SGM9140
26MHz, Video Driver with Y-C Mixer and Chroma Mute

PRODUCT DESCRIPTION

The SGM9140 is a low power, low voltage operation video amplifier with Y/C mixer and 75Ω driver. SGM9140A is 12.4dB gain driver, and SGM9140B is 6.4dB gain driver.

The SGM9140 has chroma mute and power save functions, and is suitable for energy saving products and any low power systems (digital camera, DVC and etc).

The SGM9140 is available in Green MSOP-8 package. It operates over an ambient temperature range of -40℃ to +85℃.

FEATURES

- **Low Operating Voltage: 2.8V to 5.5V**
- **Internal Y/C MIX Circuit**
- **Y-Input: Clamp**
  C-Input: Bias
- **Quiescent Current: 9mA at V_{CC} = 3.0V (TYP)**
- **Operating Current at Power Save Mode**
  1μA at V_{CC} = 3.0V (TYP)
- **Support 6.4dB and 12.4dB Gains**
- **Available in Green MSOP-8 Package**
- **-40°C to +85°C Operating Temperature Range**

APPLICATIONS

DVD Players
Security Cameras
Set-Top Boxes
Portable Media Players
Communication Device
Digital Still Cameras

PACKAGE/ORDERING INFORMATION

MODEL	ORDER NUMBER	GAIN SETTING	PACKAGE DESCRIPTION	MARKING INFORMATION	PACKAGE OPTION
SGM9140A	SGM9140AYMS8G/TR	12.4	MSOP-8	SGM9140AYMS8	Tape and Reel, 3000
SGM9140B	SGM9140BYMS8G/TR	6.4	MSOP-8	SGM9140BYMS8	Tape and Reel, 3000

ABSOLUTE MAXIMUM RATINGS

Supply Voltage, V_{CC} 6V
Storage Temperature Range.....-65℃ to +150℃
Junction Temperature .....150℃
Operating Temperature Range .....-40℃ to +85℃
Lead Temperature Range (Soldering 10 sec)
…….....260℃
ESD Susceptibility
HBM.....8000V
MM.....400V

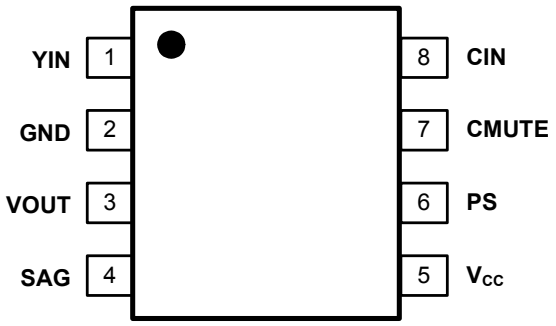
NOTE: Stresses beyond those listed under “Absolute Maximum Ratings” may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

CAUTION

This integrated circuit can be damaged by ESD if you don’t pay attention to ESD protection. SGMICRO recommends that all integrated circuits be handled with appropriate precautions. Failure to observe proper handling and installation procedures can cause damage. ESD damage can range from subtle performance degradation to complete device failure. Precision integrated circuits may be more susceptible to damage because very small parametric changes could cause the device not to meet its published specifications.

SGMICRO reserves the right to make any change in circuit design, specification or other related things if necessary without notice at any time. Please contact SGMICRO sales office to get the latest datasheet.

PIN CONFIGURATION (TOP VIEW)



MSOP-8

PIN DESCRIPTION

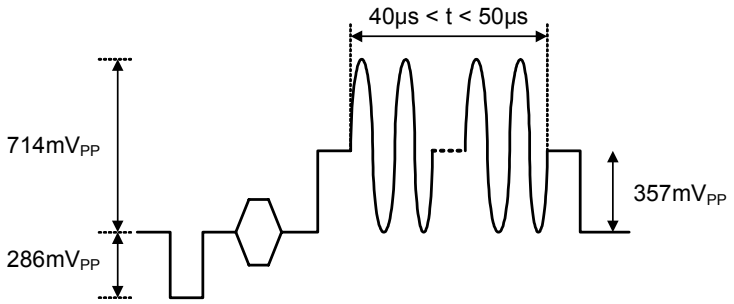
PIN	NAME	FUNCTION
1	YIN	S-Video Signal Y Input.
2	GND	Ground.
3	VOUT	Video Signal Output.
4	SAG	SAG Correction Input.
5	V_{CC}	Power Supply.
6	PS	Power Save.
7	CMUTE	C-mute Input.
8	CIN	S-Video Signal C Input.

ELECTRICAL CHARACTERISTICS

(V_{CC} = 3V, T_A = +25℃, V_{OUT} = $2V_{PP}$, R_L = 150Ω connected to GND, referenced to 400kHz, unless otherwise noted.)

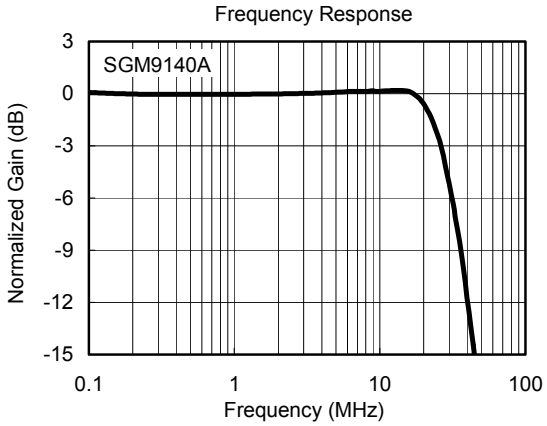
PARAMETER	CONDITIONS		MIN	TYP	MAX	UNITS
Operating Voltage Range (V_{CC})			2.8		5.5	V
Quiescent Current (I_Q)	No Signal			9.0	11.6	mA
Power Save Mode Current (I_S)	Power Save Mode			1.0	2.0	μA
Maximum Output Voltage (V_{OM})	f = 1kHz, THD = 1%			2.4		V_{PP}
Voltage Gain (G_V)	SGM9140A		11.9	12.4	12.9	dB
	SGM9140B		5.9	6.4	6.9	
-0.1dB Bandwidth	SGM9140A			18		MHz
	SGM9140B			16		
-1dB Bandwidth	SGM9140A			22		MHz
	SGM9140B			20		
-3dB Bandwidth	SGM9140A			26		MHz
	SGM9140B			23		
Frequency Characteristics (G_f)	Y_{IN} = 10MHz/100kHz	SGM9140A		0.3		dB
		SGM9140B		0.1		
Differential Gain (DG)	V_{CC} = 3V, 4.43MHz			0.4		%
Differential Phase (DP)	V_{CC} = 3V, 4.43MHz			0.2		deg
Chroma Mute Crosstalk (CT)	C_{IN} = 4.43MHz, $0.1V_{PP}$			-52		dB
Second Order Distortion (H_V)	V_{OUT} = $1.4V_{PP}$, 3.58MHz, C_{IN} = AC to GND and R_L = 75Ω	SGM9140A		-39		dB
		SGM9140B		-41.5		
Input Resistance	Chroma Input			21		kΩ
Mute Switch Change Voltage	VthMH		1.4			V
	VthML				0.4	
Power Save Switch Change Voltage	VthPH		1.4			V
	VthPL				0.4	

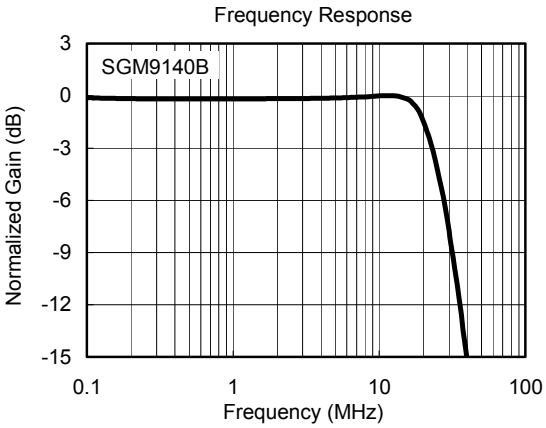
NOTE: Sine Video Signal.

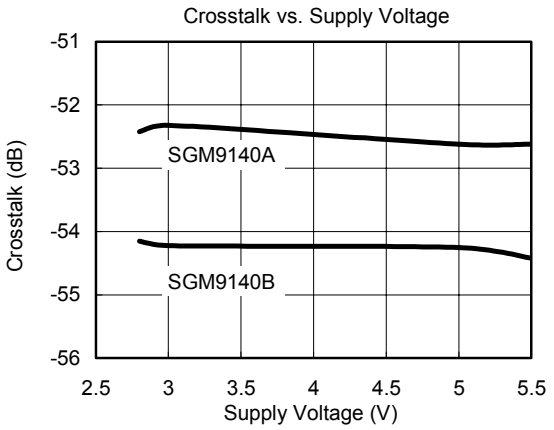


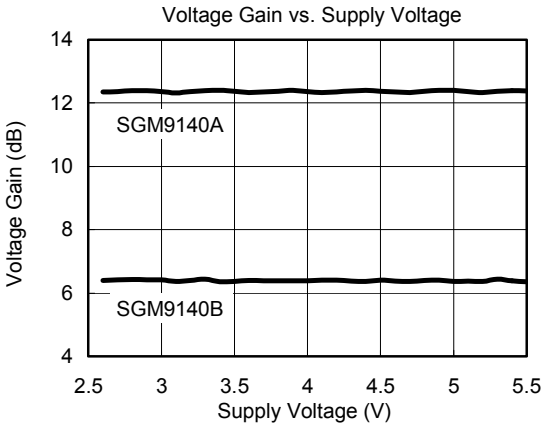
TYPICAL PERFORMANCE CHARACTERISTICS

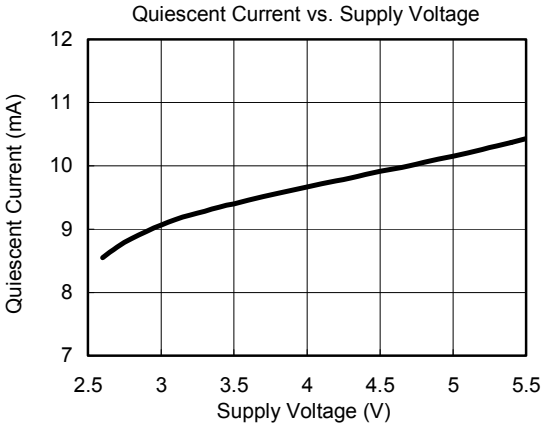
At V_{CC} = 5V, T_A = +25℃, R_L = 150Ω, all outputs AC-coupled with 220μF, unless otherwise noted.







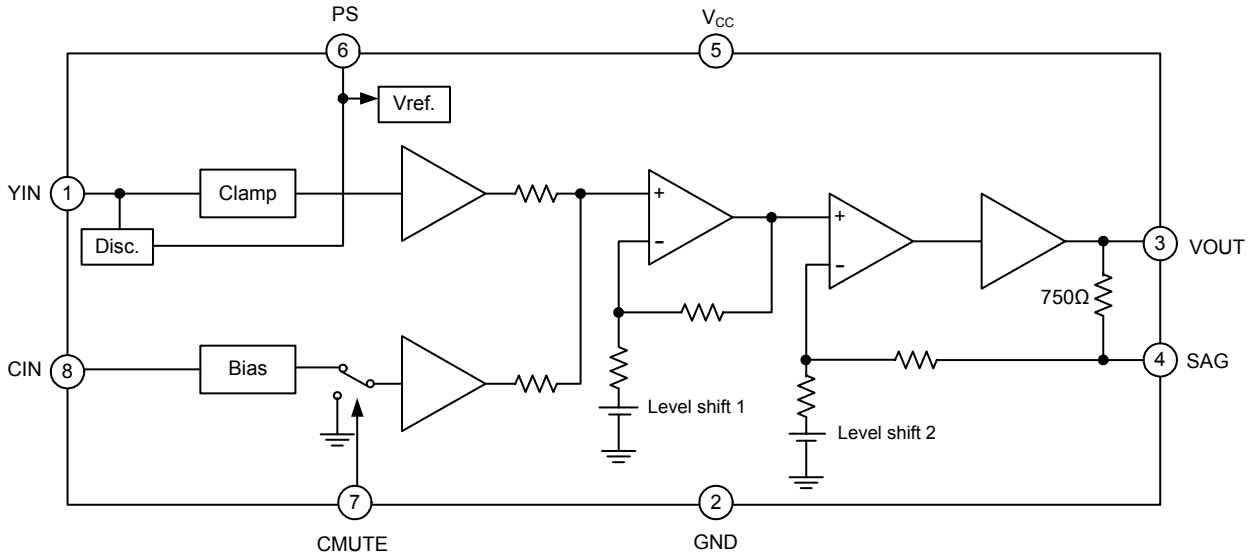




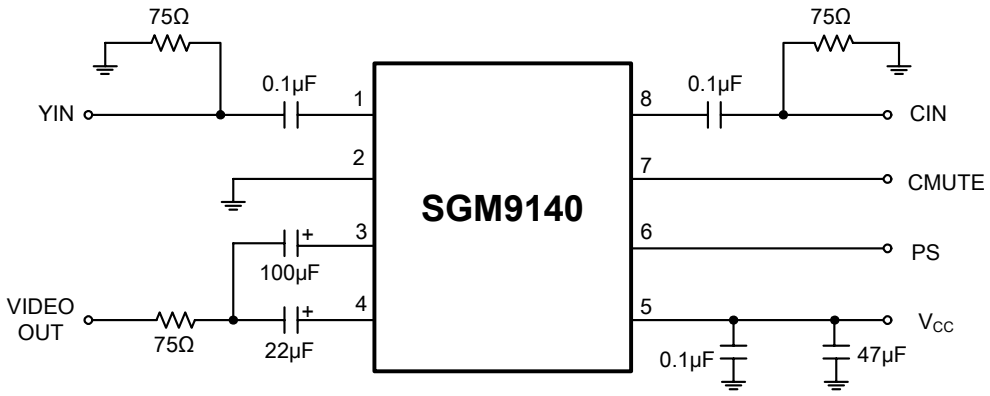
CONTROL TERMINAL EXPLANATION

PARAMETER	STATUS	NOTE
Chroma Mute	H	Chroma Mute: ON
	L	Chroma Mute: OFF
	OPEN	Chroma Mute: OFF
Power Save	H	Power Save: OFF
	L	Power Save: ON
	OPEN	Power Save: ON

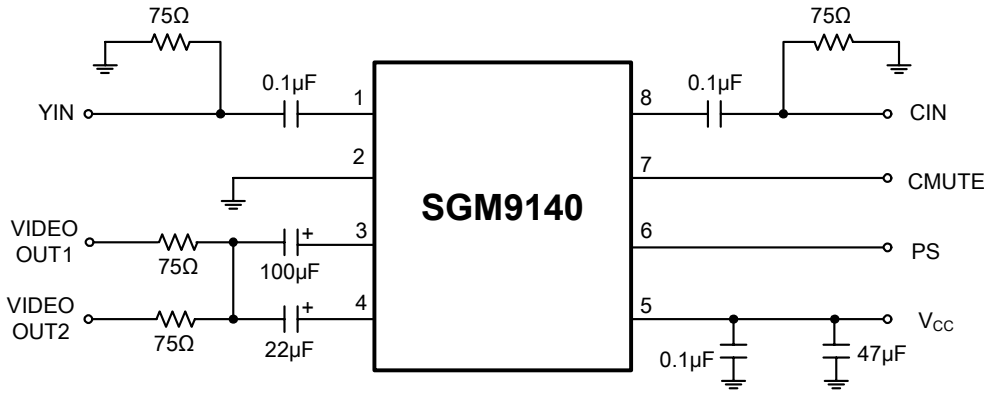
BLOCK DIAGRAM



TYPICAL APPLICATION CIRCUITS



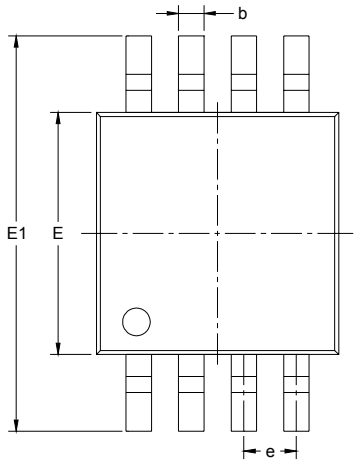
Application 1: V_{CC} = 2.8V to 5.5V, One 75Ω Video Load

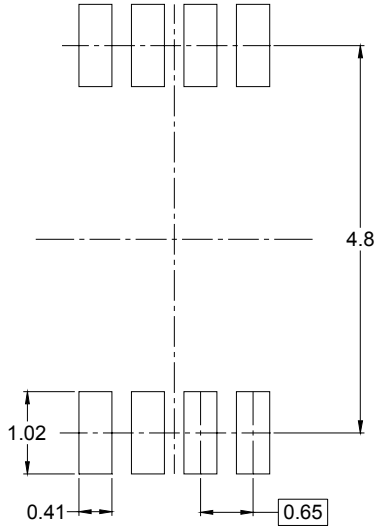


Application 2: V_{CC} = 2.8V to 5.5V, Two 75Ω Video Loads

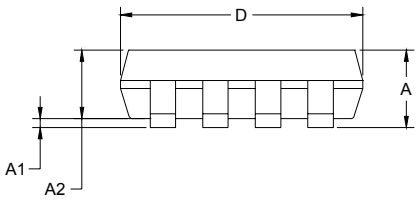
PACKAGE OUTLINE DIMENSIONS

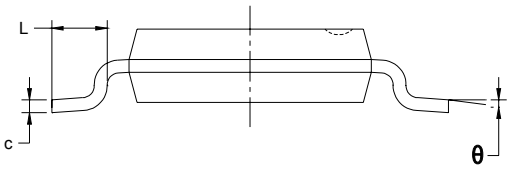
MSOP-8





RECOMMENDED LAND PATTERN (Unit: mm)





Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MIN	MAX	MIN	MAX
A	0.820	1.100	0.032	0.043
A1	0.020	0.150	0.001	0.006
A2	0.750	0.950	0.030	0.037
b	0.250	0.380	0.010	0.015
c	0.090	0.230	0.004	0.009
D	2.900	3.100	0.114	0.122
E	2.900	3.100	0.114	0.122
E1	4.750	5.050	0.187	0.199
e	0.650 BSC		0.026 BSC	
L	0.400	0.800	0.016	0.031
θ	0°	6°	0°	6°