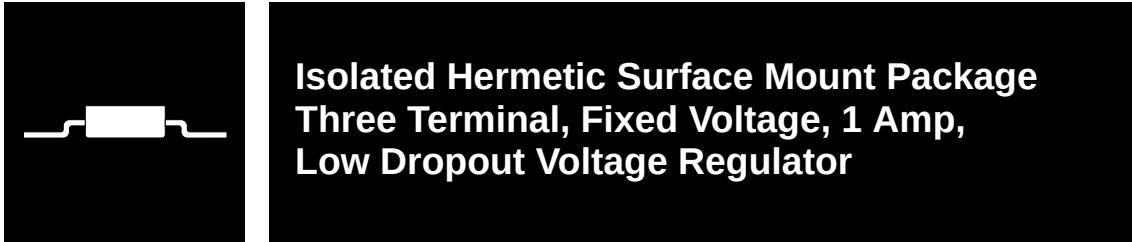


SURFACE MOUNT POSITIVE 0.5 VOLT, LOW DROPOUT VOLTAGE REGULATOR



- www.DataSheet4U.com
- ## FEATURES

 - Isolated Hermetic Surface Mount Package
 - Similar To Industry Standard LM2940
 - Dropout Voltage Typically 0.5 V @ $I_O = 1\text{ A}$
 - Output Current In Excess Of 1 A
 - Reverse Battery Protection
 - Internal Short Circuit Protection
 - Available Hi-Rel Screened

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 Hi-Rel applications where small size and high reliability are required.

ABSOLUTE MAXIMUM RATINGS @ 25°C

Input Voltage	26 Vdc
Output Voltage	+5V, +12V, +15Vdc
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)	4.2°C/W
θ_{JA}	42°C/W
Maximum Output Current.	1.3 A

3.5

ELECTRICAL CHARACTERISTICS, P/N OM7648SM (5 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.
Output Voltage	V _{OUT}	V _N = 10 V, I _{OUT} = 5 mA	1	4.85	5.15
			2	4.75	5.25
		V _N = 6 V, I _{OUT} = 5 mA	1	4.85	5.15
			2	4.75	5.25
		V _N = 7 V, I _{OUT} = 5 mA	1	4.85	5.15
			2	4.75	5.25
		V _N = 26 V, I _{OUT} = 5 mA	1	4.85	5.15
			2	4.75	5.25
		V _N = 10 V, I _{OUT} = 1 A	1	4.85	5.15
			2	4.75	5.25
Maximum Line Transient Reverse Polarity Input Voltage DC	V _{IT}	V _N = 6 V, I _{OUT} = 1 A	1	4.85	5.15
			2	4.75	5.25
		V _N = 6 V, I _{OUT} = 50 mA	1	4.85	5.15
			2	4.75	5.25
		V _N = 10 V, I _{OUT} = 50 mA	1	4.85	5.15
			2	4.75	5.25
		V _O ≤ 6 V, R _O = 100 Ω, t = 20 ms	1, 2	40	
		R _O = 100 Ω	1, 2	-15	
		R _O = 100 Ω, t = 20 ms	1, 2	-45	
		V _{IN} = 10 V, I _{OUT} = 5 mA	1	15	
Maximum Line Transient Reverse Polarity Input Voltage Transient Quiescent Current	I _Q	V _{IN} = 7 V, I _{OUT} = 5 mA	1	15	
			2	20	
		V _{IN} = 26 V, I _{OUT} = 5 mA	1	15	
			2	20	
		V _{IN} = 10 V, I _{OUT} = 1 A	1	50	
			2	100	
		7 V ≤ V _{IN} ≤ 26 V, I _{OUT} = 5 mA	1	±40	
			2	±50	
		V _N = 10 V, 50 mA ≤ I _{OUT} ≤ 1 A	1	±50	
			2	±100	
Line Regulation Load Regulation Dropout Voltage	V _{RLN}	I _{OUT} = 1 A	1	.7	
			2	1	
		I _{OUT} = 100 mA	1	150	
			2	200	
		V _N = 10 V, I _O = 5 mA, 10 Hz - 100 Hz	1, 2	700	
		V _N = 10 V, I _{OUT} = 100 mA dc and 20 mA ac, f _o = 120 Hz	1, 2	1	
		V _N = 10 V	1	1.5	
			2	1.3	
		V _N = 10 V + 1 V rms, I _{OUT} = 5 mA, f = 1 kHz	1	60	
			2	50	
Output Noise Voltage Output Impedance Short Circuit Current Ripple Rejection	V _{ON}		1	1	
			2		
			1		
			2		
			1		
			2		
			1		
			2		
			1		
			2		

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

ELECTRICAL CHARACTERISTICS, P/N OM7649SM (12 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.
Output Voltage	V _{OUT}	V _N = 17 V, I _{OUT} = 5 mA	1	11.64	12.36
			2	11.40	12.60
		V _N = 13.6 V, I _{OUT} = 5 mA	1	11.64	12.36
			2	11.40	12.60
		V _N = 14 V, I _{OUT} = 5 mA	1	11.64	12.36
			2	11.40	12.60
		V _N = 26 V, I _{OUT} = 5 mA	1	11.64	12.36
			2	11.40	12.60
		V _N = 17 V, I _{OUT} = 1 A	1	11.64	12.36
			2	11.40	12.60
Maximum Line Transient Reverse Polarity Input Voltage DC	V _{IT}	V _N = 13.6 V, I _{OUT} = 1 A	1	11.64	12.36
			2	11.40	12.60
		V _N = 13.6 V, I _{OUT} = 50 mA	1	11.64	12.36
			2	11.40	12.60
		V _N = 17 V, I _{OUT} = 50 mA	1	11.64	12.36
			2	11.40	12.60
		V _O ≤ 13 V, R _O = 100 Ω, t = 20 ms	1, 2	40	
		R _O = 100 Ω	1, 2	-15	
		R _O = 100 Ω, t = 20 ms	1, 2	-45	
		V _{IN} = 17 V, I _{OUT} = 5 mA	1	15	
Maximum Line Transient Reverse Polarity Input Voltage Transient Quiescent Current	I _Q	V _{IN} = 14 V, I _{OUT} = 5 mA	1	15	
			2	20	
		V _{IN} = 26 V, I _{OUT} = 5 mA	1	15	
			2	20	
		V _{IN} = 17 V, I _{OUT} = 1 A	1	5	
			2	60	
		14 V ≤ V _{IN} ≤ 26 V, I _{OUT} = 5 mA	1	±75	
			2	±120	
		V _N = 17 V, 50 mA ≤ I _{OUT} ≤ 1 A	1	±120	
			2	±190	
Line Regulation Load Regulation Dropout Voltage	V _{RLN}	I _{OUT} = 1 A	1	.7	
			2	1	
		I _{OUT} = 100 mA	1	150	
			2	200	
		V _N = 17 V, I _O = 5 mA, 10 Hz - 100 Hz	1	1000	
		V _N = 17 V, I _{OUT} = 100 mA dc and 20 mA ac, f _o = 120 Hz	1, 2	1	
		V _N = 17 V	1	1.6	
			2	1.3	
		V _N = 17 V + 1 V rms, I _{OUT} = 5 mA, f = 1 kHz	1	45	
			2	42	
Output Noise Voltage Output Impedance Short Circuit Current Ripple Rejection	V _{ON}		1	1	
			2		
			1		
			2		
			1		
			2		
			1		
			2		
			1		
			2		

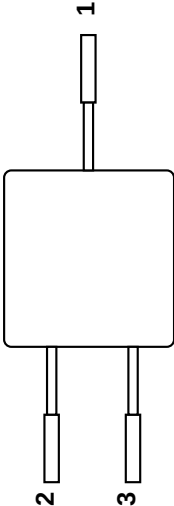
Notes: 1. T_A = 25°C.
2. Over full operating temperature range.

ELECTRICAL CHARACTERISTICS, P/N OM7650SM (15 Volts)

Parameter	Symbol	Test Conditions	Notes	Min.	Max.	Unit
Output Voltage	V_{OUT}	$V_{IN} = 20\text{ V}, I_{OUT} = 5\text{ mA}$	1	14.55	15.45	V
			2	14.25	15.75	
		$V_{IN} = 16.75\text{ V}, I_{OUT} = 5\text{ mA}$	1	14.55	15.45	
			2	14.25	15.75	
		$V_{IN} = 17\text{ V}, I_{OUT} = 5\text{ mA}$	1	14.55	15.45	
			2	14.25	15.75	
		$V_{IN} = 26\text{ V}, I_{OUT} = 5\text{ mA}$	1	14.55	15.45	
			2	14.25	15.75	
		$V_{IN} = 20\text{ V}, I_{OUT} = 1\text{ A}$	1	14.55	15.45	
			2	14.25	15.75	
		$V_{IN} = 16.75\text{ V}, I_{OUT} = 1\text{ A}$	1	14.55	15.45	
			2	14.25	15.75	
		$V_{IN} = 20\text{ V}, I_{OUT} = 50\text{ mA}$	1	14.55	15.45	
			2	14.25	15.75	
		$V_{IN} = 20\text{ V}, I_{OUT} = 50\text{ mA}$	1	14.55	15.45	
			2	14.25	15.75	
Maximum Line Transient	V_{LT}	$V_O \leq 16\text{ V}, R_O = 100\ \Omega, t = 20\text{ ms}$	1, 2	40		V
Reverse Polarity Input Voltage DC	V_{RIN}	$R_O = 100\ \Omega$	1, 2	-15		V
Reverse Polarity Input Voltage Transient	V_{RIT}	$R_O = 100\ \Omega, t = 20\text{ ms}$	1, 2	-45		V
Quiescent Current	I_Q	$V_{IN} = 20\text{ V}, I_{OUT} = 5\text{ mA}$	1		15	mA
			2		20	
		$V_{IN} = 17\text{ V}, I_{OUT} = 5\text{ mA}$	1		15	
			2		20	
		$V_{IN} = 26\text{ V}, I_{OUT} = 5\text{ mA}$	1		15	
			2		20	
Line Regulation	V_{RLIN}	$V_{IN} = 20\text{ V}, I_{OUT} = 1\text{ A}$	1		50	
			2		60	
		$17\text{ V} \leq V_{IN} \leq 26\text{ V}, I_{OUT} = 5\text{ mA}$	1	± 95		
Load Regulation	V_{RLD}		2	± 150		mV
		$V_{IN} = 20\text{ V}, 50\text{ mA} \leq I_{OUT} \leq 1\text{ A}$	1	± 150		
Dropout Voltage	V_{DO}		2	± 240		mV
		$I_{OUT} = 1\text{ A}$	1	.7		
Output Noise Voltage	V_{ON}		2	1		V
		$I_{OUT} = 100\text{ mA}$	1	150		
Output Impedance	R_O	$V_{IN} = 20\text{ V}, I_O = 5\text{ mA}, 10\text{ Hz} - 100\text{ Hz}$	1		1000	$\mu\text{V rms}$
		$V_{IN} = 20\text{ V}, I_{OUT} = 100\text{ mA ac}$ and $20\text{ mA dc}, f_o = 120\text{ Hz}$	1, 2			
Short Circuit Current	I_{OS}	$V_{IN} = 20\text{ V}$	1	1.6		Ω
			2	1.3		
Ripple Rejection	R_R	$V_{IN} = 20\text{ V} + 1\text{ V rms}, I_{OUT} = 5\text{ mA}, f = 1\text{ kHz}$	1	48		A
			2	42		

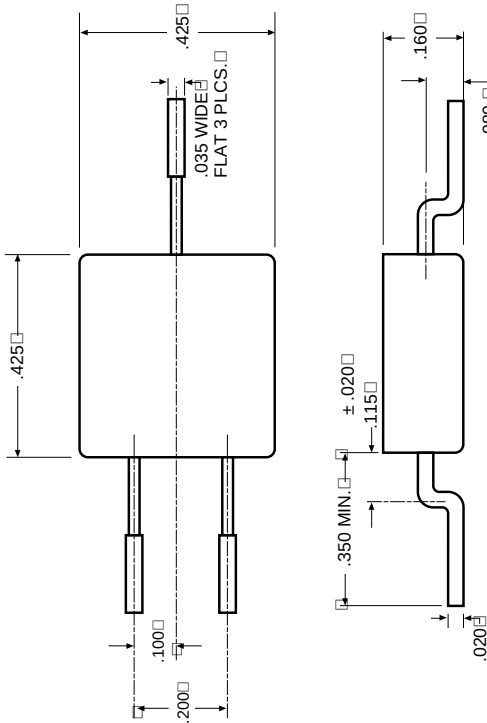
Notes: 1. $T_A = 25^\circ\text{C}$.
2. Over full operating temperature range.

PIN CONNECTION



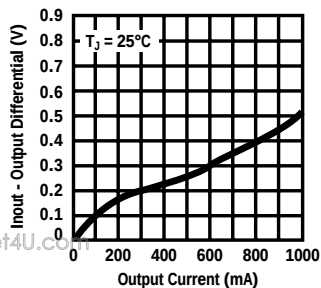
Pin 1: V_{OUT}
Pin 2: Adjust
Pin 3: V_{IN}
Case: Isolated

MECHANICAL OUTLINE

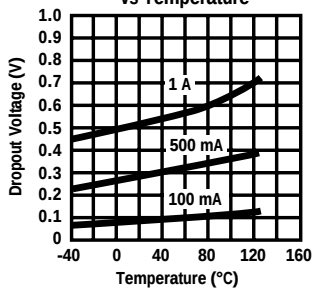


TYPICAL APPLICATIONS

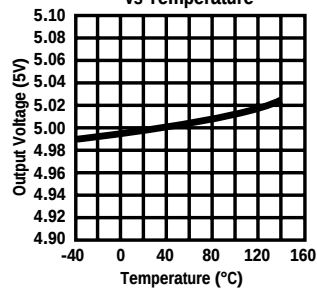
Dropout Voltage



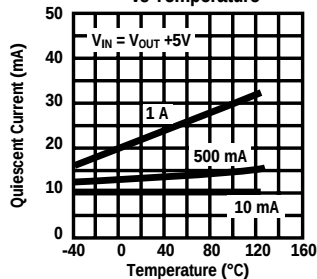
Dropout Voltage vs Temperature



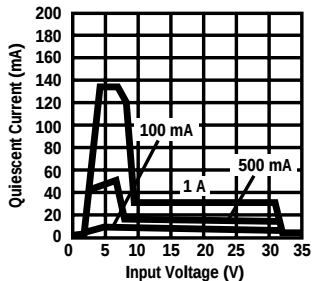
Output Voltage vs Temperature



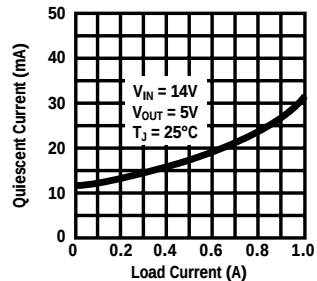
Quiescent Current vs Temperature



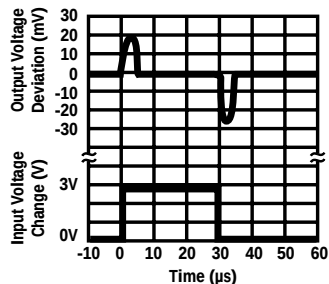
Quiescent Current



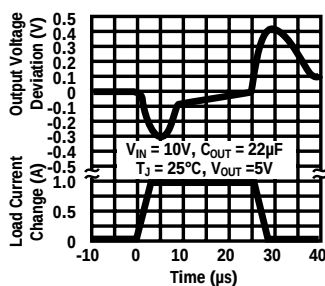
Quiescent Current



Line Transient Response



Load Transient Response



Ripple Rejection

