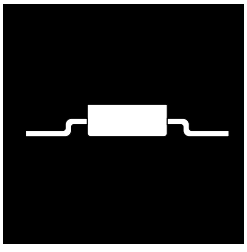
SURFACE MOUNT POSITIVE VOLTAGE REGULATOR, 3-TERMINAL, FIXED VOLTAGE



Isolated Hermetic Surface Mount Package
1.5 Amp, +5V, +12V, +15V Positive Voltage Regulators

FEATURES

- Small Hermetic Surface Mount Package
- Chip Isolated From Package
- Output Voltages: 5V, 12V, 15V
- Output Voltages Set Internally To ±1%
- Built-In Thermal Overload Protection
- Short Circuit Current Limiting
- Product Is Available Hi-Rel Screened

DESCRIPTION

These three terminal positive regulators are supplied in a hermetic metal 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 1.5 amps of output current. These units feature internally trimmed output voltages to ±1% of nominal output voltage. Standard voltages are 5V, 12V, and 15V. These units are ideally suited for Military applications where a hermetically sealed surface mount package is required.

ABSOLUTE MAXIMUM RATINGS @ 25°C

Input to Output Voltage Differential . . . . . +35V
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} . . . . . 4.2°C/W
θ_{JA} . . . . . 42°C/W
Lead Temperature at Case (5 sec). . . . . 225°C

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ELECTRICAL CHARACTERISTICS 5 Volt V_{IN} = 10V, I_o = 500mA, -55°C ≤ T_A ≤ 125°C (unless otherwise specified)

Parameter	Symbol	Test Conditions		Min.	Max.	Unit
Output Voltage	V_{OUT}	T_A = 25°C		4.92	5.08	V
		V_{IN} = 7.5V to 20V	•	4.85	5.15	V
Line Regulation	V_{RLINE}	V_{IN} = 7.5V to 20V			5	mV
(Note 1)			•		12	mV
		V_{IN} = 8.0V to 12V			4	mV
			•		10	mV
Load Regulation	V_{RLOAD}	I_O = 5mA to 1.5 Amp			12	mV
(Note 1)			•		25	mV
		I_O = 250mA to 750 mA			6	mV
			•		15	mV
Standby Current Drain	I_{SCD}				6	mA
			•		6.5	mA
Standby Current Drain	ΔI_{SCD}	V_{IN} = 7.5V to 20V	•		0.8	mA
Change With Line	(Line)					
Standby Current Drain	ΔI_{SCD}	I_O = 5mA to 1000mA	•		0.5	mA
Change With Load	(Load)					
Dropout Voltage	V_{DO}	T_A = 25°C, ΔV_{OUT} = 100mV, I_O = 1.0A			2.5	V
Peak Output Current	$I_{O(pk)}$	T_A = 25°C		1.5	3.3	A
Short Circuit Current	I_{DS}	V_{IN} = 35V			1.2	A
(Note 2)			•		2.8	A
Ripple Rejection	$\frac{\Delta V_{IN}}{\Delta V_{OUT}}$	f =120 Hz, ΔV_{IN} = 10V		66		dB
		(Note 3)	•	60		dB
Output Noise Voltage	N_O	T_A = 25°C, f =10 Hz to 100KHz			40	µV/V
(Note 3)						RMS
Long Term Stability	$\frac{\Delta V_{OUT}}{\Delta t}$	T_A = 25°C, t = 1000 hrs.			75	mV
(Note 3)						

ELECTRICAL CHARACTERISTICS 12 Volt V_{IN} = 19V, I_o = 500mA, -55°C ≤ T_A ≤ 125°C (unless otherwise specified)

Parameter	Symbol	Test Conditions		Min.	Max.	Unit
Output Voltage	V_{OUT}	T_A = 25°C		11.88	12.12	V
		V_{IN} = 14.5V to 27V	•	11.64	12.36	V
Line Regulation	V_{RLINE}	V_{IN} = 14.5V to 27V			18	mV
(Note 1)			•		50	mV
		V_{IN} = 16V to 22V			9	mV
			•		30	mV
Load Regulation	V_{RLOAD}	I_O = 5mA to 1.5 Amp			32	mV
(Note 1)			•		60	mV
		I_O = 250mA to 750 mA			20	mV
			•		40	mV
Standby Current Drain	I_{SCD}				6.0	mA
			•		6.5	mA
Standby Current Drain	ΔI_{SCD}	V_{IN} = 15V to 30V	•		0.8	mA
Change With Line	(Line)					
Standby Current Drain	ΔI_{SCD}	I_O = 5mA to 1000mA	•		0.5	mA
Change With Load	(Load)					
Dropout Voltage	V_{DO}	ΔV_{OUT} = 100mV, I_O = 1.0A	•		2.5	V
Peak Output Current	$I_{O(pk)}$	T_A = 25°C		1.5	3.3	A
Short Circuit Current	I_{DS}	V_{IN} = 35V			1.2	A
(Note 2)			•		2.8	A
Ripple Rejection	$\frac{\Delta V_{IN}}{\Delta V_{OUT}}$	f =120 Hz, ΔV_{IN} = 10V		61		dB
		(Note 3)	•	54		dB
Output Noise Voltage	N_O	T_A = 25°C, f =10 Hz to 100KHz			40	µV/V
(Note 3)						RMS
Long Term Stability	$\frac{\Delta V_{OUT}}{\Delta t}$	T_A = 25°C, t = 1000 hrs.			120	mV
(Note 3)						

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. Short Circuit protection is only assured up to V_{IN} = 35V.
3. If not tested, shall be guaranteed to the specified limits.

The • denotes the specifications which apply over the full operating temperature range.

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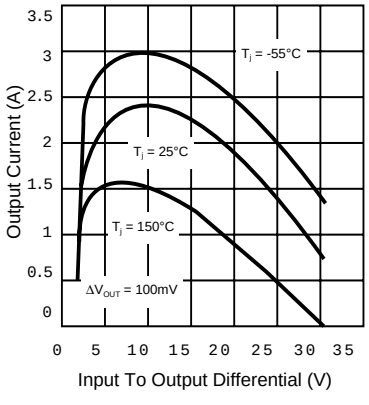
ELECTRICAL CHARACTERISTICS 15 Volt V_{IN} = 23V, I_o = 500mA, -55°C ≤ T_A ≤ 125°C (unless otherwise specified)

Parameter	Symbol	Test Conditions		Min.	Max.	Unit
Output Voltage	V_{OUT}	T_A = 25°C		14.8	15.2	V
		V_{IN} = 18.5V to 30V	•	14.6	15.4	V
Line Regulation	V_{RLINE}	V_{IN} = 17.5V to 30V			20	mV
(Note 1)			•		50	mV
		V_{IN} = 20V to 26V			15	mV
			•		25	mV
Load Regulation	V_{RLOAD}	I_O = 5mA to 1.5 Amp			35	mV
(Note 1)		I_O = 5mA to 1.0 Amp	•		75	mV
		I_O = 250mA to 750 mA			21	mV
			•		45	mV
Standby Current Drain	I_{SCD}				6.0	mA
			•		6.5	mA
Standby Current Drain Change With Line	ΔI_{SCD} (Line)	V_{IN} = 18.5V to 30V	•		0.8	mA
Standby Current Drain Change With Load	ΔI_{SCD} (Load)	I_O = 5mA to 1000mA	•		0.5	mA
Dropout Voltage	V_{DO}	T_A = 25°C, ΔV_{OUT} = 100mV, I_O = 1.0A			2.5	V
Peak Output Current	$I_{O(pk)}$	T_A = 25°C		1.5	3.3	A
Short Circuit Current	I_{DS}	V_{IN} = 35V			1.2	A
(Note 2)			•		2.8	A
Ripple Rejection	ΔV_{IN}	f =120 Hz, ΔV_{IN} = 10V		54		dB
	ΔV_{OUT}	(Note 3)	•	52		dB
Output Noise Voltage	N_O	T_A = 25°C, f =10 Hz to 100KHz			40	µV/V
(Note 3)						RMS
Long Term Stability	ΔV_{OUT}	T_A = 25°C, t = 1000 hrs.			150	mV
(Note 3)	Δt					

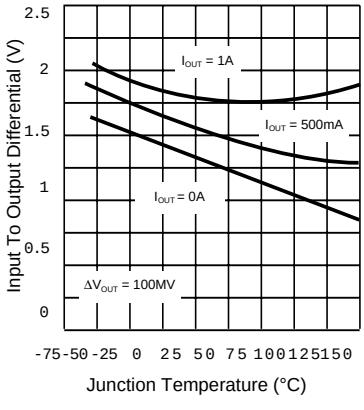
Notes:
1. Load and Line Regulation are specified at a constant junction temperature. Pulse testing with low duty cycle is used. Changes in output voltage due to heating effects must be taken into account separately.
2. Short Circuit protection is only assured up to V_{IN} = 35V.
3. If not tested, shall be guaranteed to the specified limits.
   The • denotes the specifications which apply over the full operating temperature range.

TYPICAL PERFORMANCE CHARACTERISTICS

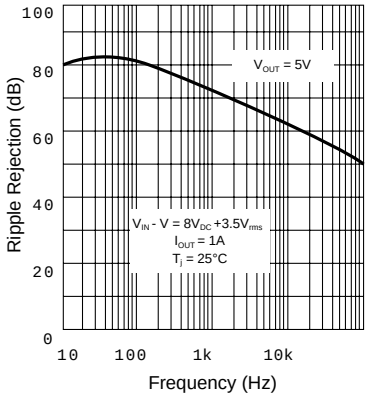
PEAK OUTPUT CURRENT



DROPOUT VOLTAGE



RIPPLE REJECTION



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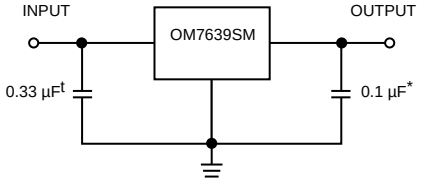
TYPICAL APPLICATIONS

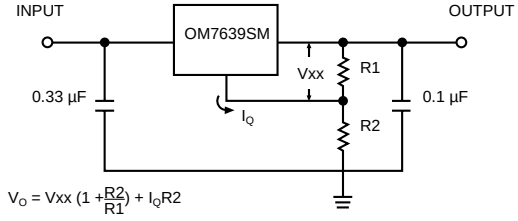
FIXED OUTPUT REGULATOR



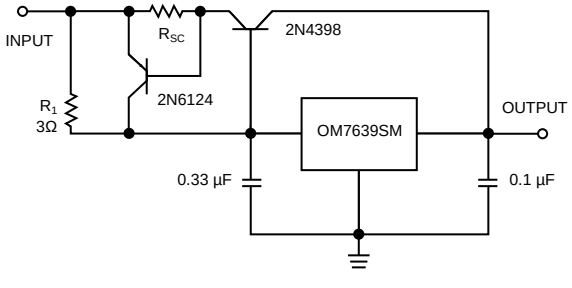
* Increasing value of output capacitor improves system transient response

† Required only if regulator is located an appreciable distance from power supply filter.

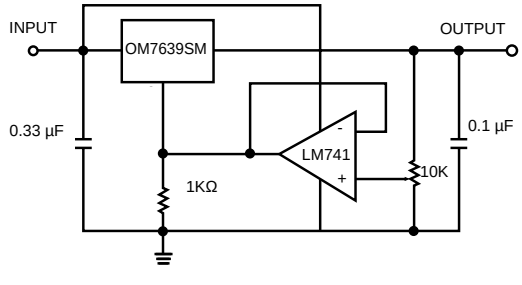
CIRCUIT FOR INCREASING OUTPUT VOLTAGE



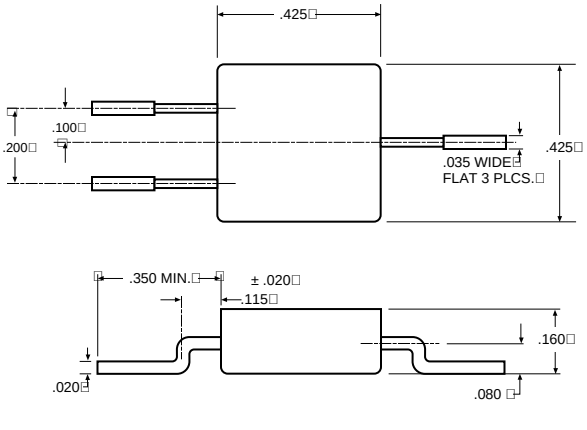
HIGH OUTPUT CURRENT, SHORT CIRCUIT PROTECTED



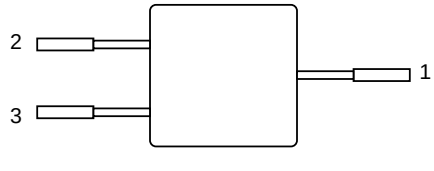
ADJUSTABLE OUTPUT REGULATOR, 7 TO 30 VOLTS



MECHANICAL OUTLINE



PIN CONNECTION



Pin 1: Ground
Pin 2: V_{IN}
Pin 3: V_{OUT}
Case: Isolated