

## 75 $\Omega$ VIDEO LINE DRIVER

### FEATURES

- Internal 75  $\Omega$  Driver
- Active High ON/OFF Control with Internal Pull-up
- Very Low Standby Current (typ.  $I_{STBY} \leq 25 \mu A$ )
- Very Small SOT23-6 Package
- Single +5 V Power Supply Operation

### APPLICATIONS

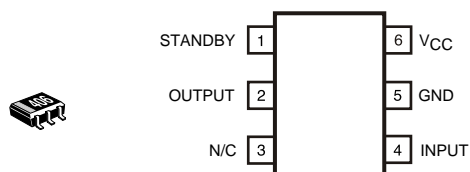
- Video Equipment
- Digital Cameras
- CCD Cameras
- TV Monitors
- Video Tape Recorders
- LCD Projectors

### DESCRIPTION

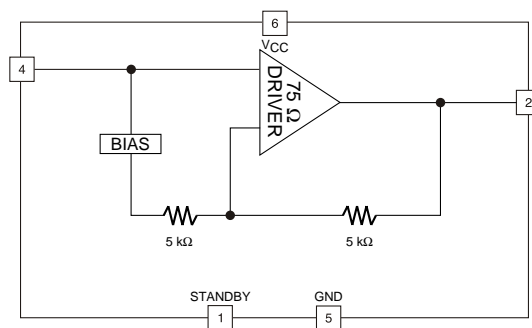
Operating from a single +5 V supply, the TK15406 is a single-channel video line driver IC that takes a standard video analog input and provides a buffered analog output for driving a 150  $\Omega$  load. The standard video input signal (1 V<sub>P-P</sub> typical) is internally biased at 2.5 V and amplified 6 dB to produce 2 V<sub>P-P</sub> (typical) into a series 75  $\Omega$  resistor and 75  $\Omega$  cable load. During standby (Pin 1 grounded), the TK15406 consumes only 120  $\mu W$  of power. Nominal power dissipation (no input) is typically 32 mW.

The TK15406M is available in the very small SOT23-6 surface mount package.

TK15406



BLOCK DIAGRAM



### ORDERING INFORMATION

TK15406M □□

Tape/Reel Code

TAPE/REEL CODE  
TL: Tape Left

# TK15406

## TK15406M ABSOLUTE MAXIMUM RATINGS

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

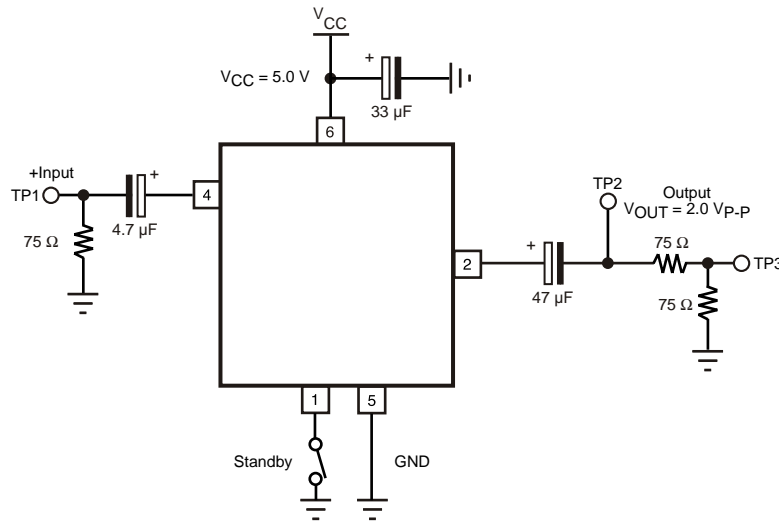
## TK15406M ELECTRICAL CHARACTERISTICS

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		6.3	8.5	mA
$I_{STBY}$	Standby Supply Current	Pin 1 Grounded		24.0	50.0	$\mu\text{A}$
$I_{OS}$	Standby Terminal Current	Pin 1 in Standby mode		24.0	50.0	$\mu\text{A}$
$V_{THL}$	Standby Threshold Voltage (High to Low)	Pin 1 Operating to Standby mode	GND	0.1	0.3	V
$V_{TLH}$	Standby Threshold Voltage (Low to High)	Pin 1 Standby to Operating mode	1.8	2.0	$V_{CC}$	V
$V_{BIAS}$	Bias Voltage	Pin 4 Input terminal	2.15	2.45	2.75	V
GVA	Voltage Gain	$f_{in} = 1 \text{ MHz}$	5.2	5.7	6.2	dB
fr	Frequency Response	$f_{in} = 1 \text{ MHz} / 5 \text{ MHz}$		-0.5		dB
THD	Total Harmonic Distortion	$f_{in} = 1.0 \text{ kHz}$		0.2	1.0	%
$V_{OUT(MAX)}$	Maximum Output Voltage	THD = 10% point	1.0	1.2		Vrms

Note 1: Power dissipation is 150 mW in free air. Derate at 1.2 mW/°C for operation above 25°C.

### TEST CIRCUIT



### MEASUREMENT METHOD

#### 1. Supply Current ( $I_{CC}$ )

The Pin 6 current is measured with no input signal and the Standby Pin (Pin 1) open.

#### 2. Standby Supply Current ( $I_{STBY}$ )

The Pin 6 current is measured when the Standby Pin (Pin 1) is connected to ground.

#### 3. Standby Terminal Current ( $I_{OS}$ )

The Pin 1 current is measured when Pin 1 is connected to ground.

#### 4. Threshold Voltage (High to Low) ( $V_{THL}$ )

The Pin 1 voltage is measured at the point which changes the device from operating mode into standby mode.

#### 5. Threshold Voltage (Low to High) ( $V_{TLH}$ )

The Pin 1 voltage is measured at the point which changes the device from standby mode into operating mode.

#### 6. Bias Voltage ( $V_{BIAS}$ )

The DC voltage at Pin 4 is measured with no input signal.

#### 7. 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 and  $V_2$  is the measured output voltage at TP2.

#### 8. 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 voltage when the TP1 input frequency is set to 1 MHz and  $V_2$  is the measured TP3 voltage when the TP1 input frequency is set to 5 MHz.

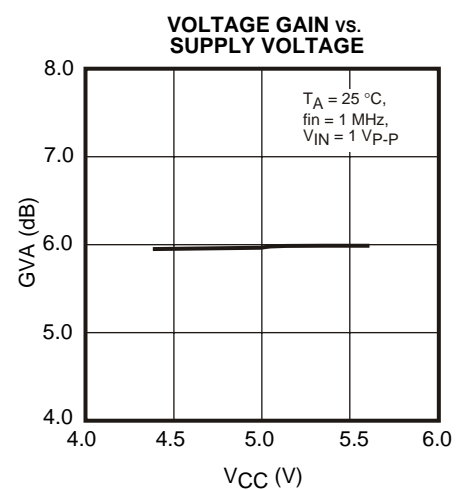
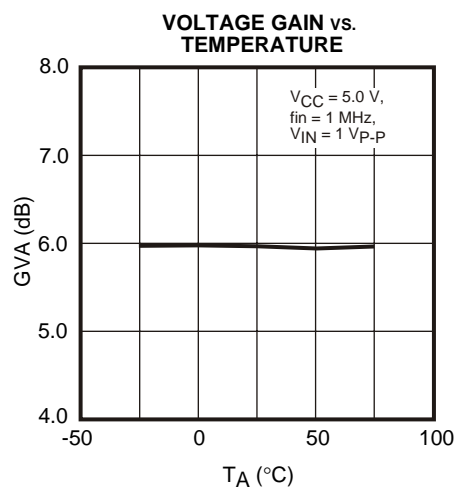
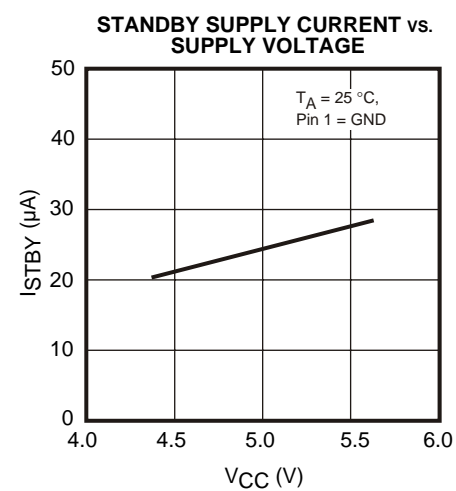
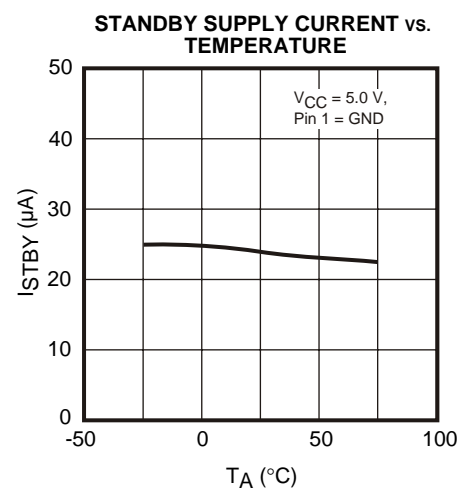
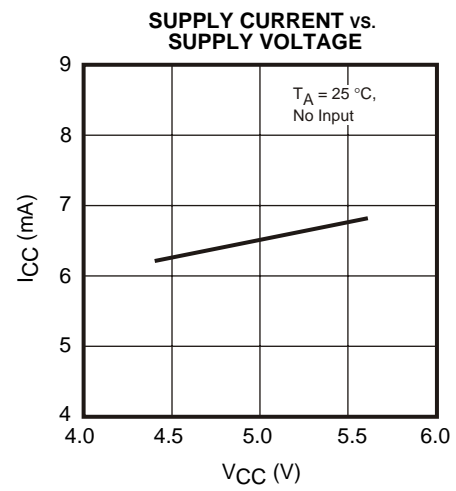
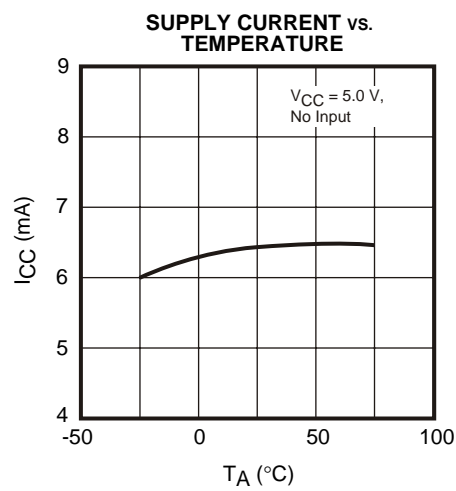
#### 9. Total Harmonic Distortion (THD)

The TP3 signal is measured when a 1 kHz 1  $V_{p-p}$  input signal is applied to TP1.

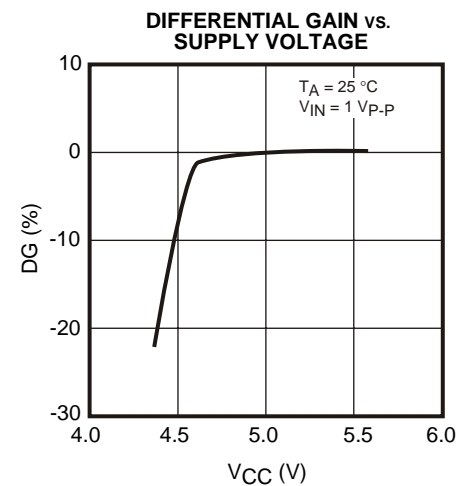
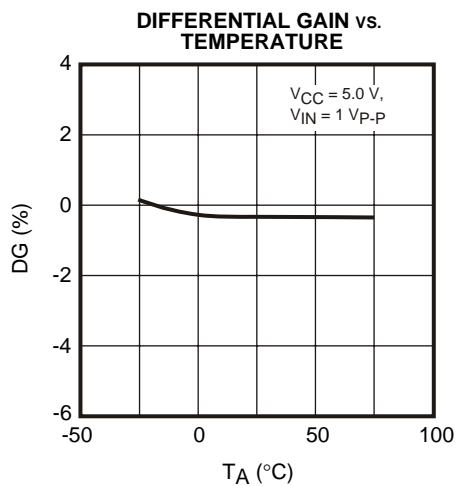
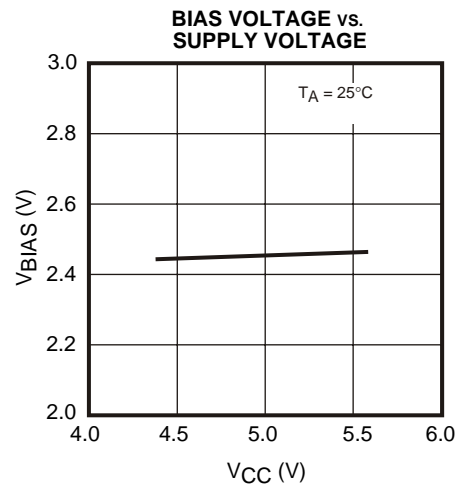
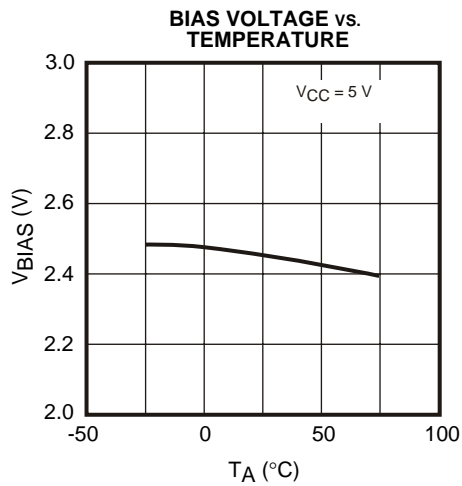
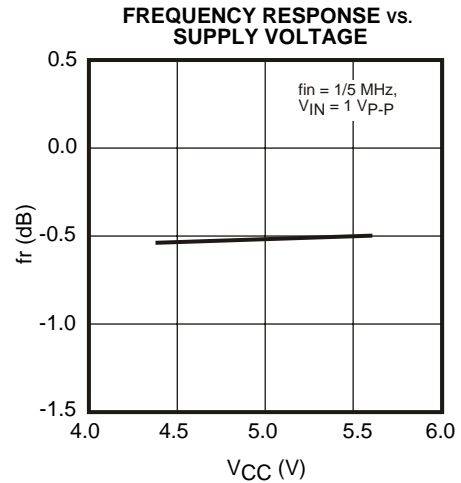
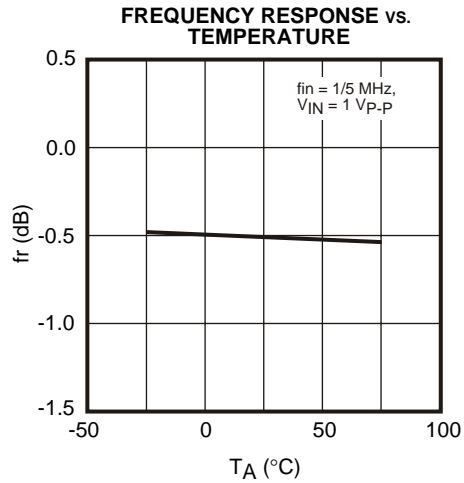
#### 10. Maximum Output Voltage ( $V_{OUT(MAX)}$ )

A 1 kHz input signal is applied to TP1 and the amplitude is slowly increased. The output voltage at TP2 is measured at the point the THD reaches 10%.

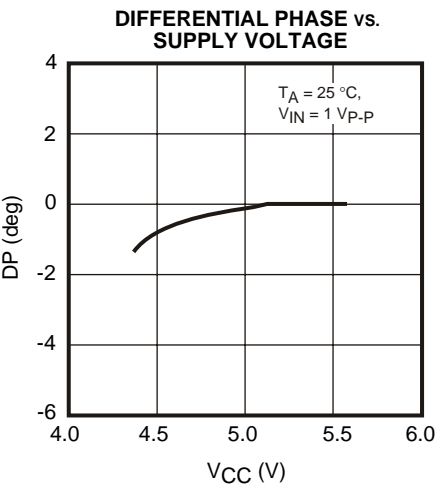
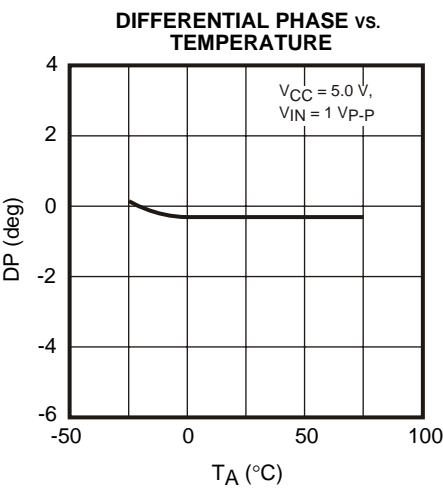
TYPICAL PERFORMANCE CHARACTERISTICS



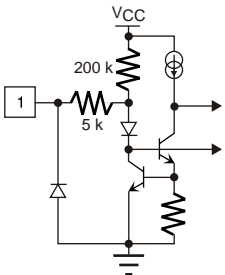
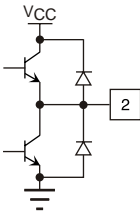
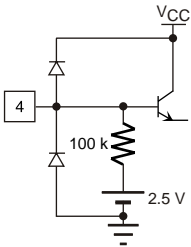
## TYPICAL PERFORMANCE CHARACTERISTICS (CONT.)



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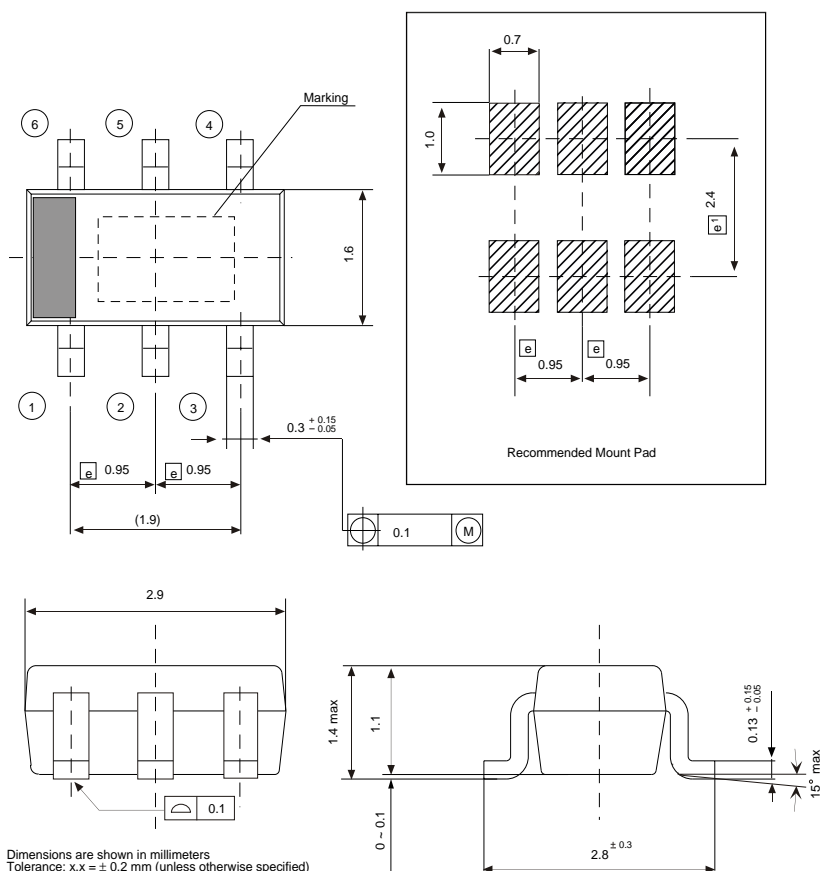


## PIN FUNCTION DESCRIPTION

TERMINAL			INTERNAL EQUIVALENT CIRCUIT	DESCRIPTION
PIN NO.	SYMBOL	VOLTAGE		
1	STANDBY	1.4 V		Standby Logic Terminal. The device is in the standby mode when Pin 1 is connected to Low. The device is in the operating mode when Pin 1 is connected to High or Open.
2	OUTPUT	2.5 V		Output Terminal. The output is available to drive a $75\ \Omega + 75\ \Omega$ load.
3	NC			No Connection Terminal
4	INPUT	2.5 V		Input Terminal. The input signal is biased to 2.5 V by a 100 kΩ bias resistor.
5	GND	GND		GND Terminal
6	$V_{CC}$	$V_{CC}$		Power Supply Terminal

## PACKAGE OUTLINE

## SOT23-6



## Marking Information

TK15406

Marking  
406

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