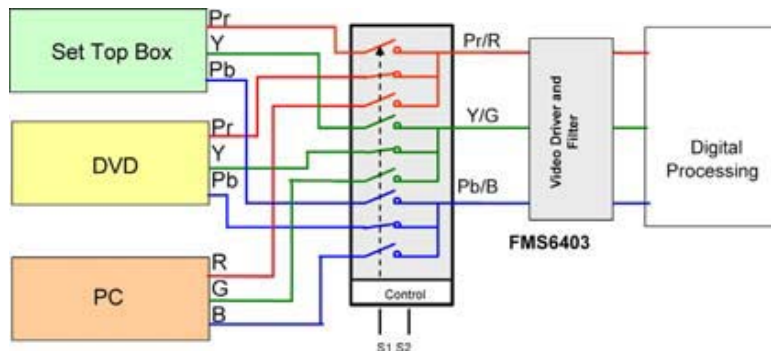
Ordering Information

Order Number	Package Number	Pb-Free ⁽¹⁾	Package Description	Packing Method
FSAV433BQX	MLP020B	Yes	20-Terminal Depopulated Quad Very-Thin Flat Pack No Leads (DQFN), JEDEC MO-241, 2.5 x 4.5mm	Tape & Reel
FSAV433MTC	MTC20	Yes	20-Lead Thin Shrink Small Outline Package (TSSOP), JEDEC MO-153, 4.4mm Wide	Tube
FSAV433MTCX	MTC20	Yes	20-Lead Thin Shrink Small Outline Package (TSSOP), JEDEC MO-153, 4.4mm Wide	Tape & Reel

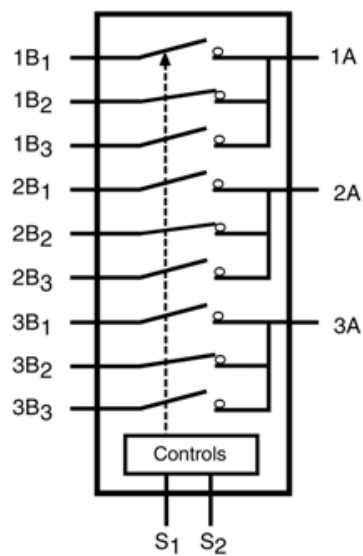
Notes:

1. Pb-Free package per JEDEC J-STD-020B.

Application Diagram



Analog Symbol



Pin Descriptions

Pin Name	Description
S ₁ , S ₂	Select Input
A	Bus A
B ₁ –B ₃	Bus B

Truth Table

S ₁	S ₂	Function
Low	Low	Disconnect
Low	High	A = B ₁
High	Low	A = B ₂
High	High	A = B ₃

Connection Diagrams

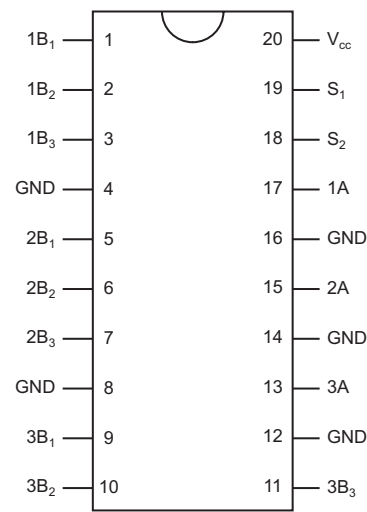


Figure 1. Pin Assignments for TSSOP
(Top Through View)

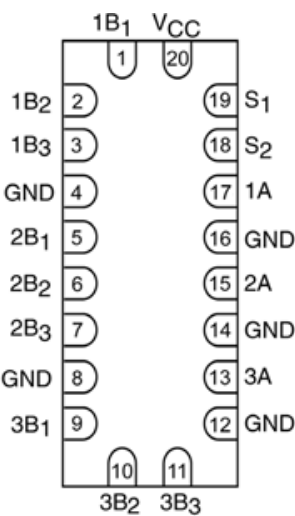


Figure 2. Pad Assignments for DQFN
(Top Through View)

AP1506

150KHz, 3A PWM BUCK DC/DC CONVERTER

General Description

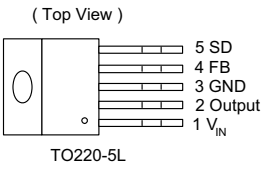
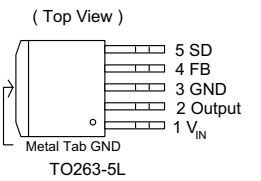
- Output Voltage: 3.3V, 5V, 12V and Adjustable Output Version
- Adjustable Version Output Voltage Range, 1.23V to 18V $\pm$ 4%
- 150KHz $\pm$ 15% Fixed Switching Frequency
- Voltage Mode Non-Synchronous PWM Control
- Thermal-Shutdown and Current-Limit Protection
- ON/OFF Shutdown Control Input
- Operating Voltage can be up to 22V
- Output Load Current: 3A
- TO220-5L, TO263-5L Packages
- Low Power standby mode
- Built-in Switching Transistor On Chip
- Lead Free Finish/RoHS Compliant (Note 1)

The AP1506 series are monolithic IC designed for a step-down DC/DC converter, and own the ability of driving a 3A load without external transistor. Due to reducing the number of external component, the board space can be saved easily. The external shutdown function can be controlled by logic level and then come into standby mode. The internal compensation makes feedback control have good line and load regulation without external design. Regarding protected function, thermal shutdown is to prevent over temperature operating from damage, and current limit is to prevent over current operating of the output switch. If current limit function occurred and V_{FB} is down to 0.5V below, the switching frequency will be reduced. The AP1506 series operate at a switching frequency of 150KHz thus allowing smaller sized filter components than what would be needed with lower frequency switching regulators. Other features include a guaranteed $\pm$ 4% tolerance on output voltage under specified input voltage and output load conditions, and $\pm$

AP1506

150KHz, 3A PWM BUCK DC/DC CONVERTER

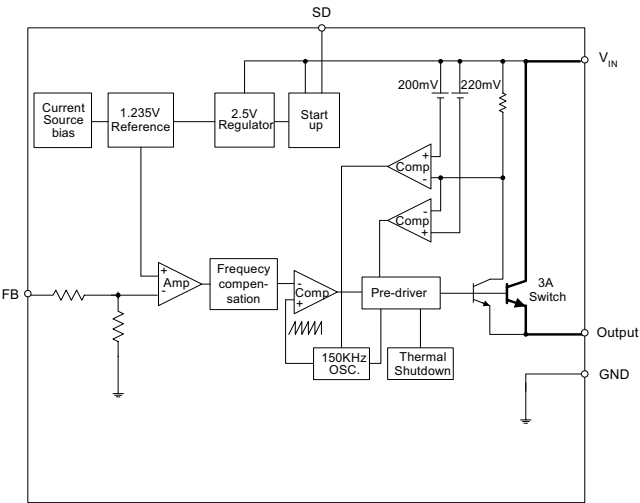
Pin Assignments



Pin Descriptions

Name	Description
V _{IN}	Operating Voltage Input
Output	Switching Output
GND	Ground
FB	Output Voltage Feedback Control
SD	$\overline{\text{ON/OFF}}$ Shutdown

Block Diagram



AP1117

1A Low Dropout Positive Adjustable or Fixed-Mode Regulator

■ Features

- 1.4V maximum dropout at full load current
- Fast transient response
- Output current limiting
- Built-in thermal shutdown
- Packages: SOT223, TO263, TO252, TO220, SOT89
- Good noise rejection
- 3-Terminal Adjustable or Fixed 1.5V, 1.8V, 1.9V, 2.5V, 3.3V, 5.0V

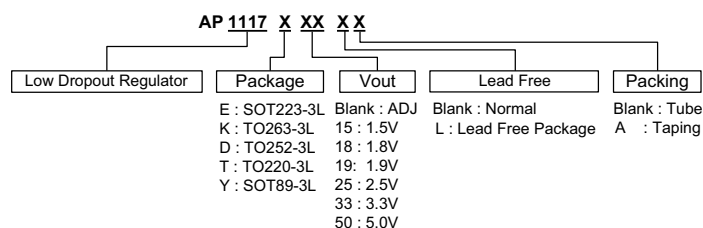
■ Applications

- PC peripheral
- Communication

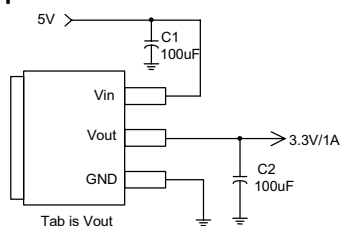
■ General Description

AP1117 is a low dropout positive adjustable or fixed-mode regulator with minimum of 1A output current capability. The product is specifically designed to provide well-regulated supply for low voltage IC applications such as high-speed bus termination and low current 3.3V logic supply. AP1117 is also well suited for other applications such as VGA cards. AP1117 is guaranteed to have lower than 1.4V dropout at full load current making it ideal to provide well-regulated outputs of 1.25 to 5.0 with 6.4V to 12V input supply.

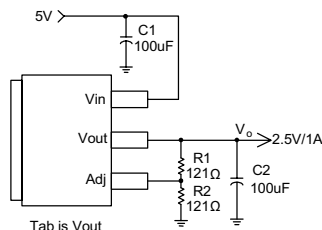
■ Ordering Information



■ Typical Circuit



(5V/3.3V fixed output)



(5V/2.5V ADJ output)

$$\text{Note: } V_o = V_{REF} * \left(1 + \frac{R_2}{R_1}\right)$$

This datasheet contains new product information. Anachip Corp. reserves the rights to modify the product specification without notice. No liability is assumed as a result of the use of this product. No rights under any patent accompany the sale of the product.

Rev.1.1 Feb 15, 2005

承认书

SPECIFICATION FOR APPROVAL

Part No. MLT666BL
Description: LCD Power Supply Specification
Revision: 1.0
Customer: _____
Customer Approval No. : _____

承认签章后请寄回承认书正本一份

Please return to us one original of "SPECIFICATION FOR APPROVAL" with your approved signatures.

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Shenzhen Tensile Digital Tech Co., LTD

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 - 1.1 Input Electrical Characteristics Overview (输入特性)
 - 1.2 Output Electrical Characteristics Overview (输出特性)
 - 1.2.1 Output Voltage ,Current & Regulation. (输出电压电流调整率)
 - 1.2.2 DC Output Ripple & Noise. (输出纹波和噪声)
 - 1.2.3 Output Transient Response. (输出动态响应)
 - 1.2.4 DC Output Hold-Up Time. (输出保持时间)
 - 1.2.4 DC Output Overshoot At Turn On & Turn Off. (输出超调)
 - 1.2.6 DC output voltage rise time (输出上升时间)
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 - 1.4.2 DC Output Over current Protection. (输出过流保护)
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10. Package (包装)

1. Power Supply Overview 电性能指标:

1.1 Table 1 Input Electrical Characteristics Overview (输入特性)

Input voltage range 输入电压	90Vac to 264Vac
Normal voltage range 标称输入	100Vac to 240Vac
Frequency range 频率范围	50Hz/60Hz±5%
Max input ac current 满载输入电流	3.0Amax at full load condition
Inrush current (cold start) 浪涌电流	50A _{typ} peak, 120Vac; 100A _{typ} peak, 220Vac
Efficiency(full load) 效率	80%min at 90Vac; 84%min at 220Vac
Harmonic current 谐波电流	Meet GB17625.1-1998/IEC61000-3-2 class D
Leakage Current 泄漏电流	Less Than 0.75mA, 230Vac input
Standby Power Loss 待机功耗	≤1W, OUTPUT POWER≤0.1W
Input Fuse 输入保险	T5A/250Vac

1.2 Output Electrical Characteristics Overview (输出特性)

1.2.1 Table 2 Output Voltage ,Current & Regulation. (输出调整率)

Output Voltage 输出电压	Regulation 调整率	Min. current 最小电流	Rated current 额定电流			Peak current or power 峰值电流或功率
+V1(+24V)	+V1±5%	0.1 A	6.5A			7.5A*
+V2(+12V)	+V2±10%	0.1 A	1.2A	2A	3A	45W*
+5.0V	+5.0V±5%	0.1 A	4A	2.5A	1A	
+5.0V(STB)	+5.0V±5%	0.1 A	1A	1A	0.5A	

Note: * The peak current or power should be test at other of dc output at Rated load ,And the peak current pulse width within 100ms 峰值电流或功率的测试是在其它额定负载时测试，且脉宽小于 100 毫秒。

1.2.2 Table 3 DC Output Ripple & Noise. (输出纹波和噪声)

Output Voltage	Ripple & Noise (Max.)
+V1(+24V)	240mVp-p@25℃ ; 350mVp-p@-10℃
+V2(+12V)	120mVp-p@25℃ ; 200mVp-p@-10℃
+5.0V	50mVp-p@25℃ ; 200mVp-p@-10℃ ;
+5.0V(STB)	50mVp-p@25℃ ; 200mVp-p@-10℃ ; 150mVpp when STB

Note: 1) Measurements shall be made with an oscilloscope with 20MHz bandwidth.

示波器须设置在 20 兆赫兹带宽

2) Outputs shall be bypassed at the connector with a 0.1uF ceramic capacitor and a

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10uF electrolytic capacitor to simulate system loading.
输出须并联 0.1uF 的陶瓷电容和 10uF 的电解电容来模拟负载

1.2.3 Output Transient Response. (输出动态响应)

Table 4. Test condition.测试条件

Voltage Tolerance Limit	Slew Rate	Load Change
24V/5.0V/5.0VSB $\pm$ 5% 12V $\pm$ 10%	0.2A/uS	Min. to 50% load and 50% to Max load
All output $\pm$ 10%	0.2A/uS	Min. load to Max load

Note: Transient response measurements shall be made with a load changing repetition rate of 50Hz to 10kHz. 以 50~10KHz 的频率跳变负载来测试。

1.2.4 Table 5 DC Output Hold-Up Time. (输出保持时间)

Output Voltage	120Vac input	220Vac input
+V1(+24V)	≥ 10 mS	≥ 10 mS
+V2(+12V)	≥ 10 mS	≥ 10 mS
+5.0V	≥ 10 mS	≥ 10 mS
+5.0V(STB)	≥ 10 mS	≥ 10 mS

Note: All of dc output at full load. 所有输出带满载

1.2.5 Table 6 DC Output Overshoot At Turn On & Turn Off. (输出超调)

Output Channel	Output (V)	Over shoot voltage (V) 超调电压	
		Turn on 开机	Turn off 关机
+V1(+24V)	+24V	10%	5%
+V2(+12V)	+ 12V	10%	5%
+5.0V	+5.0V	10%	5%
+5.0V(STB)	+5.0V	10%	5%

Note: All of dc output current from Min. to Max. 测试时负载范围：最小到最大

1.2.6 Table 7 DC output voltage rise time (输出上升时间)

Output Voltage	120Vac input &Full Load	220Vac input &Full Load
+V1(+24V)	≤ 50 mS	≤ 50 mS
+V2(+12V)	≤ 50 mS	≤ 50 mS
+5.0V	≤ 50 mS	≤ 50 mS
+5.0V(STB)	≤ 50 mS	≤ 50 mS

Note: The output voltages shall rise from10% to 90% of their output voltage.

输出从 10%上升到 90%的时间

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1.3 Remote On/Off Control: (遥控功能)

The power supply DC outputs (without +5.0Vsb) shall be enable with an active-high TTL($\geq 2.5V/2.0mA$)-compatible signal(Ps-on). The +5.0Vsb is on whenever the AC power is present.

除 5.0Vsb 外，其余输出受控于一个 TTL 电平兼容的信号（Ps-on $\geq 2.5V/2.0mA$ ），5.0Vsb 上电就存在。

- * When Ps-on is pulled to TTL high, the DC outputs are to be enabled.
Ps-on 高电平，打开输出
- * When Ps-on is pulled to TTL low or open circuit, the DC outputs are to be disabled.
Ps-on 低电平，关闭输出

Table 8.

Ps-on Signal	Comments	Outputs
Ps-on- high	$\geq 2.5V \& 2.0mA$ (source)	Output
Ps-on- low	$\leq 0.8V$	X
Ps-on-open	--	X

1.4 Protection: (保护功能)

1.4.1 Table 9 DC output Over Voltage Protection. (输出过压保护)

Output Voltage	TYP. Over Voltage	Comments
+V1(+24V)	28V	Power supply latch into shutdown state 输出锁机
+5V	7Vtyp	电源无输出
+5.0V(STB)	7Vtyp	电源无输出

Note: The power supply shall be test at max AC voltage (264Vac) and min load or no load.

应该在最大交流输入电压 264 伏和轻载、空载下测试。

1.4.2 Table 10 DC Output Over current Protection. (输出过流保护)

Output Voltage	Over Current	Comments
+V1(+24V)	$\geq 7.5A_{typ}^*$	Power supply latch into shutdown state 输出锁机
+V2(+12V)	$\geq 3A_{typ}^*$	电源重启
+5V	$\geq 6A_{typ}^*$	电源重启
+5.0V	$\geq 3A_{typ}^*$	电源重启

Note:* The over current protection should be test at other of dc output at Rated load

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过流保护测试是在其它额定负载时测试.

1.4.3 Table 11 DC Output Short Circuit Protection. (输出短路保护)

Output Voltage	Comments
+V1(+24V)	Shutdown 关机
+V2(+12V)	电源重启
+5V	电源重启
+5.0V(STB)	电源重启

Note:* The Short Circuit protection should be test at other of dc output at Rated load
短路保护测试是在其它额定负载时测试.

1.4.4 Reset After Shutdown. (保护功能复位)

Recycle the ps-on signal, the power supply will restart after the fault removed, But +5V、+5.0V(STB)output over voltage can't be reset.

故障去除后, 关掉 Ps-on 信号再打开, 电源即可恢复。+5V、+5.0V(STB)过压后不可恢复。

2. Isolation (绝缘性能)

2.1 Table 12 (绝缘阻抗)

Input To Output	DC500V 50M Ω min (at room temperature)
Input To FG	DC500V 50M Ω min (at room temperature)
Output To FG	Non Isolated

2.2 Table 13 (绝缘耐压)

Input To Output	3000Vac 50Hz 1minute $\leq$ 10mA
Input To FG	1500Vac 50Hz 1minute $\leq$ 10mA
Output To FG	Non Isolated

Note: Open FG and Output return. 交流地和输出负极要断开。

3. Safety (安全规格)

The power supply shall compliance with the following Criterion:

电源安全性满足下列标准

- 1) UL60950
- 2) EN60950

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3) GB4943-1995

4. EMC (电磁兼容性)

4.1 EMI (电磁干扰)

The power supply shall compliance with the following Criterion:

电源电磁干扰满足下列规则:

1) Conduction Emission : (传导干扰度)

*EN55022, CLASS B

*GB9254, CLASS B

*FCC PART15 CLASS B

2) Radiated Emission : (辐射干扰度)

*EN55022, CLASS B

*GB9254, CLASS B

*FCC PART15 CLASS B

注: The power board should be assembled in customer's product to test for passing the regulations 需配合用户电路整机通过上述规则。

4.2 EMS (电磁抗扰)

The power supply shall compliance with the following Criterion:

电源电磁抗扰满足下列规则:

1) ESD (静电抗扰度)

*GB17626.2-1998/IEC61000-4-2

2) EFT (脉冲群抗扰度)

*GB17626.4-1998/IEC61000-4-4 3KV

3) Surge (雷击浪涌)

*GB17626.5-1998/IEC61000-4-5 1.5KV / 3KV

5. Environmental Requirement (工作环境)

5.1 Temperature (环境温度)

* Operating: -10℃ to +50℃.

* Store: -20℃ to +80℃.

5.2 Humidity (环境湿度)

* Operating: From 10%to90% relative humidity (non-condensing).

* Store: From 5 to 95% relative humidity (non-condensing).

5.3 Altitude (海拔高度)

* Operating: to10,000 ft.

* Store: to 20,000ft.

5.4 Cooling Method (冷却方式)

* Ventilation cooling . 自然冷却

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5.5 Vibration (振动耐受)

* 10-55Hz, 19.6m/s² (2G), 3minutes period, 60minutes each along X, Y and Z axis.

5.6 Impact (冲击耐受)

* 49m/s² (5G), 11ms, once each X, Y and Z axis.

6. Dimension (物理尺寸)

* 190mm X 130mm X 25mm (长 L * 宽 W * 高 H).

7. Weight (重量)

* 560g (typ)

8. Pin Connection (连接器脚位定义)

Table 15 Pin-CON5 Connection And Function

NO.	Pin Connection	Function
5. 6. 7. 8	GND	+24VDC RETURN
1. 2. 3. 4	+V1	+24VDC OUTPUT

Note: CON103 -- XH CONNEETION, TYPE : pitch2.5mm

Note: CON103 -- XH CONNEETION, TYPE : pitch2.5mm

Table 17 Pin-CON4 Connection And Function

NO.	Pin Connection	Function
1. 2	GND	+5V +5VSB +12VDC RETURN
3. 4	+5V	+5VDC OUTPUT
5	STB	SMPS ON/OFF CONTROL (ON = HIGH)
6	+5VSB	STANDBY (+5. 0VDC) OUTPUT
7. 8	+5V	+5VDC OUTPUT
9. 10. 11	GND	+5V +5VSB +12VDC RETURN
12. 13	+12V	+12VDC OUTPUT

Note: CON5 -- VH CONNEETION, TYPE : pitch2.5mm

Table 18 Pin-CON1 Connection And Function

NO.	Pin Connection	Function
①	AC-L	AC INPUT LINE
②	NC	NC
③	AC-N	AC INPUT NUTURE

Note: CON1 -- VH CONNEETION, TYPE : pitch3.96mm

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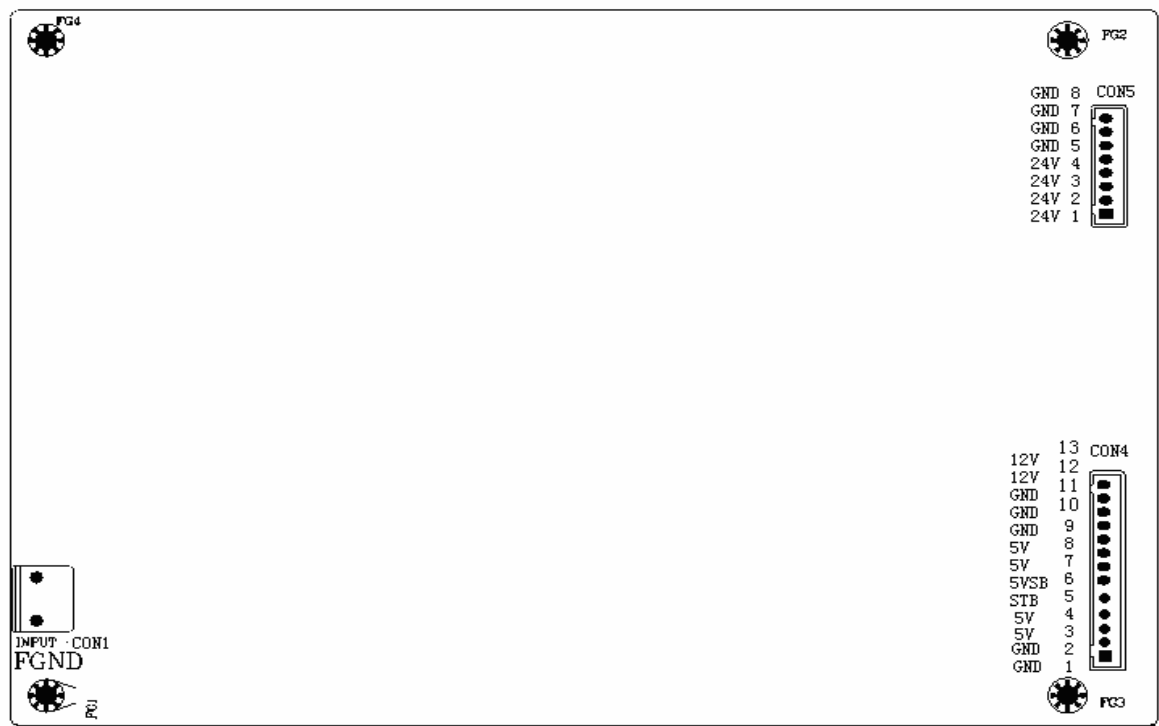
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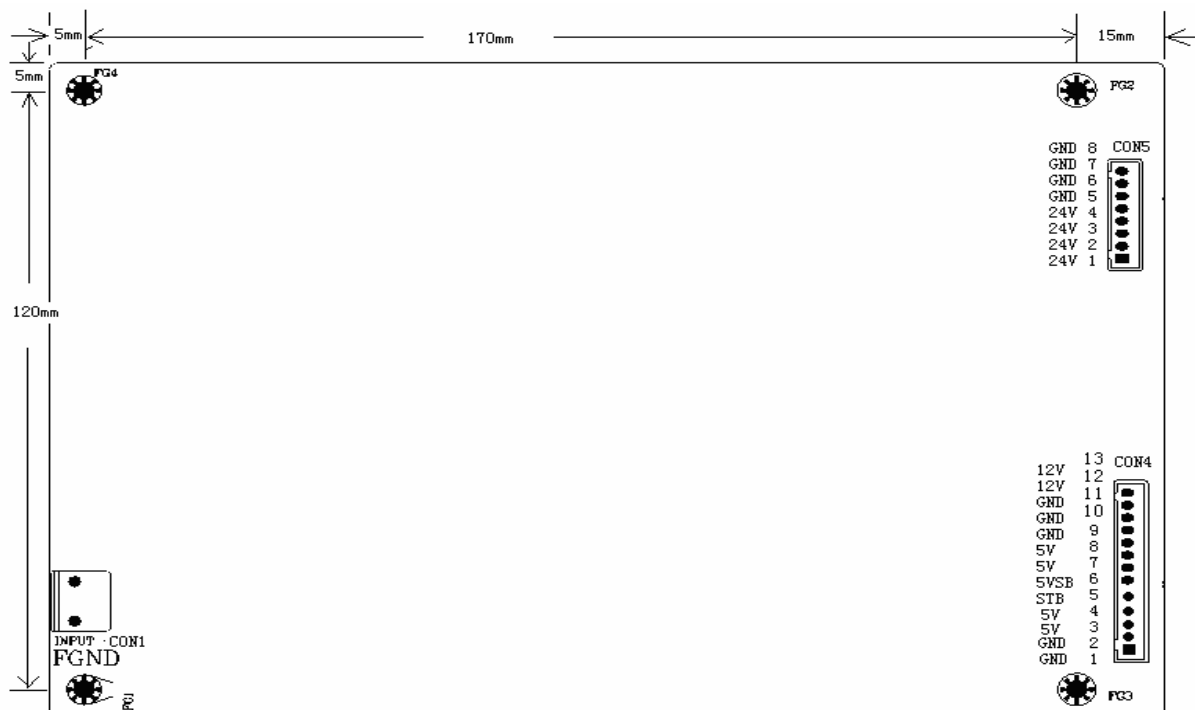
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Fig.8.1 Pin Connection (Top View)
Top View



9. Power Supply Mounting （安装尺寸）

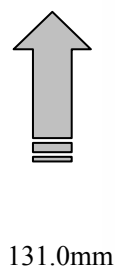
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Mount Method (装配注意事项)

Table 19

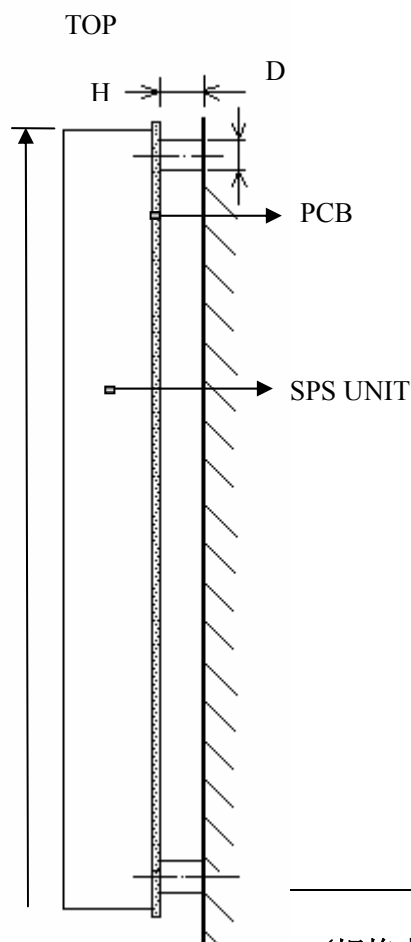
D	$\leq 5.5\text{mm}$ (1*)
H	$\geq 6.0\text{mm}$
	$\geq 3.0\text{mm}$ (2*)



Note:

1*. Mount the unit to the mounting board using M3 screw. The maximum value of the tightening torque is 0.4N-M. The insertion depth of the screw should be less 5.5mm.

2*. Add 136mmx196mmx 0.25mm (W*-H*T)Mylar under PCB bottom.



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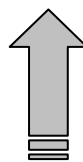
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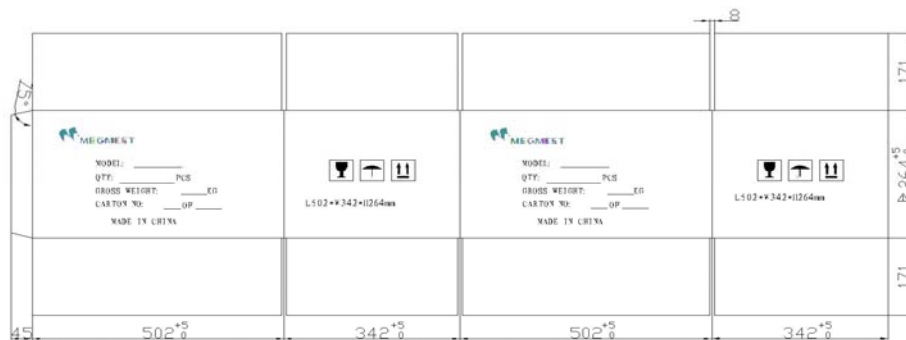
BOTTOM



Nature wind

10. Package 包装

防静电气泡袋，
包装箱尺寸：



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TROUBLESHOOTING

Please check for causes of problems in accordance with the following chart before contacting any maintenance personnel.

DISPLAY TROUBLESHOOTING

Symptom	Causes and Correction
Black screen, power indicator light off	◆ Check whether power cord is well connected, and whether this unit is power on
	◆ Check whether the signal cord of input device is well connected
	◆ Check whether input device is power on
Image display flicker, unstable	◆ Check whether the input device signal is in this unit's specification
	◆ Check computer output mode: control panel-display-setup
	◆ If the setup does not accord with this unit's specification, please change the display setup
	◆ Hor scanning frequency: 30kHz~75kHz
	◆ Ver scanning frequency: 50 Hz~75Hz
	◆ Max display mode: 15":1024X768@75 Hz

SOUND AND TV TROUBLESHOOTING

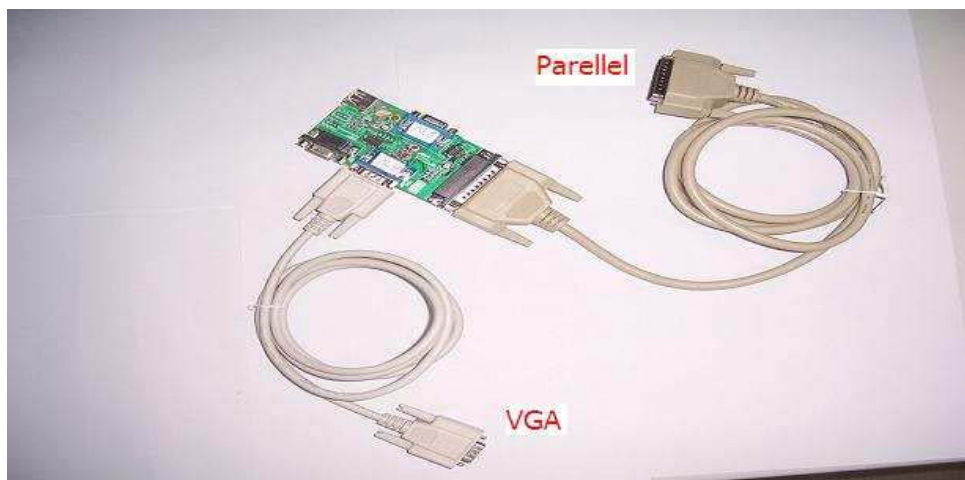
Symptom	Causes and Correction
Cannot power on	◆ Please make sure the well connecting of power cord
No sound	◆ Please make sure the well connecting of audio cord
	◆ Check volume
	◆
Volume too low	◆ Check volume
	◆ If volume is still too low when adjusting volume to maximum, please check whether the input device is well set
Snowy picture	◆ Input antenna damaged or not well connected
Remote control failure	◆ Check whether remote control battery used up
	◆ Whether battery installation is correct
	◆ Whether obstacles exist between remote control and the unit's receiving window
	◆ Check whether receiving window has strong light

Upgrade Software

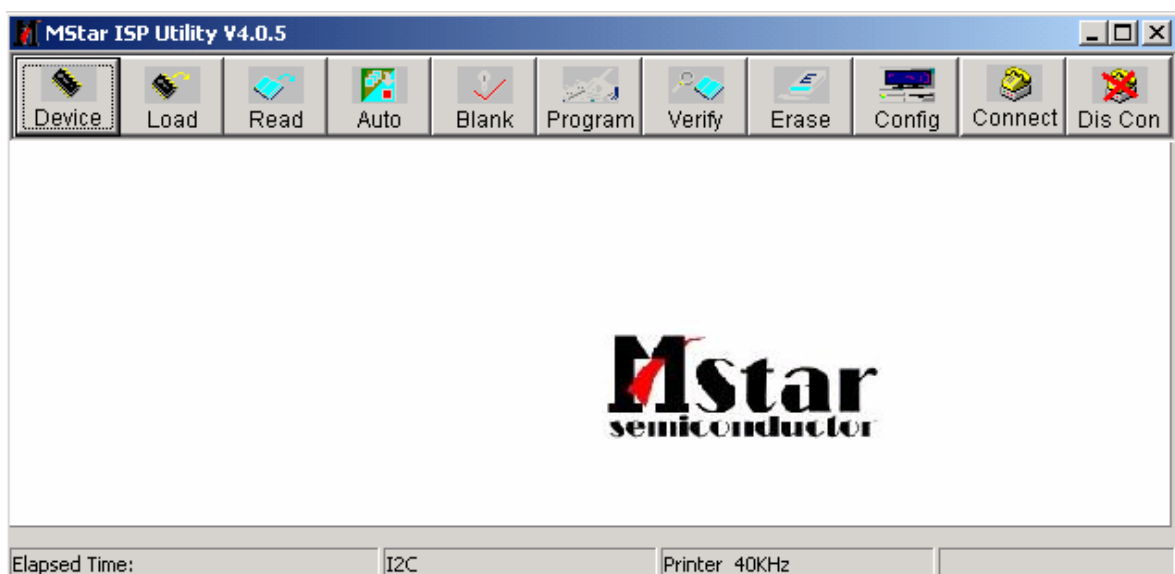
Tips: this software tool is used to upgrade the relevant model of MST718BE solution, so it is unnecessary to install. Open this software and then you may operate as follows:

Operation steps:

1. First connect the upgrade tool: the **parallel** line connect the PC parallel port, the **VGA** line connect the TV unit VGA port, and select the TV unit to “ANALOG TV” source. The upgrade step as follows.

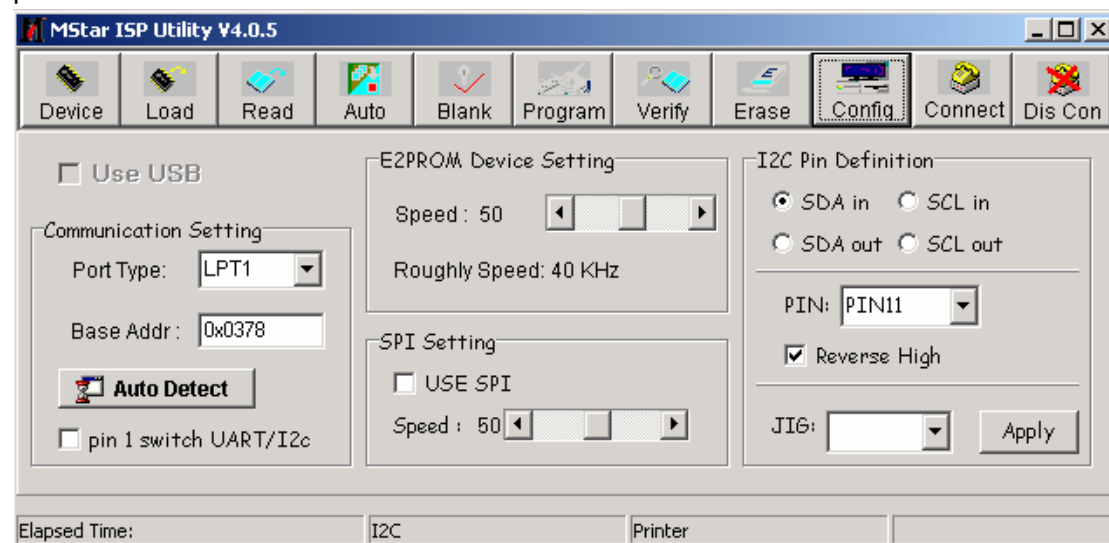


2. After opening Mstar ISP Utility V4.0.5 software, the following interface appears: Seen from this picture.

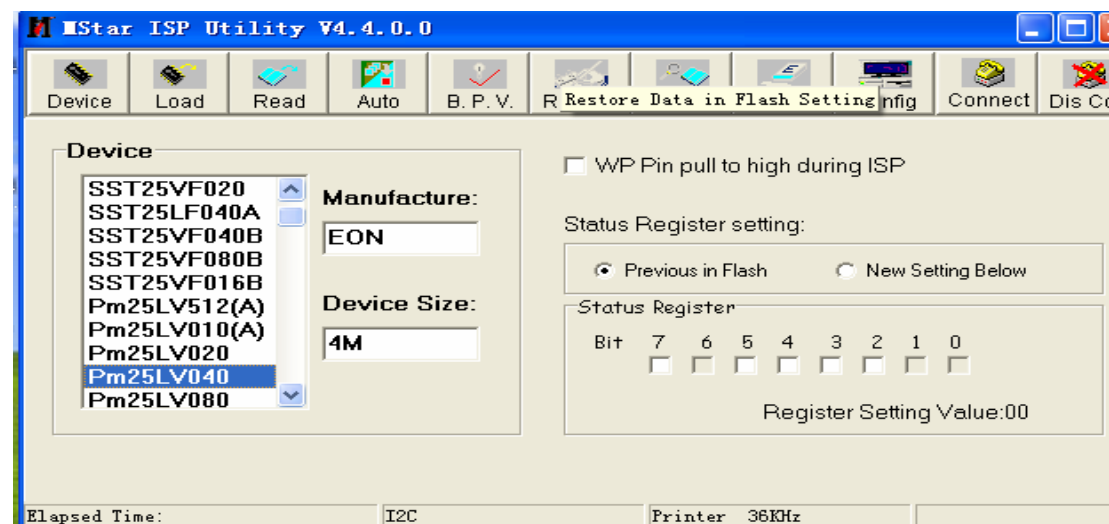


3. If it is the first time for you to use this software tool, please click the “Config” button,

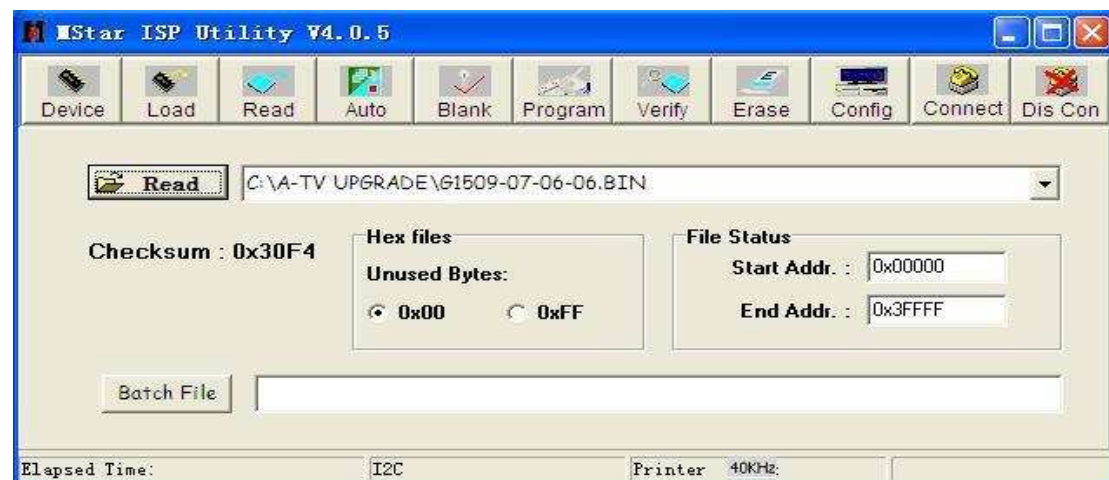
confirm whether the default configuration is correct. If not, please setup this configuration parameter.



4. Please click the “Device” button to select the “Pm25LV040” device, then double click to confirm.



5. After selecting the device, click “Read” button to read the files that need to upgrade.



6. After reading files, click “Auto” button and confirm the parameter is correct, if Ok, please click “Run” button to upgrade the software.



7. If the software update is not Ok, please click the “Run” button and upgrade the software again.



Factory Menu Description

Under the ATV source,
Press the green button on the remote controll, then press the button
SELECT on the remoter control for about 5 seconds to enter factory menu.

