

75 Ω VIDEO LINE DRIVER

FEATURES

- Internal 75 Ω 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

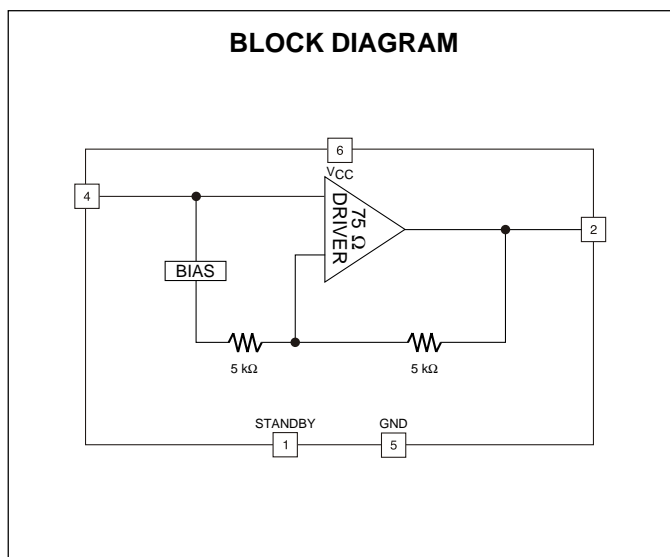
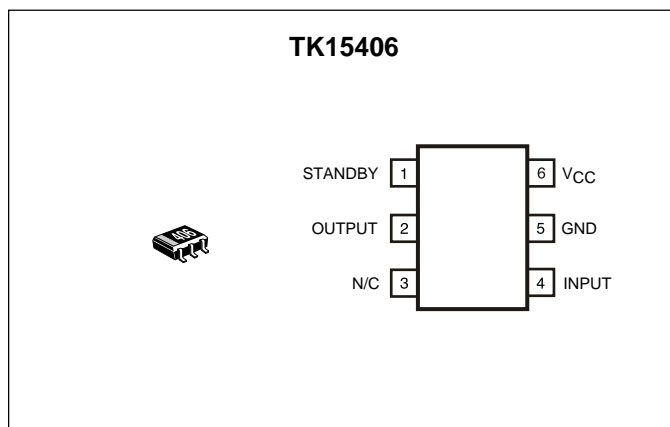
APPLICATIONS

- 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 Ω load. The standard video input signal (1 V_{P-P} typical) is internally biased at 2.5 V and amplified 6 dB to produce 2 V_{P-P} (typical) into a series 75 Ω resistor and 75 Ω cable load. During standby (Pin 1 grounded), the TK15406 consumes only 120 μW of power. Nominal power dissipation (no input) is typically 32 mW.

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



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

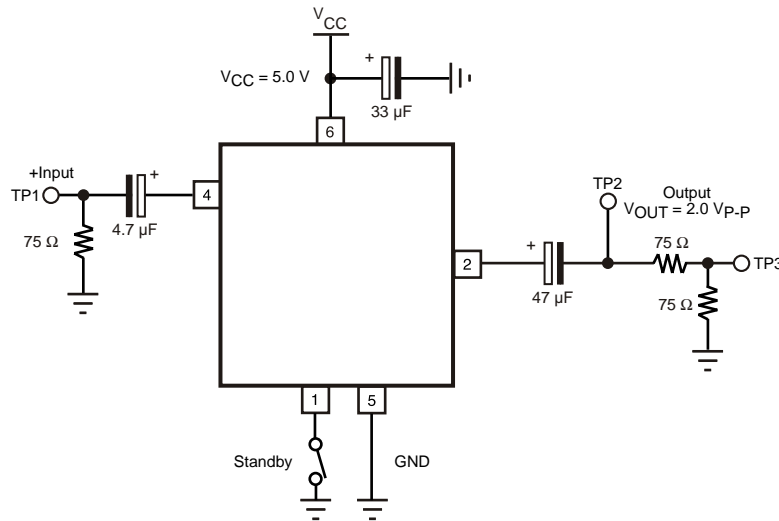
TK15406M ELECTRICAL CHARACTERISTICS

Test conditions: $V_{CC} = 5.0\text{ V}$, $V_{IN} = 1.0\text{ V}_{P-P}$, $R_L = 150\ \Omega$, $T_A = 25\text{ °C}$ 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	μA
I_{OS}	Standby Terminal Current	Pin 1 in Standby mode		24.0	50.0	μA
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.

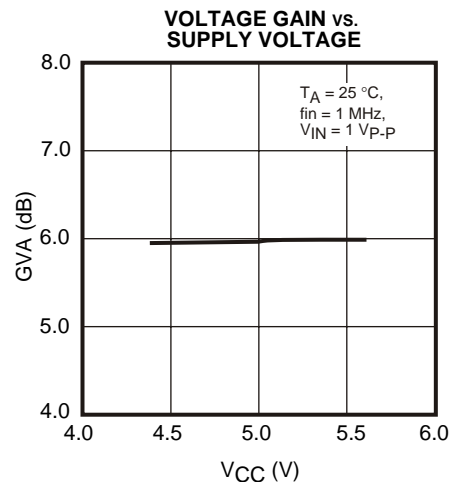
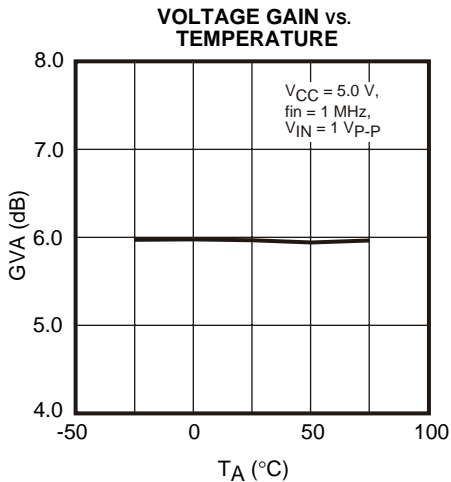
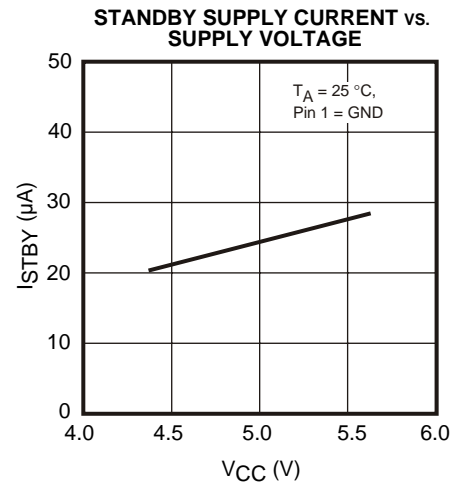
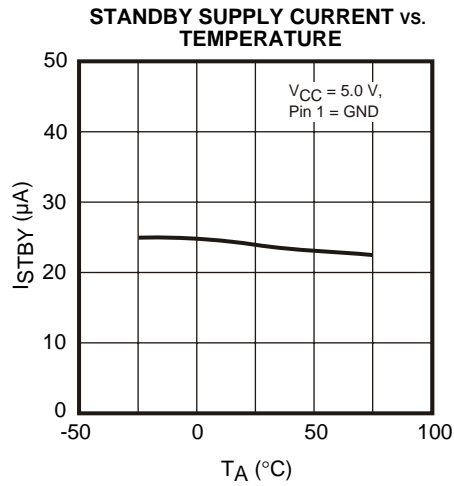
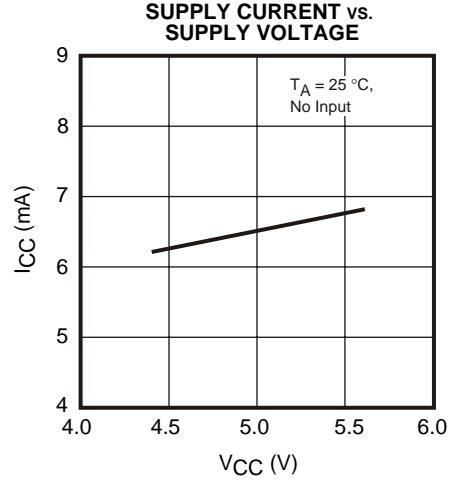
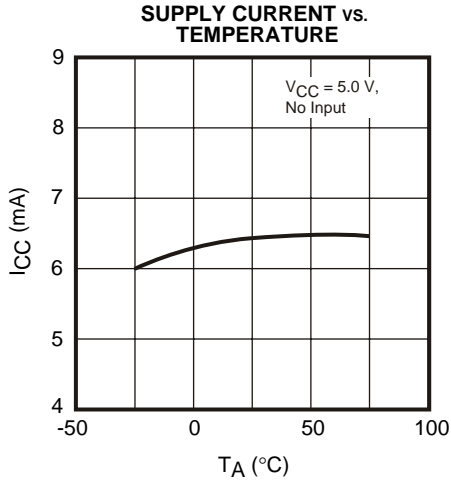
9. Total Harmonic Distortion (THD)

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

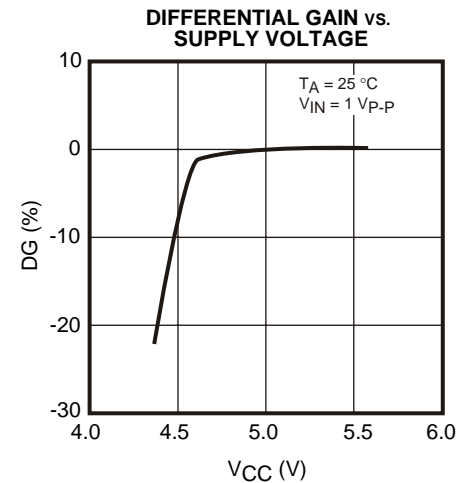
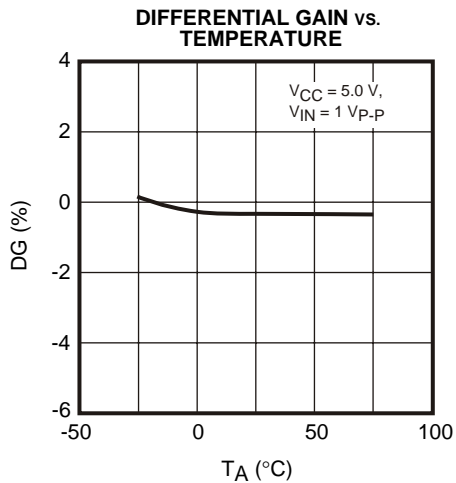
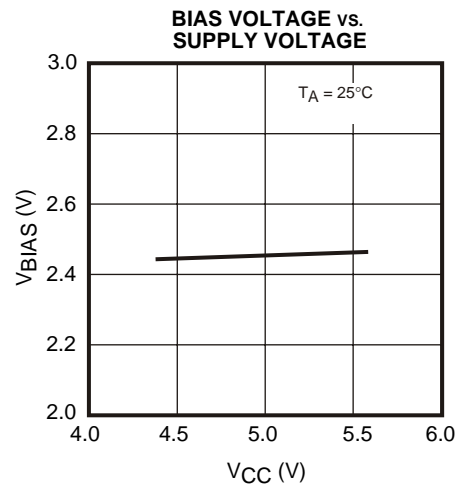
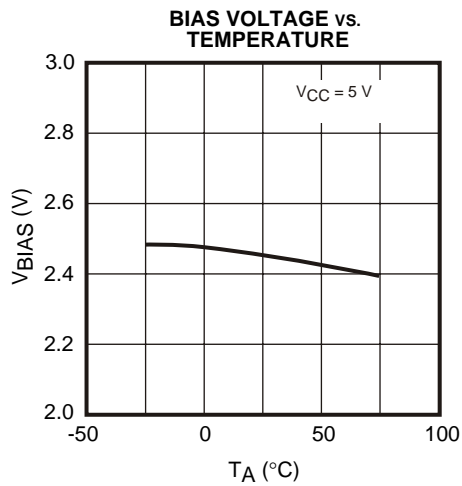
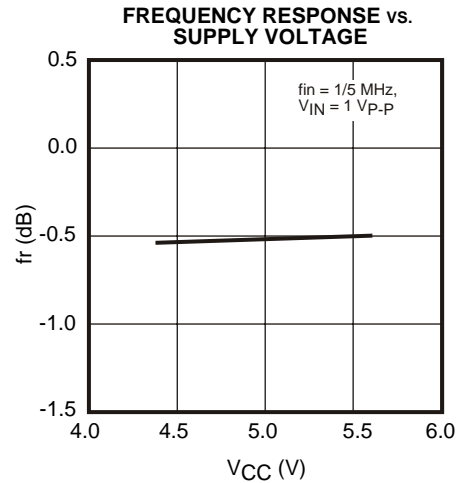
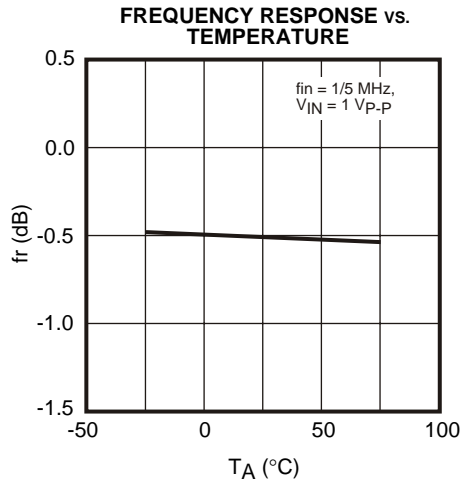
10. Maximum Output Voltage ($V_{OUT(MAX)}$)

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%.

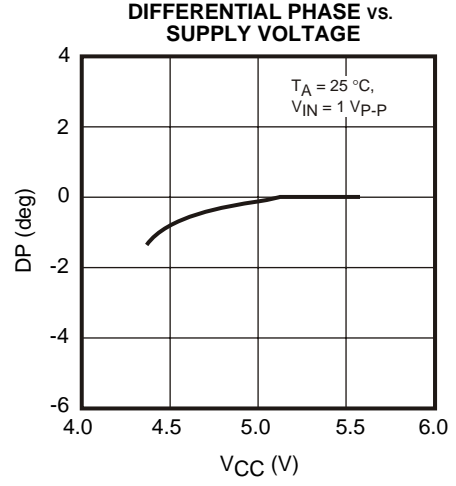
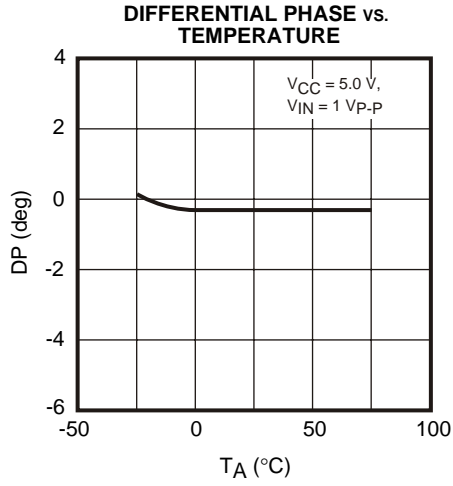
TYPICAL PERFORMANCE CHARACTERISTICS



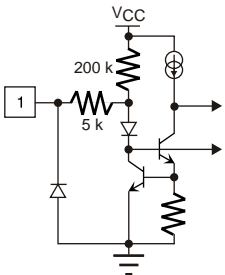
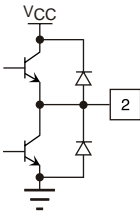
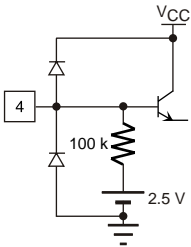
TYPICAL PERFORMANCE CHARACTERISTICS (CONT.)



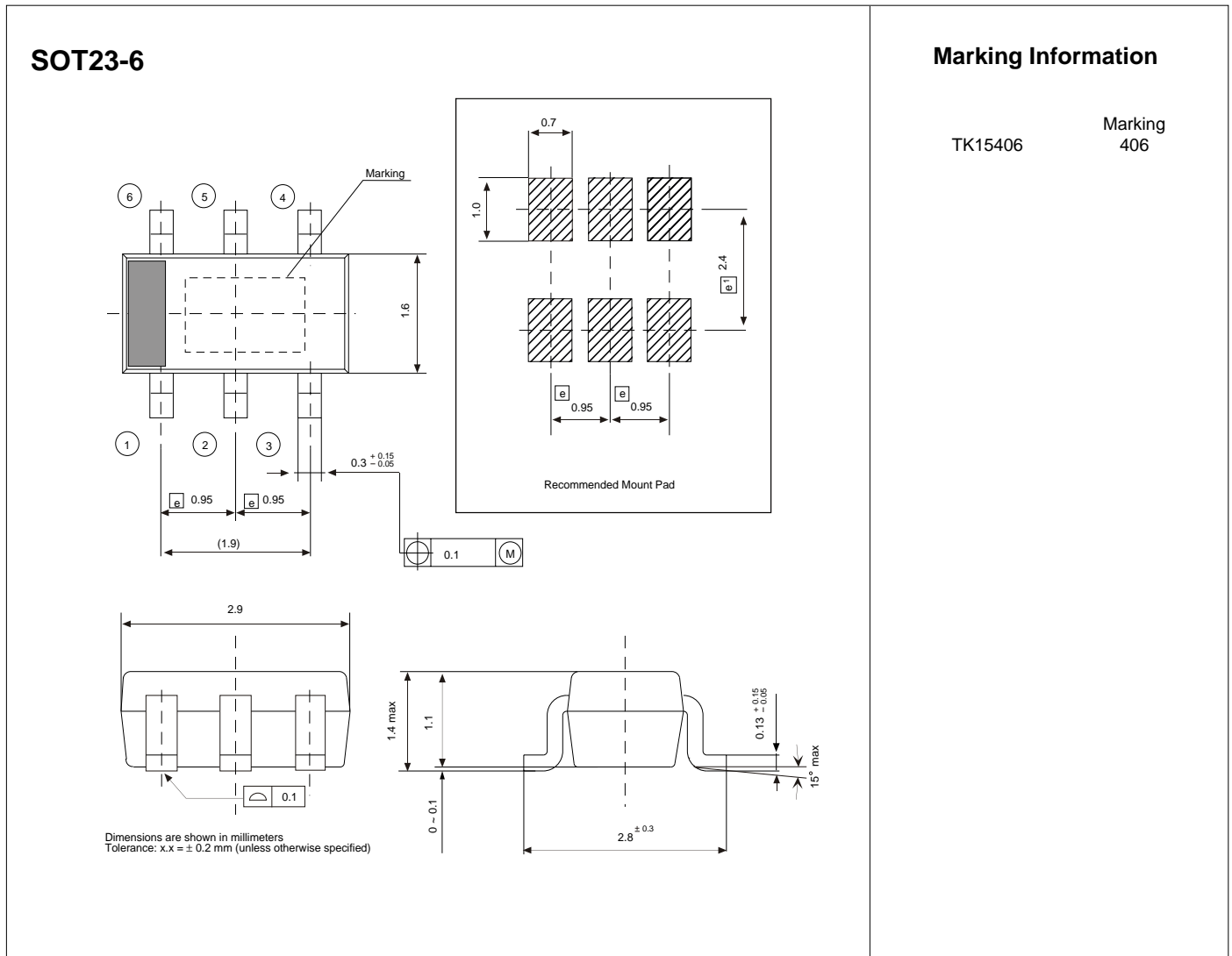
TYPICAL PERFORMANCE CHARACTERISTICS (CONT.)



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



Toko America, Inc. Headquarters
1250 Feehanville Drive, Mount Prospect, Illinois 60056
Tel: (847) 297-0070 Fax: (847) 699-7864

TOKO AMERICA REGIONAL OFFICES

Midwest Regional Office
Toko America, Inc.
1250 Feehanville Drive
Mount Prospect, IL 60056
Tel: (847) 297-0070
Fax: (847) 699-7864

Western Regional Office
Toko America, Inc.
2480 North First Street, Suite 260
San Jose, CA 95131
Tel: (408) 432-8281
Fax: (408) 943-9790

Eastern Regional Office
Toko America, Inc.
107 Mill Plain Road
Danbury, CT 06811
Tel: (203) 748-6871
Fax: (203) 797-1223

Semiconductor Technical Support
Toko Design Center
4755 Forge Road
Colorado Springs, CO 80907
Tel: (719) 528-2200
Fax: (719) 528-2375

Visit our Internet site at <http://www.tokoam.com>

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