HIGH TEMPERATURE 5.0V VOLTAGE REFERENCE

HTVREF05

FEATURES

- Specified Over -55 to +225°C
- Optional External Trim
- 8mA Output Current
- 1.5mA Quiescent Current
- Short Circuit Protected
- Hermetic 8-Pin Ceramic DIP

APPLICATIONS

- Down-Hole Oil Well
- Avionics
- Turbine Engine Control
- Industrial Process Control
- Nuclear Reactor
- Electric Power Conversion
- Heavy Duty Internal Combustion Engines

GENERAL DESCRIPTION

The HTVREF05 is a precision high-reliability monolithic voltage reference fabricated with Honeywell's dielectrically isolated high-temperature (HTMOS®) process. It is designed specifically for applications with extremely wide temperature ranges of -55 to +225°C, such as down-hole oil well, aerospace, turbine engine and industrial control. Typically, parts will operate up to +250°C, with derated performance. All parts are burned in to eliminate infant mortality.

The HTVREF05 provides a high temperature stable 5.0V output, or bandgap reference for external biasing schemes. Output current is 8mA; power supply current is only 1.5mA.

Not Actual size

ELECTRICAL CHARACTERISTICS

V_{IN} = 10.0V ±10%, T = -55 to +225°C, C_L = 100 pF to Gnd (unless otherwise specified)

Parameter	Test Conditions (1)	Typ	Worst Case		
			Min	Max	Units
Input Voltage (V_{IN})		10	9	11	V
V Reference		5.0			V
Initial Error	25° C		-75	+25	mV
Drift With Temperature	From -55 to +225° C		-30	+30	mV
Drift With Time (3)	225° C	3		10	mV/1000hr
Noise (0.1 to 10 Hz)		300			µV (pk-pk)
Output Current Range (2)	(See Figure 5)		-8	+8	mA
Line Regulation (4)	Vin = 10V ±1 VDC			5	mV/V
Load Regulation (2)				1.5	mV/mA
Supply Current	I Load = 0mA			1.5	mA
Output Short Circuit Current	Sink/Source	15			mA

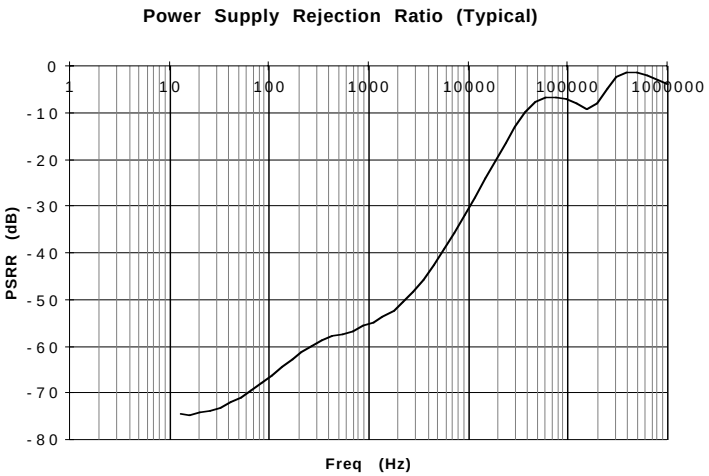
(1) Pins 6 and 7 shorted and pins 3 and 4 shorted.
(2) See Figure 1.
(3) This specification is noncummulative. Subsequent 1000 hr. periods will exhibit significantly lower drift than the first 1000 hr. period.
(4) See chart below.

ABSOLUTE MAXIMUM RATINGS (1)

Storage Temperature ..... -55 to +225°C
Total Input Voltage 12V
Output Short Circuit Duration ..... Continuous
Output Current ..... ±50mA
Thermal Resistance (Junction-to-Case) ..... 17°C/W
Lead Temperature (Attachment, 10 sec) ..... +355°C
ESD Protection 2000V

(1) Stresses in excess of those listed above may result in permanent damage. These are stress ratings only, and operation at these levels is not implied. Frequent or extended exposure to absolute maximum conditions may effect device reliability.

AC ELECTRICAL CHARACTERISTICS



Power Supply Rejection Ratio vs Frequency

OPTIONAL CONFIGURATIONS

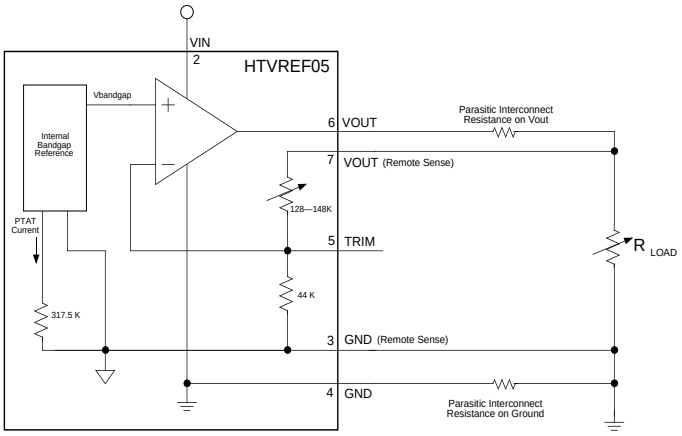


Figure 1. HTVREF05DC optimum load regulation pinout. The VOUT can either source or sink current (sourcing current shown).

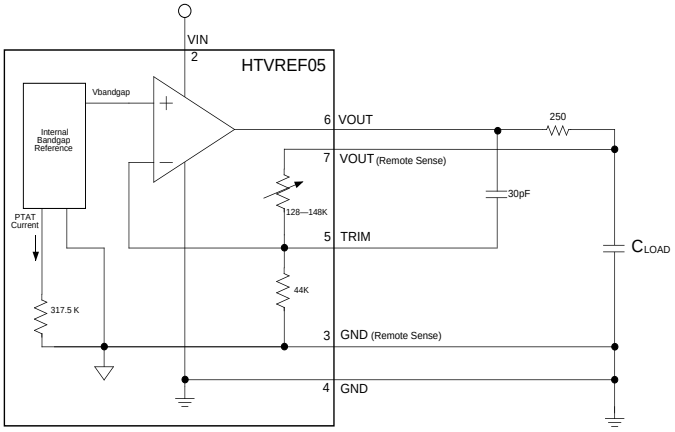


Figure 2. HTVREF05DC in minimum pinout configuration.

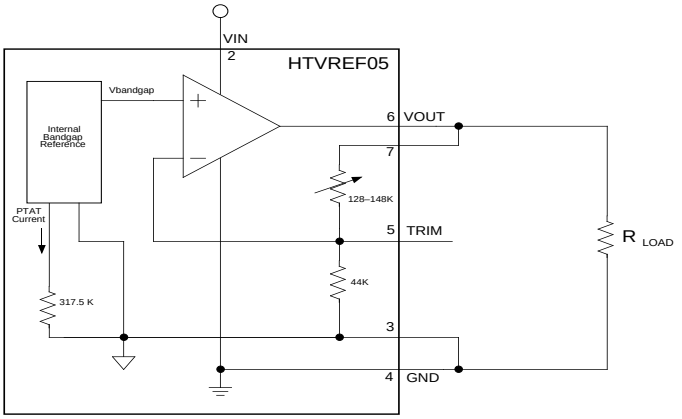


Figure 3. HTVREF05DC is the recommended circuit for CLOAD ≥100pF pinout, where Cload is due to extra cable capacitance.

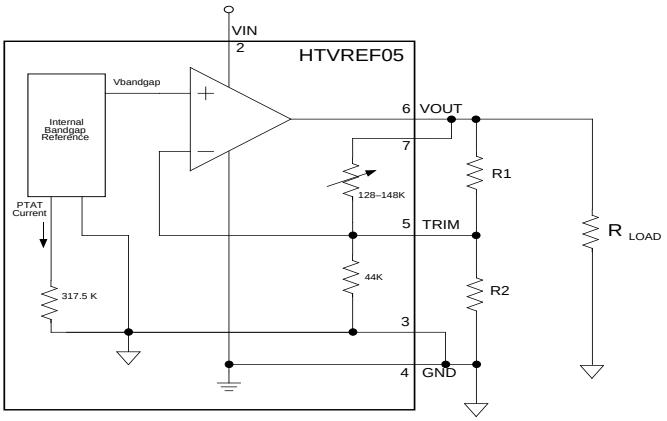


Figure 4. HTVREF05DC recommended trimming configuration. Vout may be trimmed by adding external resistor R1 to lower Vout, or adding R2 to raise Vout.

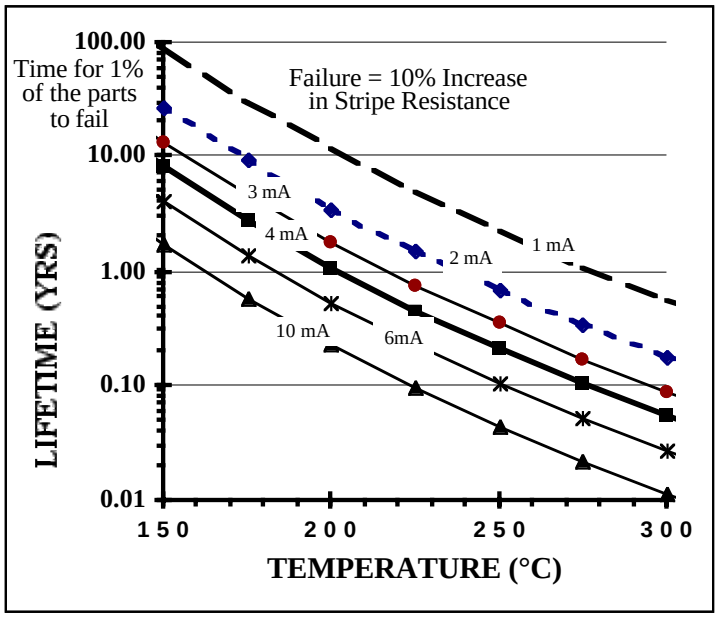
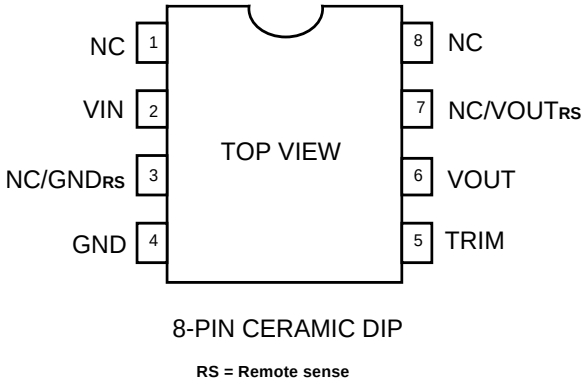


Figure 5. Electromigration lifetime dependence on HTVREF05 current load.

HTVREF05

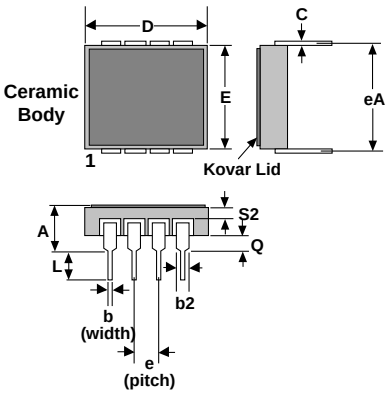
PACKAGE PINOUT



8-PIN CERAMIC DIP

RS = Remote sense

PACKAGE DRAWING



All dimensions in inches

A	0.160 (max)
b	0.019 ± 0.002
b2	0.047 ±0.002
C	0.010 +0.002 -0.001
D	0.520 ±0.008
E	0.290 ± 0.008
e	0.100 ±0.005
eA	0.300 (ref)
L	0.125 to 0.175
Q	0.039 ±0.010
S2	0.010 (min)

ORDERING INFORMATION

HTVREF05DC

D—Indicates package type*
- D = Standard Pinout DIP

C—Indicates screening level
- B = High Temperature Class B
- C = Commercial

*For packaging options, call Honeywell

To learn more about Honeywell Solid State Electronics Center, visit our web site at http://www.ssec.honeywell.com

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