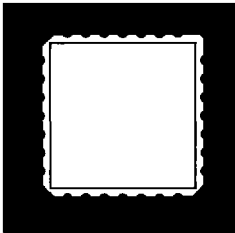


SURFACE MOUNT 0.5 VOLT LOW DROPOUT POSITIVE REGULATOR



Isolated Hermetic Surface Mount Package
Three Terminal, Fixed Voltage, 1 Amp Low
Dropout Voltage Regulator

FEATURES

- Similar To Industry Standard LM2940
- Dropout Voltage Typically 0.5V @ $I_O = 1A$
- Output Current Up To 1A
- Reverse Battery Protection
- Internal Short Circuit Protection
- Isolated Hermetic Surface Mount Package

DESCRIPTION

These three terminal fixed voltage regulators are designed to provide 1.0A with high efficiency. It has the ability to source 1A of output current with a typical dropout voltage of .5V and a maximum of 1V over the entire temperature range. It is supplied in a hermetic surface mount package and is ideally suited for Military applications where small size and high reliability are required.

ABSOLUTE MAXIMUM RATINGS @ 25°C

Input Voltage	26 Vdc
Output Voltage	+5V, +12V, +15 Vdc
Operating Junction Temperature Range	- 55°C to + 125°C
Storage Temperature Range	- 65°C to + 150°C
Lead Temperature (Soldering 10 Seconds)	300°C
Thermal Resistance:	
θ_{JC} (Isolated)	15°C/W
Maximum Output Current	1.0A

3.5

ELECTRICAL CHARACTERISTICS, P/N OM2940-5SM (5 Volts)
 $-55^{\circ}\text{C} \leq T_A \leq 125^{\circ}\text{C}$, $V_{IN} = 10\text{ V}$, $I_O = 1\text{ A}$, $C_{OUT} = 22\text{ }\mu\text{F}$ (unless otherwise specified).

Parameter	Symbol	Test Conditions	Notes	Min.	Max.	Unit
Output Voltage	V_{OUT}	$V_{IN} = 10\text{ V}$, $I_{OUT} = 5\text{ mA}$	1	4.85	5.15	V
			2	4.75	5.25	
		$V_{IN} = 6\text{ V}$, $I_{OUT} = 5\text{ mA}$	1	4.85	5.15	
			2	4.75	5.25	
		$V_{IN} = 7\text{ V}$, $I_{OUT} = 5\text{ mA}$	1	4.85	5.15	
			2	4.75	5.25	
		$V_{IN} = 28\text{ V}$, $I_{OUT} = 5\text{ mA}$	1	4.85	5.15	
			2	4.75	5.25	
		$V_{IN} = 10\text{ V}$, $I_{OUT} = 1\text{ A}$	1	4.85	5.15	
			2	4.75	5.25	
		$V_{IN} = 6\text{ V}$, $I_{OUT} = 1\text{ A}$	1	4.85	5.15	
			2	4.75	5.25	
		$V_{IN} = 6\text{ V}$, $I_{OUT} = 50\text{ mA}$	1	4.85	5.15	
			2	4.75	5.25	
		$V_{IN} = 10\text{ V}$, $I_{OUT} = 50\text{ mA}$	1	4.85	5.15	
			2	4.75	5.25	
Maximum Line Transient	V_{LT}	$V_O \leq 6\text{ V}$, $R_O = 100\text{ }\Omega$, $t = 20\text{ ms}$	1, 2	40		V
Reverse Polarity Input Voltage DC	V_{RIN}	$R_O = 100\text{ }\Omega$	1, 2	-15		V
Reverse Polarity Input Voltage Transient	V_{RIT}	$R_O = 100\text{ }\Omega$, $t \leq 20\text{ ms}$	1, 2	-45		V
Quiescent Current	I_Q	$V_{IN} = 10\text{ V}$, $I_{OUT} = 5\text{ mA}$	1		20	mA
			2		30	
		$V_{IN} = 7\text{ V}$, $I_{OUT} = 5\text{ mA}$	1		20	
			2		30	
		$V_{IN} = 28\text{ V}$, $I_{OUT} = 5\text{ mA}$	1		20	
			2		30	
		$V_{IN} = 10\text{ V}$, $I_{OUT} = 1\text{ A}$	1		70	
			2		120	
Line Regulation	V_{RLN}	$7\text{ V} \leq V_{IN} \leq 28\text{ V}$, $I_{OUT} = 5\text{ mA}$	1		± 55	mV
			2		± 80	
Load Regulation	V_{RLD}	$V_{IN} = 10\text{ V}$, $50\text{ mA} \leq I_{OUT} \leq 1\text{ A}$	1		± 65	mV
			2		± 120	
Dropout Voltage	V_{DO}	$I_{OUT} = 1\text{ A}$	1		.7	V
			2		1	
		$I_{OUT} = 100\text{ mA}$	1		150	mV
			2		200	
Output Noise Voltage	V_{ON}	$V_{IN} = 10\text{ V}$, $I_O = 5\text{ mA}$, 10 Hz - 100 Hz	1, 2		700	$\mu\text{V rms}$
Output Impedance	R_O	$V_{IN} = 10\text{ V}$, $I_{OUT} = 100\text{ mA dc}$ and 20 mA ac , $f_o = 120\text{ Hz}$	1, 2		1	Ω
Short Circuit Current	I_{SC}	$V_{IN} = 10\text{ V}$	1	1.2		A
			2	1.0		
Ripple Rejection	R_{RI}	$V_{IN} = 10\text{ V}$, $I_O = 1\text{ V rms}$, $I_{OUT} = 5\text{ mA}$, $f = 1\text{ kHz}$	1	60		dB
			2	50		

Notes: 1. $T_A = 25^{\circ}\text{C}$.
 2. Over full operating temperature range.

ELECTRICAL CHARACTERISTICS, P/N OM2940-12SM (12 Volts)
 $-55^{\circ}\text{C} \leq T_A \leq 125^{\circ}\text{C}$, $V_{IN} = 17\text{ V}$, $I_O = 1\text{ A}$, $C_{OUT} = 22\text{ }\mu\text{F}$ (unless otherwise specified).

Parameter	Symbol	Test Conditions	Notes	Min.	Max.	Unit
Output Voltage	V_{OUT}	$V_{IN} = 17\text{ V}$, $I_{OUT} = 5\text{ mA}$	1	11.64	12.36	V
			2	11.40	12.60	
		$V_{IN} = 13.6\text{ V}$, $I_{OUT} = 5\text{ mA}$	1	11.64	12.36	
			2	11.40	12.60	
		$V_{IN} = 14\text{ V}$, $I_{OUT} = 5\text{ mA}$	1	11.64	12.36	
			2	11.40	12.60	
		$V_{IN} = 28\text{ V}$, $I_{OUT} = 5\text{ mA}$	1	11.64	12.36	
			2	11.40	12.60	
		$V_{IN} = 17\text{ V}$, $I_{OUT} = 1\text{ A}$	1	11.64	12.36	
			2	11.40	12.60	
		$V_{IN} = 13.6\text{ V}$, $I_{OUT} = 1\text{ A}$	1	11.64	12.36	
			2	11.40	12.60	
		$V_{IN} = 13.6\text{ V}$, $I_{OUT} = 50\text{ mA}$	1	11.64	12.36	
			2	11.40	12.60	
		$V_{IN} = 17\text{ V}$, $I_{OUT} = 50\text{ mA}$	1	11.64	12.36	
			2	11.40	12.60	
Maximum Line Transient	V_{LT}	$V_O \leq 13\text{ V}$, $R_O = 100\text{ }\Omega$, $t = 20\text{ ms}$	1, 2	40		V
Reverse Polarity Input Voltage DC	V_{RIN}	$R_O = 100\text{ }\Omega$	1, 2	-15		V
Reverse Polarity Input Voltage Transient	V_{RIT}	$R_O = 100\text{ }\Omega$, $t \leq 20\text{ ms}$	1, 2	-45		V
Quiescent Current	I_Q	$V_{IN} = 17\text{ V}$, $I_{OUT} = 5\text{ mA}$	1		20	mA
			2		30	
		$V_{IN} = 14\text{ V}$, $I_{OUT} = 5\text{ mA}$	1		20	
			2		30	
		$V_{IN} = 28\text{ V}$, $I_{OUT} = 5\text{ mA}$	1		20	
			2		30	
		$V_{IN} = 17\text{ V}$, $I_{OUT} = 1\text{ A}$	1		70	
			2		120	
Line Regulation	V_{RLN}	$14\text{ V} \leq V_{IN} \leq 28\text{ V}$, $I_{OUT} = 5\text{ mA}$	1		± 110	mV
			2		± 180	
Load Regulation	V_{RLD}	$V_{IN} = 17\text{ V}$, $50\text{ mA} \leq I_{OUT} \leq 1\text{ A}$	1		± 160	mV
			2		± 220	
Dropout Voltage	V_{DO}	$I_{OUT} = 1\text{ A}$	1		.7	V
			2		1	
		$I_{OUT} = 100\text{ mA}$	1		150	mV
			2		200	
Output Noise Voltage	V_{ON}	$V_{IN} = 17\text{ V}$, $I_O = 5\text{ mA}$, 10 Hz - 100 Hz	1		1000	$\mu\text{V rms}$
Output Impedance	R_O	$V_{IN} = 17\text{ V}$, $I_{OUT} = 100\text{ mA dc}$ and 20 mA ac , $f_o = 120\text{ Hz}$	1, 2		1	Ω
Short Circuit Current	I_{SC}	$V_{IN} = 17\text{ V}$	1	1.2		A
			2	1.0		
Ripple Rejection	R_{RI}	$V_{IN} = 17\text{ V}$, $I_O = 1\text{ V rms}$, $I_{OUT} = 5\text{ mA}$, $f = 1\text{ kHz}$	1	52		dB
			2	46		

Notes: 1. $T_A = 25^{\circ}\text{C}$.
 2. Over full operating temperature range.

ELECTRICAL CHARACTERISTICS, PIN OM2940-15SM (15 Volts) $-55^{\circ}\text{C} \leq T_A \leq 125^{\circ}\text{C}$, $V_N = 20\text{ V}$, $I_O = 1\text{ A}$, $C_{OUT} = 22\text{ }\mu\text{F}$ (unless otherwise specified).

Parameter	Symbol	Test Conditions	Notes	Min.	Max.	Unit
Output Voltage	V_{OUT}	$V_N = 20\text{ V}$, $I_{OUT} = 5\text{ mA}$	1	14.55	15.45	V
			2	14.25	15.75	
		$V_N = 16.75\text{ V}$, $I_{OUT} = 5\text{ mA}$	1	14.55	15.45	
			2	14.25	15.75	
		$V_N = 17\text{ V}$, $I_{OUT} = 5\text{ mA}$	1	14.55	15.45	
			2	14.25	15.75	
		$V_N = 26\text{ V}$, $I_{OUT} = 5\text{ mA}$	1	14.55	15.45	
		$V_N = 20\text{ V}$, $I_{OUT} = 1\text{ A}$	1	14.55	15.45	
			2	14.25	15.75	
		$V_N = 16.75\text{ V}$, $I_{OUT} = 1\text{ A}$	1	14.55	15.45	
			2	14.25	15.75	
		$V_N = 16.75\text{ V}$, $I_{OUT} = 50\text{ mA}$	1	14.55	15.45	
			2	14.25	15.75	
		$V_N = 20\text{ V}$, $I_{OUT} = 50\text{ mA}$	1	14.55	15.45	
Maximum Line Transient	V_{LT}	$V_O \leq 16\text{ V}$, $R_O = 100\text{ }\Omega$, $t = 20\text{ ms}$	1, 2	40		V
		$R_O = 100\text{ }\Omega$	1, 2	-15		
Reverse Polarity Input Voltage DC	V_{REV}	$R_O = 100\text{ }\Omega$, $t \geq 20\text{ ms}$	1, 2	-45		V
Reverse Polarity Input Voltage Transient Quiescent Current	I_Q	$V_N = 20\text{ V}$, $I_{OUT} = 5\text{ mA}$	1		20	mA
			2		30	
		$V_N = 17\text{ V}$, $I_{OUT} = 5\text{ mA}$	1		20	
			2		30	
		$V_N = 26\text{ V}$, $I_{OUT} = 5\text{ mA}$	1		20	
Line Regulation	V_{RLN}	$V_N = 20\text{ V}$, $I_{OUT} = 1\text{ A}$	1		70	mV
		$17\text{ V} \leq V_N \leq 26\text{ V}$, $I_{OUT} = 5\text{ mA}$	2		120	
Load Regulation	V_{RLD}	$V_N = 20\text{ V}$, $I_O \leq 26\text{ V}$, $I_{OUT} = 5\text{ mA}$	1		± 125	mV
		$V_N = 20\text{ V}$, $I_{OUT} = 50\text{ mA} \leq I_{OUT} \leq 1\text{ A}$	2		± 350	
Dropout Voltage	V_{DO}	$I_{OUT} = 1\text{ A}$	1		7	V
		$I_{OUT} = 1\text{ A}$	2		1	
Output Noise Voltage	V_{ON}	$I_{OUT} = 100\text{ mA}$	1		150	mV
		$V_N = 20\text{ V}$, $I_O = 5\text{ mA}$, $10\text{ Hz} - 100\text{ Hz}$	2		200	
Output Impedance	R_O	$V_N = 20\text{ V}$, $I_{OUT} = 100\text{ mA}$ ac and 20 mA dc, $f_o = 120\text{ Hz}$	1, 2		1000	$\mu\text{V rms}$
Short Circuit Current	I_{SC}	$V_N = 20\text{ V}$	1	1.2	1	Ω
Ripple Rejection	R_R	$V_N = 20\text{ V} + 1\text{ V rms}$, $I_{OUT} = 5\text{ mA}$, $f = 1\text{ kHz}$	1	48		dB
			2	42		

Notes: 1. $T_A = 25^{\circ}\text{C}$.
 2. Over full operating temperature range.

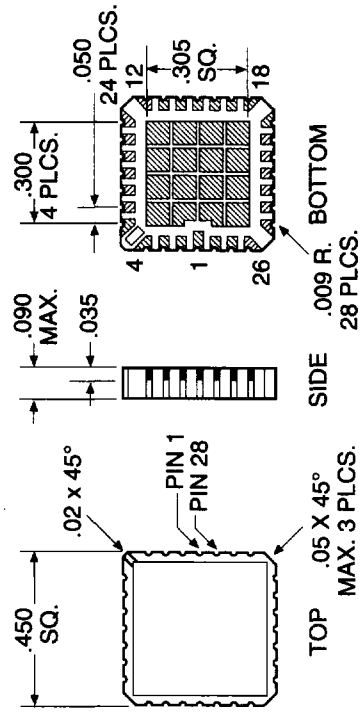
PIN CONNECTION

Pin 1, 15 thru 28: IN

Pin 2, 3, 13, and 14: GND

Pin 4 thru 12: OUT

MECHANICAL OUTLINE



TYPICAL APPLICATIONS

