

# Superimpose Monolithic IC MM1166

## Outline

This is a superimpose IC that supports S-VHS, with 1 circuit for Y signals and 1 circuit for C signals, with built-in character level and border level. The level is suppressed to eliminate the problem of spike noise generated when switching between input video signal and character signal.

## Features

1. Supports S-VHS
2. Built-in character and border levels
3. Frequency response            Y : 10MHz    C : 5MHz
4. Input/output signal                    1V<sub>P-P</sub>
5. Operating power supply voltage range    4.5~5.5V

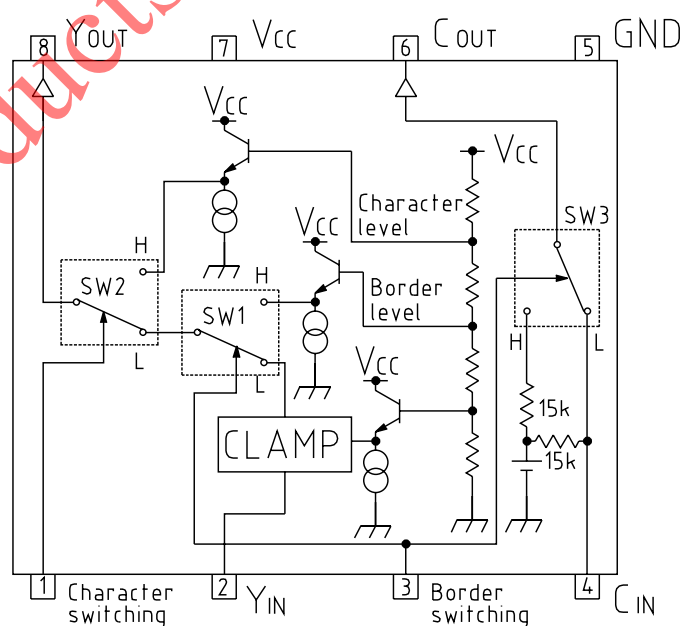
## Package

SOP-8C (MM1166XF)

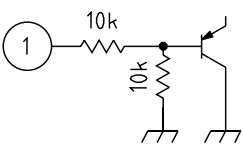
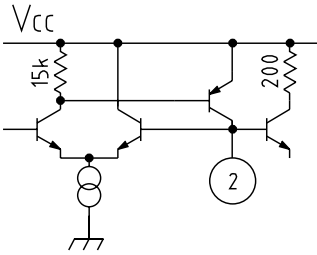
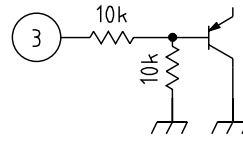
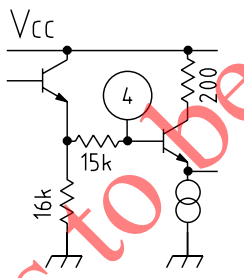
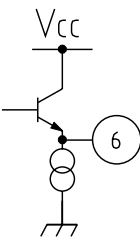
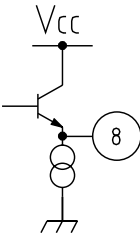
## Applications

1. TV
2. VCR
3. VCR with camera

## Block Diagram



Pin Description

Pin no.	Pin name	Internal equivalent circuit diagram	Pin Description
1	Character switching		Input pin for pulse that switches input signal and character signal High : character level output
2	Y <sub>IN</sub>		Luminance signal input pin
3	Border switching		Input pin for pulse that switches input signal and border signal High : border level output
4	C <sub>IN</sub>		Chroma signal input pin
5	GND		GND
6	C <sub>OUT</sub>		Chroma signal output pin
7	V <sub>CC</sub>		Power supply pin
8	Y <sub>OUT</sub>		Luminance signal output pin

**Absolute Maximum Ratings** (Ta=25°C)

Item	Symbol	Ratings	Units
Storage temperature	T <sub>STG</sub>	-40~+125	°C
Operating temperature	T <sub>OPR</sub>	-20~+75	°C
Power supply voltage	V <sub>CC</sub> max.	7	V
Allowable loss	P <sub>d</sub>	300	mW

**Electrical Characteristics** (Except where noted otherwise, Ta=25°C, V<sub>CC</sub>=5.0V, pulse level 0V, SG1~SG2: no signal, SWA, B : 1)

Item	Symbol	Measurement circuit	Measurement conditions	Min.	Typ.	Max.	Units
Operating power supply voltage	V <sub>CC</sub>			4.5	5.0	5.5	V
Consumption current	I <sub>CC</sub>				6.5	9.0	mA
<b>Y subsystem</b>							
Voltage gain	G <sub>v1</sub>	TP5A	SG1 : Sweep signal 1V <sub>P-P</sub> , 0.1MHz	-0.5	0	+0.5	dB
Frequency characteristic	F <sub>c1</sub>		SG1 : Sweep signal 1V <sub>P-P</sub> 10MHz/0.1MHz	-1.0	0	1.0	dB
Differential gain	D <sub>G</sub>	TP5B	SG1 : Staircase wave 1V <sub>P-P</sub> APL=10, 50, 90%	-3.0	1.0	3.0	%
Differential phase	D <sub>P</sub>		-3.0	1.0	3.0	deg	
Character level	V <sub>CH</sub>	TP5A	SG1 : Staircase wave 1V <sub>P-P</sub> *1	70	75	80	IRE
Edge level	V <sub>ED</sub>		SG1 : Staircase wave 1V <sub>P-P</sub> *1	5	10	15	IRE
<b>C subsystem</b>							
Voltage gain	G <sub>v2</sub>	TP7	SG2 : Sine wave 1V <sub>P-P</sub> , 0.1MHz	-0.5	0	+0.5	dB
Frequency characteristic	F <sub>c2</sub>		SG2 : Sine wave 1V <sub>P-P</sub> , 5MHz/0.1MHz	-1.0	0	1.0	dB
<b>Crosstalk *2</b>							
Y→C	C <sub>T1</sub>	TP7	SG1 : Sine wave 1V <sub>P-P</sub> , 4.43MHz SWB : 2		-65	-55	dB
C→Y	C <sub>T2</sub>	TP5A	SG2 : Sine wave 1V <sub>P-P</sub> , 4.43MHz SWA : 2		-65	-55	dB
<b>SW input voltage</b>							
Character input H	V <sub>IH1</sub>	TP5A	SG1 : Staircase wave 1V <sub>P-P</sub> *3	2.1			V
Character input L	V <sub>IL1</sub>		SG1 : Staircase wave 1V <sub>P-P</sub> *4			0.7	V
Edge input H	V <sub>IH2</sub>		SG1 : Staircase wave 1V <sub>P-P</sub> *5	2.1			V
Edge input L	V <sub>IL2</sub>		SG1 : Staircase wave 1V <sub>P-P</sub> *6			0.7	V

\*1 Input a 1V<sub>P-P</sub> staircase wave to SG1, and pulses as shown in Figure 1 to TP1 and TP3, and measure TP5A.

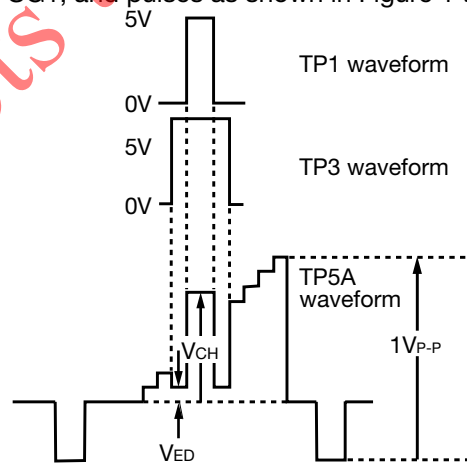


Figure 1 TP1, TP3, TP5A waveforms

\*2 Given input signal as V1 and output signal as V2, C<sub>T</sub> is obtained as follows.

$$C_T = 20 \log \frac{V_2}{V_1} \text{ dB}$$

- \*3 Character switching pin (Pin 1) high level voltage
- \*4 Character switching pin (Pin 1) low level voltage
- \*5 Border switching pin (Pin 3) high level voltage
- \*6 Border switching pin (Pin 3) low level voltage

# Measuring Circuit

