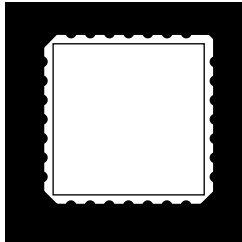


SURFACE MOUNT 0.5 VOLT LOW DROPOUT POSITIVE REGULATOR



**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



ELECTRICAL CHARACTERISTICS, P/N OM2940-5SM (5 Volts)
 -55°C T_A 125°C, V_{IN} = 10 V, I_O = 1 A, C_{OUT} = 22 μF (unless otherwise specified).

Parameter	Symbol	Test Conditions	Notes	Min.	Max.	Unit
Output Voltage	V _{OUT}	V _{IN} = 10 V, I _{OUT} = 5 mA	1	4.85	5.15	V
			2	4.75	5.25	
		V _{IN} = 6 V, I _{OUT} = 5 mA	1	4.85	5.15	
			2	4.75	5.25	
		V _{IN} = 7 V, I _{OUT} = 5 mA	1	4.85	5.15	
			2	4.75	5.25	
		V _{IN} = 26 V, I _{OUT} = 5 mA	1	4.85	5.15	
			2	4.75	5.25	
		V _{IN} = 10 V, I _{OUT} = 1 A	1	4.85	5.15	
			2	4.75	5.25	
V _{IN} = 6 V, I _{OUT} = 1 A	1	4.85	5.15			
	2	4.75	5.25			
V _{IN} = 6 V, I _{OUT} = 50 mA	1	4.85	5.15			
	2	4.75	5.25			
V _{IN} = 10 V, I _{OUT} = 50 mA	1	4.85	5.15			
	2	4.75	5.25			
Maximum Line Transient	V _{LT}	V _O 6 V, R _O = 100 , t = 20 ms	1, 2	40		V
Reverse Polarity Input Voltage DC	V _{RIN}	R _O = 100	1, 2	-15		V
Reverse Polarity Input Voltage Transient	V _{RIT}	R _O = 100 , t = 20 ms	1, 2	-45		V
Quiescent Current	I _O	V _{IN} = 10 V, I _{OUT} = 5 mA	1	20	mA	
			2	30		
		V _{IN} = 7 V, I _{OUT} = 5 mA	1	20		
			2	30		
V _{IN} = 26 V, I _{OUT} = 5 mA	1	20				
	2	30				
V _{IN} = 10 V, I _{OUT} = 1 A	1	70				
	2	120				
Line Regulation	V _{RLN}	7 V V _{IN} 26 V, I _{OUT} = 5 mA	1, 2	±55		mV
Load Regulation	V _{RLD}	V _{IN} = 10 V, 50 mA I _{OUT} 1 A	1	±65	mV	
			2	±120		
Dropout Voltage	V _{DO}	I _{OUT} = 1 A	1	.7	V	
			2	1		
			I _{OUT} = 100 mA	1		150
2	200					
Output Noise Voltage	V _{ON}	V _{IN} = 10 V, I _O = 5 mA, 10 Hz - 100 Hz	1, 2		700	μV rms
Output Impedance	R _O	V _{IN} = 10 V, I _{OUT} = 100 mA dc and 20 mA ac, f _O = 120 Hz	1, 2		1	
Short Circuit Current	I _{OS}	V _{IN} = 10 V	1	1.2	A	
			2	1.0		
Ripple Rejection	R _R	V _{IN} = 10 V + 1 V rms, I _{OUT} = 5 mA, f = 1 kHz	1	60	dB	
			2	50		

Notes: 1. T_A = 25°C.
 2. Over full operating temperature range.

ELECTRICAL CHARACTERISTICS, P/N OM2940-12SM (12 Volts)
 -55°C T_A 125°C, V_{IN} = 17 V, I_O = 1 A, C_{OUT} = 22 μF (unless otherwise specified).

Parameter	Symbol	Test Conditions	Notes	Min.	Max.	Unit
Output Voltage	V _{OUT}	V _{IN} = 17 V, I _{OUT} = 5 mA	1	11.64	12.36	V
			2	11.40	12.60	
		V _{IN} = 13.6 V, I _{OUT} = 5 mA	1	11.64	12.36	
			2	11.40	12.60	
		V _{IN} = 14 V, I _{OUT} = 5 mA	1	11.64	12.36	
			2	11.40	12.60	
		V _{IN} = 26 V, I _{OUT} = 5 mA	1	11.64	12.36	
			2	11.40	12.60	
		V _{IN} = 17 V, I _{OUT} = 1 A	1	11.64	12.36	
			2	11.40	12.60	
V _{IN} = 13.6 V, I _{OUT} = 1 A	1	11.64	12.36			
	2	11.40	12.60			
V _{IN} = 13.6 V, I _{OUT} = 50 mA	1	11.64	12.36			
	2	11.40	12.60			
V _{IN} = 17 V, I _{OUT} = 50 mA	1	11.64	12.36			
	2	11.40	12.60			
Maximum Line Transient	V _{LT}	V _O 13 V, R _O = 100 , t = 20 ms	1, 2	40		V
Reverse Polarity Input Voltage DC	V _{RIN}	R _O = 100	1, 2	-15		V
Reverse Polarity Input Voltage Transient	V _{RIT}	R _O = 100 , t = 20 ms	1, 2	-45		V
Quiescent Current	I _O	V _{IN} = 17 V, I _{OUT} = 5 mA	1	20	mA	
			2	30		
		V _{IN} = 14 V, I _{OUT} = 5 mA	1	20		
			2	30		
		V _{IN} = 26 V, I _{OUT} = 5 mA	1	20		
2	30					
V _{IN} = 17 V, I _{OUT} = 1 A	1	70				
	2	120				
Line Regulation	V _{RLN}	14 V V _{IN} 26 V, I _{OUT} = 5 mA	1, 2	±110		mV
Load Regulation	V _{RLD}	V _{IN} = 17 V, 50 mA I _{OUT} 1 A	1	±160	mV	
			2	±220		
Dropout Voltage	V _{DO}	I _{OUT} = 1 A	1	.7	V	
			2	1		
			I _{OUT} = 100 mA	1		150
2	200					
Output Noise Voltage	V _{ON}	V _{IN} = 17 V, I _O = 5 mA, 10 Hz - 100 Hz	1		1000	μV rms
Output Impedance	R _O	V _{IN} = 17 V, I _{OUT} = 100 mA dc and 20 mA ac, f _O = 120 Hz	1, 2		1	
Short Circuit Current	I _{OS}	V _{IN} = 17 V	1	1.2	A	
			2	1.0		
Ripple Rejection	R _R	V _{IN} = 17 V + 1 V rms, I _{OUT} = 5 mA, f = 1 kHz	1	52	dB	
			2	46		

Notes: 1. T_A = 25°C.
 2. Over full operating temperature range.



ELECTRICAL CHARACTERISTICS, P/N OM2940-15SM (15 Volts)
 -55°C T_A 125°C, V_{IN} = 20 V, I_O = 1 A, C_{OUT} = 22 μF (unless otherwise specified).

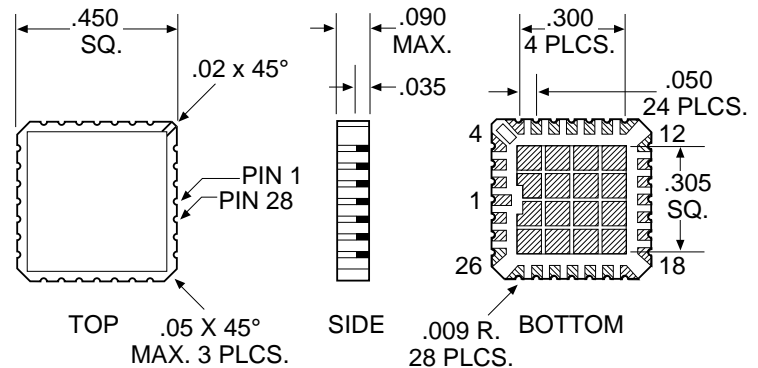
Parameter	Symbol	Test Conditions	Notes	Min.	Max.	Unit
Output Voltage	V _{OUT}	V _{IN} = 20 V, I _{OUT} = 5 mA	1	14.55	15.45	V
			2	14.25	15.75	
		V _{IN} = 16.75 V, I _{OUT} = 5 mA	1	14.55	15.45	
			2	14.25	15.75	
		V _{IN} = 17 V, I _{OUT} = 5 mA	1	14.55	15.45	
			2	14.25	15.75	
		V _{IN} = 26 V, I _{OUT} = 5 mA	1	14.55	15.45	
			2	14.25	15.75	
		V _{IN} = 20 V, I _{OUT} = 1 A	1	14.55	15.45	
2	14.25		15.75			
V _{IN} = 16.75 V, I _{OUT} = 1 A	1	14.55	15.45			
	2	14.25	15.75			
V _{IN} = 16.75 V, I _{OUT} = 50 mA	1	14.55	15.45			
	2	14.25	15.75			
V _{IN} = 20 V, I _{OUT} = 50 mA	1	14.55	15.45			
	2	14.25	15.75			
Maximum Line Transient	V _{LT}	V _O 16 V, R _O = 100 , t = 20 ms	1, 2	40		V
Reverse Polarity Input Voltage DC	V _{RIN}	R _O = 100	1, 2	-15		V
Reverse Polarity Input Voltage Transient	V _{RIT}	R _O = 100 , t = 20 ms	1, 2	-45		V
Quiescent Current	I _Q	V _{IN} = 20 V, I _{OUT} = 5 mA	1		20	mA
			2		30	
		V _{IN} = 17 V, I _{OUT} = 5 mA	1		20	
			2		30	
		V _{IN} = 26 V, I _{OUT} = 5 mA	1		20	
2		30				
V _{IN} = 20 V, I _{OUT} = 1 A	1		70			
	2		120			
Line Regulation	V _{RLN}	17 V V _{IN} 26 V, I _{OUT} = 5 mA	1		±125	mV
2		±350				
Load Regulation	V _{RLD}	V _{IN} = 20 V, 50 mA I _{OUT} 1 A	1		±200	mV
2		±400				
Dropout Voltage	V _{DO}	I _{OUT} = 1 A	1		.7	V
			2		1	
I _{OUT} = 100 mA	1		150			
	2		200			
Output Noise Voltage	V _{ON}	V _{IN} = 20 V, I _O = 5 mA, 10 Hz - 100 Hz	1		1000	μV rms
Output Impedance	R _O	V _{IN} = 20 V, I _{OUT} = 100 mA ac and 20 mA dc, f _O = 120 Hz	1, 2		1	
Short Circuit Current	I _{OS}	V _{IN} = 20 V	1	1.2		A
			2	1.0		
Ripple Rejection	R _R	V _{IN} = 20 V + 1 V rms, I _{OUT} = 5 mA, f = 1 kHz	1	48		dB
2		42				

Notes: 1. T_A = 25°C.
 2. Over full operating temperature range.

PIN CONNECTION

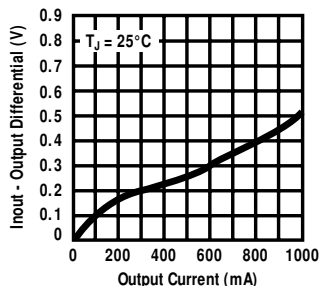
Pin 1, 15 thru 28: IN
 Pin 2, 3, 13, and 14: GND
 Pin 4 thru 12: OUT

MECHANICAL OUTLINE

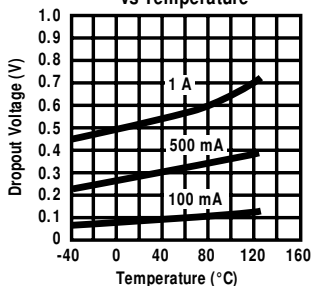


TYPICAL APPLICATIONS

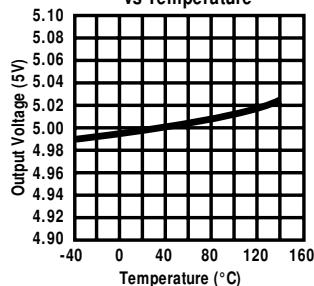
Dropout Voltage



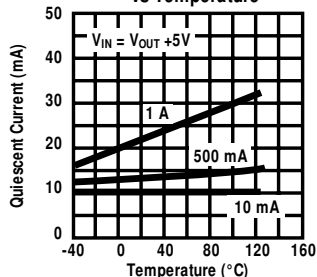
Dropout Voltage vs Temperature



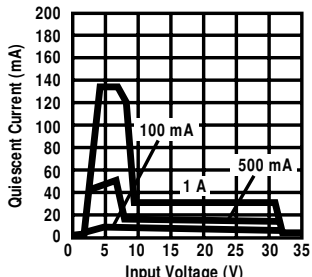
Output Voltage vs Temperature



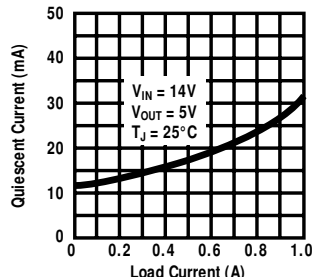
Quiescent Current vs Temperature



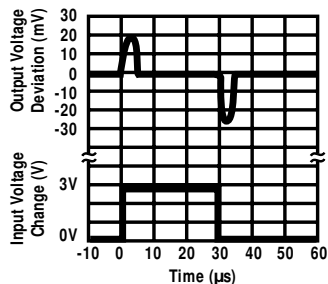
Quiescent Current



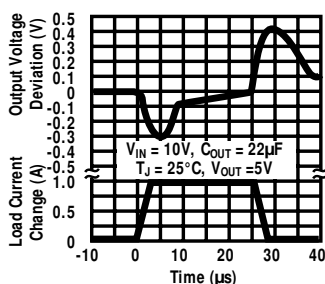
Quiescent Current



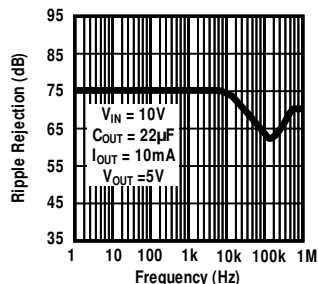
Line Transient Response



Load Transient Response



Ripple Rejection



3.5

