HIGH TEMPERATURE POSITIVE LINEAR REGULATOR

HTPLREG

FEATURES

- Specified Over -55 to +225°C
- Output Current up to 300 mA
- Calibrated +15, +10, and +5V Output
- Input Voltage up to 28V
- 2.0 mA Quiescent Current
- Current Limit Short Circuit Protection
- Hermetic 4-Pin Power Package

APPLICATIONS

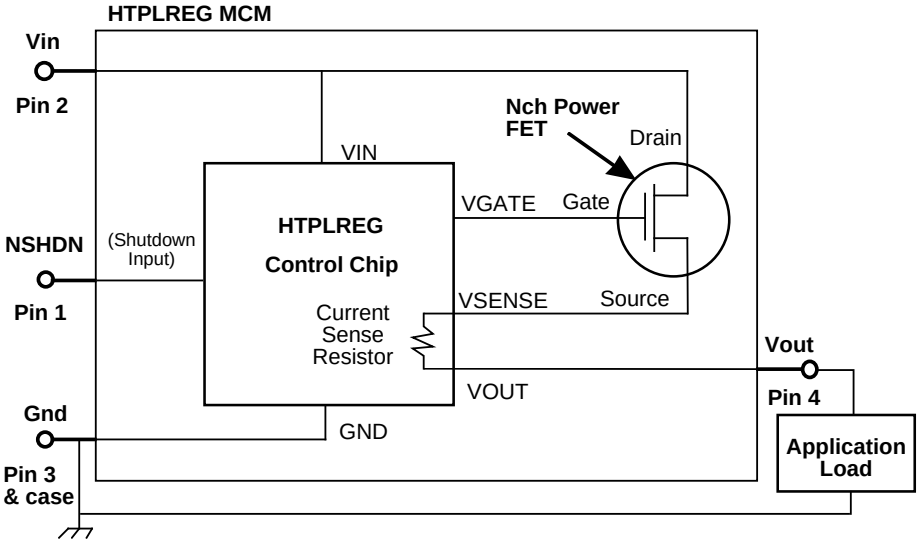
- Down-Hole Well
- Avionics
- Turbine Engine Control
- Industrial Process Control
- Nuclear Reactor
- Electric Power Conversion
- Heavy Duty Internal Combustion Engines

GENERAL DESCRIPTION

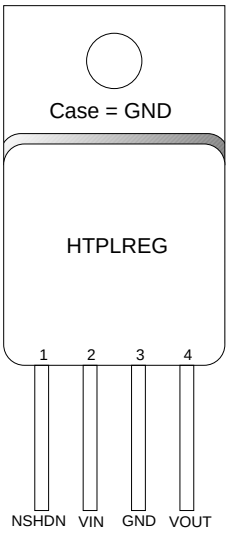
The HTPLREG is a hybrid linear regulator designed to operate over an extremely wide temperature range of -55 to +225°C. The regulator's control circuit is fabricated with Honeywell's dielectrically isolated high-temperature (HT-MOS™) process. A silicon-on-insulator MOSFET is the power device. The HTPLREG is designed specifically for severe high-temperature applications such as down-hole oil well, aerospace, turbine engine and industrial control.

The HTPLREG is available with a calibrated +5, +10, or +15V output. Output current is 300 mA over the specified temperature range, while quiescent current is 2.0 mA. Internal short circuit protection is provided. All parts are burned in to eliminate infant mortality. The HTPLREG is a high-reliability part designed specifically for applications with an extremely wide operating temperature range.

FUNCTIONAL DIAGRAM



PACKAGE DRAWING



HTPLREG

ELECTRICAL CHARACTERISTICS

+5V Output and TA = -55 to +225°C, unless otherwise specified

Parameter	Description	Conditions	Typical	Min.	Max.	Units
VOUT	Output voltage; 0 mA ≤Iout≤300mA HTPLREG05 HTPLREG10 HTPLREG15	 8.2V≤VIN≤25V 13.2V≤VIN≤28V 18.2V≤VIN≤28V	 5.00 10.00 15.00	 4.60 9.50 14.25	 5.25 10.50 15.75	Volts
I_STDBY	Supply current, no load	Vin=10V, no load	—	0.6	2.0	mA
LINE_REG	Line regulation	Iout=50mA	—	60	—	dB
R_OUT	Output resistance	Vin=10V	—	—	0.90	Ohms
DROP_V	Dropout voltage	Iout=300mA	3.0	—	3.2	Volts
I_LIMIT	Current limit threshold	VIN=10V	450	350	950	mA
I_SHORT	Short circuit current	VIN=25V	650	350	1250	mA
SHUTDN_V	Shutdown threshold voltage on NSHDN pin.	VIN=20V Iout=300mA	1.7	—	—	Volts
IIL_SHUTDN	Shutdown pullup current	—	100	50	250	µAmps

APPLICATION NOTES

1. HIGH TEMPERATURE DEVICE STARTUP: If power is interrupted while these devices are at high temperatures, they may not re-start properly when power is re-applied. For this reason care must be taken (by proper heat-sinking and/or load management) so the case temperature does not exceed 215°C for +5V and +10V regulators HTPLREG-05 and HTPLREG-10). For +15V regulators (HTPLREG-15) the case temperature should not exceed 200°. The minimum overhead voltage required to assure proper startup at high temperature is (Vin-Vout)=4 Volts.

2. NSHDN should be pulled low to turn off the device. NSHDN pin may be left open for normal operation. Voltage applied to the NSHDN pin should not exceed 0V<NSHDN<5V.

ABSOLUTE MAXIMUM RATINGS (1)

Rating	Symbol	Value	Unit
Output Current	I_{OUT}	350	mA
Input Voltage	V_{IN}	+30	VDC
Storage Temperature	T_{ST}	-65 to +325	° C
Power Dissipation	Pd	6	W

(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 affect device reliability.

ORDERING INFORMATION

Type	V_{IN}	V_{OUT}
HTPLREG05TC	8-25V	5V
HTPLREG10TC	13-28V	10V
HTPLREG15TC	18-28V	15V

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