

MAXIM**High Precision +2.5 Volt Reference**

T-58-07

Features**AD580****General Description**

The AD580 is a high performance three-terminal voltage reference which provides a stable +2.5V source for 8, 10, and 12-bit data converters and analog functions. A temperature compensated internal band-gap operates from +4.5V to +30V and consumes only 1.5mA.

The reference can be connected directly to a number of CMOS A-to-D and D-to-A converters and is especially convenient in +5V powered systems. An initial untrimmed accuracy of 0.4% and temperature stability of 10ppm/°C allow adjustment-free designs in many precision applications.

Available packages include TO-52 metal cans for commercial and military temperature grades, as well as 8 lead small outline for commercial grade devices.

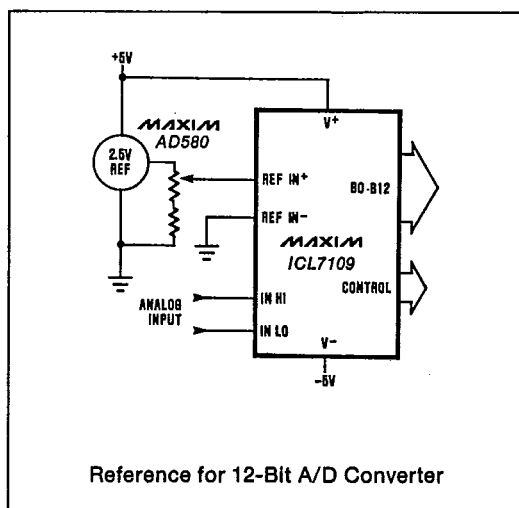
Applications

CMOS Data Conversion
Digital Panel Meters
Portable Instrumentation
Remote Measurement Systems
Logic Powered Analog Systems

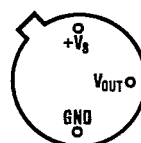
- ◆ 2.500V $\pm 0.4\%$ Accuracy (AD580L/M)
- ◆ 10ppm/°C Temperature Stability (AD580M)
- ◆ No Adjustments
- ◆ 250 μ V Long Term Stability
- ◆ 1.5mA Quiescent Current
- ◆ +4.5V to +30V Operation

Ordering Information

PART	TEMP. RANGE	PACKAGE	TOLERANCE
AD580JH	0°C to +70°C	TO-52 Can	± 75 mV
AD580KH	0°C to +70°C	TO-52 Can	± 25 mV
AD580LH	0°C to +70°C	TO-52 Can	± 10 mV
AD580MH	0°C to +70°C	TO-52 Can	± 10 mV
AD580JCSA	0°C to +70°C	8 Lead S.O.	± 75 mV
AD580KCSA	0°C to +70°C	8 Lead S.O.	± 25 mV
AD580LCSA	0°C to +70°C	8 Lead S.O.	± 10 mV
AD580MCSA	0°C to +70°C	8 Lead S.O.	± 10 mV
AD580SH	-55°C to +125°C	TO-52 Can	± 25 mV
AD580TH	-55°C to +125°C	TO-52 Can	± 10 mV
AD580UH	-55°C to +125°C	TO-52 Can	± 10 mV

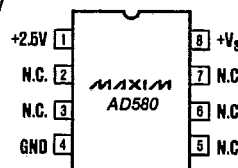
Typical Application**Pin Configurations****3**

Bottom View



TO-52

Top View



8 Lead Small Outline

MAXIM

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High Precision +2.5 Volt Reference

AD580

ABSOLUTE MAXIMUM RATINGS

Input Voltage V_{IN} to GND -0.3V, +40V
 Power Dissipation
 TO-52 Metal Can (Derate 2.8mW/°C above +25°C) ... 350mW
 Small Outline (Derate 5.3mW/°C above +75°C) 400mW
 Output Short-Circuit Duration (Note 1) Indefinite
 Operating Temperature Range
 Commercial (J, K, L, M) 0°C to +70°C
 Military (S, T, U) -55°C to +125°C
 Storage Temperature Range -65°C to +175°C

Lead Temperature (Soldering 10sec) +300°C
 Junction Temperature (T_J) -55°C to +150°C
 Thermal Resistance, Junction to Ambient
 TO-52 Metal Can 360°C/W
 Small Outline Package 170°C/W
 Junction to Case
 TO-52 Metal Can 100°C/W
 Small Outline Package 55°C/W

Stresses above those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only and functional operation of the device at these or any other conditions above those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

ELECTRICAL CHARACTERISTICS

($V_{IN} = +15V$, $T_A = +25^\circ C$, unless otherwise noted)

PARAMETER	SYMBOL	CONDITIONS	MIN.	TYR	MAX.	UNITS
Output Voltage Tolerance		$I_L = 0mA$; AD580J/S AD580K/T AD580L/M/U			± 75 ± 25 ± 10	mV
Output Voltage Change with Temperature, (Temperature Coefficient)		$T_A = 0^\circ C$ to $+70^\circ C$; AD580J AD580K AD580L AD580M			15 (85) 7 (40) 4.3 (25) 1.75 (10)	$\pm mV$ (ppm/°C)
		$T_A = -55^\circ C$ to $+125^\circ C$; AD580S AD580T AD580U			25 (55) 11 (25) 4.5 (10)	
Line Regulation		$I_L = 0mA$, $+4.5V < V_{IN} < +7V$; AD580J/S AD580K AD580L/M/T/U		0.3 0.3	3 2 1	mV
		$I_L = 0mA$, $+7V < V_{IN} < +30V$; AD580J/S AD580K AD580L/M/T/U		1.5 1.5	6 4 2	
Load Regulation		$I_L = 0mA$ to 10mA			10	mV
Quiescent Supply Current	I_Q	$I_L = 0mA$		1.0	1.5	mA
Noise	e_{NP-P}	0.1Hz to 10Hz		60		μV_{P-P}
Stability Long Term Per Month				250 25		μV

Note 1: Absolute Maximum power dissipation must not be exceeded.

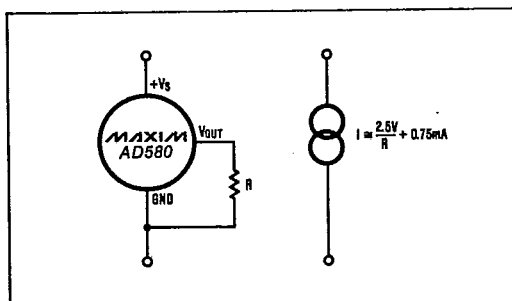


Figure 1. Two-Component Precision Current Limiter

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