

SURFACE MOUNT POSITIVE 0.5 VOLT, LOW DROPOUT VOLTAGE REGULATOR



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

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.	Unit
Output Voltage	V _{OUT}	V _N = 10 V, I _{OUT} = 5 mA	1	4.85	5.15	V
			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	
		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
		V _N = 10 V, I _{OUT} = 5 mA	1		15	
			2		20	
		V _N = 7 V, I _{OUT} = 5 mA	1		15	
			2		20	
		V _N = 26 V, I _{OUT} = 5 mA	1		15	
			2		20	
		V _N = 10 V, I _{OUT} = 1 A	1		50	
			2		100	
Line Regulation	V _{RIN}	7 V ≤ V _{IN} ≤ 26 V, I _{OUT} = 5 mA	1		±40	mV
			2		±50	
		V _N = 10 V, 50 mA ≤ I _{OUT} ≤ 1 A	1		±50	
			2		±100	
		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	
Output Impedance	R _O	V _N = 10 V, I _{OUT} = 100 mA dc and 20 mA ac, f _O = 120 Hz	1, 2		1	Ω
		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		
Ripple Rejection	R _R					dB

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.	Unit
Output Voltage	V _{OUT}	V _N = 17 V, I _{OUT} = 5 mA	1	11.64	12.36	V
			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	
		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
		V _N = 17 V, I _{OUT} = 5 mA	1		15	
			2		20	
		V _N = 14 V, I _{OUT} = 5 mA	1		15	
			2		20	
		V _N = 26 V, I _{OUT} = 5 mA	1		15	
			2		20	
		V _N = 17 V, I _{OUT} = 1 A	1		5	
			2		60	
Line Regulation	V _{RIN}	14 V ≤ V _{IN} ≤ 26 V, I _{OUT} = 5 mA	1		±75	mV
			2		±120	
		V _N = 17 V, 50 mA ≤ I _{OUT} ≤ 1 A	1		±120	
			2		±190	
		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	
Output Impedance	R _O	V _N = 17 V, I _{OUT} = 100 mA dc and 20 mA ac, f _O = 120 Hz	1, 2		1	Ω
		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		

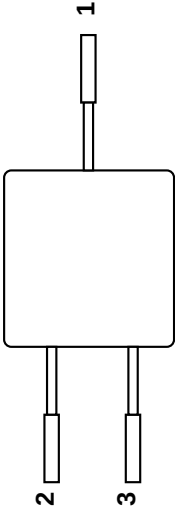
Notes: 1. T_A = 25°C.
2. Over full operating temperature range.

ELECTRICAL CHARACTERISTICS, P/N OM7650SM (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 Ω, t = 20 ms	1, 2	40		V
Reverse Polarity Input Voltage DC	V _{RIN}	R _O = 100 Ω	1, 2	-15		V
Reverse Polarity Input Voltage Transient	V _{RIT}	R _O = 100 Ω, t = 20 ms	1, 2	-45		V
Quiescent Current	I _Q	V _{IN} = 20 V, I _{OUT} = 5 mA	1		15	mA
			2		20	
		V _{IN} = 17 V, I _{OUT} = 5 mA	1		15	
			2		20	
		V _{IN} = 26 V, I _{OUT} = 5 mA	1		15	
			2		20	
Line Regulation	V _{RLN}	V _{IN} = 20 V, I _{OUT} = 1 A	1		50	
			2		60	
		17 V ≤ V _{IN} ≤ 26 V, I _{OUT} = 5 mA	1	±95		
Load Regulation	V _{RLD}	V _{IN} = 20 V, 50 mA ≤ I _{OUT} ≤ 1 A	1	±150		mV
			2	±240		
Dropout Voltage	V _{DO}	I _{OUT} = 1 A	1	.7		V
Output Noise Voltage	V _{ON}	I _{OUT} = 100 mA	1		150	mV
			2		200	
Output Impedance	R _O	V _{IN} = 20 V, I _O = 5 mA, 10 Hz - 100 Hz and 20 mA dc, f _o = 120 Hz	1		1000	μV rms
Short Circuit Current	I _{OS}	V _{IN} = 20 V	1, 2		1	Ω
Ripple Rejection	R _R	V _{IN} = 20 V + 1 V rms, I _{OUT} = 5 mA, f = 1 kHz	1	1.6		A
			2	1.3		
			1	48		dB
			2	42		

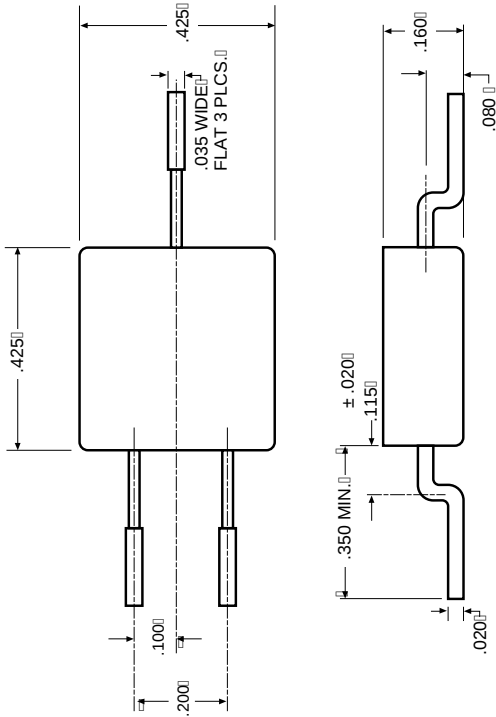
Notes: 1. T_A = 25°C.
2. Over full operating temperature range.

PIN CONNECTION



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

MECHANICAL OUTLINE



TYPICAL APPLICATIONS

