

ADVANCED INFORMATION

TEMPERATURE SENSOR IC

FEATURES

- Linear Output Voltage 10 mV/°C Output
- 2.4 to 8.0 Volt Supply Range
- Miniature Package (SOT-23L)
- Minimum External Parts Count
- Low Power Consumption

APPLICATIONS

- Home and Industrial Thermostats
- Automotive Climate Control
- Battery Charger Temperature Monitor
- Notebook Computer Temperature Monitor
- Electronic Thermometers
- Fish Finder Water Temperature
- Industrial Process Controllers
- Home Appliance Temperature Control

DESCRIPTION

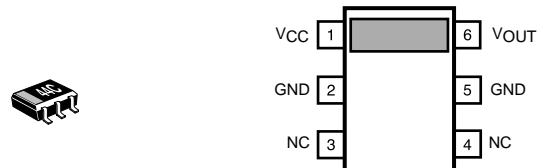
The TK11044 is a temperature sensor IC with a linear output of 10 mV/°C over the range of -25 to + 105 °C. Its wide operating voltage range of 2.4 to 8.0 volts makes it suitable for a number of applications requiring accurate temperature control, such as electronic thermostats for climate control, refrigerators, and industrial process controls.

A typical application is to make a digital representation of temperature with an A/D converter, or to make a thermal detector with a comparator.

The TK11044 has a compensation pin for a 0.1 µF capacitor that insures stability over the IC's operating temperature range.

The TK11044 is available in a miniature SOT 23L-6 surface mount package.

TK11044



Note: Both GND pins must connect to GND

ORDERING INFORMATION

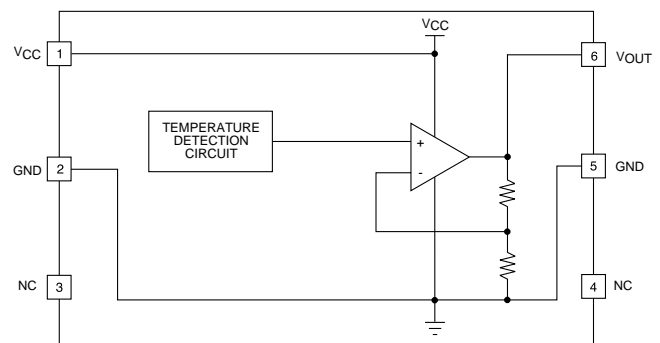
TK11044M-1



Tape/Reel Code

TAPE/REEL CODE
TL: Tape Left

BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Supply Voltage 12 V
 Operating Voltage 2.4 to 8 V
 Power Dissipation (Note 1) 200 mW
 Junction Temperature 150 °C

Storage Temperature Range -55 to +150 °C
 Operating Temperature Range -25 to +105 °C
 Lead Soldering Temp. (10 s)..... 235 °C

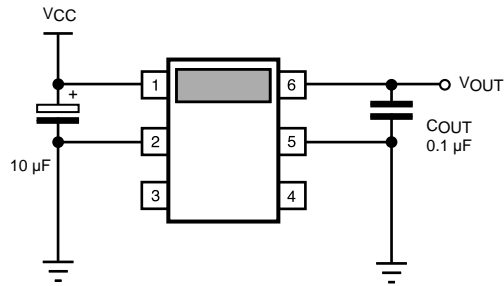
TK11044 ELECTRICAL CHARACTERISTICS

Test Conditions: $V_{CC} = 3.0\text{ V}$, $I_{OUT} = 0\text{ }\mu\text{A}$, $T_A = 25\text{ }^\circ\text{C}$, unless otherwise specified.

SYMBOL	PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNITS
V_{OUT}	Output Voltage	$T_A = 25\text{ }^\circ\text{C}$	965	995	1025	mV
		$T_A = 85\text{ }^\circ\text{C}$	1573	1613	1653	mV
		$T_A = -25\text{ }^\circ\text{C}$		480		mV
T_C	Temperature Coefficient	$T_A = 25\text{ }^\circ\text{C}$ to $85\text{ }^\circ\text{C}$	9.5	10.3	11.1	mV/ °C
Line Reg	Line Regulation	$V_{CC} = 3\text{ V}$ to 5 V	-20	-5	20	mV
Load Reg	Load Regulation	$I_{OUT} = 0\text{ }\mu\text{A}$ to $400\text{ }\mu\text{A}$		3	20	mV
I_{CC}	Supply Current	$T_A = 25\text{ }^\circ\text{C}$		160	200	μA
I_{OUT}	Output Current	$\Delta V_{OUT} \leq 20\text{ mV}$			400	μA

Note 1: Power dissipation is 200 mW when mounted as recommended. Derate at 1.6 mW/°C for operation above 25 °C.

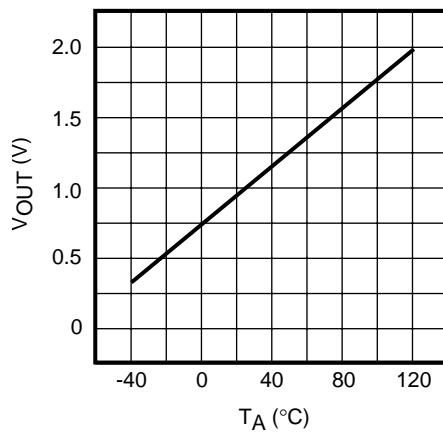
TEST CIRCUIT



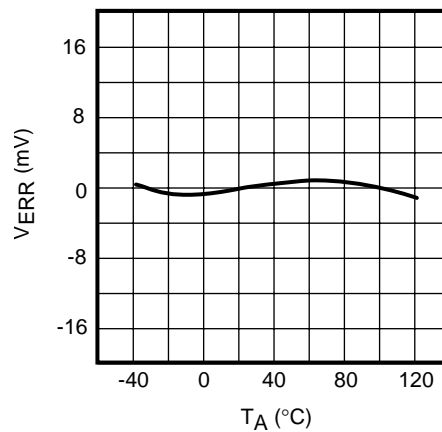
TYPICAL PERFORMANCE CHARACTERISTICS

$V_{CC} = 3\text{ V}$, $I_{OUT} = 0\text{ }\mu\text{A}$, $T_A = 25\text{ }^\circ\text{C}$, unless otherwise specified.

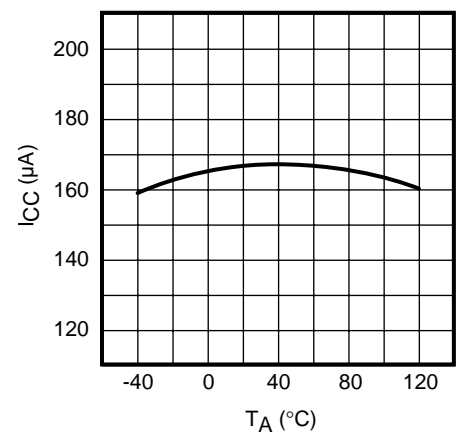
OUTPUT VOLTAGE vs. TEMPERATURE



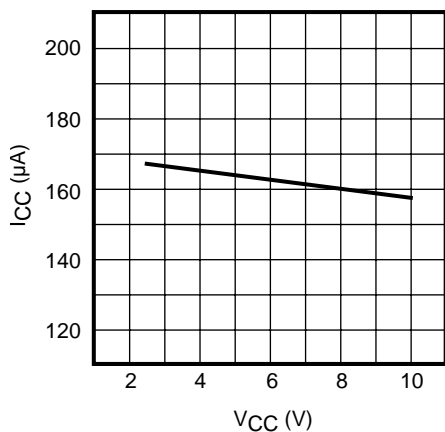
LINEARITY ERROR vs. TEMPERATURE



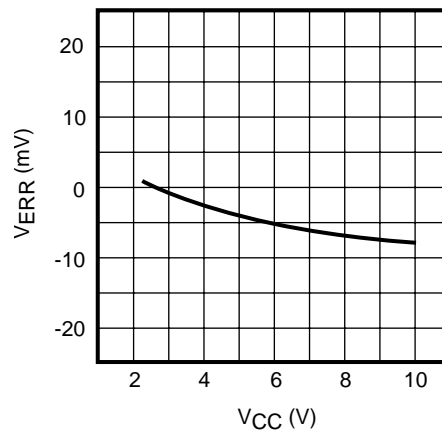
INPUT CURRENT vs. TEMPERATURE



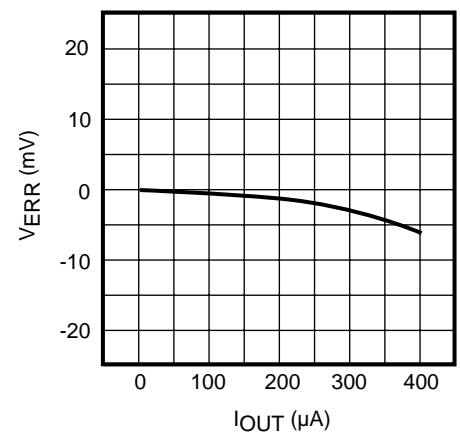
INPUT CURRENT vs. INPUT VOLTAGE

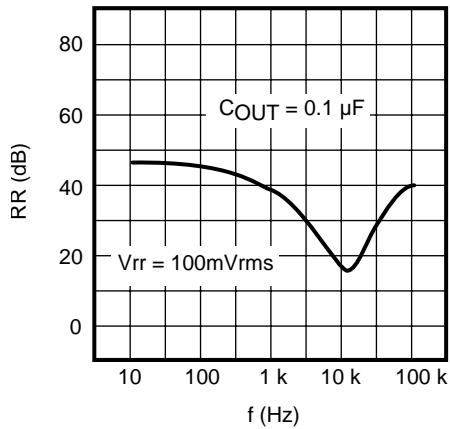
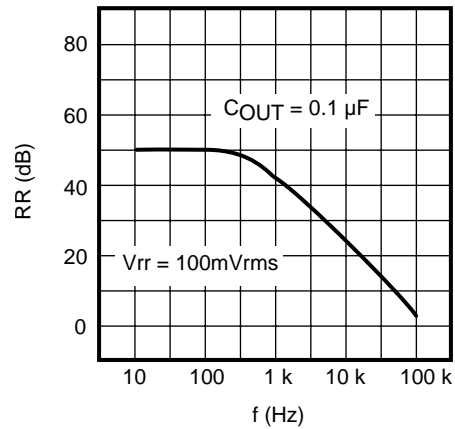
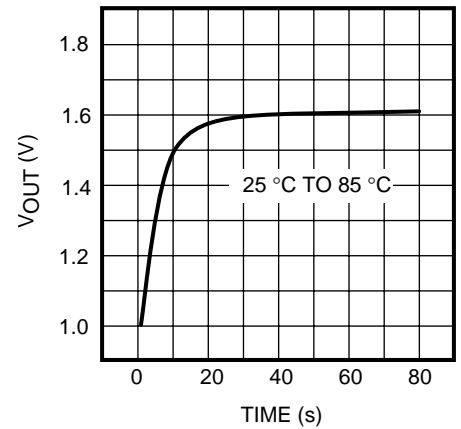
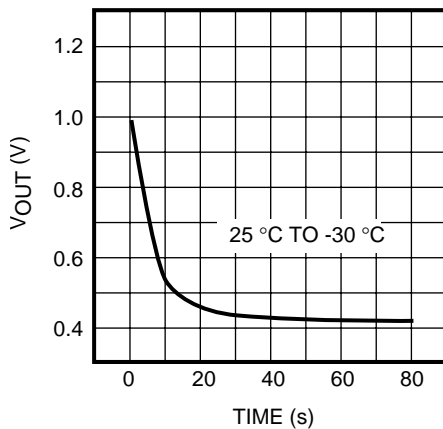


LINE REGULATION



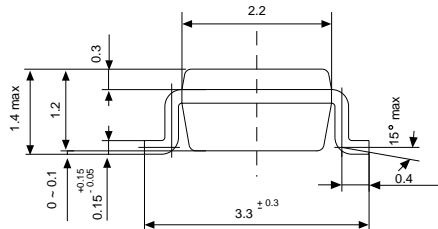
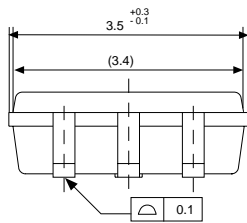
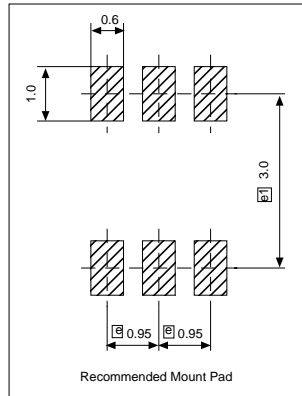
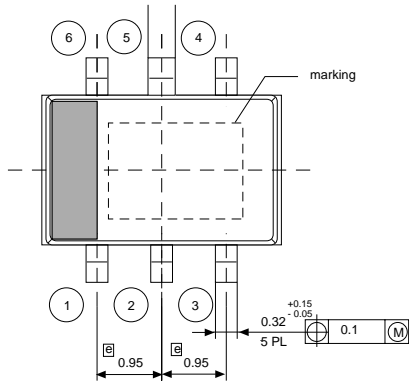
LOAD REGULATION



TYPICAL PERFORMANCE CHARACTERISTICS $V_{CC} = 3\text{ V}$, $I_{OUT} = 0\text{ }\mu\text{A}$, $T_A = 25\text{ }^\circ\text{C}$, unless otherwise specified.**RIPPLE REJECTION RATIO A****RIPPLE REJECTION RATIO B****TEMPERATURE RESPONSE A****TEMPERATURE RESPONSE B**

PACKAGE OUTLINE

SOT 23L-6



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

Marking Information

TK11044

Marking
44C

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