MAX7456 ON SCREEN DISPLAY DEVLOPMENT BOARD

General Description:

The MAX7456 Development Board is a fully assembled and tested Printed-Circuit Board (PCB) that supports SPI interface to MAX7456 signal-channel monochrome on-screen display (OSD) with integrated video driver.

The MAX7456 is single channel monochrome on-screen display(OSD) generator lowers the system cost by eliminating the need for an external video driver, sync separator, video switch and EEPROM. The MAX7456 serves all market with 256 user programmable characters in NTSC and PAL Standards.

The MAX7456 can easily display information such as

1. Company logo.
2. Custom graphics.
3. Time.
4. Date.
5. Arbitrary character size.

The MAX7456 is preloaded with 256 characters and pictograph and can be reprogrammed in-circuit using SPI port.

The MAX7456 is available in a 28 pin TSSOP package and is fully specified over the extended (-40 degree C to +85 degree C) temperature range.

The power LED shows the +5V on board.
Total current MAX7456 board consumes is around 100 ma, power consumption is around 0.5W.

Application:

Security Switching Systems.
Security Cameras.
Industrial Application.
In-Cabin Entertainment.
Consumer Electronics.

Recommended Equipment:

VCC accepts 7-12 Volt 250ma power supply.
NTSC or PAL signal source.
NTSC or PAL video monitor.
Video Cable (RCA cable not included).

Do not turn on the power until all connections are made.

Features:

256 User-Defined Character or Pictograph in integrated EEPROM.
12X18 Pixel Character Size.
Blinking, Inverse and Background Control Character Attribute.
Selectable Brightness by Row.
Display up to 16 Row and 30 Characters.
Sag Compensation on Video-Driver Outputs.
LOS, VSYNC(active low), HSYNC(active low) and clock output.
Integral Sync Generation.
NTSC and PAL Compatible.
SPI-Compatible Serial Interface.
Delivered With Preprogrammed Character Set.

MAX7456 Dev Board Signals:

1. **LOS:** LOS goes high when 32 consecutive valid sync pulses are missing. Connect to 1k or 2.2 k pull up resistor to DVDD or another positive supply voltage suitable for the receiving device. If user want different pull up he can cut the pull up resistor and user external ones.
2. **VSYNC:** Vertical Sync Output (Open Drain, active low). VSYNC goes low following the video input vertical sync internal. VSYNC is either recovered from VIN or internally generated when internal sync mode used. Connect to 1k or 2.2 k pull up resistor to DVDD or another positive supply voltage suitable for the receiving device. If user want different pull up he can cut the pull up resistor and user external ones.
3. **HSYNC:** Horizontal Sync Output (Open Drain, active low). HSYNC goes low following the video input horizontal sync interval.
4. **RESET:** System Reset Input. The minimum RESET Pulse width is 50 msec. All SPI register are reset to their default values after 100 usec following rising edge of RESET. The display memory is reset to its default value of 00h in all location after 20usec following the rising edge of RESET.
5. **VIDEO IPUT:** The MAX7456 accepts NTSC or PAL CVBS Signals at VIN. The video signal input must be AC-Coupled with a 0.1uf capacitor and internally coupled. An input coupling capacitance of 0.1uf is required to guarantee the specific line-time distortion (LTD) and video clamp setting time.
6. **Sync Separator:** The sync separator detects the composite sync pulses on the Video Input and extracts the timing information to generate HSYNC and VSYNC. LOS goes high if no sync signal is detected at VIN for 32 consecutive lines and goes low if 32 consecutive horizontal sync signals are detected.
7. **Serial Interface:** The SPI compatible Serial Interface programs the operating mode and OSD data Read capability permits Write verification

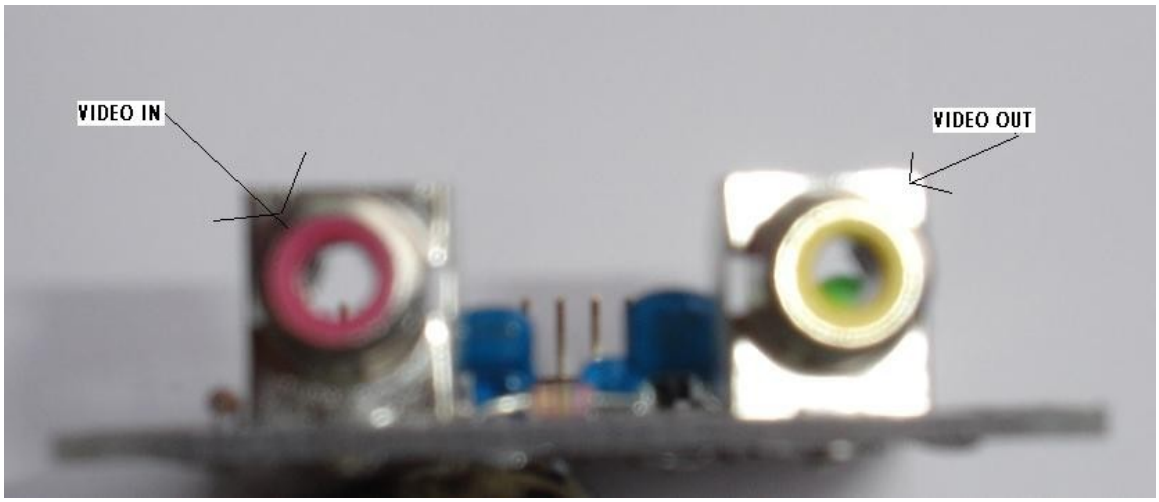
and reading the status (STAT), Display Memory Data Out (DMDO) and Character Memory Data Out(CMDO) registers.

8. **Video-Driver Output:** The MAX7456 includes a Video-driver output with a gain of 2. The driver has a maximum of 2.4Vp-p output swing and a 6MHZ large signal bandwidth. The driver is capable of driving two 150ohms standard video loads.

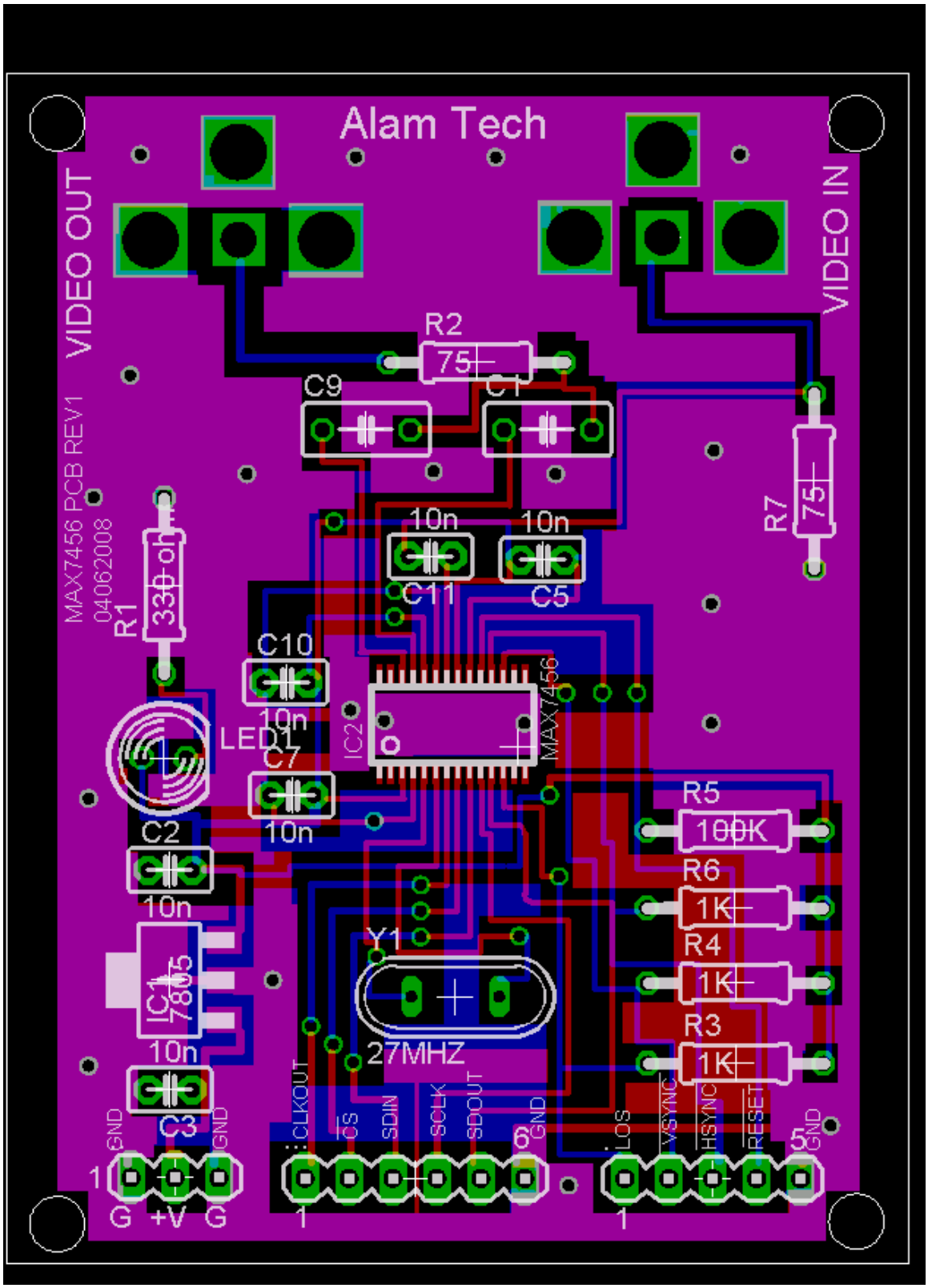
For MAX7456 data sheet, please check these links, you will find sample code along with other useful information.

http://www.maxim-ic.com/
http://www.rcgroups.com/forums/showthread.php?t=732783&page=10#post9926192
http://www.rcgroups.com/forums/showthread.php?t=732783&page=8
http://www.rcgroups.com/forums/showthread.php?t=732783&page=5
http://www.rcgroups.com/forums/showthread.php?t=732783&page=4

MAX7456 DEV BOARD VIDEO IN-OUT RCA CONNECTOR

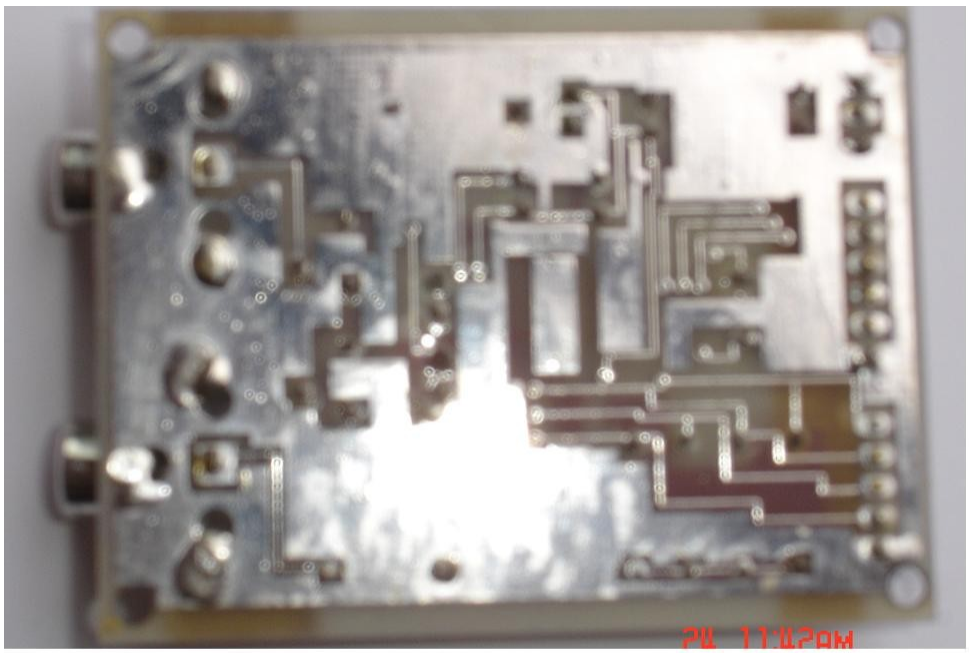


MAX7456 DEV BOARD COMPLETE LAYOUT

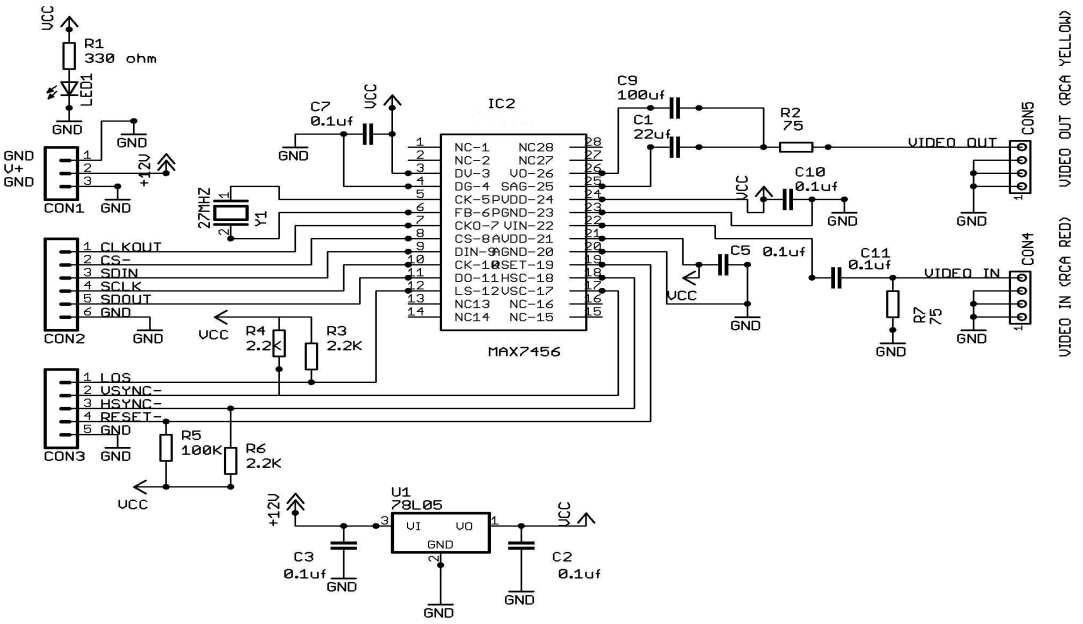


COMPONENT SIDE VIEW

MAX7456 DEV BOARD SOLDER SIDE VIEW



MAX756 DEV BOARD SCHEMATIC



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MAX7456 Board Specification:

1. Board **width is 2.0625 inches.**
2. Board **length is 2.625 inches.**
3. Board **weight is 0.6250 oz (20 grams).**

MAX7456 Board using with +5v supply:

Please short the pin 1 with pin 3 of U1 (7805) voltage regulator.
Check the picture below, just short the pin1 and pin3, so by doing this voltage regulator can be bypass.
Please disconnect R3, R4, R5, R6 if you want to connect the LOS, RESET, VSYNC, HSYNC to 3.3 volt device, use external pull up resistors. All these signals are pull up using +5 volt.

MAX7456 DEV BOARD WITH ALL SIGNALS INFO

MAX756 DEV BOARD CONNETORS:

CON1: (MAIN POWER IN)

INTERFACE	PIN
GND	1
VCC (+7 to +15V)	2
GND	3

CON2: (SPI INTERFACE)

INTERFACE	PIN
CLKOUT (MAX7456 CLK OUT)	1
CS- (SPI)	2
SDIN (SPI)	3
SCLK (SPI)	4
SDOUT (SPI)	5
GND	6

CON3: (MAX7456 STATUS OUT)

INTERFACE	PIN
LOS (ACTIVE HIGH)	1
VSYNC - (ACTIVE LOW)	2
HSYNC - (ACTIVE LOW)	3
RESET- (ACTIVE LOW)	4
GND	5

CON4: (RCA VIDEO IN CONNECTOR)

INTERFACE	PIN
GND	1
GND	2
GND	3
VIDEO IN (NTSC/PAL)	4

CON5: (RCA VIDEO OUT CONNECTOR)

INTERFACE	PIN
GND	1
GND	2
GND	3
VIDEO OUT (NTSC/PAL)	4

MAX756 Dev Board Part List:

PARTS	SPECS	MECH SPEC
CON1	3 PIN (POWER)	0.1 INCH SPACING
CON2	6 PIN (SPI)	0.1 INCH SPACING
CON3	5 PIN (SIGNALS)	0.1 INCH SPACING
CON4	4 PIN (VIDEO IN)	RCA CONNECTOR
CON5	4 PIN (VIDEIO OUT)	RCA CONNECTOR
R1	330 OHMS	¼ W
LED1	GREEN LED	
Y1	27 MHZ	
C7	0.1 UF	50 V
R4	2.2 K	¼ W
R3	2.2 K	¼ W
R5	100 K	¼ W
R6	2.2 K	¼ W
U1	78L05	500 ma +5v regulator
C9	100 UF	16 V
C1	22 UF	16 V
R2	75 OHMS	¼ W
C10	0.1UF	50 V
C5	0.1UF	50 V
C11	0.1UF	50V
R7	75 OHMS	
IC2	MA7456	28 PIN TSSOP
C3	0.1UF	50 V
C2	0.1UF	50V

For more information please contact.

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