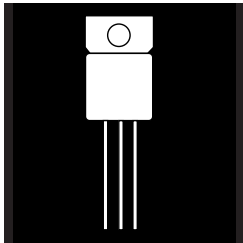


0.5 VOLT LOW DROPOUT POSITIVE FIXED VOLTAGE REGULATOR APPROVED TO DESC DRAWING



Three Terminal, Fixed Voltage, 1 Amp Low Dropout Voltage Regulator In Hermetic JEDEC TO-257AA Package

FEATURES

- Similar To Industry Standard LM2940
- Approved To DESC Standardized Military Drawing
- Dropout Voltage Typically 0.5 V @ $I_O = 1$ A
- Output Current in Excess of 1 A
- Reverse Battery Protection
- Internal Short Circuit Protection
- Isolated Hermetic 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 the hermetic TO-257 package and is ideally suited for Military applications where small size and high reliability is required.

ABSOLUTE MAXIMUM RATINGS

Input Voltage	26Vdc
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

3.3

PART NUMBER DESIGNATOR

Standard Military Drawing Number	Omnirel Part Number
5962-8958710MUX	OM2940-5STM
5962-9088401MUX	OM2940-12STM
5962-9088501MUX	OM2940-15STM

ELECTRICAL CHARACTERISTICS, P/N OM2940-5 (5 Volt)

Test Conditions are -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	15	mA	
			2	20		
		V _{IN} = 7 V, I _{OUT} = 5 mA	1	15		
			2	20		
		V _{IN} = 26 V, I _{OUT} = 5 mA	1	15		
V _{IN} = 10 V, I _{OUT} = 1 A	1	50				
	2	100				
Line Regulation	V _{RLN}	7 V V _{IN} 26 V, I _{OUT} = 5 mA	1, 2	±40 ±50		mV
Load Regulation	V _{RLD}	V _{IN} = 10 V, 50 mA I _{OUT} 1 A	1, 2	±50 ±100		mV
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	1.5	A	
			2	1.3		
Ripple Rejection	R _{RR}	V _{IN} = 10 V + 1 V rms, I _{OUT} = 5 mA, f = 1 kHz	1, 2	60 50		dB

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

ELECTRICAL CHARACTERISTICS, P/N OM2940-12 (12 Volt)

Test Conditions are -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	15	mA	
			2	20		
		V _{IN} = 14 V, I _{OUT} = 5 mA	1	15		
			2	20		
		V _{IN} = 26 V, I _{OUT} = 5 mA	1	15		
V _{IN} = 17 V, I _{OUT} = 1 A	1	50				
	2	60				
Line Regulation	V _{RLN}	14 V V _{IN} 26 V, I _{OUT} = 5 mA	1, 2	±75 ±120		mV
Load Regulation	V _{RLD}	V _{IN} = 17 V, 50 mA I _{OUT} 1 A	1, 2	±120 ±190		mV
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	1.6	A	
			2	1.3		
Ripple Rejection	R _{RR}	V _{IN} = 17 V + 1 V rms, I _{OUT} = 5 mA, f = 1 kHz	1, 2	52 46		dB

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

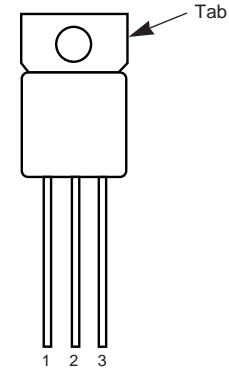
ELECTRICAL CHARACTERISTICS, P/N OM2940-15 (15Volt)

Test Conditions are -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 _O	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			
V _{IN} = 20 V, I _{OUT} = 1 A	1		50			
	2		60			
Line Regulation	V _{RLN}	17 V V _{IN} 26 V, I _{OUT} = 5 mA	1		±95	mV
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
			2		1	
			I _{OUT} = 100 mA	1		
Output Noise Voltage	V _{ON}	V _{IN} = 20 V, I _O = 5 mA, 10 Hz - 100 Hz	1		1000	μV rms
			2		200	
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		1.6	A
			2		1.3	
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.

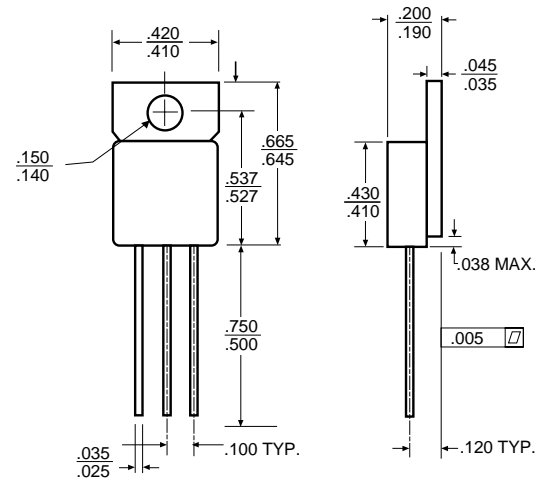
PIN CONNECTION



Front View

Pin 1: V_{IN} Pin 3: V_{OUT}
Pin 2: Gnd Tab: Isolated

MECHANICAL OUTLINE

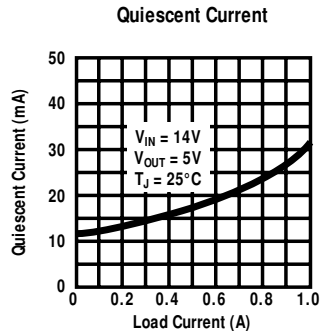
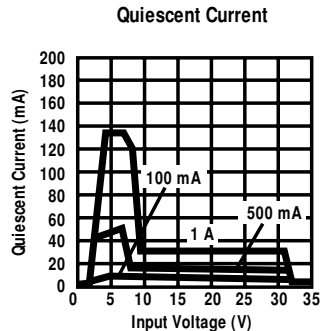
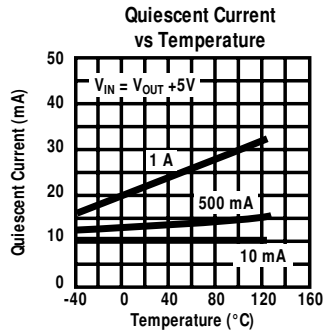
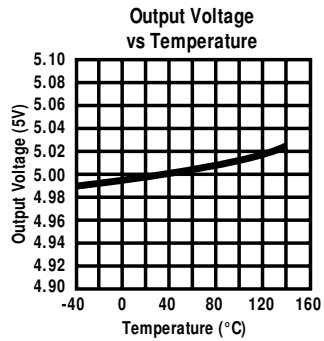
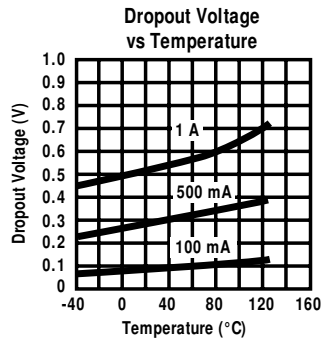
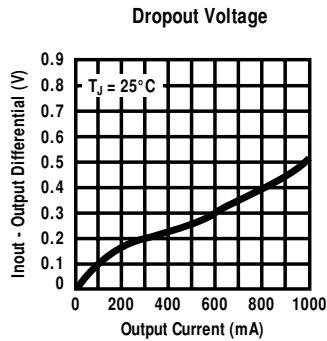


NOTES

- Case is metal/hermetically sealed
- Isolated Tab

OM2940STM

TYPICAL APPLICATIONS



3.3

