



Low-Cost, Micropower, Precision 3-Terminal, 1.2V Voltage Reference

MAX6120

General Description

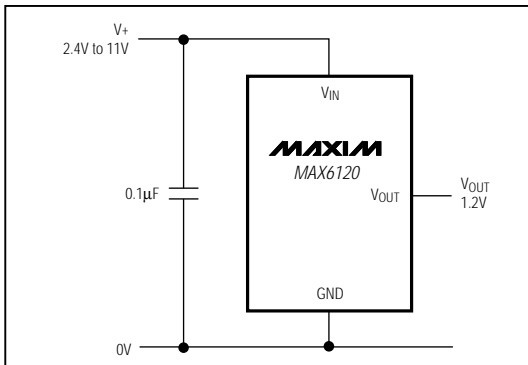
The MAX6120 is the lowest-power 1.2V, precision, three-terminal voltage reference offered in a SOT-23 package. Ideal for 3V battery-powered equipment where power conservation is critical, the MAX6120 is a low-power alternative to existing two-terminal shunt references. Unlike two-terminal references that throw away battery current and require an external series resistor, the MAX6120 has a 70µA maximum supply current (typically only 50µA) that is independent of the input voltage. This feature translates to maximum efficiency at all battery voltages.

The MAX6120 operates from a supply voltage as low as 2.4V, and initial accuracy is ±1% for the SOT-23 package. Output voltage temperature coefficient is typically only 30ppm/°C, and is guaranteed to be less than 100ppm/°C in the SOT-23 package.

Applications

- Battery-Powered Systems
- Portable and Hand-Held Equipment
- Data Acquisition Systems
- Instrumentation and Process Control

Typical Operating Circuit



Features

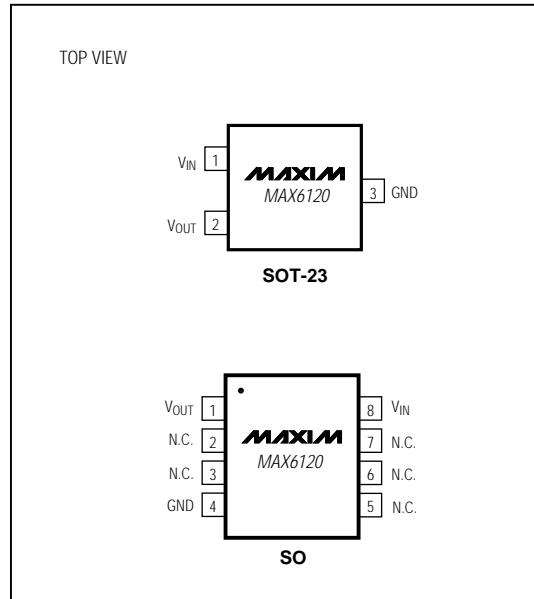
- ◆ 3-Pin SOT-23 Package
- ◆ Supply Current Independent of Input Voltage Over Temperature
- ◆ 50µA Supply Current
- ◆ 2.4V to 11V Input Voltage Range
- ◆ 30ppm/°C Typical Tempco (SOT-23)
- ◆ ±1% Initial Accuracy (SOT-23)

Ordering Information

PART	TEMP. RANGE	PIN-PACKAGE
MAX6120ESA*	-40°C to +85°C	8 SO
MAX6120EUR	-40°C to +85°C	3 SOT-23

* Contact factory for availability.

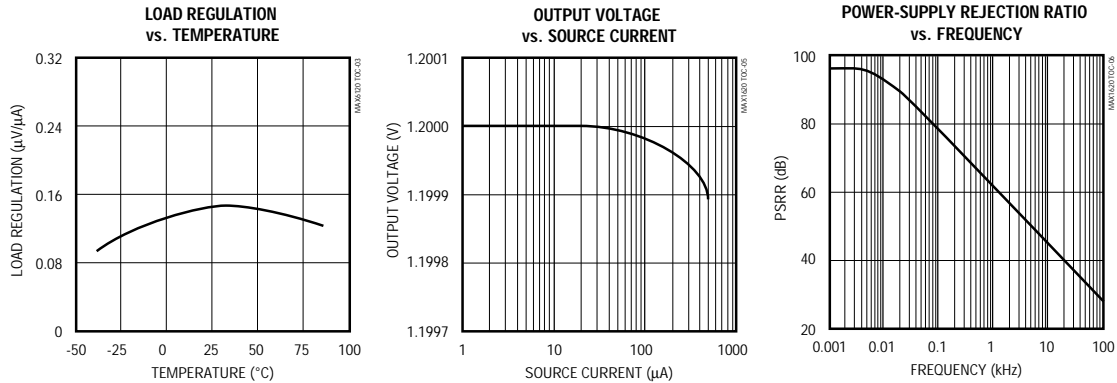
Pin Configurations



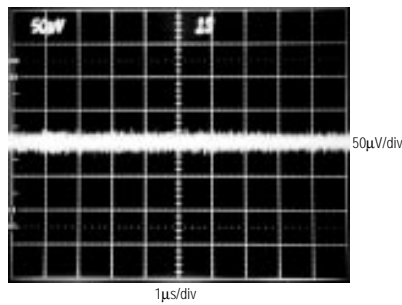
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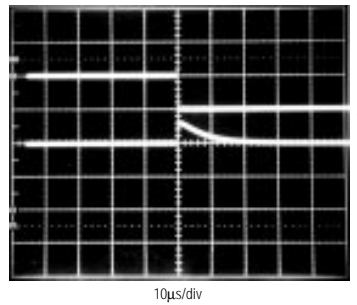
Typical Operating Characteristics (continued)
 (VIN = 3V, ILOAD = 0mA, TA = +25°C, unless otherwise noted.)



0.1Hz TO 100Hz NOISE

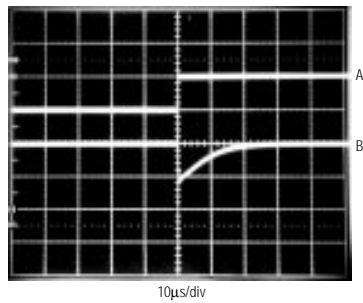


LOAD-TRANSIENT RESPONSE



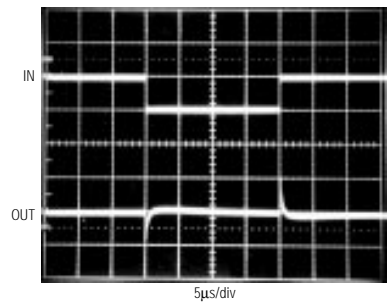
A = OUTPUT CURRENT, 50μA/div, ILOAD = 0μA TO -50μA
 B = OUTPUT VOLTAGE, 100mV/div

LOAD-TRANSIENT RESPONSE



A = OUTPUT CURRENT, 500μA/div, ILOAD = 0μA TO 500μA
 B = OUTPUT VOLTAGE, 100mV/div

LINE-TRANSIENT RESPONSE



A = INPUT VOLTAGE, 100mV/div, VIN = 3V ± 50mV
 B = OUTPUT VOLTAGE, 10mV/div

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Pin Description

PIN		NAME	FUNCTION
SOT-23	SO		
1	8	V _{IN}	Input Voltage
2	1	V _{OUT}	Reference Output
3	4	GND	Ground
—	2, 3, 5, 6, 7	N.C.	No Connect—not internally connected

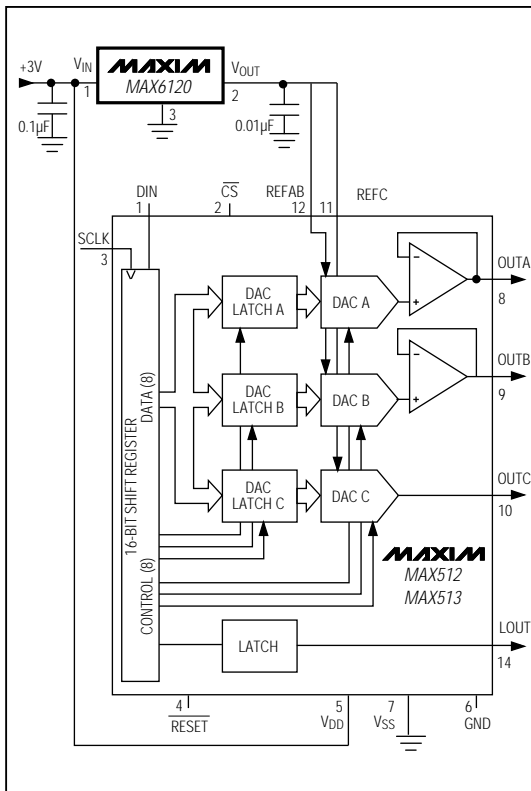


Figure 1. 3V, Triple, 8-Bit Serial DAC

Applications Information

Input Bypassing

For the best line-transient performance, decouple the input with a 0.1µF ceramic capacitor as shown in the *Typical Operating Circuit*. Locate the capacitor as close to the device pin as possible. Where transient performance is less important, no capacitor is necessary.

Output Bypass

The MAX6120 performs well without an output decoupling capacitor. If your application requires an output charge reservoir (e.g., to decouple the reference from the input of a DAC), then make sure that the total output capacitive load does not exceed 10nF.

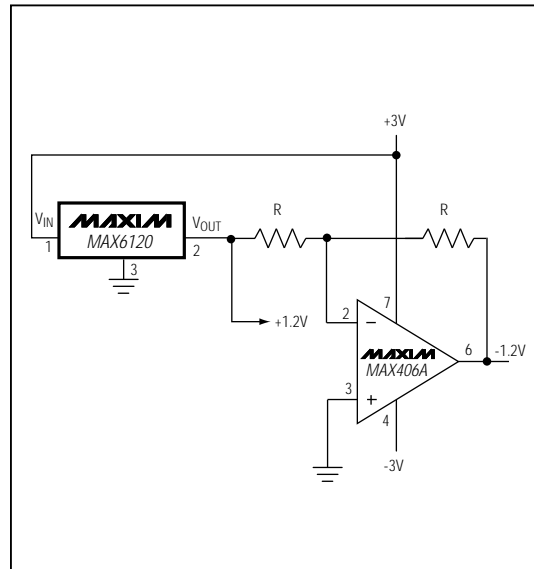


Figure 2. Low-Power ±1.2V Reference

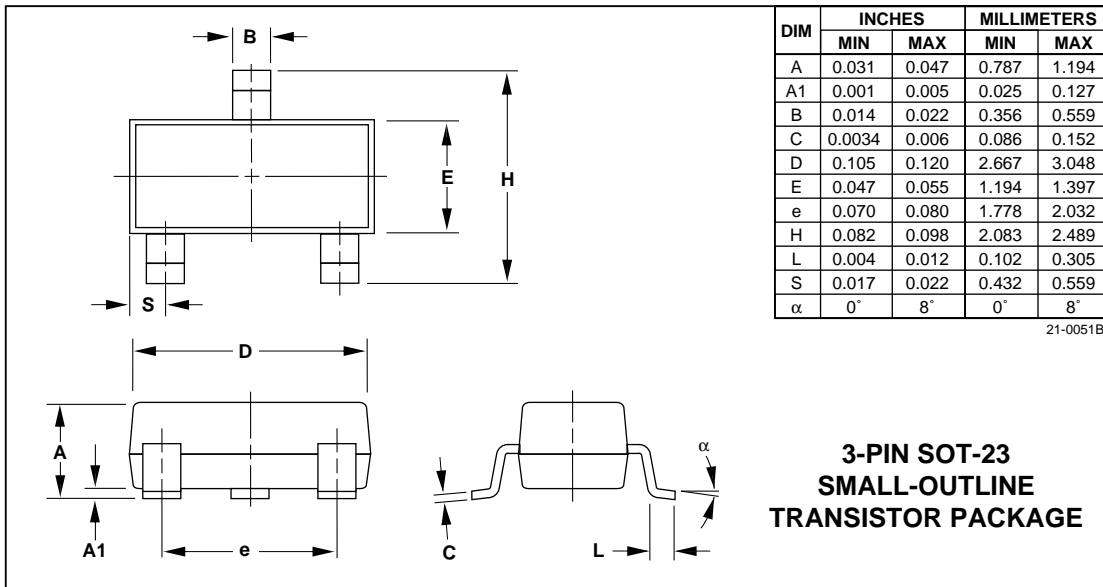
Chip Information

TRANSISTOR COUNT: 39

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Package Information

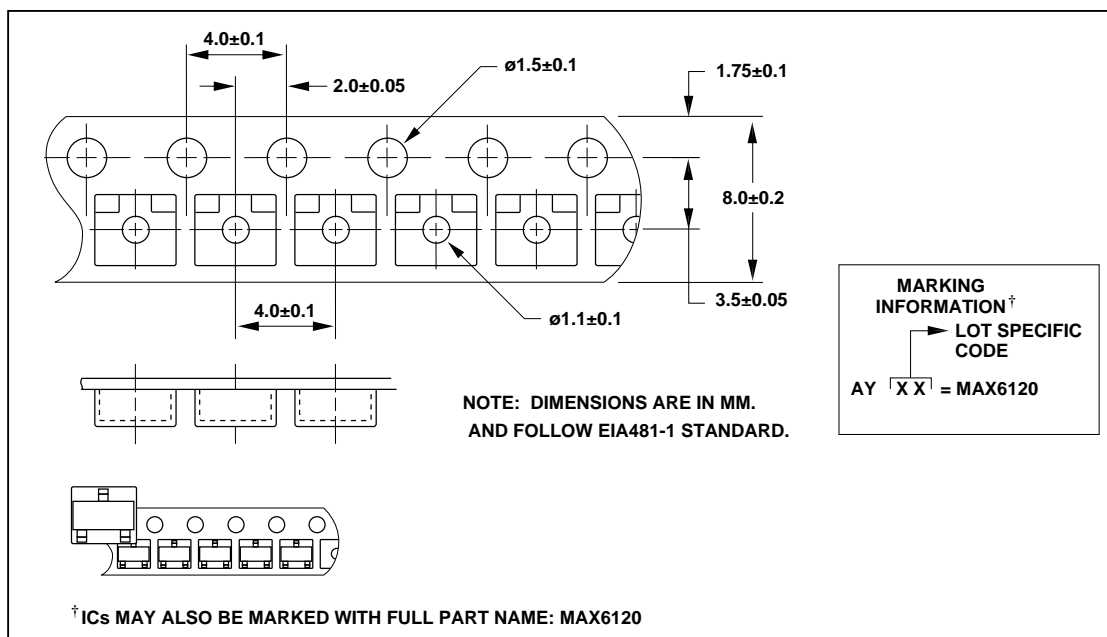
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Package Information (continued)



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