

LOW VOLTAGE OPERATIONAL AMPLIFIER

FEATURES

- Very Low and Wide Operating Voltage Range ($V_{OP} = 1.0$ to 7 V)
- Very Wide Input Signal Voltage Range ($V_{IN} = 0$ V to 1.4 V_{P-P})
- Very Large Output Signal ($V_{OUT(MAX)} = 1.4$ V_{P-P})
- Very Large Output (Source) Current ($I_{OUT(MAX)} = 660$ μ A)
- Very Small SOT23L-6 Package

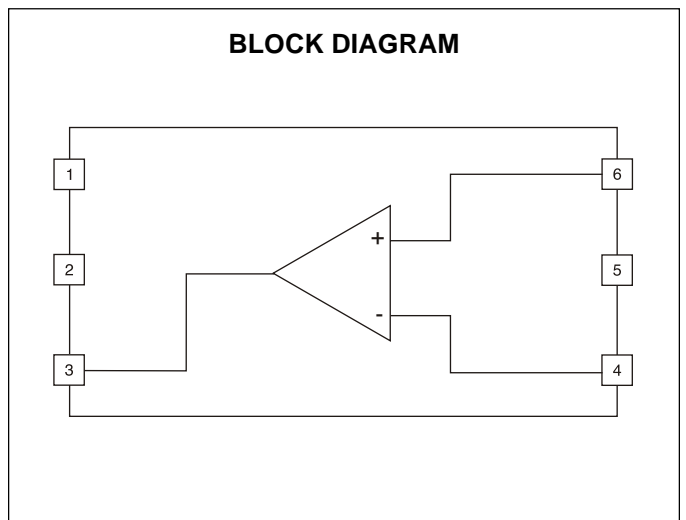
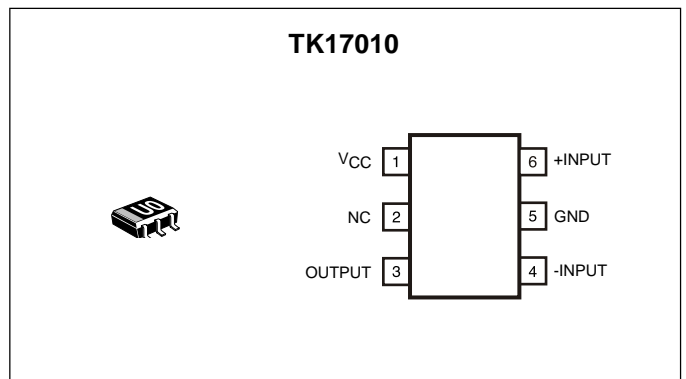
APPLICATIONS

- Battery-Powered Equipment

DESCRIPTION

The TK17010 is a single-supply operational amplifier capable of operating from a very low and very wide supply voltage range ($V_{CC} = 1.0$ to 7 V). With its rail-to-rail structures, the input signal circuit can accept a very wide input voltage range ($V_{IN} = 0$ to 1.4 V_{P-P}). The TK17010 can also provide a very large output signal ($V_{OUT(MAX)} = 1.4$ V_{P-P}) while operating from a single 1.5 volt supply. This makes the TK17010 ideal for battery-operated equipment.

The TK17010 is available in the very small SOT23L-6 Surface Mount Package.



ORDERING INFORMATION

TK17010M□□

└─ Tape/Reel Code

TAPE/REEL CODE
TL: Tape Left

TK17010

ABSOLUTE MAXIMUM RATINGS

Supply Voltage 8.0 V Operating Temperature Range -20 to +75 °C
Power Dissipation (Note 1) 200 mW Operating Voltage Range 1.0 to 7.0 V
Storage Temperature Range -55 to +150 °C

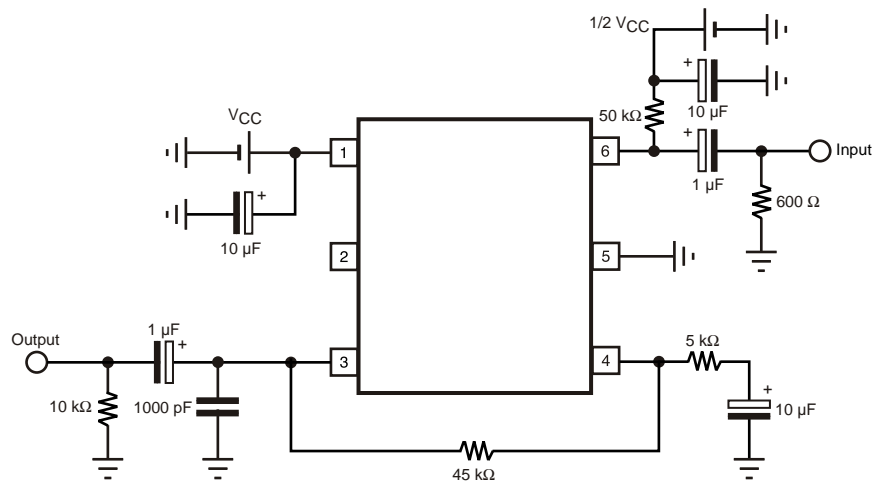
TK17010M ELECTRICAL CHARACTERISTICS

Test conditions: $V_{CC} = 1.5\text{ V}$, $f_{IN} = 1.0\text{ kHz}$, $R_L = 10\text{ k}\Omega$, $T_A = 25\text{ }^\circ\text{C}$ unless otherwise specified.

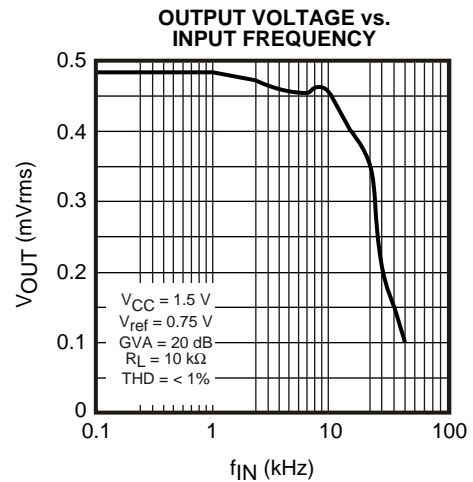
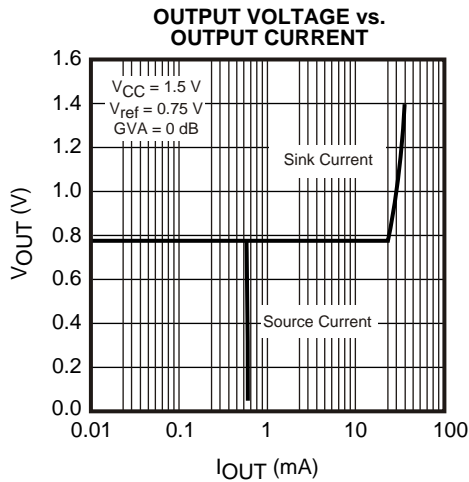
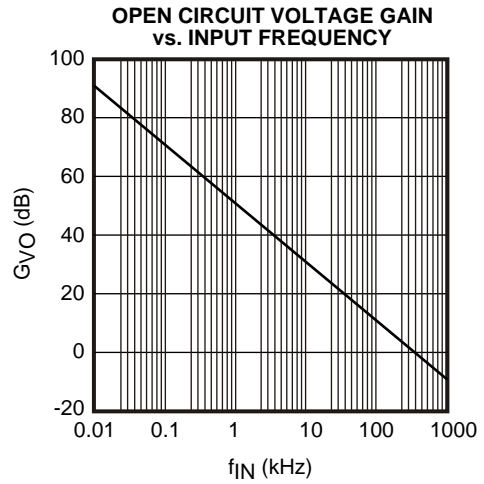
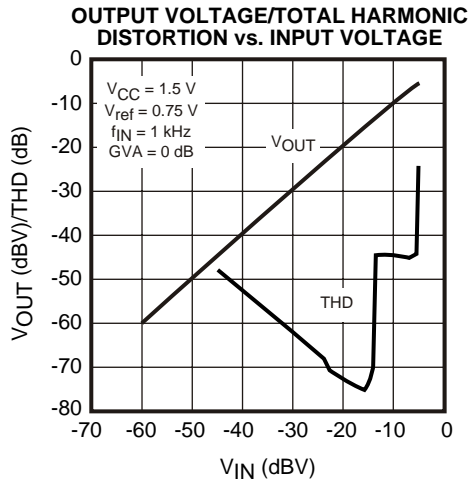
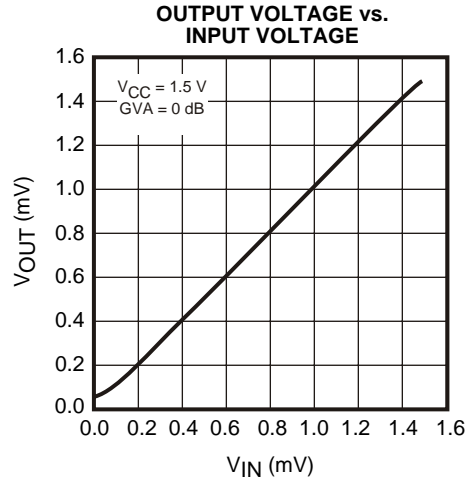
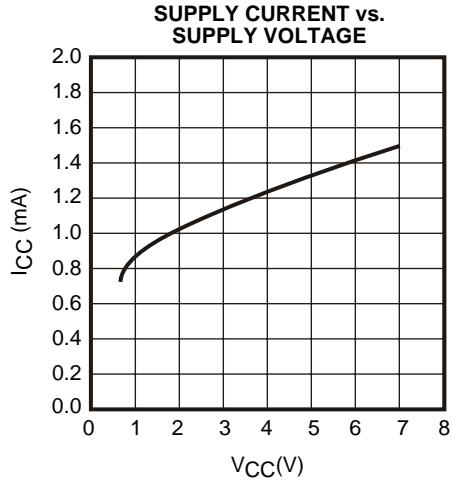
SYMBOL	PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNITS
I_{CC}	Supply Current			1.0	1.5	mA
$V_{IN(MAX)}$	Maximum Input Voltage	Gain = 0 dB, THD = 1%	1.2	1.4		V_{P-P}
$V_{OUT(MAX)}$	Maximum Output Voltage		1.3	1.4		V_{P-P}
I_{IB}	Input Bias Current	Pin 4, Pin 6	-0.9		+0.9	μA
$I_{OUT(MAX)}$	Maximum Output Current	Source Current	450	660		μA
GVO	Open Circuit Voltage Gain			96		dB
BW	Frequency Band Width			350		kHz
GVA	Voltage Gain	$V_{IN} = 30\text{ mV}_{rms}$	18.5	20.0	21.5	dB
THD	Total Harmonic Distortion	$V_{IN} = 30\text{ mV}_{rms}$		0.07	0.30	%
V_{ni}	Noise Voltage Referred to Input	BW = 400 Hz to 30 kHz		26	60	μV

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

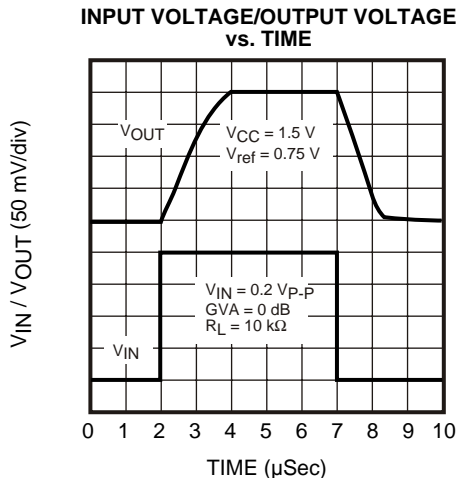
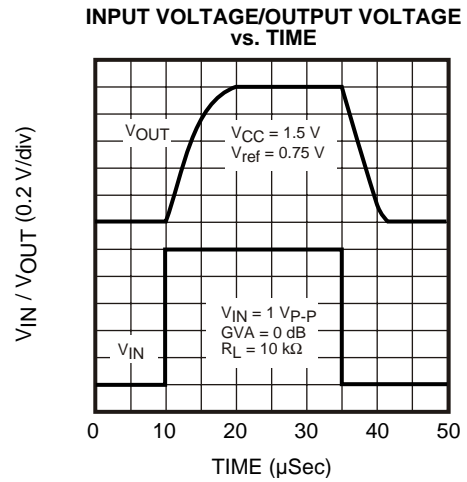
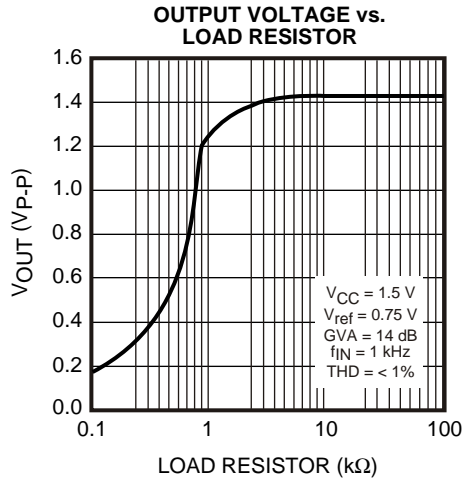
TEST CIRCUIT



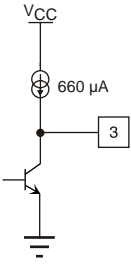
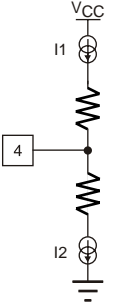
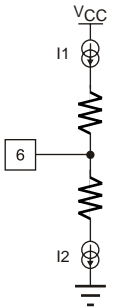
TYPICAL PERFORMANCE CHARACTERISTICS



TYPICAL PERFORMANCE CHARACTERISTICS (CONT.)

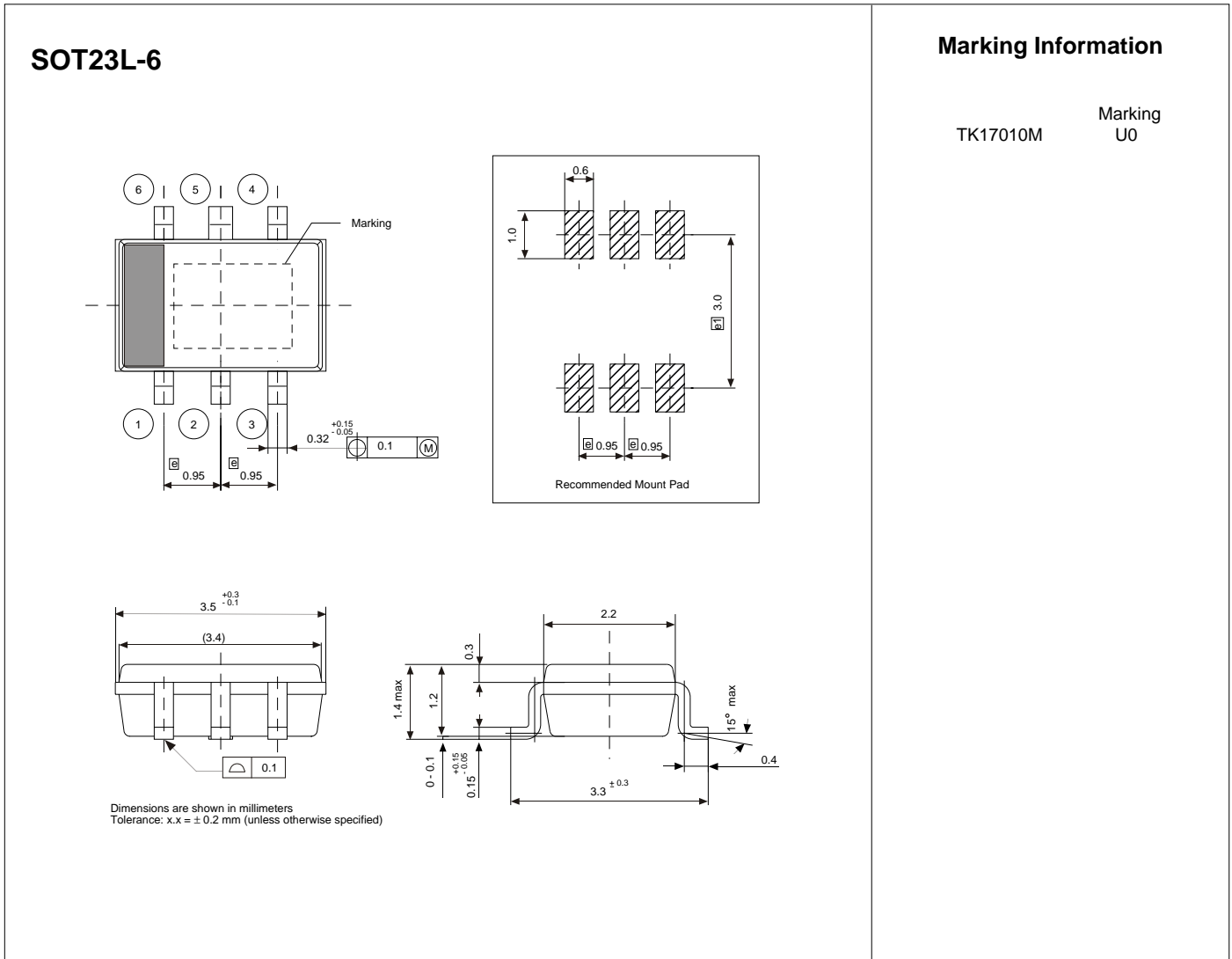


TERMINAL VOLTAGE AND CIRCUIT

TERMINAL			INTERNAL EQUIVALENT CIRCUIT	DESCRIPTION
PIN NO.	SYMBOL	VOLTAGE		
1	V_{CC}	V_{CC}		Power Supply terminal.
2	NC			
3	OUTPUT	$1/2 V_{CC}$		Output terminal. The output can approach the supply voltage according to a Class A output system.
4	-INPUT	$1/2 V_{CC}$		Inverted Input Signal terminal. It has a Level Shifter for low operating voltage.
5	GND	0 V		GND terminal.
6	+INPUT	Approximately V_{OUT}		Non-inverted Input Signal terminal. It has a Level Shifter for low operating voltage.

NOTES

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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