

# M52733SP

## 3-CHANNEL VIDEO AMPLIFICATION WITH OSD BLANKING

### DESCRIPTION

The M52733SP is a semiconductor integrated circuit amplifies video signals, having a 3-channel amplifier with a band width of 130MHz. The circuit also features the OSD blanking function.

The circuit is most useful with high resolution displays that have OSD, and its function are available for each channel, including OSD blanking, wide-band amplification, contrast control (main and sub), and brightness control.

### FEATURES

- Frequency band width: RGB.....130MHz (3VP-P)  
Input :RGB.....0.7VP-P (typ.)  
BLK .....3.0VP-P min. (positive)  
Output :RGB.....4.0VP-P (max.)
- To adjust contrast, two types of controls are provided, main and sub. With the main control, the contrast of the 3-channels can be changed simultaneously. Sub controls are used to adjust the contrast of a given channel individually. The control terminals can be controlled by applying a voltage of 0 to 5V.
- The DC power remains stable at the IC output terminal because a feedback circuit is built in.

### APPLICATION

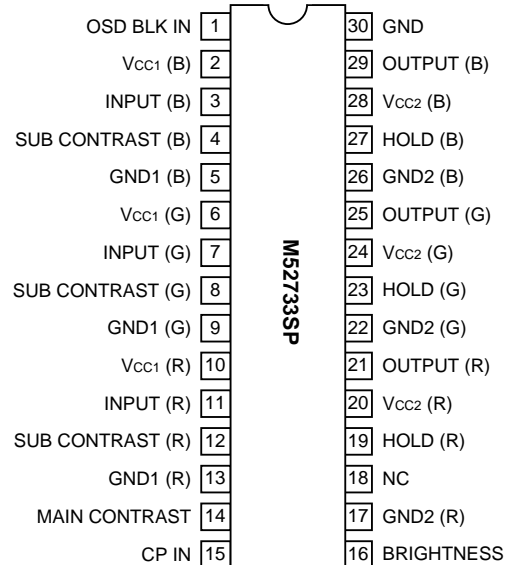
Display monitor

### RECOMMENDED OPERATING CONDITION

Supply voltage range.....11.5 to 12.5V

Rated supply voltage.....12.0V

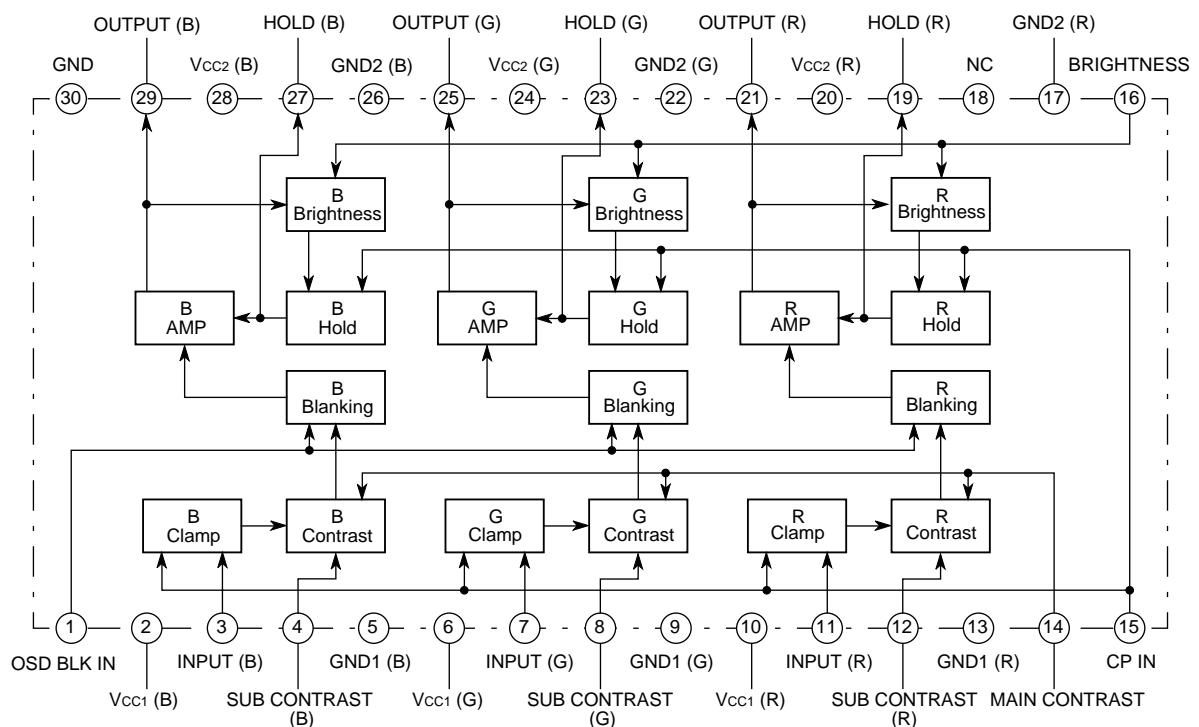
### PIN CONFIGURATION (TOP VIEW)



Outline 30P4B

NC : NO CONNECTION

### BLOCK DIAGRAM



**M52733SP****3-CHANNEL VIDEO AMPLIFICATION WITH OSD BLANKING****ABSOLUTE MAXIMUM RATINGS** (Ta=25°C)

Symbol	Parameter	Ratings	Unit
V <sub>CC</sub>	Supply voltage	13.0	V
P <sub>d</sub>	Power dissipation	1736	mW
T <sub>opr</sub>	Ambient temperature	-20 to +85	°C
T <sub>stg</sub>	Storage temperature	-40 to +150	°C
V <sub>opr</sub>	Recommended supply voltage	12.0	V
V <sub>opr'</sub>	Recommended supply voltage range	11.5 to 12.5	V
Surge	Electrostatic discharge	±200	V

**ELECTRICAL CHARACTERISTICS** (V<sub>CC</sub>=12V, Ta=25°C, unless otherwise noted)

Symbol	Parameter	Test conditions									Limits			Unit	
		Test point (s)	Input			External power supply (V)			Pulse input						
			SW11 R-ch	SW7 G-ch	SW3 B-ch	V4	V14	V16	SW1	SW15	Min.	Typ.	Max.		
I <sub>CC</sub>	Circuit current	A	a —	a —	a —	5	5	5	a —	b SG5	60	83	123	mA	
V <sub>omax</sub>	Output dynamic range	T.P.29 T.P.25 T.P.21	b SG6	b SG6	b SG6	5	5	Variable	a —	b SG5	5.8	6.8	9.0	V <sub>P-P</sub>	
V <sub>imax</sub>	Maximum input	T.P.29 T.P.25 T.P.21	b SG6	b SG6	b SG6	5	2.5	1	a —	b SG5	1	1.8	—	V <sub>P-P</sub>	
G <sub>v</sub>	Maximum gain	T.P.29 T.P.25 T.P.21	b SG6	b SG6	b SG6	5	5	2	a —	b SG5	15	17	20	dB	
ΔG <sub>v</sub>	Rrlative maximum gain		Relative to measured values above									0.8	1	1.2	—
V <sub>CR1</sub>	Contrast control characteristics (typical)	T.P.29 T.P.25 T.P.21	b SG6	b SG6	b SG6	5	4	2	a —	b SG5	14	15.5	17	dB	
ΔV <sub>CR1</sub>	Contrast control relative characteristics (typical)		Relative to measured values above									0.8	1	1.2	—
V <sub>CR2</sub>	Contrast control characteristics (minimum)	T.P.29 T.P.25 T.P.21	b SG6	b SG6	b SG6	5	1	2	a —	b SG5	0.3	0.6	0.9	V <sub>P-P</sub>	
ΔV <sub>CR2</sub>	Contrast control relative characteristics (minimum)		Relative to measured values above									0.8	1	1.2	—
V <sub>SCR1</sub>	Sub contrast control characteristics (typical)	T.P.29 T.P.25 T.P.21	b SG6	b SG6	b SG6	4	5	2	a —	b SG5	14	15.5	17	dB	
ΔV <sub>SCR1</sub>	Sub contrast control relative characteristics (typical)		Relative to measured values above									0.8	1	1.2	—
V <sub>SCR2</sub>	Sub contrast control characteristics (minimum)	T.P.29 T.P.25 T.P.21	b SG6	b SG6	b SG6	1	5	2	a —	b SG5	0.5	0.9	1.3	V <sub>P-P</sub>	
ΔV <sub>SCR2</sub>	Sub contrast control relative characteristics (minimum)		Relative to measured values above									0.8	1	1.2	—
V <sub>SCR3</sub>	Contrast/sub contrast control characteristics (typical)	T.P.29 T.P.25 T.P.21	b SG6	b SG6	b SG6	3	3	2	a —	b SG5	0.8	1.5	2.2	V <sub>P-P</sub>	
ΔV <sub>SCR3</sub>	Contrast/sub contrast control relative characteristics (typical)		Relative to measured values above									0.8	1	1.2	—
V <sub>B1</sub>	Brightness control characteristics (maximum)	T.P.29 T.P.25 T.P.21	a —	a —	a —	5	5	4	a —	b SG5	3.0	3.6	4.2	V	
ΔV <sub>B1</sub>	Brightness control relative characteristics (maximum)		Relative to measured values above									-0.3	0	0.3	V

**3-CHANNEL VIDEO AMPLIFICATION WITH OSD BLANKING****ELECTRICAL CHARACTERISTICS** (cont.)

Symbol	Parameter	Test conditions									Limits			Unit	
		Test point (s)	Input			External power supply (V)			Pulse input						
			SW11 R-ch	SW7 G-ch	SW3 B-ch	V4	V14	V16	SW1	SW15	Min.	Typ.	Max.		
V <sub>B2</sub>	Brightness control characteristics (typical)	T.P.29 T.P.25 T.P.21	a —	a —	a —	5	5	2.5	a —	b SG5	1.7	2.3	2.9	V	
ΔV <sub>B2</sub>	Brightness control relative characteristics (typical)		Relative to measured values above									-0.3	0	0.3	V
V <sub>B3</sub>	Brightness control characteristics (minimum)	T.P.29 T.P.25 T.P.21	a —	a —	a —	5	5	1	a —	b SG5	0.5	0.9	1.3	V	
ΔV <sub>B3</sub>	Brightness control relative characteristics (minimum)		Relative to measured values above									-0.3	0	0.3	V
F <sub>C1</sub>	Frequency characteristics 1 (f=50MHz)	T.P.29 T.P.25 T.P.21	b SG2	b SG2	b SG2	5	2.5	V <sub>T</sub>	a —	a —	-2.5	-1	3	dB	
ΔF <sub>C1</sub>	Frequency relative characteristics 1 (f=50MHz)		Relative to measured values above									-1	0	1	dB
F <sub>C1'</sub>	Frequency characteristics 1 (f=130MHz;maximum)	T.P.29 T.P.25 T.P.21	b SG3	b SG3	b SG3	5	2.5	V <sub>T</sub>	a —	a —	-3	-2	3	dB	
ΔF <sub>C1'</sub>	Frequency relative characteristics 1 (f=130MHz;maximum)		Relative to measured values above									-1	0	1	dB
F <sub>C2</sub>	Frequency characteristics 2 (f=130MHz; maximum)	T.P.29 T.P.25 T.P.21	b SG3	b SG3	b SG3	5	1.5	V <sub>T</sub>	a —	a —	-3	0	3	dB	
ΔF <sub>C2'</sub>	Frequency relative characteristics 2 (f=130MHz; maximum)		Relative to measured values above									-1	0	1	dB
C.T.1	Crosstalk 1 (f=50MHz)	T.P.29 T.P.25 T.P.21	b SG2	a —	a —	5	5	V <sub>T</sub>	a —	a —	—	-30	-20	dB	
C.T.1'	Crosstalk 1 (f=130MHz)	T.P.29 T.P.25 T.P.21	b SG3	a —	a —	5	5	V <sub>T</sub>	a —	a —	—	-20	-15	dB	
C.T.2	Crosstalk 2 (f=50MHz)	T.P.29 T.P.25 T.P.21	a —	b SG2	a —	5	5	V <sub>T</sub>	a —	a —	—	-30	-20	dB	
C.T.2'	Crosstalk 2 (f=130MHz)	T.P.29 T.P.25 T.P.21	a —	b SG3	a —	5	5	V <sub>T</sub>	a —	a —	—	-20	-15	dB	
C.T.3	Crosstalk 3 (f=50MHz)	T.P.29 T.P.25 T.P.21	a —	a —	b SG2	5	5	V <sub>T</sub>	a —	a —	—	-30	-20	dB	
C.T.3'	Crosstalk 3 (f=130MHz)	T.P.29 T.P.25 T.P.21	a —	a —	b SG3	5	5	V <sub>T</sub>	a —	a —	—	-20	-15	dB	
Tr	Pulse characteristics 1	T.P.29 T.P.25 T.P.21	b SG4	b SG4	b SG4	5	3.3	2	a —	b SG5	—	3	7	nsec	
Tf	Pulse characteristics 2	T.P.29 T.P.25 T.P.21	b SG4	b SG4	b SG4	5	3.3	2	a —	b SG5	—	4	8	nsec	
V14th	Clamp pulse threshold voltage	T.P.29 T.P.25 T.P.21	a —	a —	a —	5	5	2	a —	b SG5	1.0	1.5	2.0	V <sub>DC</sub>	
W14	Clamp pulse minimum width	T.P.29 T.P.25 T.P.21	a —	a —	a —	5	5	2	a —	b SG5	—	0.1	0.5	μsec	
P <sub>DCH</sub>	Pedestal voltage temperatere characteristics1	T.P.29 T.P.25 T.P.21	b SG6	b SG6	b SG6	5	5	2	a —	b SG5	-0.3	0	0.3	V <sub>DC</sub>	

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## ELECTRICAL CHARACTERISTICS (cont.)

Symbol	Parameter	Test conditions									Limits			Unit
		Test point (s)	Input			External power supply (V)			Pulse input					
			SW11 R-ch	SW7 G-ch	SW3 B-ch	V4	V14	V16	SW1	SW15	Min.	Typ.	Max.	
PDCL	Pedestal voltage temperatere characteristics2	T.P.29 T.P.25 T.P.21	b SG6	b SG6	b SG6	5	5	2	a –	b SG5	-0.3	0	0.3	VDC
V1th	BLK input threshold voltage	T.P.29 T.P.25 T.P.21	b SG6	b SG6	b SG6	5	5	2	b SG7	b SG5	1.7	2.5	3.5	VDC

## ELECTRICAL CHARACTERISTICS TEST METHOD

1. Because a description of signal input pin and pulse input pin switch numbers is already given in Supplementary Table, only external power supply switch numbers are included in the notes below.

Sub contrast voltages V4, V8 and V12 are always set to the same voltage, therefore only V4 is referred to in Supplementary Table.

## Icc Circuit current

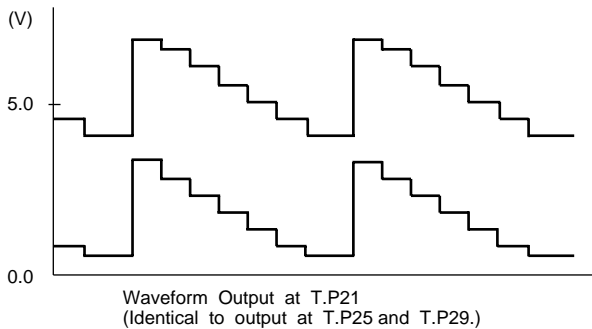
Measuring conditions are as listed in Supplementary Table.

Measured with an ammeter At test point A when SW A is set to b.

## Vomax Output dynamic range

Voltage V16 is varied as described below:

- Increase V16 gradually while inputting SG6 to pin 11 (7 or 3). Measure the voltage when the top of the waveform output at T.P.21 (25 or 29) is distorted. The voltage is called V<sub>TR1</sub> (V<sub>TG1</sub> or V<sub>TB1</sub>). Next, decrease V16 gradually, and measure the voltage when the bottom of the waveform output at T.P.29 (25 or 21) is distorted. The voltage is called V<sub>TR2</sub> (V<sub>TG2</sub> or V<sub>TB2</sub>).



- Voltage V<sub>T</sub> (V<sub>TR</sub>, V<sub>TG</sub> and V<sub>TB</sub>) is calculated by the equation below:

$$V_{TR} (V_{TG}, V_{TB}) = \frac{V_{TR1} (V_{TG1}, V_{TB1}) + V_{TR2} (V_{TG1}, V_{TB1})}{2}$$

Use relevant voltages, depending on the pin at which the waveform is output; specifically, use V<sub>TR1</sub> when it is output at T.P.21; V<sub>TG1</sub>, at T.P.25, and V<sub>TB</sub>, at T.P.29.

- After setting V<sub>TR</sub> (V<sub>TG</sub> or V<sub>TB</sub>), increase the SG6 amplitude gradually, starting from 700mV. Measure the amplitude when the top and bottom of the waveform output at T.P.21 (25 or 29) starts becoming distorted synchronously.

## Vimax Maximum input

Measuring conditions are the same as those used above, except that the setting of V14 is changed to 2.5V as specified in Supplementary Table. Increase the input signal amplitude gradually, starting from 700mV<sub>P-P</sub>. Measure the amplitude when the output signal starts becoming distorted.

## Gv Maximum gain

## ΔGv Relative maximum gain

- Input SG6 to pin 11 (7 or 3), and read the amplitude at output T.P.21 (25 or 29). The amplitude is called V<sub>OR1</sub> (V<sub>OG1</sub> or V<sub>OB1</sub>).
- Maximum gain G<sub>V</sub> is calculated by the equation below:

$$G_V = 20 \text{ LOG } \frac{V_{OR1} (V_{OG1}, V_{OB1})}{0.7} \frac{[V_{P-P}]}{[V_{P-P}]}$$

- Relative maximum gain ΔG is calculated by the equation below:

$$\Delta G_V = V_{OR1}/V_{OG1}, V_{OG1}/V_{OB1}, V_{OB1}/V_{OR1}$$

## Vcr1 Contrast control characteristics (typical)

## ΔVcr1 Contrast control relative characteristics (typical)

- Measuring conditions are as given in Supplementary Table. The setting of V14 is changed to 4V.
- Measure the amplitude output at T.P.21 (25 or 29). The measured value is called V<sub>OR2</sub> (V<sub>OG2</sub> or V<sub>OB2</sub>).
- Contrast control characteristics V<sub>CR1</sub> and relative characteristics ΔV<sub>CR1</sub> are calculated, respectively, by the equations below:

$$V_{CR1} = 20 \text{ LOG } \frac{V_{OR2} (V_{OG2}, V_{OB2})}{0.7} \frac{[V_{P-P}]}{[V_{P-P}]}$$

$$\Delta V_{CR1} = V_{OR2}/V_{OG2}, V_{OG2}/V_{OB2}, V_{OB2}/V_{OR2}$$

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**VCR2 Contrast control characteristics (minimum)**

**ΔVCR2 Contrast control relative characteristics (minimum)**

1. Measuring conditions are as given in Supplementary Table.  
The setting of V14 is changed to 1.0V.
2. Measure the amplitude output at T.P21 (25 or 29). The measured value is called VOR3 (VOG3 or VOB3), and is treated as VCR2.
3. Contrast control relative characteristics ΔVCR2 are calculated by the equation below:

$$\Delta V_{CR2} = V_{OR3}/V_{OG3}, V_{OG3}/V_{OB3}, V_{OB3}/V_{OR3}$$

**VSCR1 Sub contrast control characteristics (typical)**

**ΔVSCR1 Sub contrast control relative characteristics (typical)**

1. Set V4, V8 and V12 to 4.0V. Other conditions are as given in Supplementary Table.
2. Measure the amplitude output at T.P21 (25 or 29). The measured value is called VOR4 (VOG4 or VOB4).
3. Sub contrast control characteristics VSCR1 and relative characteristics ΔVSCR1 are calculated, respectively, by the equations below:

$$V_{SCR1} = 20 \log \frac{V_{OR4} (V_{OG4}, V_{OB4})}{0.7} \frac{[VP-P]}{[VP-P]}$$

$$\Delta V_{SCR1} = V_{OR4}/V_{OG4}, V_{OG4}/V_{OB4}, V_{OB4}/V_{OR4}$$

**VSCR2 Sub contrast control characteristics (minimum)**

**ΔVSCR2 Sub contrast control relative characteristics (minimum)**

1. Set V4, V8 and V12 to 1.0V. Other conditions are as given in Supplementary Table.
2. Measure the amplitude output at T.P21 (25 or 29). The measured value is called VOR5 (VOG5 or VOB5).
3. Relative characteristics ΔVSCR2 are calculated by the equation below:

$$\Delta V_{SCR2} = V_{OR5}/V_{OG5}, V_{OG5}/V_{OB5}, V_{OB5}/V_{OR5}$$

**VSCR3 Contrast/sub contrast control characteristics (typical)**

**ΔVSCR3 Contrast/sub contrast control relative characteristics (typical)**

1. Set V4, V8, V12 and V14 to 3.0V. Other conditions are as given in Supplementary Table.
2. Measure the amplitude at T.P21 (25 or 29). The measured value is called VOR6 (VOG6 or VOB6).

$$V_{CR3} = 20 \log \frac{V_{OR6} (V_{OG6}, V_{OB6})}{0.7} \frac{[VP-P]}{[VP-P]}$$

$$\Delta V_{CR3} = V_{OR6}/V_{OG6}, V_{OG6}/V_{OB6}, V_{OB6}/V_{OR6}$$

**VB1 Brightness control characteristics (maximum)**

**ΔVB1 Brightness control relative characteristics (maximum)**

1. Measuring conditions are as given in Supplementary Table.
2. Measure the output at T.P21 (25 or 29) with a voltmeter.  
The measured value is called VOR7 (VOG7 or VOB7), and is treated as VB1.
3. To obtain brightness control relative characteristics, calculate the difference in the output between the channels, using VOR7, VOG7 and VOB7.

$$\Delta V_{B1} = V_{OR7} - V_{OG7} \quad [mV]$$

$$= V_{OG7} - V_{OB7}$$

$$= V_{OB7} - V_{OR7}$$

**VB2 Brightness control characteristics (typical)**

**ΔVB2 Brightness control relative characteristics (typical)**

1. Measuring conditions are as given in Supplementary Table.
2. Measure the output at T.P21 (25 or 29) with a voltmeter.  
The measured value is called VOR7' (VOG7' or VOB7'), and is treated as VB2.
3. To obtain brightness control relative characteristics (ΔVB2), calculate the difference in the output between the channels, using VOR7', VOG7', and VOB7'.

$$\Delta V_{B2} = V_{OR7'} - V_{OG7'} \quad [mV]$$

$$= V_{OG7'} - V_{OB7'}$$

$$= V_{OB7'} - V_{OR7'}$$

**VB3 Brightness control characteristics (minimum)**

**ΔVB3 Brightness control relative characteristics (minimum)**

1. Measuring conditions are as given in Supplementary Table.
2. Measure the output at T.P21 (25 or 29) with a voltmeter.  
The measured value is called VOR7'' (VOG7'' or VOB7''), and is treated as VB2.
3. To obtain brightness control relative characteristics (ΔVB3), calculate the difference in the output between the channels, using VOR7'', VOG7'' and VOB7''.

$$\Delta V_{B3} = V_{OR7''} - V_{OG7''} \quad [mV]$$

$$= V_{OG7''} - V_{OB7''}$$

$$= V_{OB7''} - V_{OR7''}$$

**Fc1 Frequency characteristics1 (f=50MHz)**

**ΔFc1 Frequency relative characteristics1 (f=50MHz)**

**Fc1' Frequency characteristics1 (f=130MHz; maximum)**

**ΔFc1' Frequency relative characteristics1 (f=130MHz; maximum)**

1. Measuring conditions are as given in Supplementary Table.
2. SG2 and SG3 are input. The amplitude of the waveform output at T.P21 (25 or 29) is measured by the same procedure as in Gv, ΔGv.

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3. Supposing that the measured value is treated as amplitude  $V_{OR1}$  ( $V_{OG1}$  or  $V_{OB1}$ ) when SG1 is input, as  $V_{OR8}$  ( $V_{OG8}$  or  $V_{OB8}$ ) when SG2 is input, or as  $V_{OR9}$  ( $V_{OG9}$  or  $V_{OB9}$ ) when SG3 is input, frequency characteristics  $F_{C1}$  and  $F_{C1'}$  are calculated as follows:

$$F_{C1} = 20 \log \frac{V_{OR8} (V_{OG8}, V_{OB8})}{V_{OR1} (V_{OG1}, V_{OB1})} \frac{[V_{P-P}]}{[V_{P-P}]}$$

$$F_{C1'} = 20 \log \frac{V_{OR9} (V_{OG9}, V_{OB9})}{V_{OR1} (V_{OG1}, V_{OB1})} \frac{[V_{P-P}]}{[V_{P-P}]}$$

4. Frequency relative band widths  $\Delta F_{C1}$  and  $\Delta F_{C1'}$  are equal to the difference in  $F_{C1}$  and  $F_{C1'}$ , respectively, between the channels.

**Fc2 Frequency characteristics2 (f=130MHz; maximum)** **$\Delta F_{C2'}$  Frequency relative characteristics2**

(f=130MHz; maximum)

Measuring conditions and procedure are the same as described in  $F_{C1}$ ,  $\Delta F_{C1}$ ,  $F_{C1'}$ ,  $\Delta F_{C1'}$ , except that CONTRAST (V14) is turned down to 1.5V.

**C.T.1 Crosstalk1 (f=50MHz)****C.T.1' Crosstalk1 (f=130MHz)**

- Measuring conditions are as given in Supplementary Table.
- Input SG2 (or SG3) to pin 11 (R-ch) only, and then measure the waveform amplitude output at T.P21 (25 or 29). The measured value is called  $V_{OR}$ ,  $V_{OG}$  and or  $V_{OB}$  respectively.
- Crosstalk C.T. 1 is calculated by the equation below:

$$\frac{C.T.1}{(C.T.1')} = 20 \log \frac{V_{OG} \text{ or } V_{OB}}{V_{OR}} \frac{[V_{P-P}]}{[V_{P-P}]} \text{ [dB]}$$

**C.T.2 Crosstalk2 (f=50MHz)****C.T.2' Crosstalk2 (f=130MHz)**

- Change the input pin from pin 11 (R-ch) to pin 7 (G-ch), and measure the output in the same way as in C.T.1, C.T.1'.
- Crosstalk C.T. 2 is calculated by the equation below:

$$\frac{C.T.2}{(C.T.2')} = 20 \log \frac{V_{OR} \text{ or } V_{OB}}{V_{OG}} \frac{[V_{P-P}]}{[V_{P-P}]} \text{ [dB]}$$

**C.T.3 Crosstalk3 (f=50MHz)****C.T.3' Crosstalk3 (f=130MHz)**

- Change the input pin from pin 11 (R-ch) to pin 3 (B-ch), and measure the output in the same way as in C.T.1, C.T.1'.
- Crosstalk C.T. 3 is calculated by the equation below:

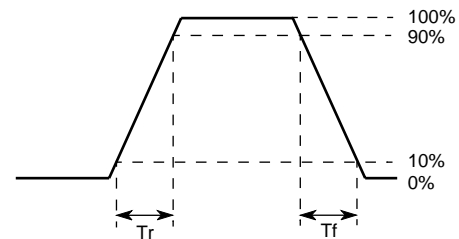
$$\frac{C.T.3}{(C.T.3')} = 20 \log \frac{V_{OR} \text{ or } V_{OG}}{V_{OB}} \frac{[V_{P-P}]}{[V_{P-P}]} \text{ [dB]}$$

**Tr Pulse characteristics1****Tf Pulse characteristics2**

- Measuring conditions are as given in Supplementary Table.
- Measure the time needed for the input pulse to rise from 10% to 90% ( $Tr1$ ) and to fall from 90% to 10% ( $Tf1$ ) with an active prove.
- Measure the time needed for the output pulse to rise from 10% to 90% ( $Tr2$ ) and to fall from 90% to 10% ( $Tf2$ ) with an active prove.
- Pulse characteristics  $Tr$  and  $Tf$  are calculated by the equation below:

$$Tr \text{ (nsec)} = \sqrt{(Tr2)^2 - (Tr1)^2}$$

$$Tf \text{ (nsec)} = \sqrt{(Tf2)^2 - (Tf1)^2}$$

**V14th Clamp pulse threshold voltage**

- Measuring conditions are as given in Supplementary Table.
- Turn down the SG5 input level gradually, monitoring the output (about 2.0 VDC). Measure the SG5 input level when the output reaches 0V.

**W14 Clamp pulse minimum width**

Under the same conditions as given in V14th, reduce the SG5 pulse width gradually, monitoring the output. Measure the SG5 pulse width when the output reaches 0V.


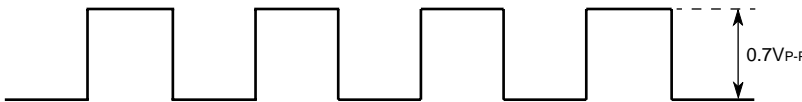
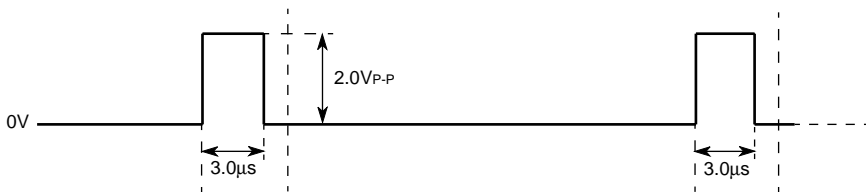
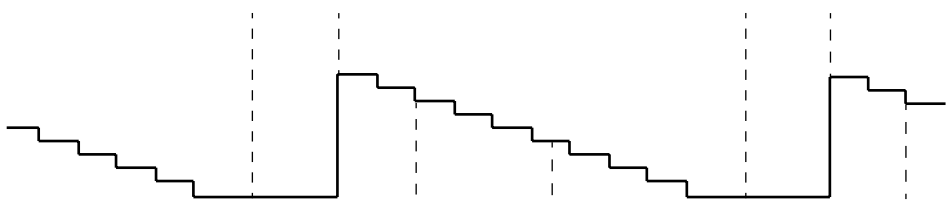
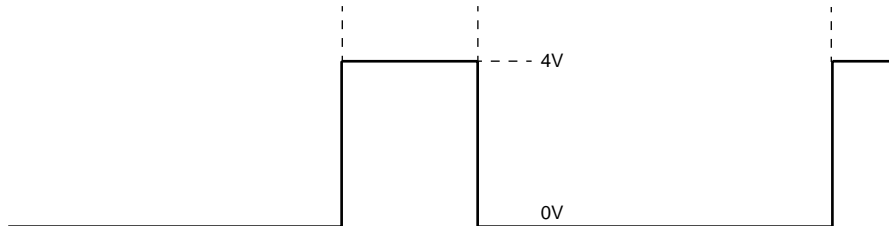
**PdCH Pedestal voltage temperature characteristics1****PdCL Pedestal voltage temperature characteristics2**

- Measuring conditions are as given in Supplementary Table.
- Measure the pedestal voltage at room temperature. The measured value is called  $P_{DC1}$ .
- Measure the pedestal voltage at temperatures of -20°C and 85°C. The measured value is called, respectively,  $P_{DC2}$  and  $P_{DC3}$ .
- $P_{DCH} = P_{DC1} - P_{DC2}$   
 $P_{DCL} = P_{DC1} - P_{DC3}$

**V1th BLK input threshold voltage**

- Measuring conditions are as given in Supplementary Table.
- Make sure that signals are not being output synchronously with SG7 (blanking period).
- Reduce the SG7 input level gradually, monitoring output. Measure the SG7 level when the blanking period disappears. The measured value is called V1th.

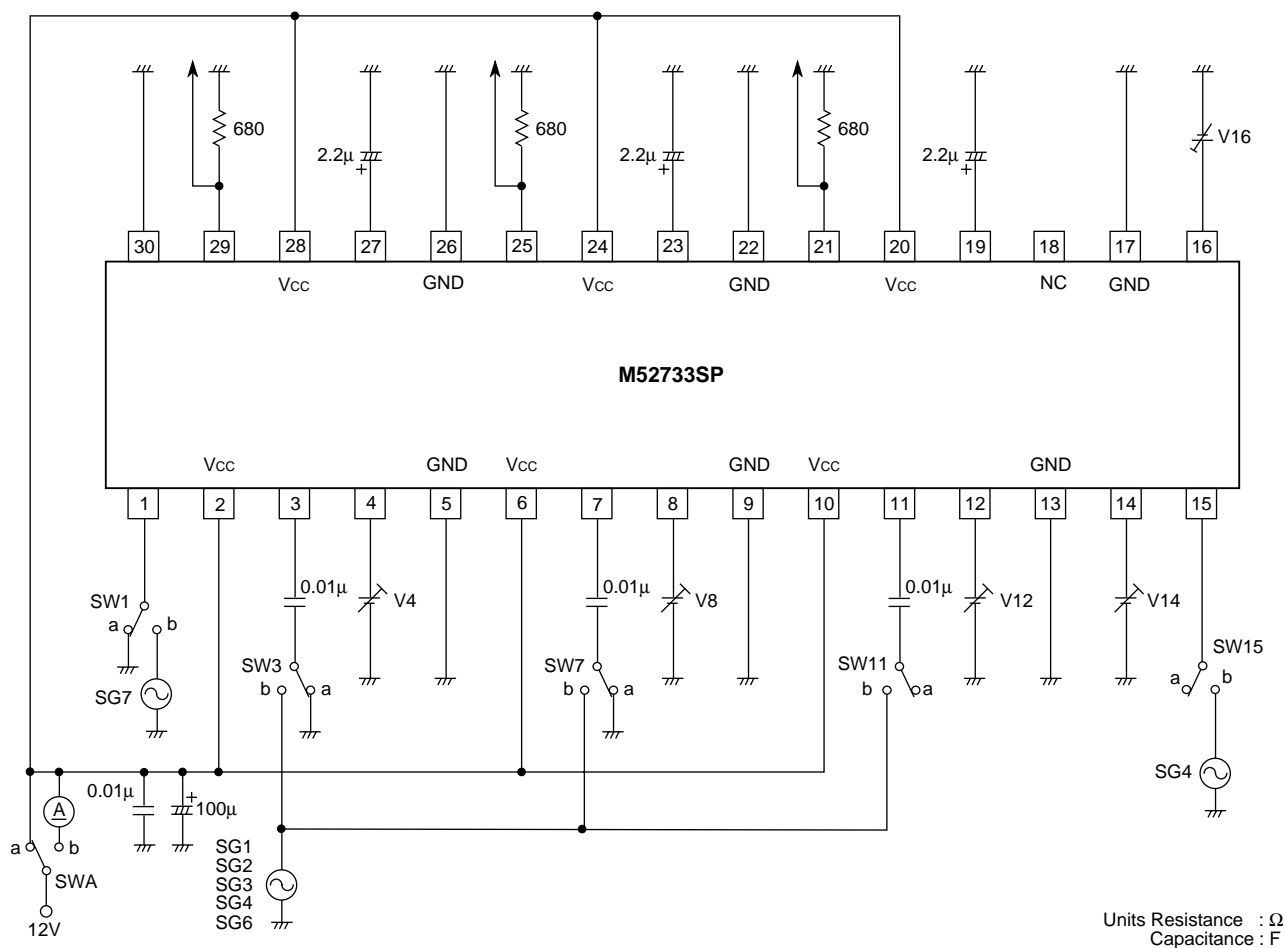
**3-CHANNEL VIDEO AMPLIFICATION WITH OSD BLANKING****INPUT SIGNAL**

SG No.	Signals
SG1	<p>Sine wave of amplitude <math>0.7V_{P-P}</math> (<math>f=1MHz</math>)</p> 
SG2	Sine wave with amplitude of $0.7V_{P-P}$ ( $f=50MHz$ )
SG3	Sine wave with amplitude of $0.7V_{P-P}$ ( $f=130MHz$ )
SG4	<p>Pulse with amplitude of <math>0.7V_{P-P}</math> (<math>f=30kHz</math>, duty=50%) Pulses which are synchronous with SG4 pedestal portion</p> 
SG5	<p>Pulses which are synchronous with standard video step waveform pedestal portion: amplitude, <math>2.0V_{P-P}</math>; and pulse width, <math>3.0\mu s</math> (pulse width and amplitude sometimes variable)</p> 
SG6 Standard video step waveform	 <p>Video signal with amplitude of <math>0.7V_{P-P}</math> (<math>f=30kHz</math>, amplitude sometimes variable)</p>
SG7 OSD BLK signals	 <p>Pulses which are synchronous with standard video step waveform's video portions: amplitude, <math>4.0V_{P-P}</math>; and pulse width, <math>25\mu s</math></p>

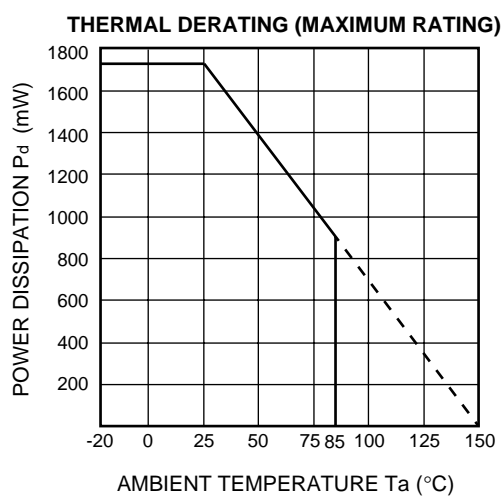
# M52733SP

## 3-CHANNEL VIDEO AMPLIFICATION WITH OSD BLANKING

### TEST CIRCUIT



### TYPICAL CHARACTERISTICS

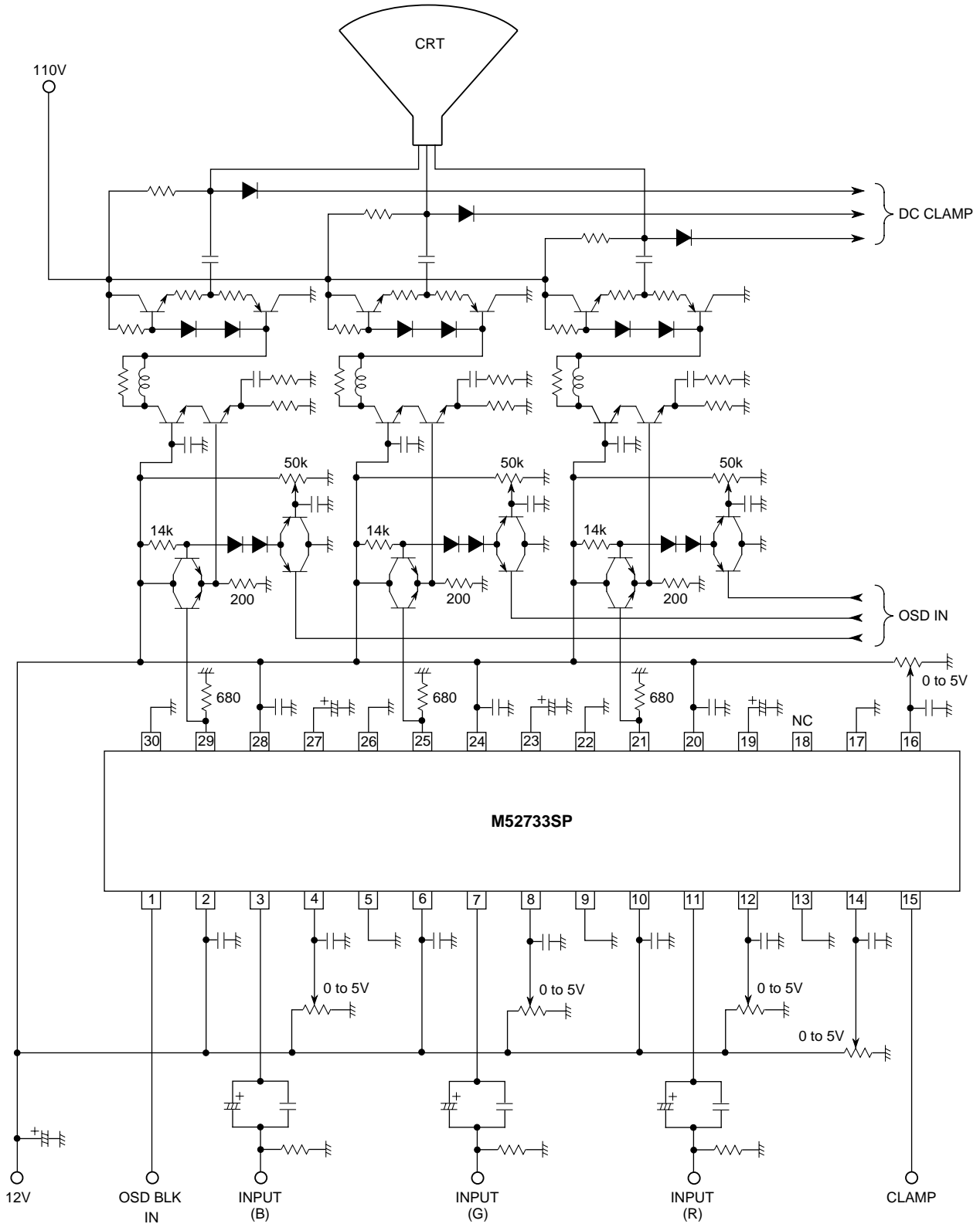




# M52733SP

## 3-CHANNEL VIDEO AMPLIFICATION WITH OSD BLANKING

### APPLICATION EXAMPLE 1

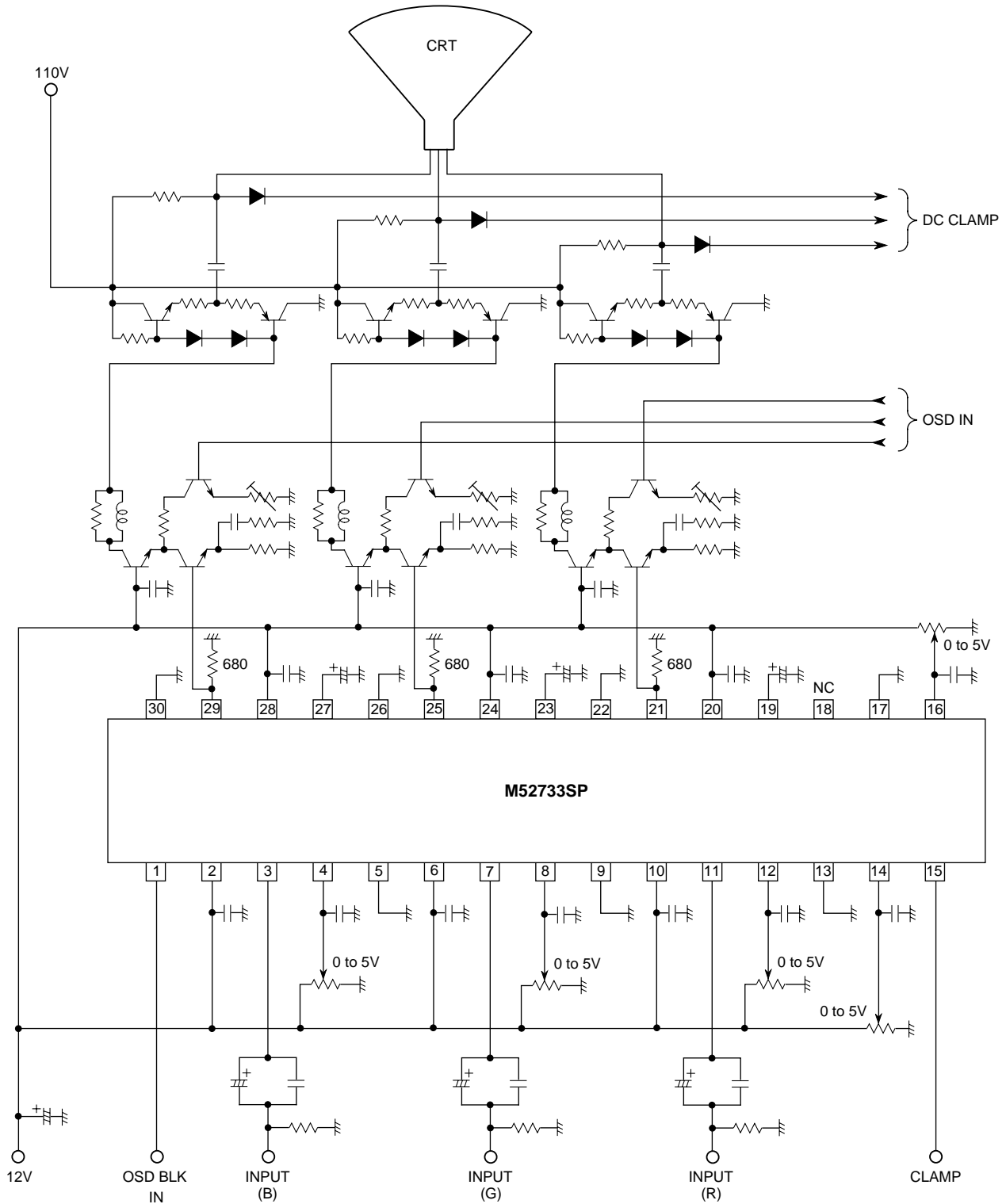


Units Resistance :  $\Omega$   
Capacitance : F

# M52733SP

## 3-CHANNEL VIDEO AMPLIFICATION WITH OSD BLANKING

### APPLICATION EXAMPLE 2



Units Resistance :  $\Omega$   
Capacitance : F

# M52733SP

## 3-CHANNEL VIDEO AMPLIFICATION WITH OSD BLANKING

### DESCRIPTION OF PIN

Pin No.	Name	DC voltage (V )	Peripheral circuit of pins	Description of function
1	OSD BLK IN	—		<p>·Input pulses of minimum 3V.</p> <p>— 3 to 5V</p> <p>1V maximum</p> <p>·Connected to GND if not used.</p>
2 6 10	Vcc (B-ch) Vcc (G-ch) Vcc (R-ch)	12	—	·Apply equivalent voltage to 3 channels.
3 7 11	INPUT (B) INPUT (G) INPUT (R)	2.5		<p>·Clamped to about 2.5V due to clamp pulses from pin 18.</p> <p>·Input at low impedance.</p>
4 8 12 14	Subcontrast (B) Subcontrast (G) Subcontrast (R) Main contrast	2.5		·Use at maximum 5V for stable operation.
5, 26 9, 22 13, 17 30	GND (B-ch) GND (G-ch) GND (R-ch) GND	GND	—	
15	CP IN	—		<p>·Input pulses of minimum 2.5V.</p> <p>— 2.5V minimum</p> <p>0.5V maximum</p> <p>·Input at low impedance.</p>

**M52733SP****3-CHANNEL VIDEO AMPLIFICATION WITH OSD BLANKING****DESCRIPTION OF PIN** (CONT.)

Pin No.	Name	DC voltage (V )	Peripheral circuit of pins	Description of function
16	Main brightness	—		
19 23 27	Hold (R) Hold (G) Hold (B)	Variable		·A capacity is needed on the GND side.
20 24 28	Vcc2 (R) Vcc2 (G) Vcc2 (B)	Apply 12		·Used to supply power to output emitter follower only. ·Apply equivalent voltage to 3 channels.
21 25 29	OUTPUT (R) OUTPUT (G) OUTPUT (B)	Variable		·A resistor is needed on the GND side. Set discretionally to maximum 15mA, depending on the required driving capacity.