

75 Ω VIDEO LINE DRIVER

FEATURES

- Fixed Gain (6 dB)
- Internal 75 Ω Drivers
- Very Small Output Capacitor Using SAG Function Pin
- Internal Clamping Circuit
- Single +5 V Power Supply Operation

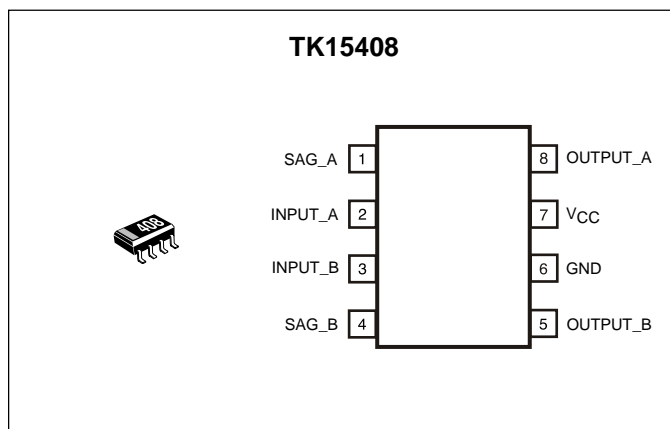
APPLICATIONS

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

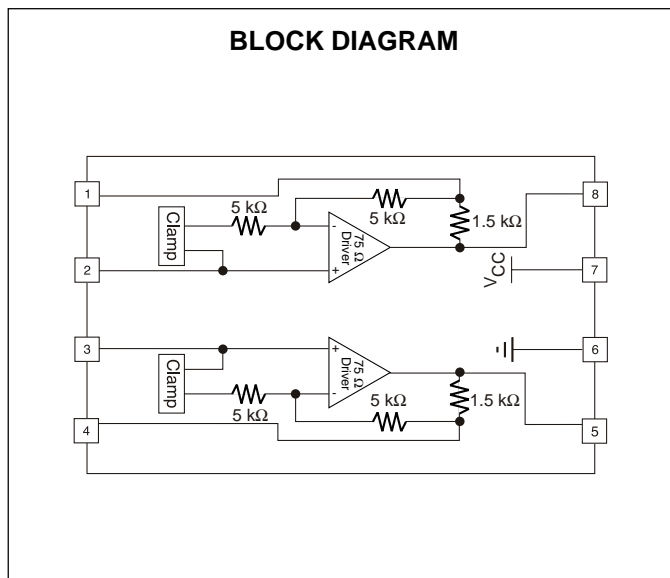
DESCRIPTION

Operating from a single +5 V supply, the TK15408 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 with internal clamping circuits. Each 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 resistors provide gain compensation for low frequency signals. Nominal power dissipation (no input) is typically 76 mW. The TK15408 is ideally suited for S-VHS systems.

The TK15408M is available in the very small SOT23L-8 surface mount package.



BLOCK DIAGRAM



ORDERING INFORMATION

TK15408M □□

Tape/Reel Code

TAPE/REEL CODE
TL: Tape Left

TK15408

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

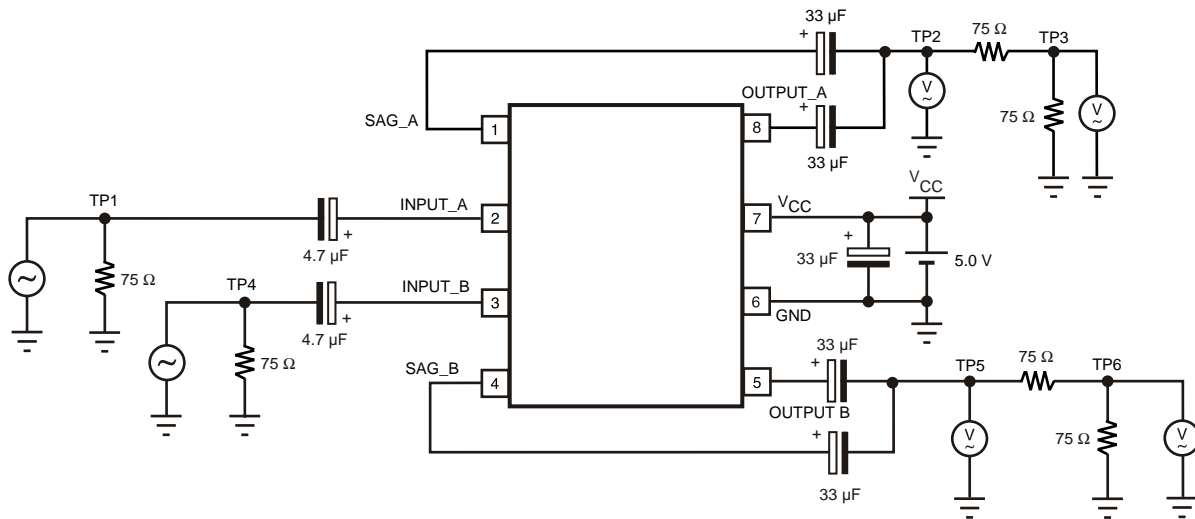
TK15408M ELECTRICAL CHARACTERISTICS

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
V_{CMP}	Clamp Voltage	Pin 2, Pin 3 Input terminal	1.10	1.29	1.50	V
GVA	Voltage Gain	$f_{in} = 1\text{ MHz}$	5.2	5.7	6.2	dB
DG	Differential Gain	Staircase signal input	-3.0	+0.6	+3.0	%
DP	Differential Phase	Staircase signal input	-3.0	-0.1	+3.0	deg
fr	Frequency Response	$f_{in} = 1\text{ MHz} / 5\text{ MHz}$		-0.3		dB

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

TEST CIRCUIT



MEASUREMENT METHOD

1. Supply Current (I_{CC})

The Pin 7 current is measured with no input signal.

2. Clamp Voltage (V_{CMP})

The DC voltage at Pin 2 (Pin 3) is measured with no input signal.

3. Voltage Gain (GVA)

The voltage gain equation is as follows:

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

Where V_1 is the input voltage at TP1 (TP4) and V_2 is the measured voltage at TP2 (TP5).

4. Differential Gain (DG)

The differential gain is measured at TP3 (TP6) when a staircase waveform of 10 steps is applied to TP1 (TP4).

5. Differential Phase (DP)

The differential phase is measured at TP3 (TP6) when a staircase waveform of 10 steps is applied to TP1 (TP4).

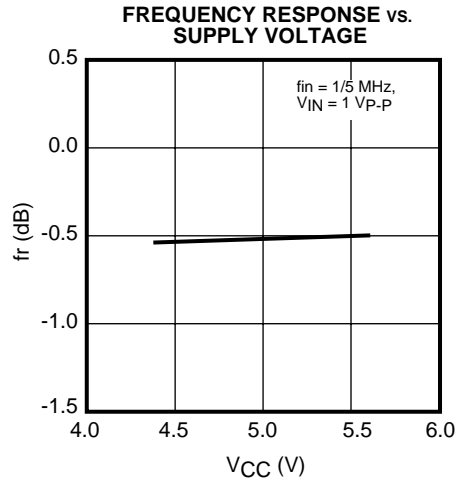
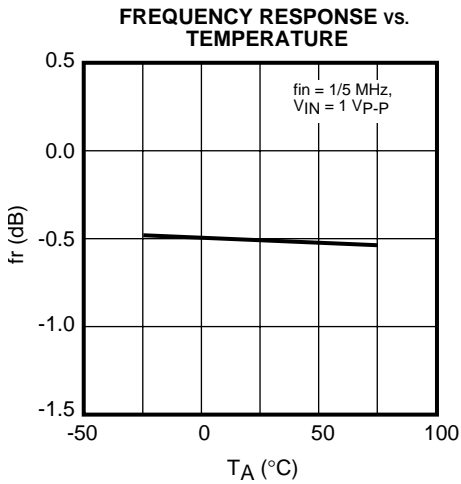
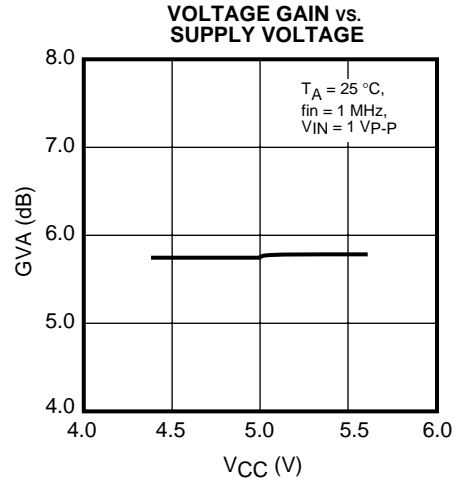
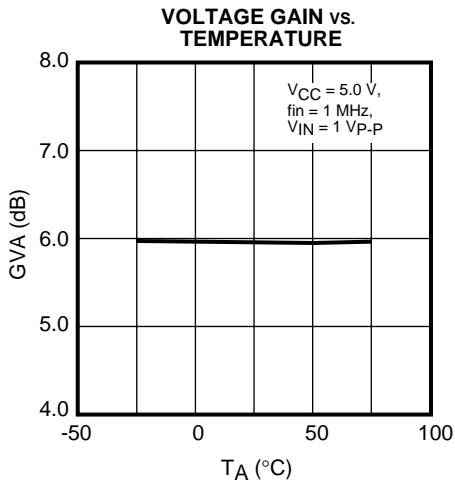
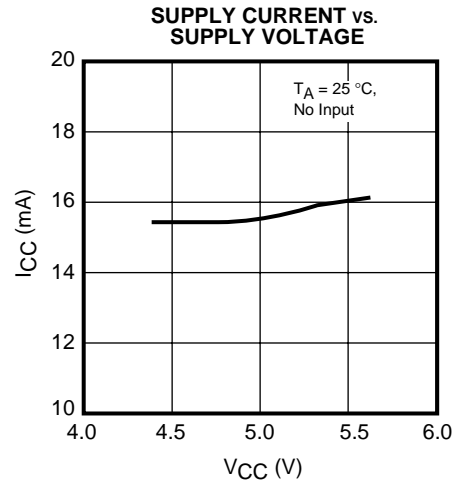
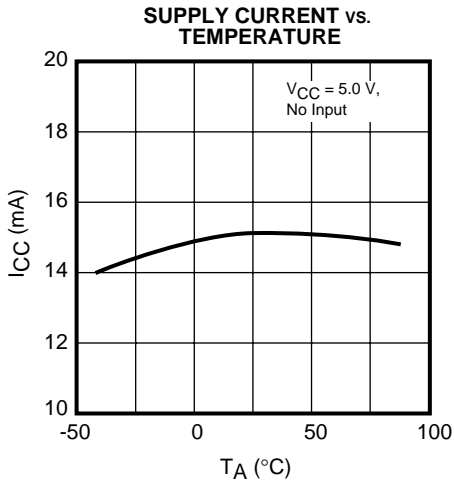
6. Frequency Response (fr)

The frequency response equation is as follows:

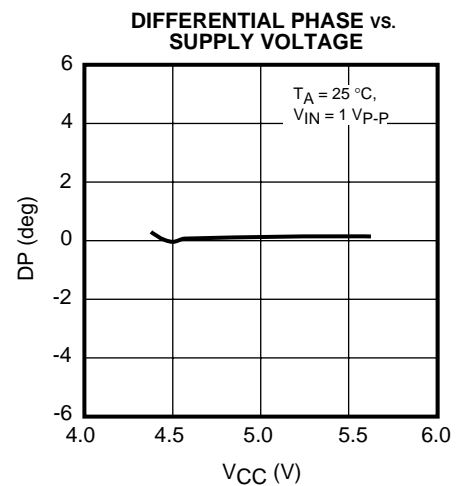
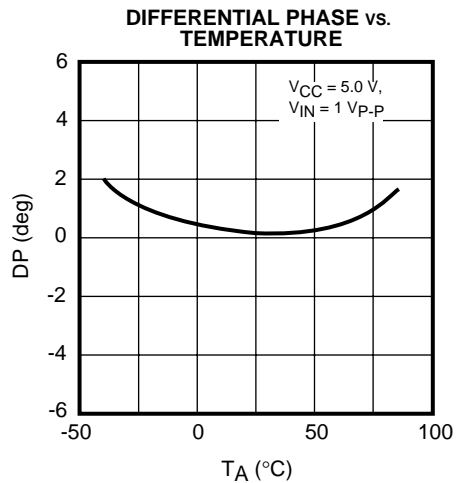
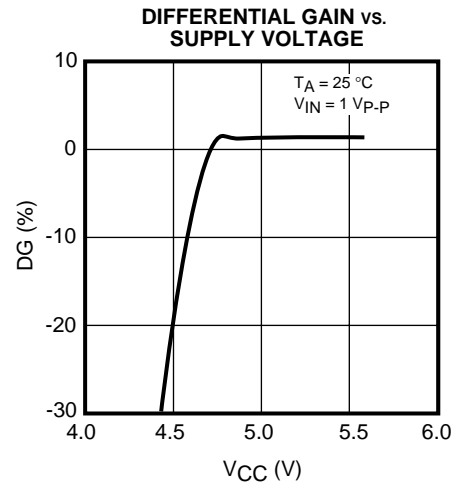
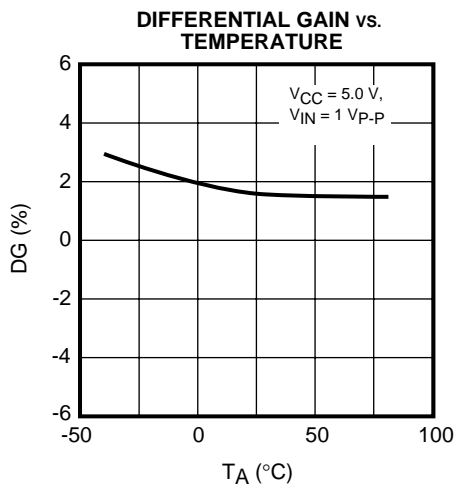
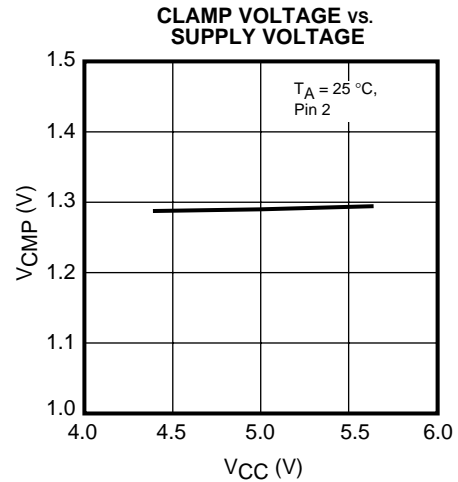
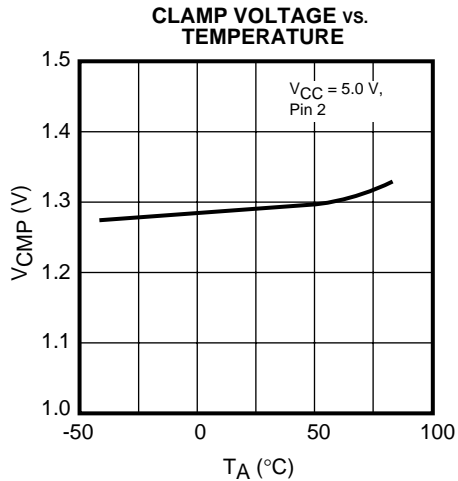
$$fr = 20 \log_{10} V_2/V_1$$

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.

TYPICAL PERFORMANCE CHARACTERISTICS



TYPICAL PERFORMANCE CHARACTERISTICS (CONT.)

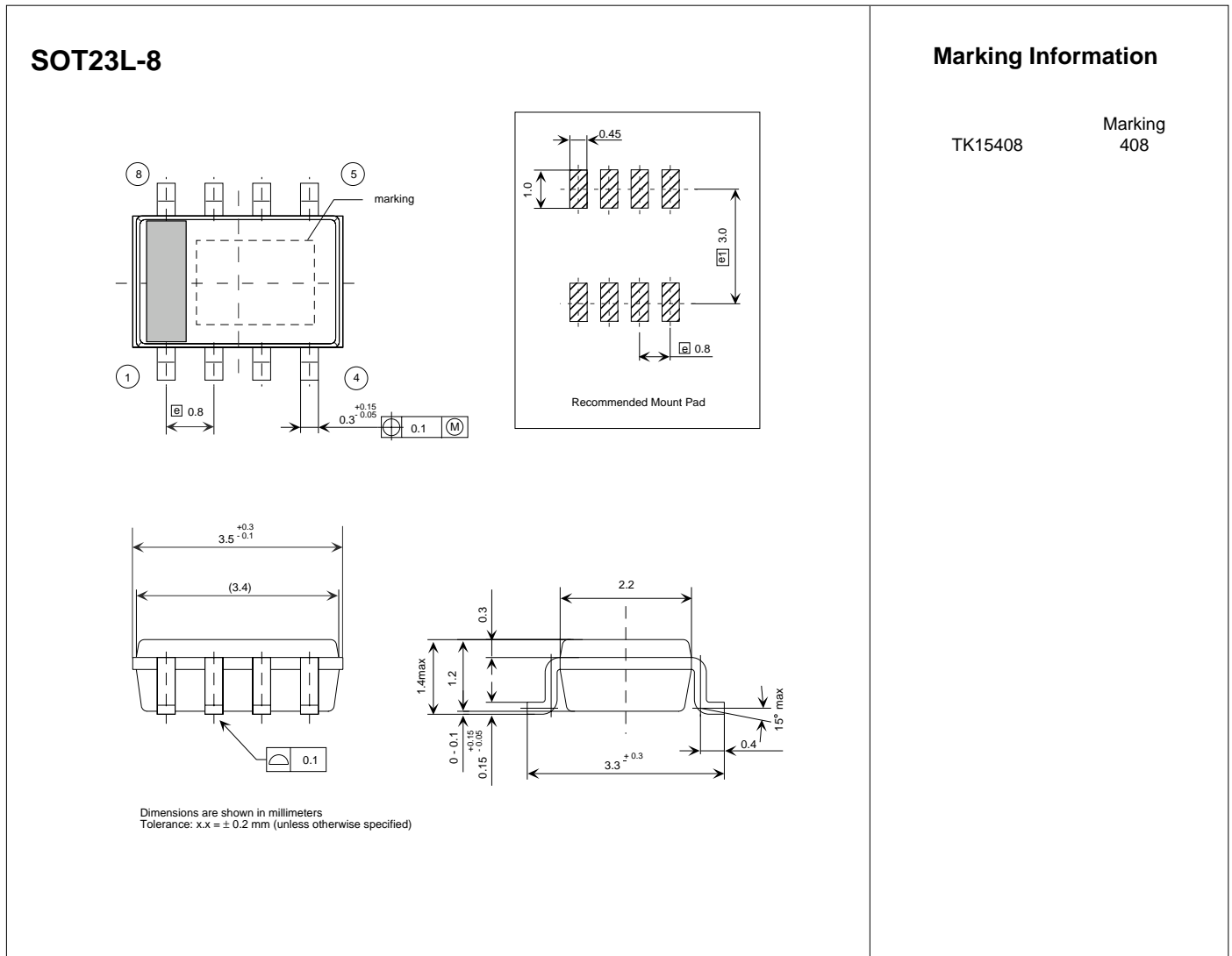


PIN FUNCTION DESCRIPTIONS

TERMINAL			INTERNAL EQUIVALENT CIRCUIT	DESCRIPTION
PIN NO.	SYMBOL	VOLTAGE		
8 1	OUTPUT_A SAG_A	1.6 V 1.4 V		<p>Pin 8: Output A terminal. The output A is available to drive 75 Ω + 75 Ω load.</p> <p>Pin 1: SAG A terminal</p>
2	INPUT_A	1.3 V		<p>Input A terminal. The luminance input signal is clamped at 1.29 V.</p>
3	INPUT_B	1.3 V		<p>Input B terminal. The luminance input signal is clamped at 1.29 V.</p>
4 5	SAG_B OUTPUT_B	1.4 V 1.6 V		<p>Pin 5: Output B terminal. The output B is available to drive 75 Ω + 75 Ω load.</p> <p>Pin 4: SAG B terminal.</p>
6	GND	GND		GND terminal.
7	V _{CC}	V _{CC}		Power Supply terminal.

NOTES

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