75 Ω VIDEO LINE DRIVER

FEATURES

- **Internal Y-C Summing Circuit**
- **Internal Switch Circuit for Composite Signal or Y-C Signal**
- **Voltage Gain is 6 dB Fixed**
- **Internal 75 Ω Driver**
- **Very Small Output Capacitor Using SAG Function Pin**
- **Very Small Package (SOT23L-8)**

APPLICATIONS

- **Video Equipment**
- **Camcorder**
- **CCD Cameras**
- **DVD Player/RW**
- **Video Board**
- **Video Tape Recorders**
- **LCD TV/Monitor**

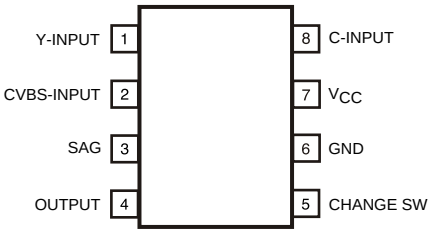
DESCRIPTION

Operating from a single +5 V supply, the TK15414M is a 75 Ω video line driver IC with an internal Y-C summing circuit. It has an internal switch circuit for the CVBS compostie signal and the Y-C signal. The internal 1.5 k SAG function resistor provides gain compensation for low frequency signals. (Voltage gain from the CVBS signal input terminal is 0 dB.)

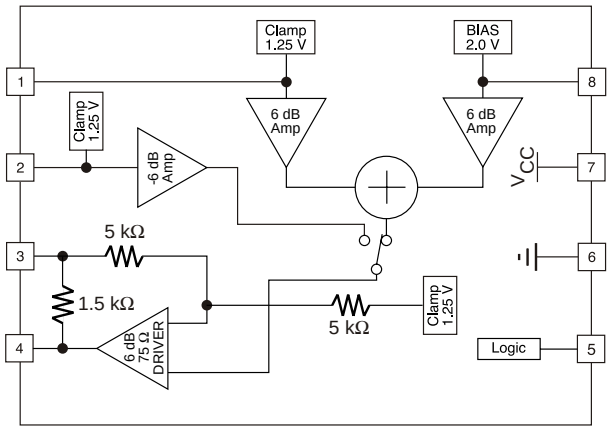
The TK15414M is available in the very small SOT23L-8 surface mount package.

TK15414





BLOCK DIAGRAM



ORDERING INFORMATION

TK15414M □□

Tape/Reel Code

TAPE/REEL CODE
TL: Tape Left

ABSOLUTE MAXIMUM RATINGS

Supply Voltage ..... 6 V
Operating Voltage Range..... 4.5 to 5.5 V
Power Dissipation (Note 1) ..... 200 mW
Maximum Input Frequency..... 20 MHz
Storage Temperature Range ..... -55 to +150 °C
Operating Temperature Range .....-25 to +75 °C

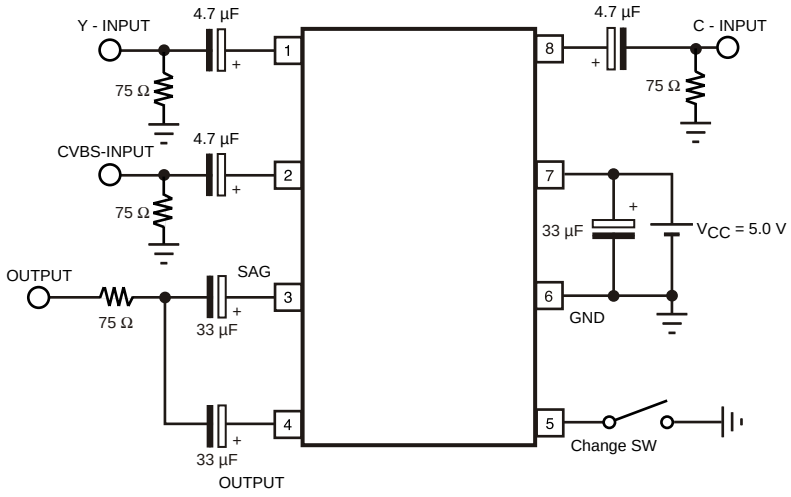
TK15414M ELECTRICAL CHARACTERISTICS

Test conditions: V_{CC} = 5.0 V, V_{IN} = 1.0 V_{P-P}, R_L = 150 Ω, T_A = 25 °C unless otherwise specified.

SYMBOL	PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNITS
I_{CC}	Supply Current	No input		24.5	36.0	mA
$V_{THL(SW)}$	Switch Threshold Voltage (High to Low)	Pin 5, S-VHS to CVBS			0.3	V
$V_{TLH(SW)}$	Switch Threshold Voltage (Low to High)	Pin 5, CVBS to S-VHS	1.8			V
S-VHS (Pin 5 OPEN)						
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-Y	Voltage Gain, Y channel	f_{IN} = 1 MHz, Y signal input	5.2	5.7	6.2	dB
GVA-C	Voltage Gain, C channel	f_{IN} = 1 MHz, C signal input	5.1	5.6	6.1	dB
DG-S	Differential Gain	Staircase signal input	-3.0	-1.5	+3.0	%
DP-S	Differential Phase	Staircase signal input	-3.0	0.0	+3.0	deg
fr-S	Frequency Response	f_{in} = 1 MHz / 5 MHz		-0.5		dB
CVBS (Pin 5 GND)						
V_{CMP}	Clamp Voltage	Pin 2, CVBS input terminal	1.10	1.28	1.50	V
GVA	Voltage Gain	f_{IN} = 1 MHz	-0.9	-0.4	-0.1	dB
DG	Differential Gain	Staircase signal input	-3.0	-0.7	+3.0	%
DP	Differential Phase	Staircase signal input	-3.0	0.2	+3.0	deg
fr	Frequency Response	f_{in} = 1 MHz / 5 MHz		-0.5		dB

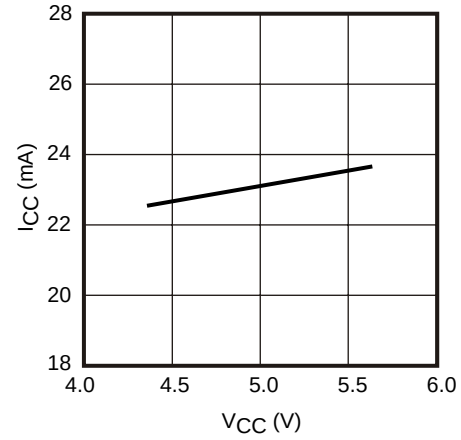
Note 1: Power dissipation is 200 mW in free air. Derate at 1.6 mW/°C for operation above 25°C.

TEST CIRCUIT

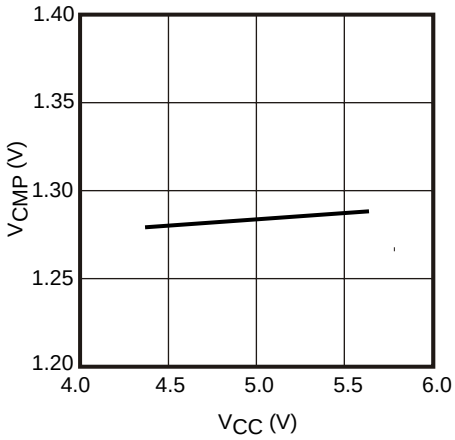


TYPICAL PERFORMANCE CHARACTERISTICS

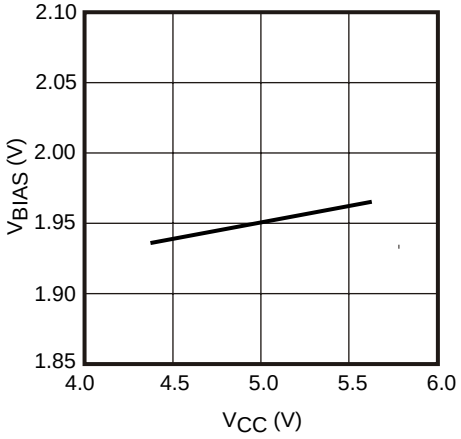
SUPPLY CURRENT vs. SUPPLY VOLTAGE



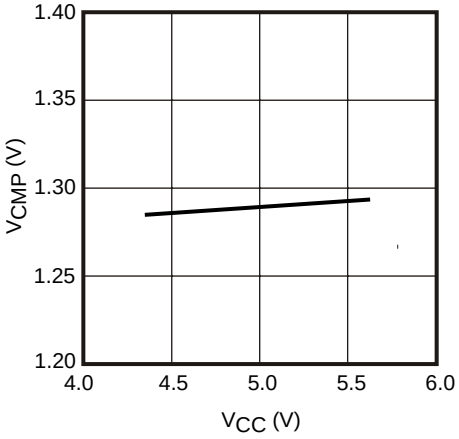
Y-INPUT CLAMP VOLTAGE vs. SUPPLY VOLTAGE



C-INPUT BIAS VOLTAGE vs. SUPPLY VOLTAGE

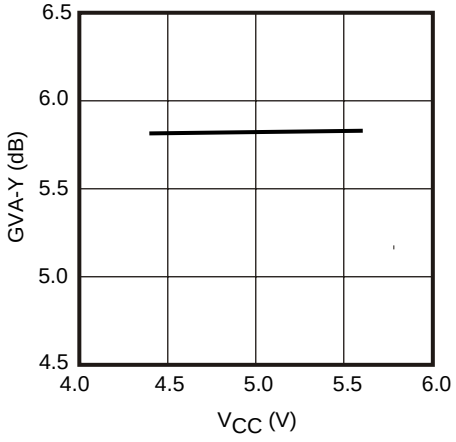


CVBS INPUT CLAMP VOLTAGE vs. SUPPLY VOLTAGE

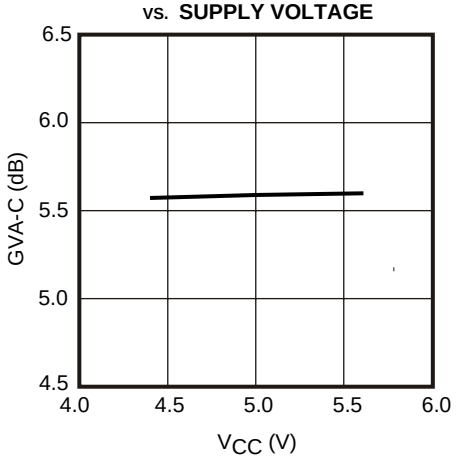


TYPICAL PERFORMANCE CHARACTERISTICS

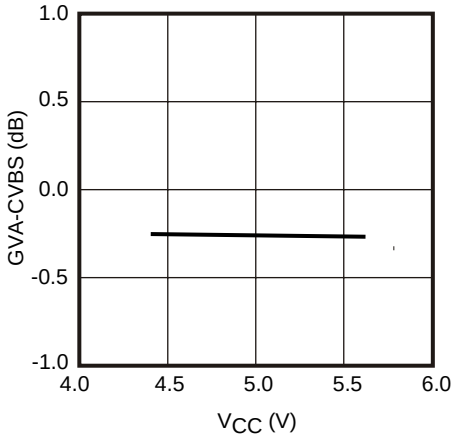
Y-CHANNELVOLTAGE GAIN vs. SUPPLY VOLTAGE



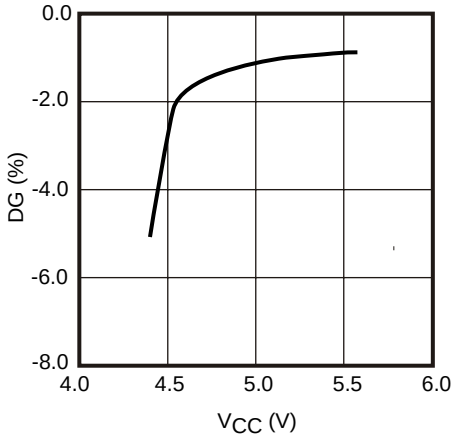
C-CHANNEL VOLTAGE GAIN vs. SUPPLY VOLTAGE



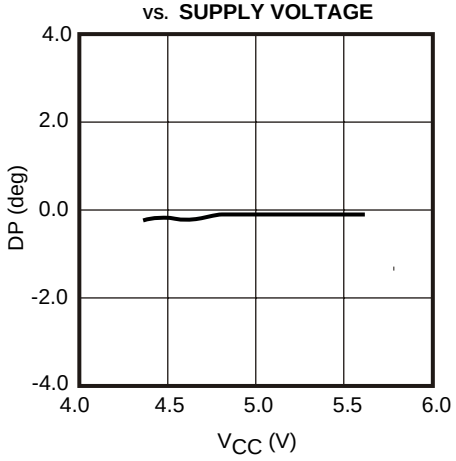
CVBS CHANNEL VOLTAGE GAIN vs. SUPPLY VOLTAGE



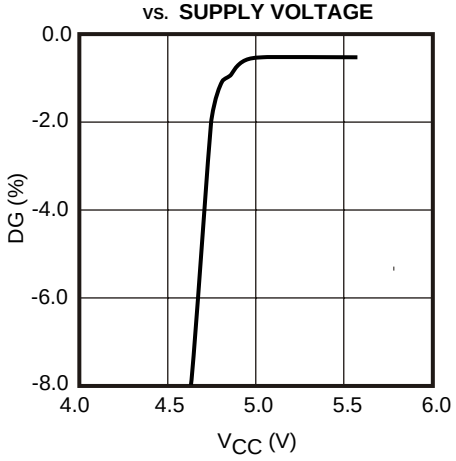
S-VHS DIFFERENTIAL GAIN vs. SUPPLY VOLTAGE



S-VHS DIFFERENTIAL PHASE vs. SUPPLY VOLTAGE

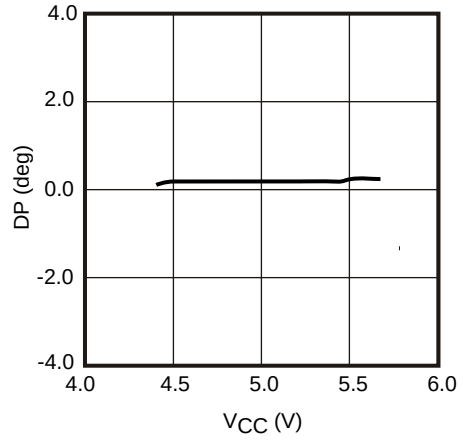


CVBS DIFFERENTIAL GAIN vs. SUPPLY VOLTAGE

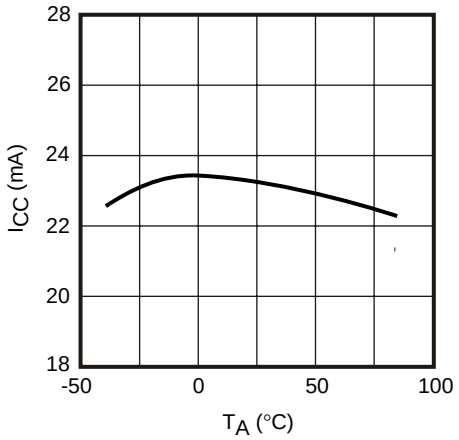


TYPICAL PERFORMANCE CHARACTERISTICS

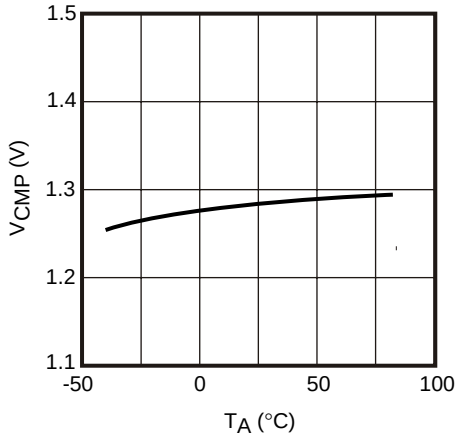
CVBS DIFFERENTIAL PHASE vs. SUPPLY VOLTAGE



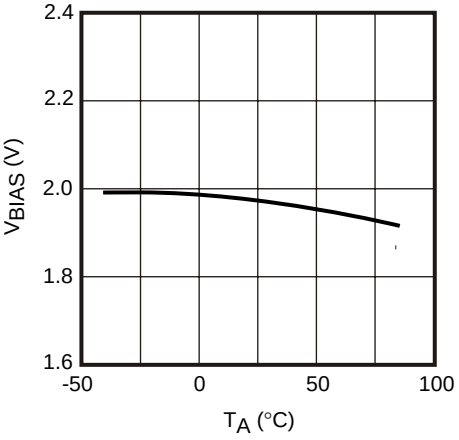
SUPPLY CURRENT vs. TEMPERATURE



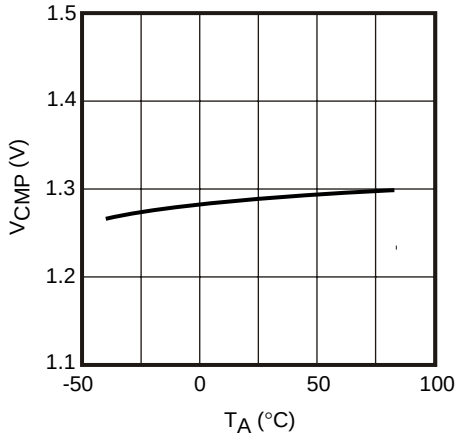
Y-INPUT CLAMP VOLTAGE vs. TEMPERATURE



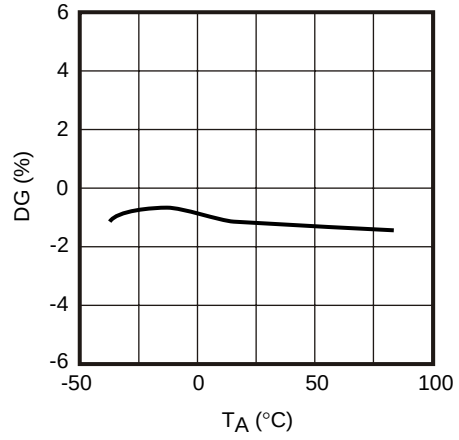
C- INPUT BIAS VOLTAGE vs. TEMPERATURE



CVBS INPUT CLAMP VOLTAGE vs. TEMPERATURE

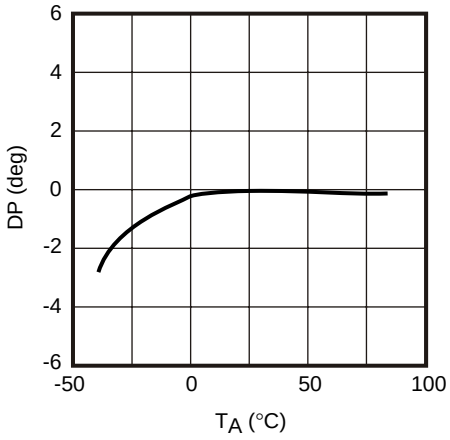


S-VHS DIFFERENTIAL GAIN vs. TEMPERATURE

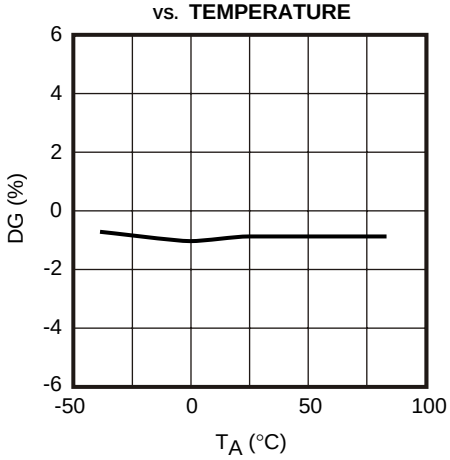


TYPICAL PERFORMANCE CHARACTERISTICS

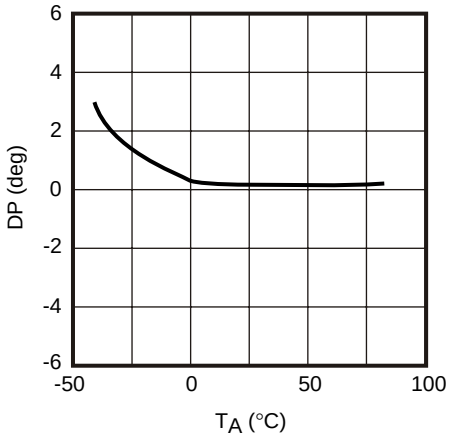
S-VHS DIFFERENTIAL PHASE vs. TEMPERATURE



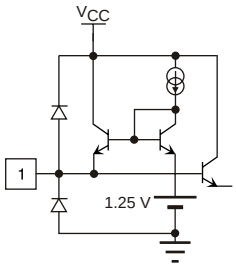
CVBS DIFFERENTIAL GAIN vs. TEMPERATURE



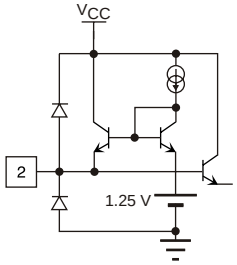
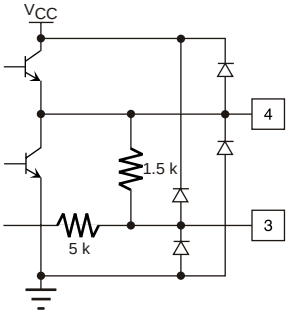
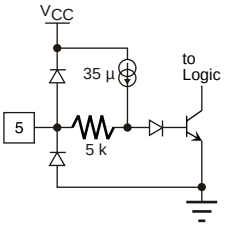
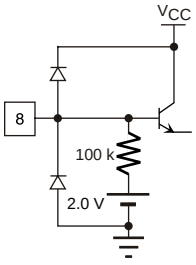
CVBS DIFFERENTIAL PHASE vs. TEMPERATURE



PIN FUNCTION DESCRIPTION

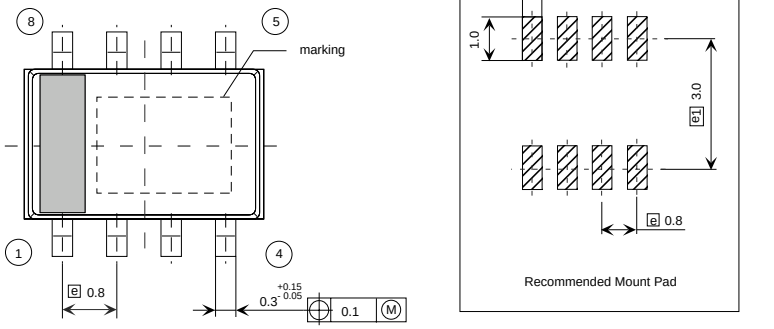
PIN NO.	SYMBOL	INTERNAL EQUIVALENT CIRCUIT	DESCRIPTION
1	Y-INPUT		Luminance Input Terminal. The luminance input signal is clamped at 1.25 V.

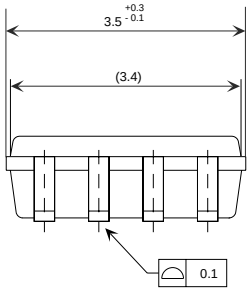
PIN FUNCTION DESCRIPTION (CONT.)

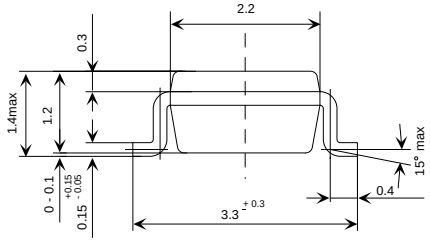
PIN NO.	SYMBOL	INTERNAL EQUIVALENT CIRCUIT	DESCRIPTION
2	CVBS-INPUT		CVBS Signal Input Terminal. The CVBS input signal is clamped at 1.25 V.
3 4	SAG OUTPUT		Pin 3: SAG Terminal Pin 4: Signal Output Terminal. The output is available to drive a 75 Ω + 75 Ω load.
5	CHANGE SW		Change-Over Switch Terminal for selecting S-VHS or CVBS. The S-VHS signal is applied to the output when Pin 5 is connected to High or Open. The CVBS signal is applied to the output when Pin 5 is connected to Low.
6	GND		GND Terminal
7	V_{CC}		Power Supply Terminal
8	C-INPUT		Chromanance Input Terminal. The chromanance input signal is biased to 2.0 V by a 100 kΩ bias resistor.

PACKAGE OUTLINE

SOT23L-8







Dimensions are shown in millimeters
Tolerance: x.x = ± 0.2 mm (unless otherwise specified)

Marking Information

	Marking
TK15414	414

TOKO

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

The information furnished by TOKO, Inc. is believed to be accurate and reliable. However, TOKO reserves the right to make changes or improvements in the design, specification or manufacture of its products without further notice. TOKO does not assume any liability arising from the application or use of any product or circuit described herein, nor for any infringements of patents or other rights of third parties which may result from the use of its products. No license is granted by implication or otherwise under any patent or patent rights of TOKO, Inc.

© 2000 Toko, Inc.
All Rights Reserved