

75 Ω VIDEO LINE DRIVER

FEATURES

- Fixed Gain (6 dB)
- Internal 75 Ω Drivers
- Very Small Output Capacitor Using SAG Function Pin
- Active High ON/OFF Control
- Very Low Standby Current (typ. $I_{STBY} \leq 25 \mu A$)
- Very Small SOT23L-8 Package

APPLICATIONS

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

DESCRIPTION

Operating from a single +5 V supply, the TK15407 is a dual video driver IC that takes standard video signals as analog inputs and provides buffered analog outputs for driving 150 Ω loads (series 75 Ω resistor and 75 Ω cable load). Both amplifiers have a fixed gain of 6 dB and can be used in series for 12 dB gain. The luminance (Y) input is clamped at 1.29 V and amplified 6 dB to produce 2 V_{P-P} (typical) into a series 75 Ω resistor and 75 Ω cable load. The internal 1.5 k SAG function resistor provides gain compensation for low frequency signals. The chrominance (C) input is biased at 2.6 V and amplified 6 dB to produce 1.1 V_{P-P} (typical) into a series 75 Ω resistor and 75 Ω cable load. During standby (Pin 3 grounded), the TK15407 consumes only 119 μW of power. Nominal power dissipation (no input) is typically 76 mW. The TK15407 is ideally suited for S-VHS systems.

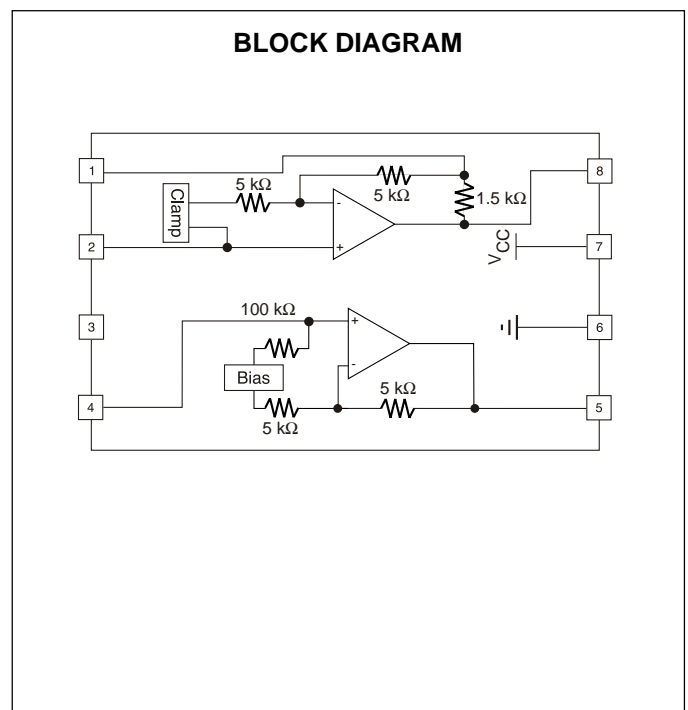
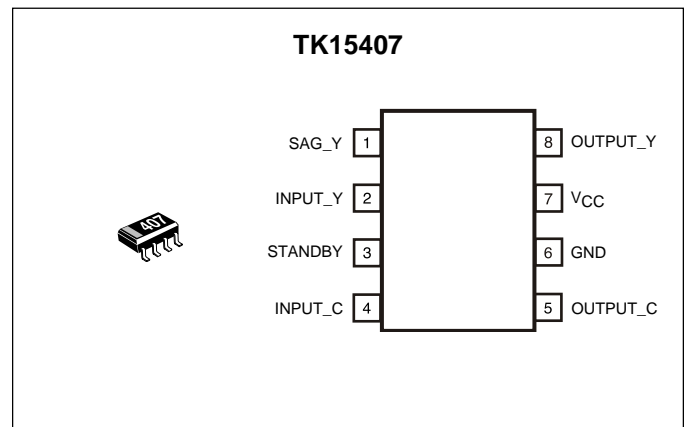
The TK15407M is available in the very small SOT23L-8 surface mount package.

ORDERING INFORMATION

TK15407M □□

Tape/Reel Code

TAPE/REEL CODE
TL: Tape Left



TK15407

ABSOLUTE MAXIMUM RATINGS

Supply Voltage 6 V Storage Temperature Range -55 to +150 °C
 Operating Voltage Range 4.5 to 5.5 V Operating Temperature Range -25 to +75 °C
 Power Dissipation (Note 1) 200 mW

TK15407M 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		15.1	21.0	mA
I_{STBY}	Standby Supply Current	Pin 3 Grounded		23.8	50.0	μA
I_{OS}	Standby Terminal Current	Pin 3 in Standby mode		23.8	50.0	μA
V_{THL}	Threshold Voltage (High to Low)	Pin 3 Operating to Standby mode	GND	0.1	0.3	V
V_{TLH}	Threshold Voltage (Low to High)	Pin 3 Standby to Operating mode	1.8	2.0	V_{CC}	V
V_{CMP}	Clamp Voltage	Pin 2 Y Signal Input terminal	1.10	1.29	1.50	V
V_{BIAS}	Bias Voltage	Pin 4 C Signal Input terminal	2.35	2.66	2.95	V
GVA	Voltage Gain	$f_{in} = 1\text{ MHz}$	5.2	5.7	6.2	dB
DG	Differential Gain (Y Signal)	Staircase signal input	-3.0	+1.3	+3.0	%
DP	Differential Phase (Y Signal)	Staircase signal input	-3.0	0.0	+3.0	deg
fr	Frequency Response	$f_{in} = 1\text{ MHz} / 5\text{ MHz}$		-0.3		dB
THD	Total Harmonic Distortion (C Signal)	$f_{in} = 1.0\text{ kHz}$		0.4	1.5	%
$V_{OUT(MAX)}$	Maximum Output Voltage (C Signal)	THD = 10% point	0.9	1.1		Vrms

Note 1: Power dissipation is 200 mW in free air. Derate at 1.6 mW/°C for operation above 25°C.

MEASUREMENT METHOD (CONT.)

10. Differential Phase (DP)

The differential phase is measured at TP3 when a staircase waveform of 10 steps is applied to TP1.

11. Frequency Response (fr)

The frequency response equation is as follows:

$$fr = 20 \log_{10} V_2/V_1$$

Where V_1 is the measured TP3 (TP6) voltage when the TP1 (TP4) input frequency is set to 1 MHz and V_2 is the measured TP3 (TP6) voltage when the TP1 (TP4) input frequency is set to 5 MHz.

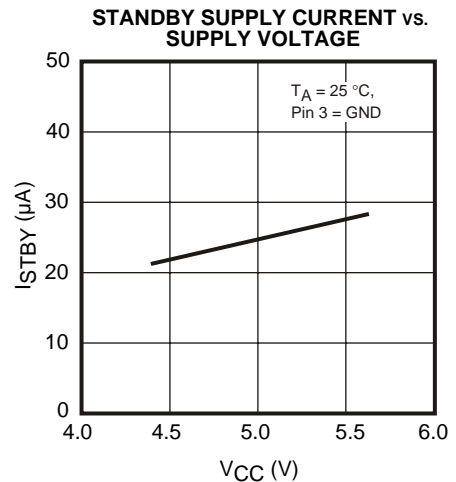
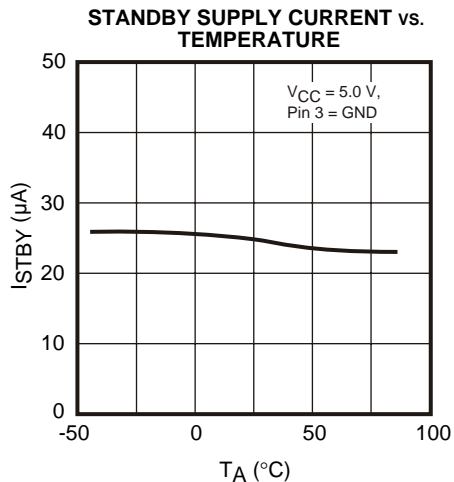
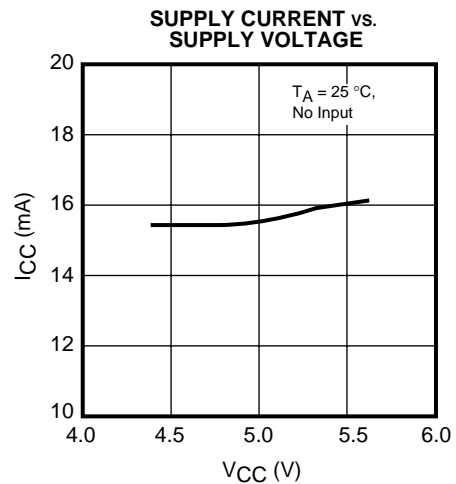
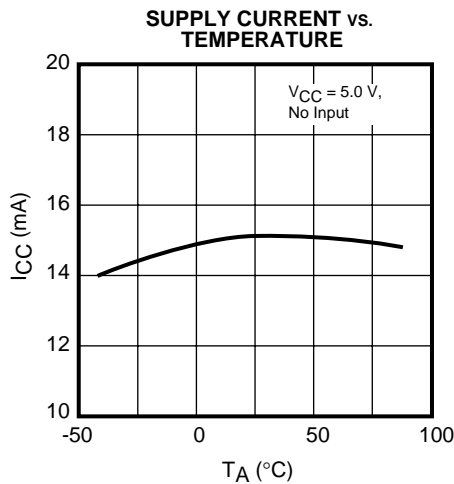
12. Total Harmonic Distortion (THD)

The TP6 signal is measured when a 1 kHz 1 V_{p-p} input signal is applied to TP4.

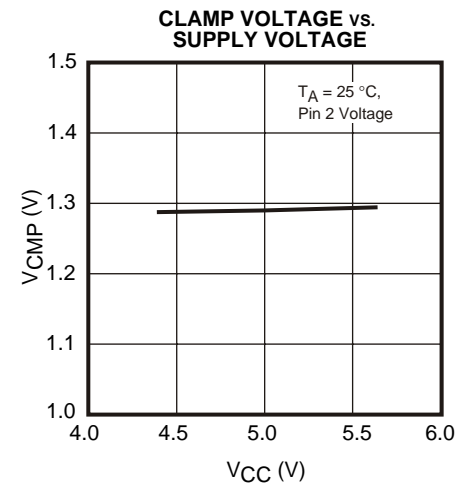
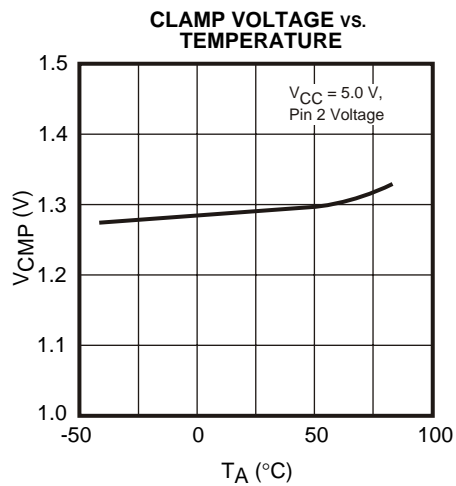
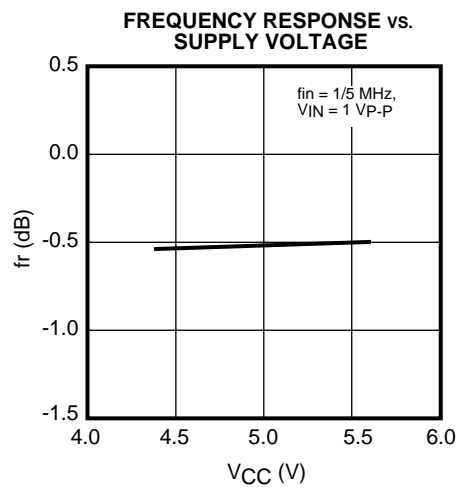
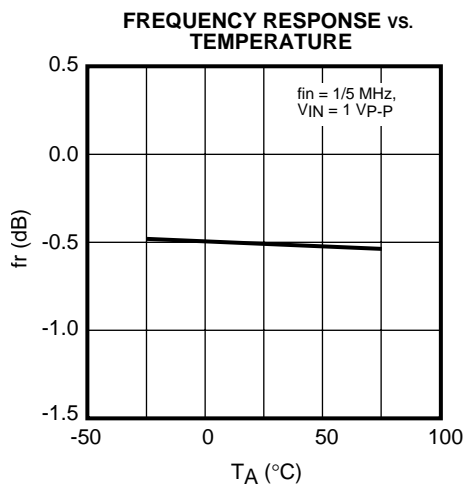
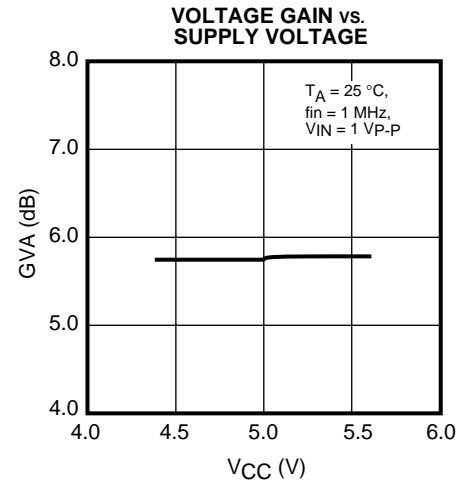
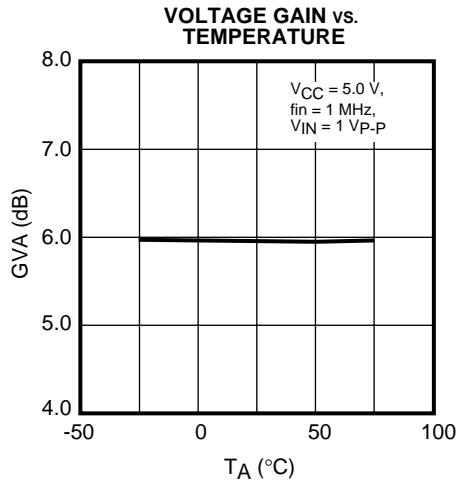
13. Maximum Output Voltage ($V_{OUT(MAX)}$)

A 1 kHz input signal is applied to TP4 and the amplitude is slowly increased. The output voltage at TP5 is measured at the point the THD reaches 10%.

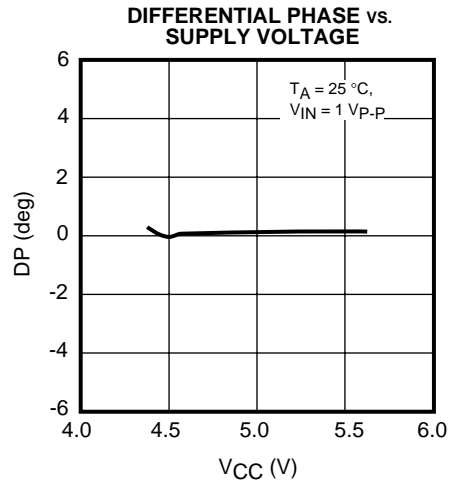
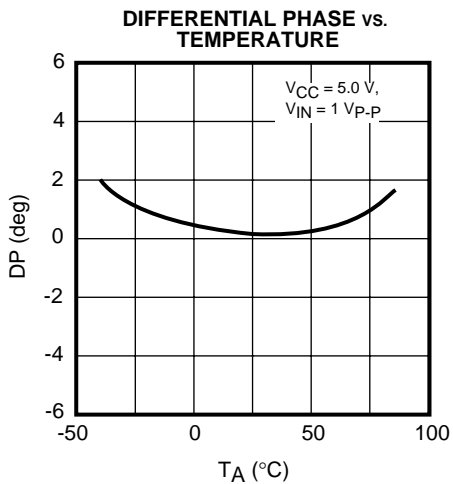
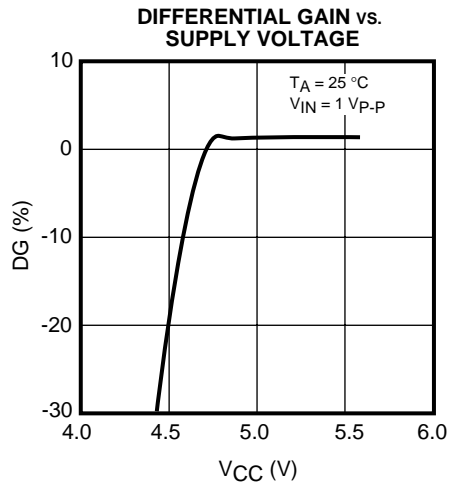
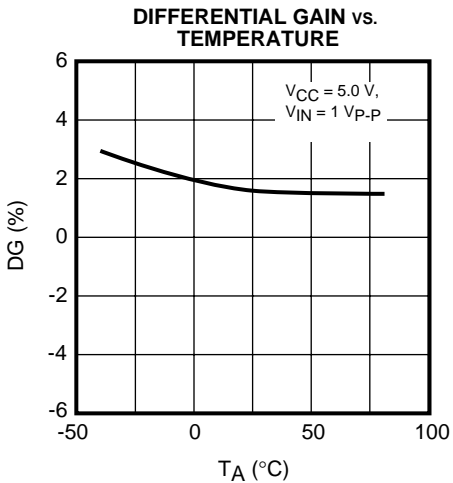
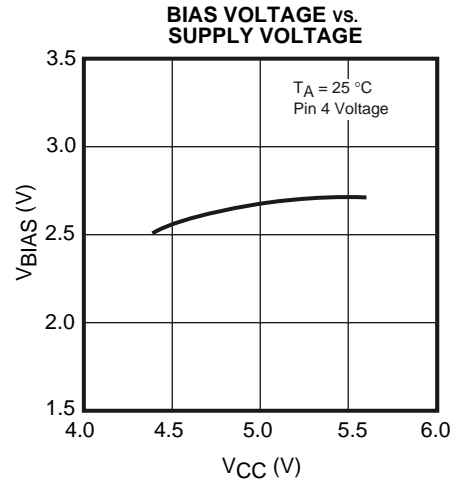
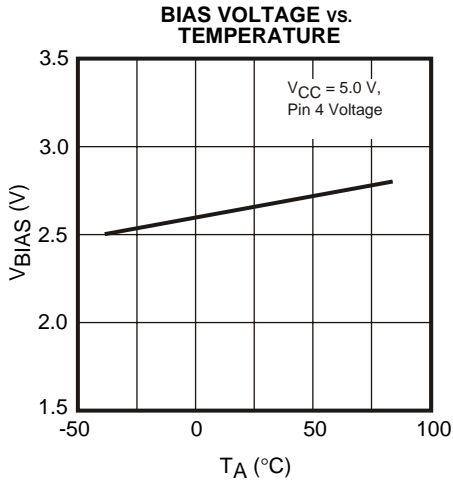
TYPICAL PERFORMANCE CHARACTERISTICS



TYPICAL PERFORMANCE CHARACTERISTICS (CONT.)



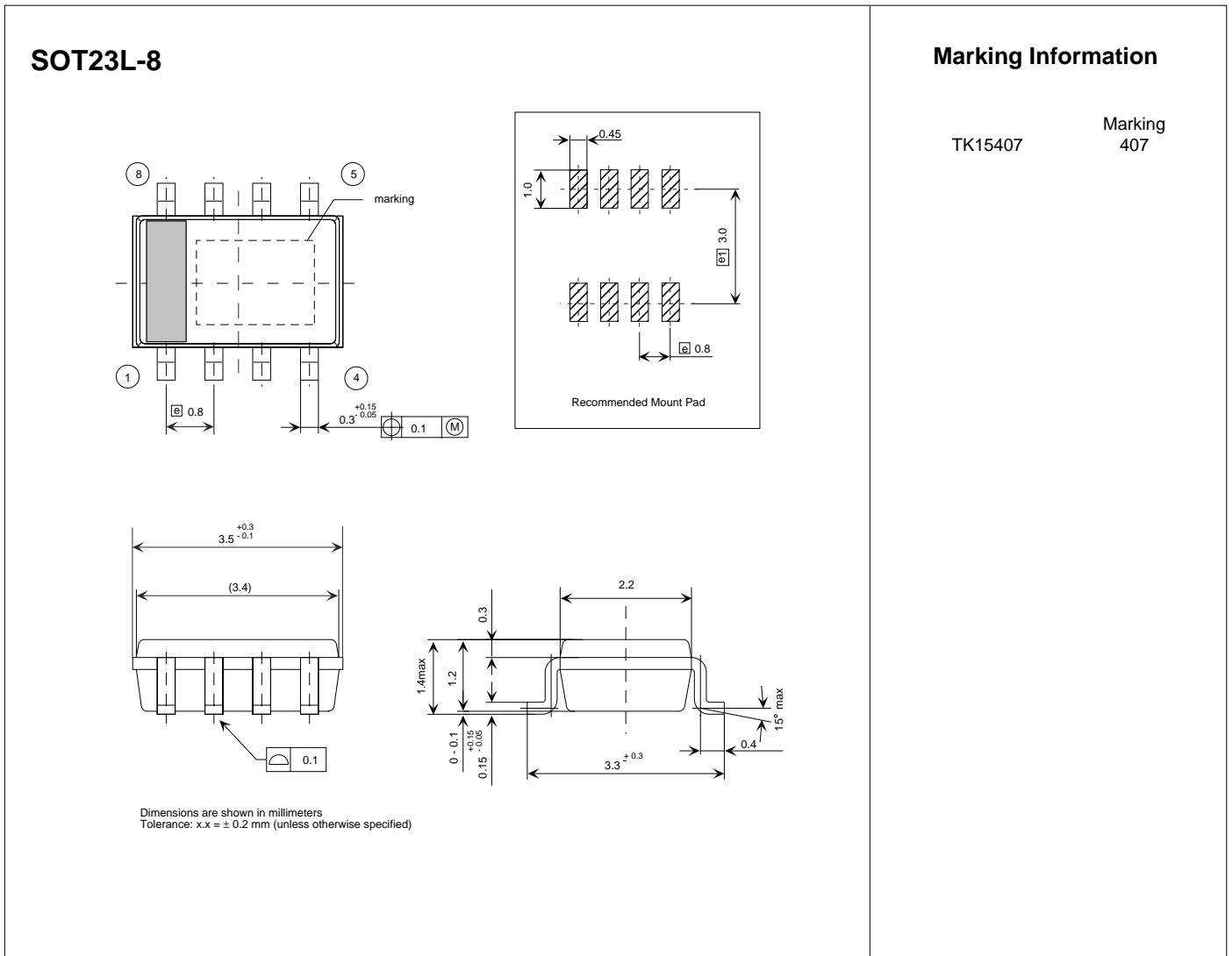
TYPICAL PERFORMANCE CHARACTERISTICS (CONT.)



PIN FUNCTION DESCRIPTIONS

TERMINAL			INTERNAL EQUIVALENT CIRCUIT	DESCRIPTION
PIN NO.	SYMBOL	VOLTAGE		
8 1	OUTPUT_Y SAG_Y	1.6 V 1.4 V		<p>Pin 8: Luminance Output terminal. The Luminance output is available to drive $75\ \Omega + 75\ \Omega$ load.</p> <p>Pin 1: SAG terminal</p>
2	INPUT_Y	1.3 V		<p>Luminance Input terminal. The luminance input signal is clamped at 1.29 V.</p>
3	STANDBY	2.1 V		<p>Standby Logic terminal. The device is in the standby mode when Pin 3 is connected to Low. The device is in the operating mode when Pin 3 is connected to High or Open.</p>
4	INPUT_C	2.6 V		<p>Chrominance Input terminal. The chrominance input signal is biased by a $100\ \text{k}\Omega$ Bias Resistance.</p>
5	OUTPUT_C	2.8 V		<p>Chrominance Output terminal. The chrominance output is available to drive $75\ \Omega + 75\ \Omega$ load.</p>
6	GND	GND		GND terminal.
7	V_{CC}	V_{CC}		Power Supply terminal.

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