VR-182 Series
Precision Bandgap Voltage References

FEATURES

- 2.455V dc Output
- Tempcos to 30 ppm/°C
- 2-to-120 mA Reference current
- ±1.4% Tolerance
- Two terminals
- Low cost

GENERAL DESCRIPTION

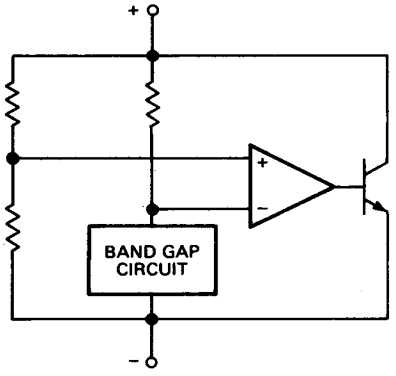
The VR-182 series precision references are two-terminal monolithic bandgap devices which feature 2.455 volts output with tight tolerance and low tempcos. Temperature coefficients are 100, 50, and 30 ppm/°C respectively for Models VR-182A, VR-182B, and VR-182C.

An active regulator around the bandgap circuit results in 0.1 ohm typical dynamic impedance with a wide 2-to-120 mA reference current range. Furthermore, the dynamic impedance is flat to 4 kHz rising to only 1.2 ohms at 50 kHz. Other specifications include ±1.43% voltage tolerance, 10 μV RMS output voltage noise, and 10 ppm per 1000 hours long term stability.

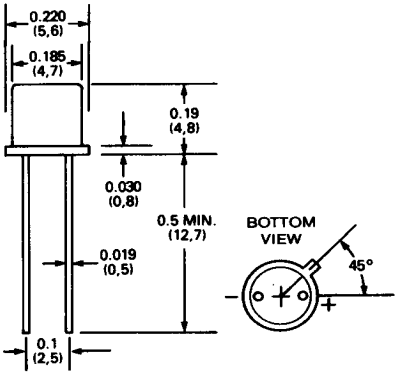
These low cost references are easy to use and are ideal for use with monolithic A/D and D/A converters which do not have internal references. They are also useful in voltage regulator circuits, switching power supplies, comparator circuits, and other analog signal processing applications.

The low 2.455 reference voltage allows these references to be used with 5V dc logic supplies and other power supply voltages as low as 3.5V dc. In many cases they give improved performance over higher priced Zener diode references which require higher supply voltages and have much higher dynamic impedances.

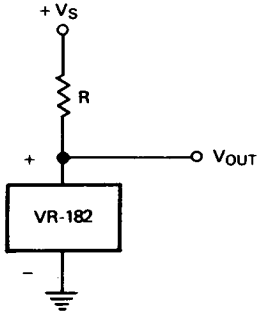
The VR-182 devices are supplied in a two-lead hermetically sealed TO-18 package and operate over the 0°C to +70°C temperature range.



MECHANICAL DIMENSIONS INCHES (MM)



CONNECTION



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ABSOLUTE MAXIMUM RATINGS	
Reference Current	120 mA*
Dissipation	300 mW

FUNCTIONAL SPECIFICATIONS

Typical at 25°C, I_{REF} = 2 mA unless otherwise noted.

OUTPUT	
Output Voltage	2.455V
Output Voltage Tolerance, %	±1.43%
Output Voltage Tolerance, mV	±35 mV
PERFORMANCE	
Reference Current Range	2 to 120 mA*
Temperature Coefficient, ppm/°C	
VR-182A	60 typ., 100 max.
VR-182B	35 typ., 50 max.
VR-182C	23 typ., 30 max.
Dynamic Impedance, DC	0.1 typ., 0.2 ohm max.
Dynamic Impedance, 50 kHz	1.2 ohms
Noise Voltage, 1 Hz to 10 Hz	10 μV RMS
Long Term Stability	±10 ppm/1000 hours
PHYSICAL/ENVIRONMENTAL	
Operating Temperature Range	0°C to +70°C
Storage Temperature Range	−55°C to +150°C
Package Type	2-lead TO-18

*Derate the 120 mA by 1 mA/°C above 25°C

APPLICATION

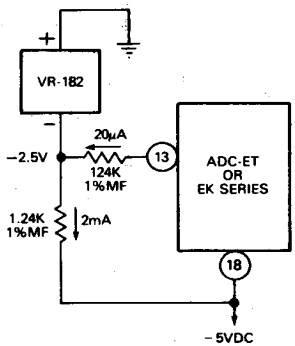
VR-182 series voltage references are recommended for use with the following DATEL products:

A/D Converters	D/A Converters
ADC-EK Series	DAC-08B
ADC-ET Series	DAC-IC8B
	DAC-IC10B

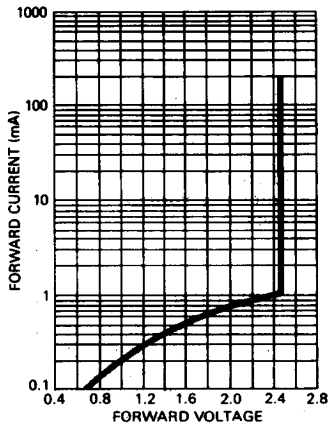
Application Equation: $R = \frac{V_S - 2.455}{I_L + I_R}$

V_S = Supply Voltage
I_R = Reference Current
I_L = Load Current

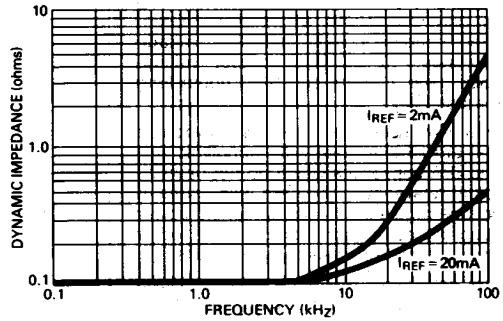
CONNECTION TO DATEL ADC-EK OR ADC-ET SERIES A/D CONVERTERS



FORWARD CHARACTERISTIC



DYNAMIC IMPEDANCE



ORDERING INFORMATION

MODEL	TEMPCO/MAXIMUM
VR-182A	100 ppm/°C
VR-182B	50 ppm/°C
VR-182C	30 ppm/°C