MITSUBISHI LINEAR ICs

M51327P

ANALOG SWITCH

DESCRIPTION

The M51327P is a semiconductor integrated circuit containing an analog switch designed for use in a video system. It contains two audio switches and one video switch. Each switch has three inputs and can be independently controlled.

FEATURES

- Video and stereo sound switches in one package
- Wide frequency range (video switch) ····· DC~10MHz
- High separation (video) ····· Crosstalk 55dB(typ.) @5MHz

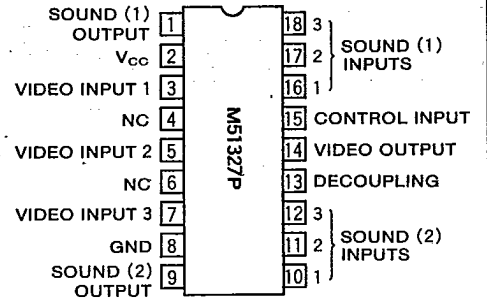
APPLICATION

Video equipment.

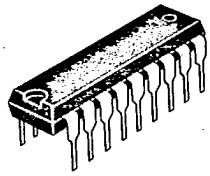
RECOMMENDED OPERATING CONDITIONS

Supply voltage range ····· 5~14V

PIN CONFIGURATION (TOP VIEW)

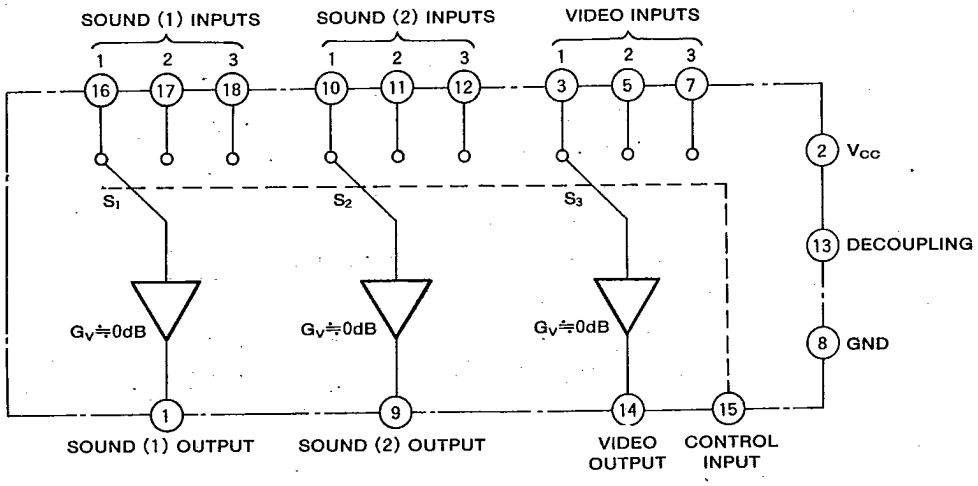


NC : NO CONNECTION



18-pin molded plastic DIP

BLOCK DIAGRAM



MITSUBISHI ELECTRIC

M51327P

ANALOG SWITCH

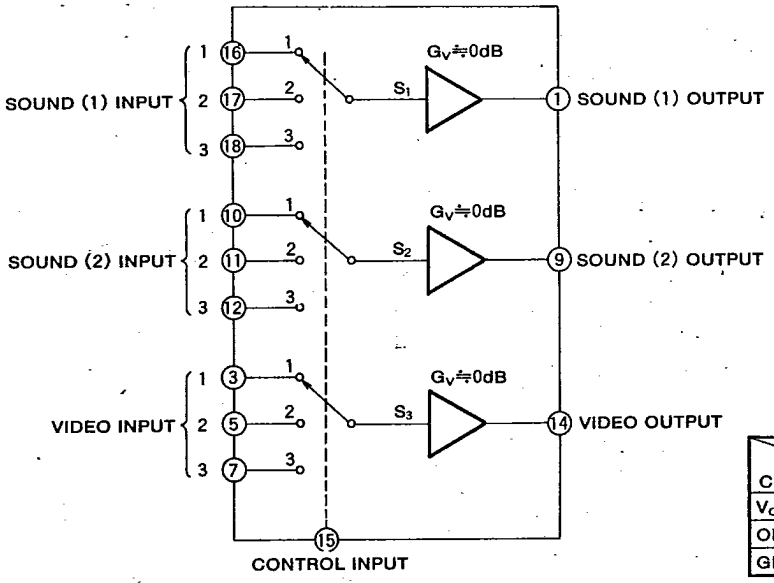
ABSOLUTE MAXIMUM RATINGS (T_a=25℃, V_{CC}=12V, unless otherwise noted)

Symbol	Parameter	Conditions	Ratings	Unit
V_{CC}	Supply voltage		14	V
V_{IS}	Input signal voltage		6	V
V_{IC}	Input control voltage		V_{CC}	V
Pd	Power dissipation		1.25	W
$K\theta$	Thermal derating		12.5	mW/℃
T_{opr}	Operating temperature range		−20∼+75	℃
T_{stg}	Storage temperature range		−40∼+125	℃

ELECTRICAL CHARACTERISTICS (T_a=25℃, V_{CC}=12V, unless otherwise noted)

Symbol	Parameter	Test conditions	Limits			Unit
			Min	Typ	Max	
I_{CC}	Circuit current			28	36	mA
$V_{I\,DC}$	Input bias voltage		3.8	4.2	4.6	V
$V_{O\,DC}$	Output bias voltage		3.0	3.6	4.2	V
V_{OP}	Output DC offset voltage			15	100	mV
$V_{IC\,H}$	Control-pin threshold voltage		7.0	8.0	9.0	V
$V_{IC\,L}$			3.0	4.0	5.0	V
G_V	Voltage gain	Sound, f=1kHz	−0.5	−0.1		dB
THD	Total harmonic distortion	Sound, f=1kHz, V_O=1Vrms		0.02	0.2	%
V_N	Output noise voltage	Sound, R_g=600Ω, BW=15kHz		3	50	μVrms
		Video, R_g=75Ω, BW=10MHz		0.5	1.0	mVrms
CT	Crosstalk	Sound, f=1kHz	65	80		dB
		Video, f=5MHz	45	55		

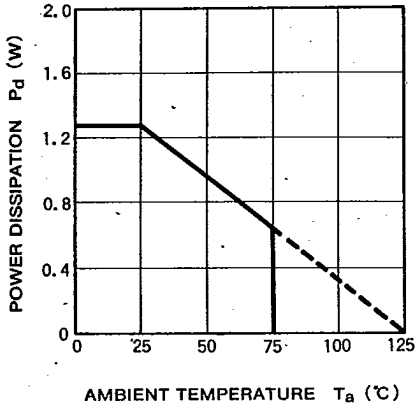
SWITCH MODE



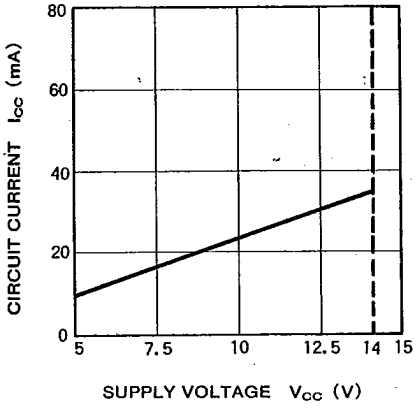
Control Input \ Switch No.	S_1	S_2	S_3
V_{CC}	1	1	1
OPEN	2	2	2
GND	3	3	3

TYPICAL CHARACTERISTICS (T_a=25℃, unless otherwise noted)

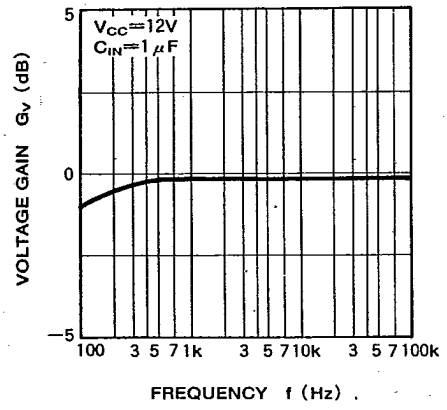
THERMAL DERATING (MAXIMUM RATING)



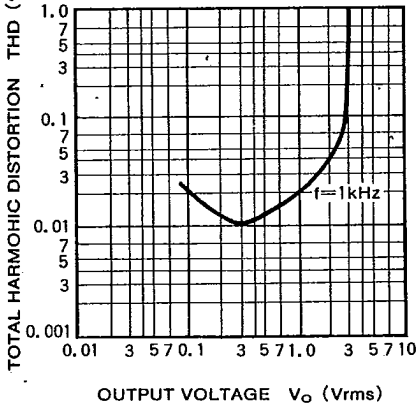
CIRCUIT CURRENT VS. SUPPLY VOLTAGE



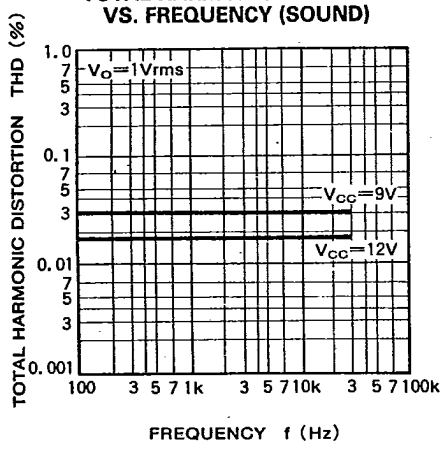
VOLTAGE GAIN VS. FREQUENCY (SOUND)



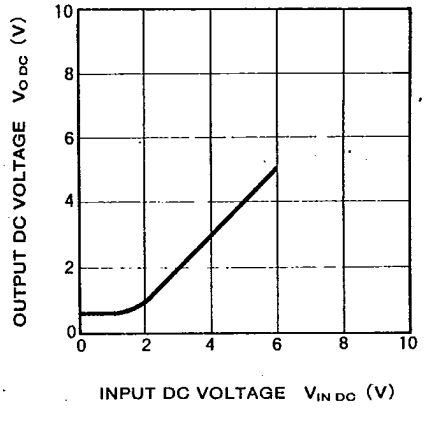
TOTAL HARMONIC DISTORTION VS. OUTPUT VOLTAGE (SOUND)



TOTAL HARMONIC DISTORTION VS. FREQUENCY (SOUND)



OUTPUT DC VOLTAGE VS. INPUT DC VOLTAGE (SOUND)



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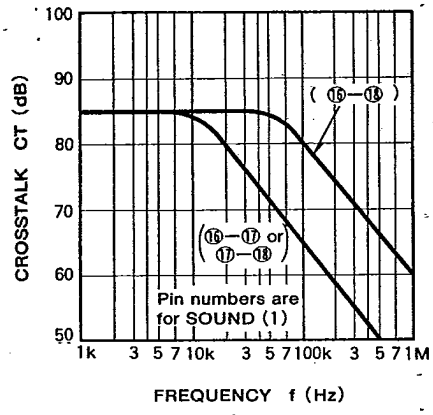
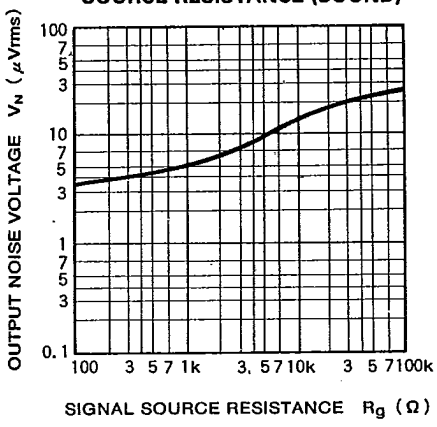
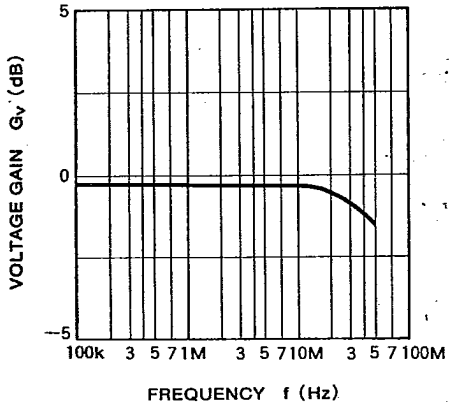
CROSSTALK VS. FREQUENCY (SOUND)



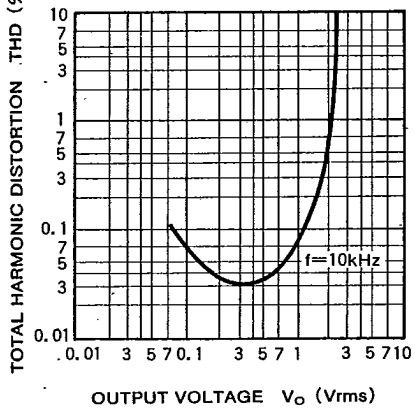
OUTPUT NOISE VOLTAGE VS. SIGNAL SOURCE RESISTANCE (SOUND)



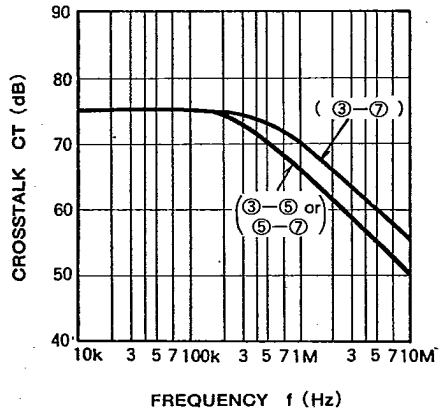
VOLTAGE GAIN VS. FREQUENCY (VIDEO)



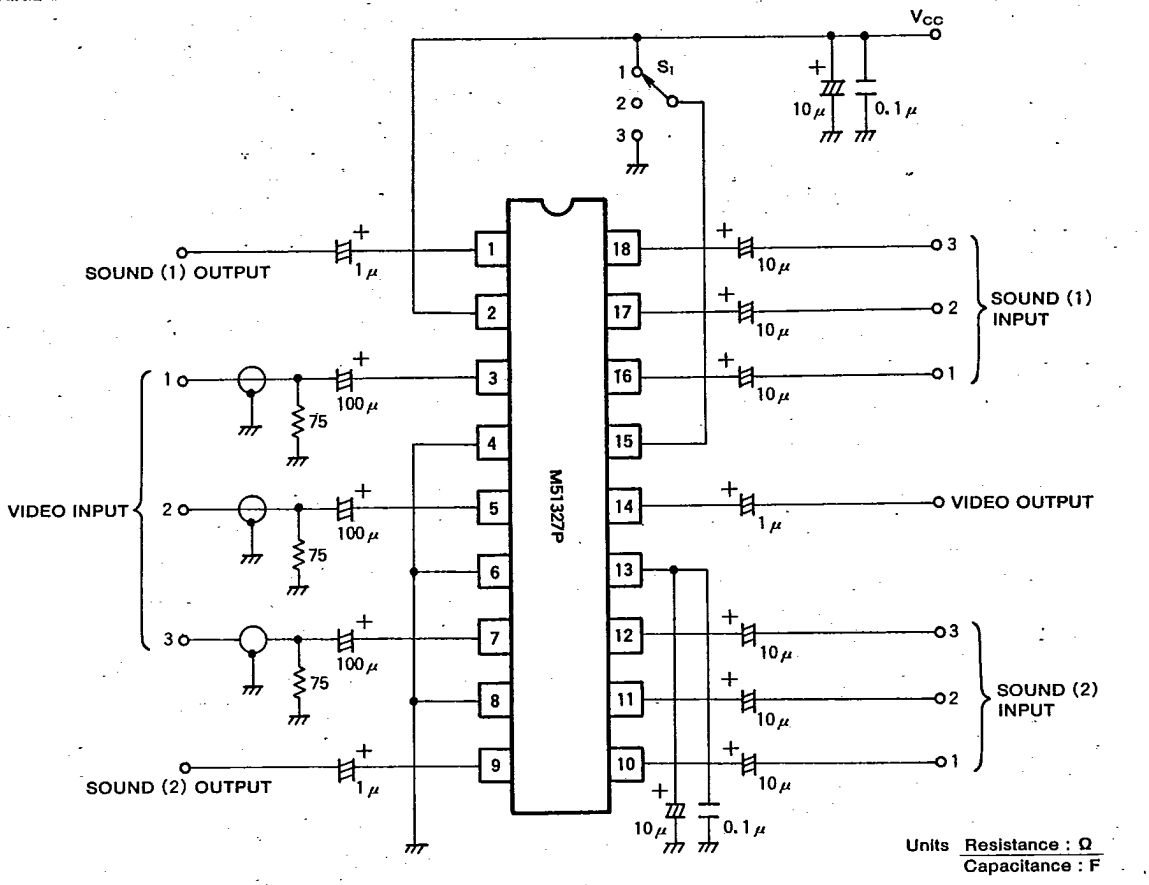
TOTAL HARMONIC DISTORTION VS. OUTPUT VOLTAGE (VIDEO)



CROSSTALK VS. FREQUENCY (VIDEO)



APPLICATION EXAMPLE



PRECAUTIONS FOR USE

Since an emitter-follower output is used in the video and sound outputs, when the external wiring is long or a capacitive load is connected, a resistor with a value of several tens of ohms should be connected at a position near the output pin.