

Figure 1. The Photos of Voltage Reference ATREF500.

### FEATURES

- Accuracy:  $\pm 1\mu\text{V}$
- High Reliability
- Zero EMI
- Compact Size
- Ultralow Noise:  $100\text{nV}_{\text{P-P}}$  @0.1Hz to 10Hz
- Temperature Coefficient:  $1\text{ppm}/^\circ\text{C}$
- Wide Temperature Range:  $-40^\circ\text{C}$ ~ $125^\circ\text{C}$
- High Output Source and Sink Current:  
+10mA and -5mA, Respectively
- Low Dropout Operation (Supply Voltage Headroom):  
500mV
- 100 % Lead (Pb)-Free and RoHS Compliant

### APPLICATIONS

This voltage reference can be used in high precision industrial applications, data acquisition systems, high resolution ADCs or DACs, optical control circuits, medical instruments, etc.

### DESCRIPTION

The 3-terminal voltage reference features high accuracy, ultra low noise, and low temperature drift, which is a best choice for optical applications and high end data acquisition systems, etc. The output voltage change is  $\pm 1\mu\text{V}$  when the input voltage, temperature or the output current changes. Figure 1 shows the photos of voltage reference.

It comes with a curvature-correction circuit and laser-trimmed thin-film resistors so that a low temperature coefficient of  $1\text{ppm}/^\circ\text{C}$  can be achieved. This voltage reference draws as low as  $90\mu\text{A}$  of supply current and can source 10mA or sink  $-5\text{mA}$  of load current. It provides a supply current that is virtually independent of the supply voltage and do not need an external resistor, which is better than those conventional two-terminal references that need an external resistor. Moreover, this voltage reference is internally compensated so that no external compensation capacitor is needed. This helps save valuable board space for most applications. Its low dropout voltage and low supply current make these devices ideal for battery-powered and low voltage systems.

Figure 1 is the photos of this voltage reference. Figure 2 is the real size top view of the voltage reference showing the pin names and locations with the actual size. The pin functions are shown in Table 1.

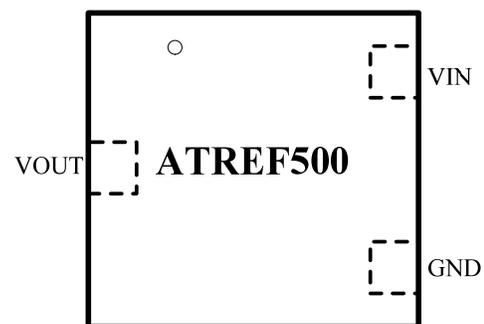


Figure 2. Pin Names and Locations



#### SELECTION GUIDE

Table 1. Selection Guide.

Part #	V <sub>OUT</sub> (V)	Initial Accuracy (μV)	Temperature Coefficient (ppm/°C)
ATREF500	2.048	±1	1
ATREF501	2.500	±1	1
ATREF502	3.000	±1	1
ATREF503	4.096	±1	1
ATREF504	5.000	±1	1

#### SPECIFICATIONS

Table 2. Pin Function Descriptions

Pin #	Pin Name	Type	Description
1	V <sub>OUT</sub>	Analog Output	Output voltage.
2	GND	Signal Ground	Signal ground pin.
3	V <sub>IN</sub>	Power Input	Power supply voltage.

Table 3. Characteristics.

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Power Supply Input						
Input Voltage Range	V <sub>IN</sub>		V <sub>OUT</sub> + 0.5		18	V
Input Current	I <sub>IN</sub>		10	18	20	mA
Voltage Output						
Output Voltage	V <sub>OUT</sub>		2.048		5	V
Output Current	I <sub>OUT</sub>		5	10	10	mA
Temperature Drift	TCV <sub>OUT</sub>			1		ppm/°C
Operating Temp. Range			-40		125	°C

**MECHANICAL DIMENSIONS**

Dimensions of the voltage reference is shown in Figure 3.

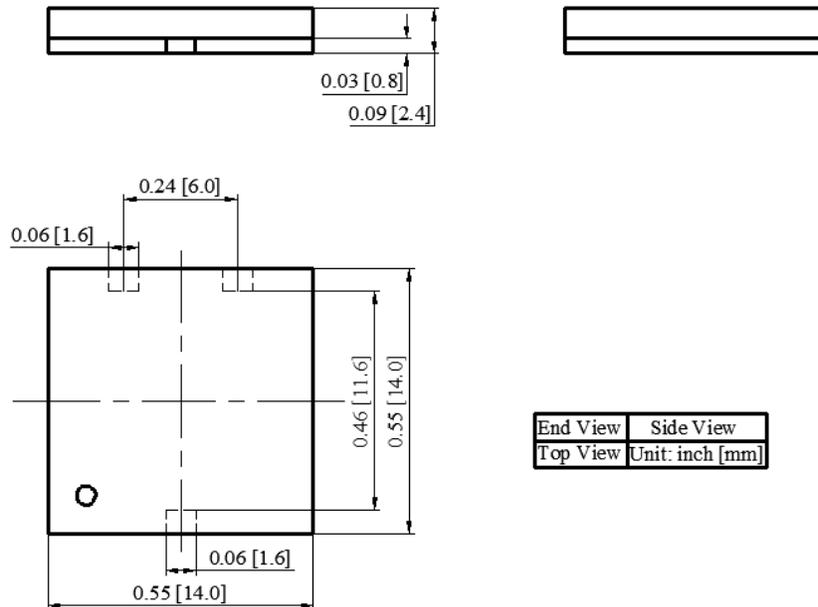


Figure 3. Dimensions of the Voltage Reference

**NOTICE**

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