

## 75 Ω VIDEO LINE DRIVER

### FEATURES

- Internal Y-C Summing Circuit
- Voltage Gain is 6 dB Fixed
- Internal 75 Ω Driver
- Active High ON/OFF Control
- Very Low Standby Current (typ.  $I_{STBY} \leq 25 \mu A$ )
- Very Small Output Capacitor Using SAG Function Pin
- Very Small Package (SOT23L-8)
- Single +5 V Power Supply Operation

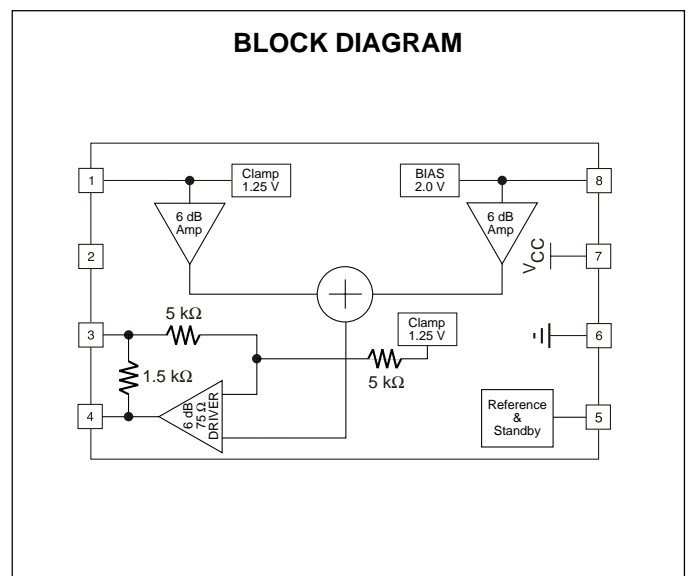
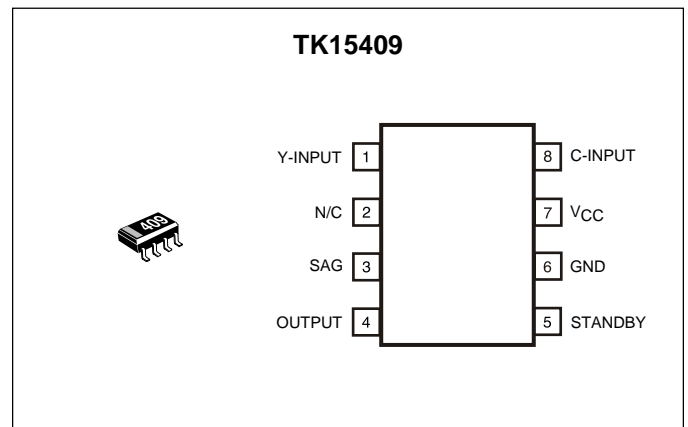
### APPLICATIONS

- Video Equipment
- Digital Cameras
- CCD Cameras
- TV Monitors
- Video Tape Recorders
- LCD Projectors

### DESCRIPTION

Operating from a single +5 V supply, the TK15409 is a video line driver IC that takes standard Y and C analog inputs and provides a composite analog output for driving 150 Ω loads (75 Ω resistor and 75 Ω cable load). Internal summing of the Y and C inputs is performed to produce the composite video output. The luminance (Y) input is clamped at 1.25 V and amplified 6 dB; the chrominance (C) input is biased at 2.0 V and amplified 6 dB. The internal 1.5 kΩ SAG function resistor provides gain compensation for low frequency signals. During standby (Pin 5 grounded), the TK15409 consumes only 127 μW of power. Nominal power dissipation (no input) is typically 90 mW.

The TK15409M is available in the very small SOT23L-8 surface mount package.



**ORDERING INFORMATION**

TK15409M

└─ Tape/Reel Code

TAPE/REEL CODE  
TL: Tape Left

# TK15409

## ABSOLUTE MAXIMUM RATINGS

Supply Voltage ..... 6 V      Input Frequency ..... 10.0 MHz  
Operating Voltage Range ..... 4.5 to 5.5 V      Storage Temperature Range ..... -55 to +150 °C  
Power Dissipation (Note 1) ..... 350 mW      Operating Temperature Range ..... -25 to +85 °C

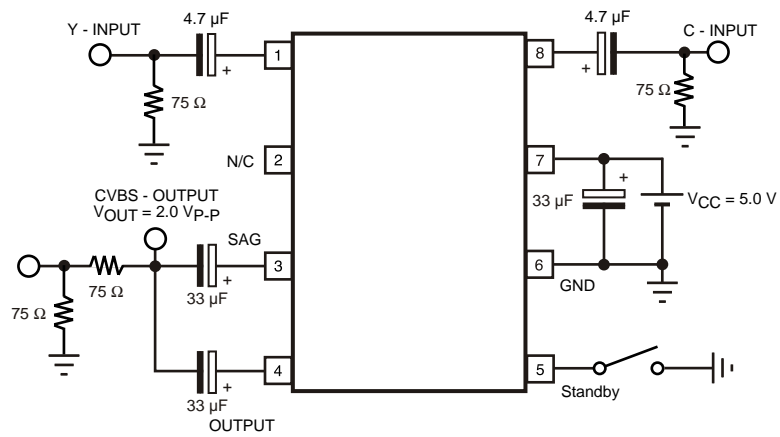
## TK15409M ELECTRICAL CHARACTERISTICS

Test conditions:  $V_{CC} = 5.0\text{ V}$ ,  $V_{IN} = 1.0\text{ V}_{P-P}$ ,  $R_L = 150\ \Omega$ ,  $T_A = 25\ ^\circ\text{C}$  unless otherwise specified.

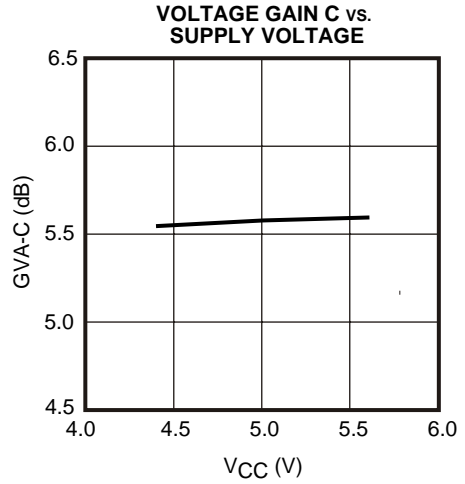
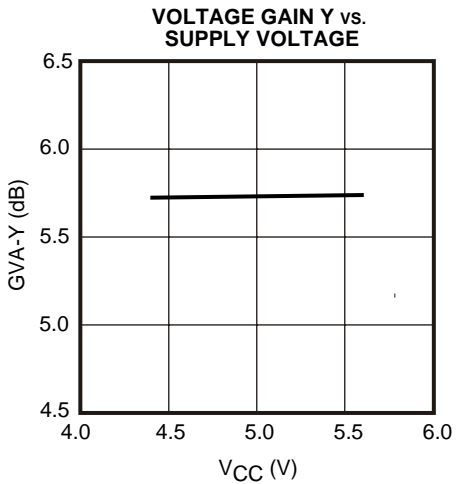
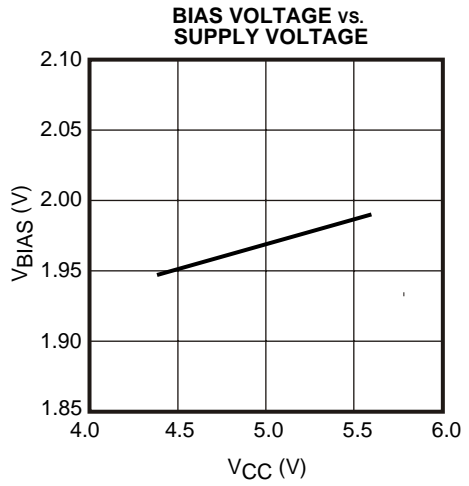
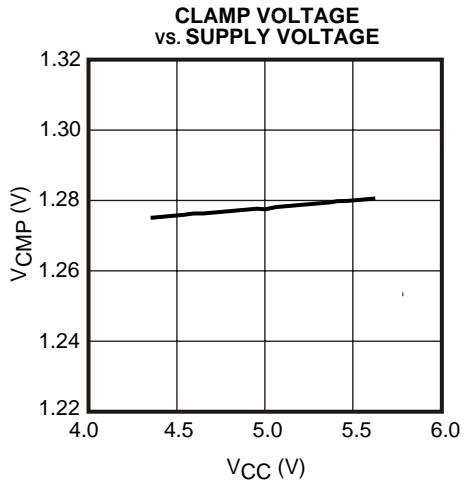
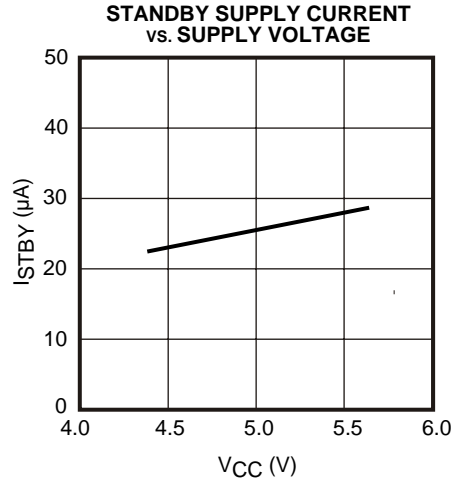
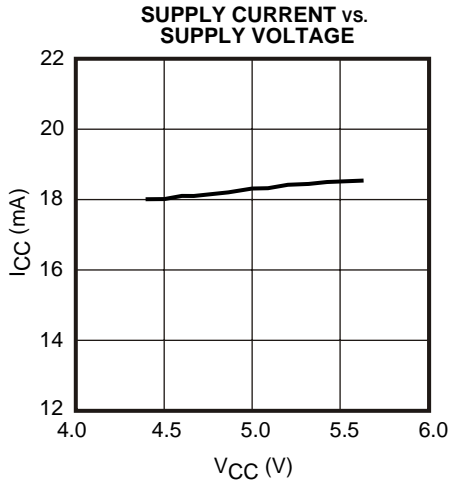
SYMBOL	PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNITS
$I_{CC}$	Supply Current	No input		18.0	26.0	mA
$I_{STBY}$	Standby Supply Current	Pin 5 Grounded		25.3	50.0	$\mu\text{A}$
$I_{OS}$	Standby Terminal Current	Pin 5 in Standby mode		25.3	50.0	$\mu\text{A}$
$V_{THL}$	Threshold Voltage (High to Low)	Pin 5 Operating to Standby mode	GND		0.3	V
$V_{TLH}$	Threshold Voltage (Low to High)	Pin 5 Standby to Operating mode	1.8		$V_{CC}$	V
$V_{CMP}$	Clamp Voltage	Pin 1 Y signal input terminal	1.10	1.28	1.50	V
$V_{BIAS}$	Bias Voltage	Pin 8 C signal input terminal	1.70	2.00	2.30	V
GVA-Y1	Voltage Gain Y ch-1	$f_{IN} = 1\text{ MHz}$ , Y signal input	5.2	5.7	6.2	dB
GVA-Y2	Voltage Gain Y ch-2	$f_{IN} = 15\text{ kHz}$ , Y signal input	5.2	5.7	6.2	dB
GVA-C1	Voltage Gain C ch-1	$f_{IN} = 1\text{ MHz}$ , C signal input	5.1	5.6	6.1	dB
GVA-C2	Voltage Gain C ch-1	$f_{IN} = 15\text{ kHz}$ , C signal input	5.1	5.6	6.1	dB
DG	Differential Gain	Staircase signal input	-3.0	-1.2	+3.0	%
DP	Differential Phase	Staircase signal input	-3.0	-0.4	+3.0	deg
fr	Frequency Response	$f_{in} = 1\text{ MHz} / 5\text{ MHz}$		-0.5		dB

Note 1: Power dissipation is 350 mW in free air. Derate at 2.8 mW/°C for operation above 25°C.

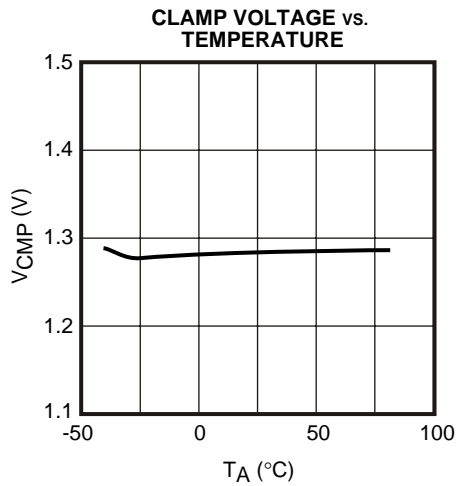
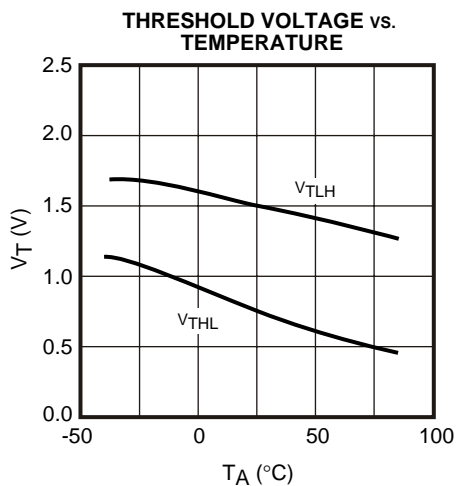
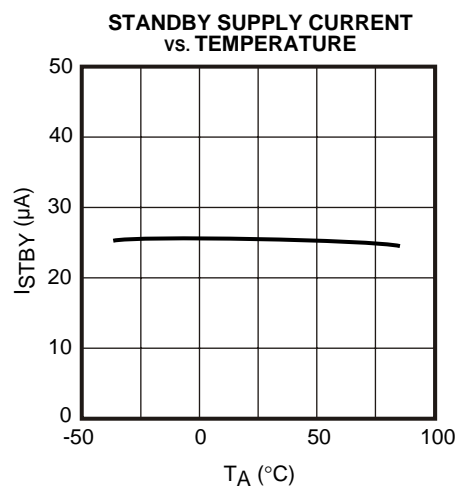
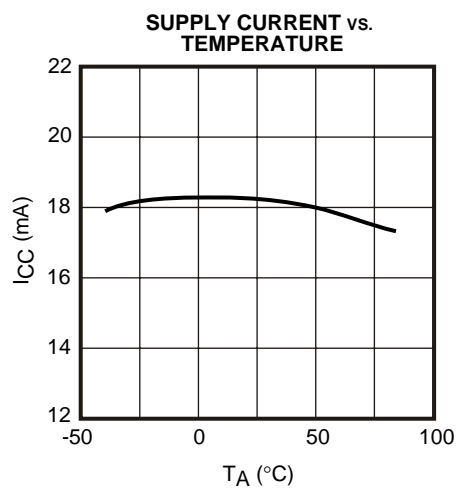
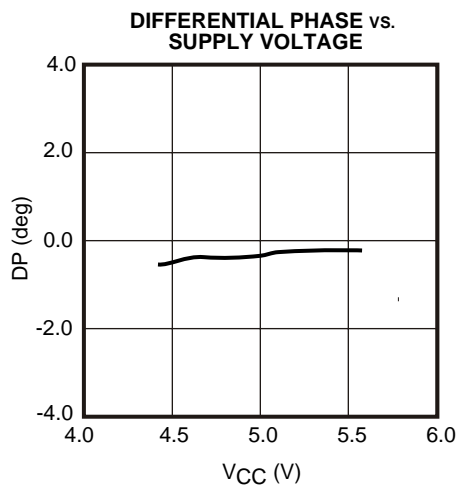
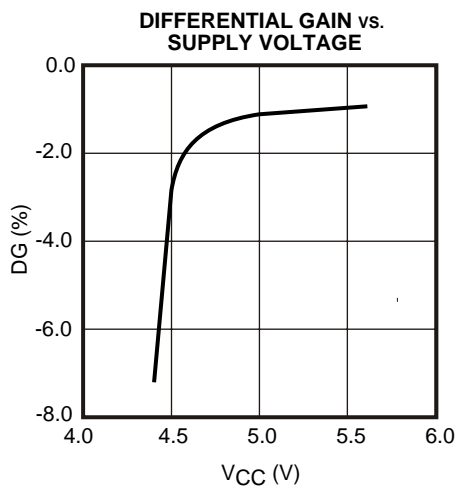
## TEST CIRCUIT



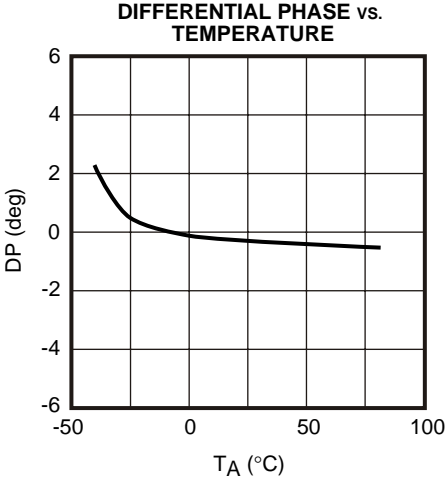
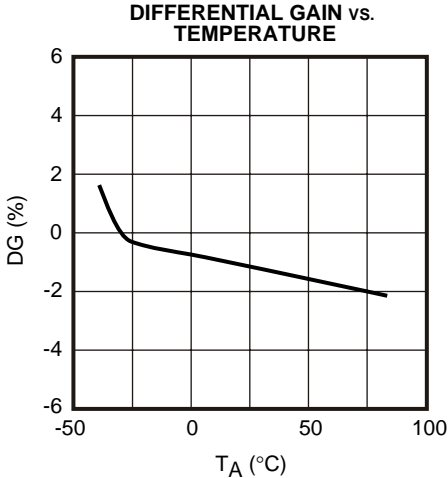
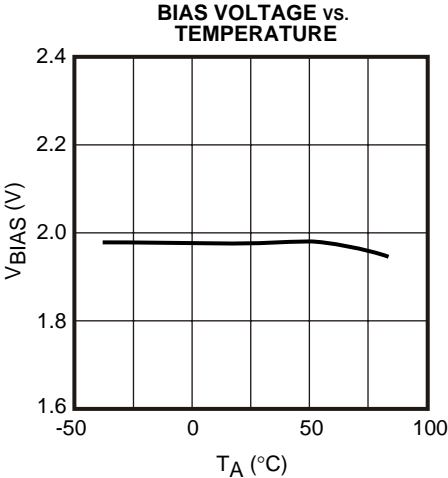
TYPICAL PERFORMANCE CHARACTERISTICS



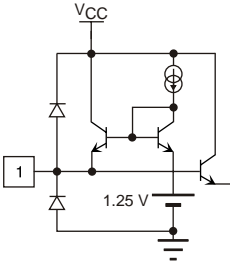
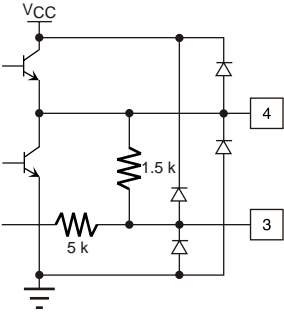
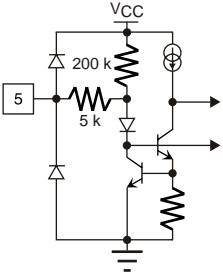
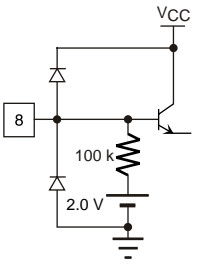
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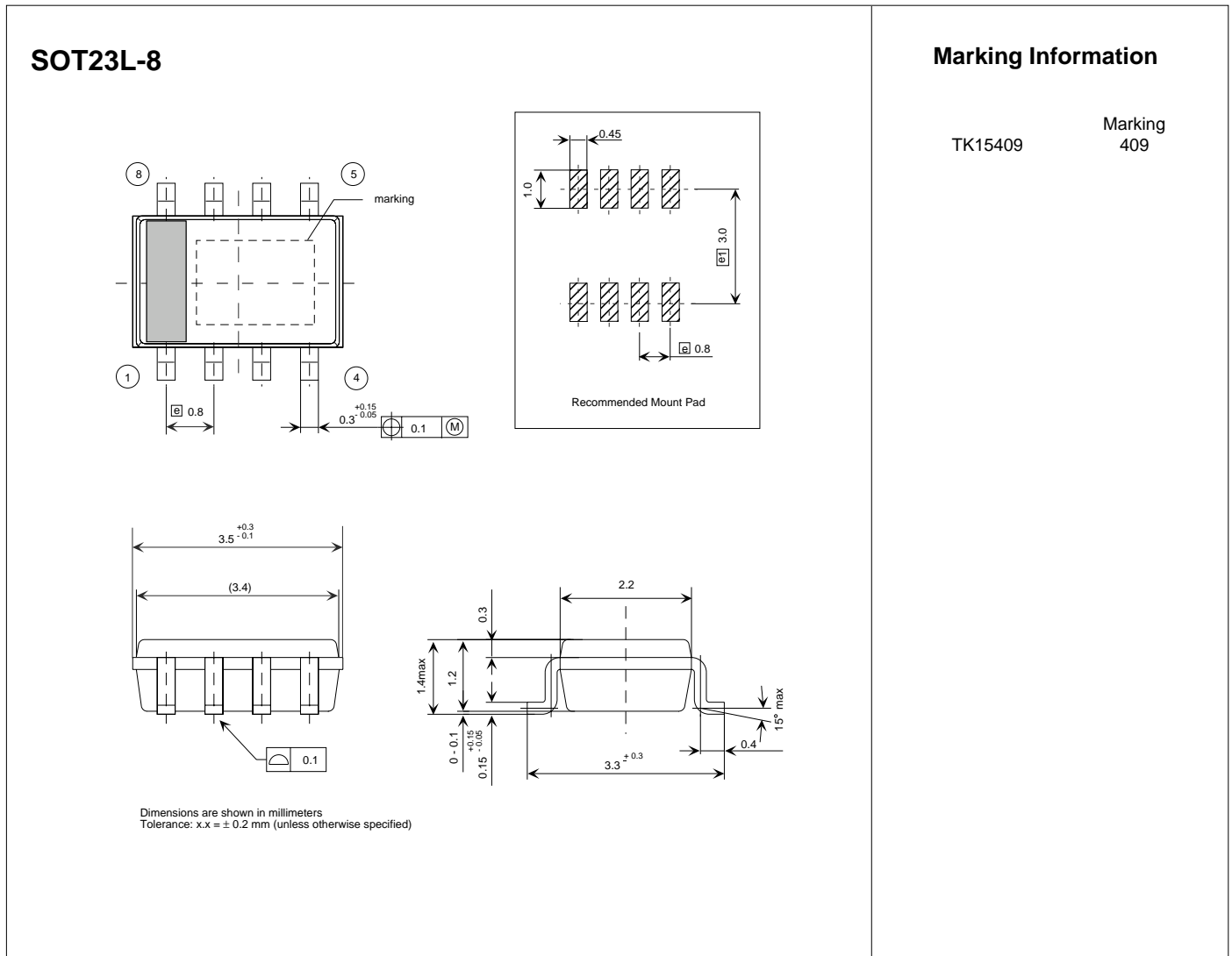
TYPICAL PERFORMANCE CHARACTERISTICS



## PIN FUNCTION DESCRIPTION

PIN NO.	SYMBOL	INTERNAL EQUIVALENT CIRCUIT	DESCRIPTION
1	Y-INPUT		<p>Luminance Input Terminal.</p> <p>The luminance input signal is clamped at 1.25 V.</p>
2	NC		No Connection Terminal
3 4	SAG OUTPUT		<p>Pin 4: Signal Output Terminal.</p> <p>The output is available to drive a <math>75\ \Omega + 75\ \Omega</math> load.</p> <p>Pin 3: SAG Terminal.</p>
5	STANDBY		<p>Standby Logic Terminal.</p> <p>The device is in the standby mode when Pin 5 is connected to Low.</p> <p>The device is in the operation mode when Pin 5 is connected to High or Open.</p>
6	GND		GND Terminal
7	$V_{CC}$		Power Supply Terminal
8	C-INPUT		<p>Chrominance Input Terminal.</p> <p>The chrominance input signal is biased to 2.0 V by a <math>100\ k\Omega</math> bias resistor.</p>

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