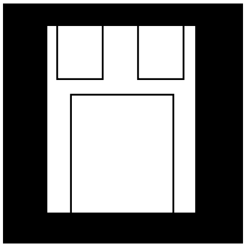
SURFACE MOUNT POSITIVE ADJUSTABLE VOLTAGE REGULATOR



Three Terminal, Adjustable Voltage, 1.0 Amp Precision Positive Regulator In Hermetic Surface Mount Package

FEATURES

- Surface Mount Hermetic Package
- Adjustable Output Voltage
- Built-In Thermal Overload Protection
- Short Circuit Current Limiting
- Product Is Available Hi-Rel Screened
- Electrically Similar To Industry Standard Type LM117

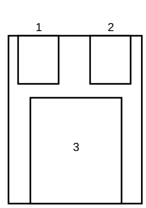
DESCRIPTION

This three terminal negative regulator is supplied in a hermetically sealed surface mount package. All protective features are designed into the circuit, including thermal shutdown, current limiting and safe-area control. With heat sinking, they can deliver over 1.0 amp of output current. This unit features output voltages that can be trimmed using external resistors, from 1.2 volts to 37 volts.

ABSOLUTE MAXIMUM RATINGS

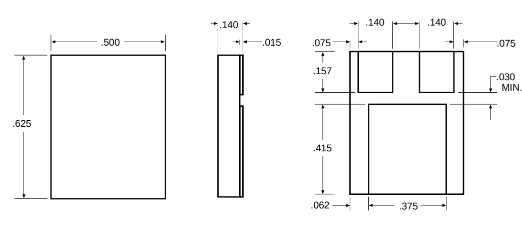
Input to Output Voltage Differential . . . . 40 V
Operating Junction Temperature Range. . . . . - 55°C to + 150°C
Storage Temperature Range . . . . - 55°C to + 150°C
Typical Power/Thermal Characteristics:
Rated Power @ 25°C
T_C 17.5W
T_A 3W
Thermal Resistance:
θ_{JC} . . . . 3.5°C/W
θ_{JA} . . . . 42°C/W
Lead Temperature at Case (5 sec). . . . . 225°C

PIN CONNECTION



Pin 1: Adjust
Pin 2: V_{IN}
Pin 3: V_{OUT}

MECHANICAL OUTLINE



4 11 R1
Supersedes 1 05 R0

ELECTRICAL CHARACTERISTICS
$-55°C \le T_A \le 125°C$, I_L = 8mA (unless otherwise specified)

Parameter	Symbol	Test Conditions		Min.	Max.	Unit
Reference Voltage	V_{REF}	V_{DIFF} = 3.0V, T_A = 25°C		1.20	1.30	
		V_{DIFF} = 3.3V	•	1.20	1.30	V
		V_{DIFF} = 40V	•	1.20	1.30	
Line Regulation	R_{LINE}	$3.0V \le V_{DIFF} \le 40V$, $V_{out} = V_{ref}$, T_A = 25°C		-9	9	mV
(Note 1)		$3.3V \le V_{DIFF} \le 40V$, $V_{out} = V_{ref}$	•	-23	23	
Load Regulation	R_{LOAD}	V_{DIFF} = 3.0V, $10mA \le I_L \le 1.5A$, T_A = 25°C		-15	15	
(Note 1)		V_{DIFF} = 3.3V, $10mA \le I_L \le 1.5A$	•	-15	15	mV
		V_{DIFF} = 40V, $10mA \le I_L \le 300mA$, T_A = 25°C		-15	15	
		V_{DIFF} = 40V, $10mA \le I_L \le 195mA$	•	-15	15	
Thermal Regulation	V_{RTH}	V_{in} = 14.6V, I_L = 1.5A		-16	16	mV
		P_d = 20 Watts, t = 20 ms, T_A =25°C				
Ripple Rejection	R_N	f = 120 Hz, $V_{out} = V_{ref}$	•	66		dB
(Note 2)		C_{Adj} = 10 µF, I_{out} = 100 mA				
Adjustment Pin Current	I_{Adj}	V_{DIFF} = 3.0V, T_A = 25°C			100	
		V_{DIFF} = 3.3V	•		100	µA
		V_{DIFF} = 40V	•		100	
Adjustment Pin	ΔI_{Adj}	V_{DIFF} = 3.0V, $10mA \le I_L \le 1.5A$, T_A = 25°C		-5	5	
Current Change		V_{DIFF} = 3.3V, $10mA \le I_L \le 1.5A$	•	-5	5	
		V_{DIFF} = 40V, $10mA \le I_L \le 300mA$, T_A = 25°C	•	-5	5	
		V_{DIFF} = 40V, $10mA \le I_L \le 195mA$	•	-5	5	µA
		$3.0V \le V_{DIFF} \le 40V$, T_A = 25°C		-5	5	
		$3.3V \le V_{DIFF} \le 40V$	•	-5	5	
Miminum Load Current	I_{Lmin}	V_{DIFF} = 3.0V, V_{OUT} = 1.4V (forced)			5.0	
		V_{DIFF} = 3.3V, V_{OUT} = 1.4V (forced)	•		5.0	mA
		V_{DIFF} = 40V, V_{OUT} = 1.4V (forced)	•		5.0	
Current Limit	I_{CL}	V_{DIFF} = 15V	•	1.5	3.5	
(Note 2)		V_{DIFF} = 40V, T_A = 25°C		0.18	1.5	A

Notes:
1. Load and Line Regulation are specified at a constant junction temperature. Pulse testing with low duty cycle is used. Changes in output voltage due to heating effects must be taken into account separately.
2. If not tested, shall be guaranteed to the specified limits.
3. The • denotes the specifications which apply over the full operating temperature range.

STANDARD APPLICATION

* C_{in} is required if regulator is located an appreciable distance from power supply filter.

** C_o is not needed for stability, however it does improve transient response.

$$V_{OUT} = 1.25\ V\left(1 + \frac{R_2}{R_1}\right) + I_{ADJ} R_2$$

Since I_{ADJ} is controlled to less than 100 µA, the error associated with this term is negligible in most applications.