SURFACE MOUNT DUAL POSITIVE AND NEGATIVE FIXED VOLTAGE REGULATORS

Dual 5V, 12V and 15V, 1.5 Amp Fixed Voltage Regulators In Isolated Hermetic Surface Mount Package

FEATURES

- Positive And Negative Regulators In One Package
- Hermetic 6-Pin Metal Package, Surface Mount
- Isolated Case
- Output Voltages: ±5V, ±12V, And ±15V
- Output Voltages Set Internally To ±2.0%
- Built-In Thermal Overload Protection
- Short Circuit Current Limiting
- Product Is Available Screened To MIL-PRF-38535, TX, TXV, S Levels

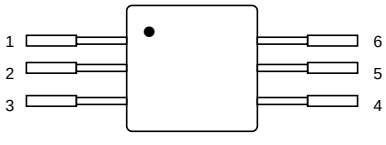
DESCRIPTION

This series of products offers a positive and a negative fixed voltage regulator in one hermetically sealed, 6-pin package whose outline is a surface mount type. With heat sinking, they can regulate over 1.5 Amp of output current per device. Standard voltages are + or - 5V, 12V, and 15V. Output voltages are intermally trimmed to ±2.0% of nominal voltage. These devices are ideally suited for military applications where small size and high reliability is required.

To order, use the following Omnirel part numbers to determine the required output voltage of each regulator within one package.

Omnirel Part Number	Output Voltages	
	Positive	Negative
OM7501SM	+5V	-5V
OM7502SM	+5V	-12V
OM7503SM	+5V	-15V
OM7504SM	+12V	-5V
OM7505SM	+12V	-12V
OM7506SM	+12V	-15V
OM7507SM	+15V	-5V
OM7508SM	+15V	-12V
OM7509SM	+15V	-15V

PIN CONNECTION



Pin 1: +In
Pin 2: Common
Pin 3: -In
Pin 4: -Out
Pin 5: Common
Pin 6: +Out

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INDIVIDUAL POSITIVE REGULATORS

ELECTRICAL CHARACTERISTICS +5 Volt

V_{IN} = 10V, I_O = 500mA, -55°C ≤ T_A ≤ 125°C (unless otherwise specified)

Parameter	Symbol	Test Conditions		Min.	Max.	Unit
Output Voltage	V_{OUT}	T_A = 25°C		4.92	5.08	V
		V_{IN} = 7.5V to 20V	•	4.85	5.15	V
Line Regulation	V_{RLINE}	V_{IN} = 7.5V to 20V			5	mV
(Note 1)			•		12	mV
		V_{IN} = 8.0V to 12V			4	mV
			•		10	mV
Load Regulation	V_{RLOAD}	I_O = 5mA to 1.5 Amp			12	mV
(Note 1)			•		25	mV
		I_O = 250mA to 750 mA			6	mV
			•		15	mV
Standby Current Drain	I_{SCD}				6	mA
			•		6.5	mA
Standby Current Drain	ΔI_{SCD}	V_{IN} = 7.5V to 20V	•		0.8	mA
Change With Line	(Line)					
Standby Current Drain	ΔI_{SCD}	I_O = 5mA to 1000mA	•		0.5	mA
Change With Load	(Load)					
Dropout Voltage	V_{DO}	T_A = 25°C, ΔV_{OUT} = 100mV, I_O = 1.0A			2.5	V
Peak Output Current	$I_{O(pk)}$	T_A = 25°C		1.5	3.3	A
Short Circuit Current	I_{DS}	V_{IN} = 35V			1.2	A
(Note 2)			•		2.8	A
Ripple Rejection	$\frac{\Delta V_{IN}}{\Delta V_{OUT}}$	f =120 Hz, ΔV_{IN} = 10V		66		dB
		(Note 3)	•	60		dB
Output Noise Voltage	N_O	T_A = 25°C, f =10 Hz to 100KHz			40	µV/V
(Note 3)						RMS
Long Term Stability	$\frac{\Delta V_{OUT}}{\Delta t}$	T_A = 25°C, t = 1000 hrs.			75	mV
(Note 3)						

ELECTRICAL CHARACTERISTICS +12 Volt

V_{IN} = 19V, I_O = 500mA, -55°C ≤ T_A ≤ 125°C (unless otherwise specified)

Parameter	Symbol	Test Conditions		Min.	Max.	Unit
Output Voltage	V_{OUT}	T_A = 25°C		11.88	12.12	V
		V_{IN} = 14.5V to 27V	•	11.64	12.36	V
Line Regulation	V_{RLINE}	V_{IN} = 14.5V to 27V			18	mV
(Note 1)			•		50	mV
		V_{IN} = 16V to 22V			9	mV
			•		30	mV
Load Regulation	V_{RLOAD}	I_O = 5mA to 1.5 Amp			32	mV
(Note 1)			•		60	mV
		I_O = 250mA to 750 mA			20	mV
			•		40	mV
Standby Current Drain	I_{SCD}				6.0	mA
			•		6.5	mA
Standby Current Drain	ΔI_{SCD}	V_{IN} = 15V to 30V	•		0.8	mA
Change With Line	(Line)					
Standby Current Drain	ΔI_{SCD}	I_O = 5mA to 1000mA	•		0.5	mA
Change With Load	(Load)					
Dropout Voltage	V_{DO}	ΔV_{OUT} = 100mV, I_O = 1.0A	•		2.5	V
Peak Output Current	$I_{O(pk)}$	T_A = 25°C		1.5	3.3	A
Short Circuit Current	I_{DS}	V_{IN} = 35V			1.2	A
(Note 2)			•		2.8	A
Ripple Rejection	$\frac{\Delta V_{IN}}{\Delta V_{OUT}}$	f =120 Hz, ΔV_{IN} = 10V		61		dB
		(Note 3)	•	54		dB
Output Noise Voltage	N_O	T_A = 25°C, f =10 Hz to 100KHz			40	µV/V
(Note 3)						RMS
Long Term Stability	$\frac{\Delta V_{OUT}}{\Delta t}$	T_A = 25°C, t = 1000 hrs.			120	mV
(Note 3)						

Notes:

1. Load and Line Regulation are specified at a constant junction temperature. Pulse testing with low duty cycle is used. Changes in output voltage due to heating effects must be taken into account separately.
2. Short Circuit protection is only assured up to V_{IN} = 35V.
3. If not tested, shall be guaranteed to the specified limits.
   The • denotes the specifications which apply over the full operating temperature range.

INDIVIDUAL POSITIVE REGULATORS

ELECTRICAL CHARACTERISTICS +15 Volt

V_{IN} = 23V, I_o = 500mA, -55°C ≤ T_A ≤ 125°C (unless otherwise specified)

Parameter	Symbol	Test Conditions		Min.	Max.	Unit
Output Voltage	V_{OUT}	T_A = 25°C		14.8	15.2	V
		V_{IN} = 18.5V to 30V	•	14.6	15.4	V
Line Regulation	V_{RLINE}	V_{IN} = 17.5V to 30V			20	mV
(Note 1)			•		50	mV
		V_{IN} = 20V to 26V			15	mV
			•		25	mV
Load Regulation	V_{RLOAD}	I_O = 5mA to 1.5 Amp			35	mV
(Note 1)		I_O = 5mA to 1.0 Amp	•		75	mV
		I_O = 250mA to 750 mA			21	mV
			•		45	mV
Standby Current Drain	I_{SCD}				6.0	mA
			•		6.5	mA
Standby Current Drain Change With Line	ΔI_{SCD} (Line)	V_{IN} = 18.5V to 30V	•		0.8	mA
Standby Current Drain Change With Load	ΔI_{SCD} (Load)	I_O = 5mA to 1000mA	•		0.5	mA
Dropout Voltage	V_{DO}	T_A = 25°C, ΔV_{OUT} = 100mV, I_O = 1.0A			2.5	V
Peak Output Current	$I_{O\,(pk)}$	T_A = 25°C		1.5	3.3	A
Short Circuit Current	I_{DS}	V_{IN} = 35V			1.2	A
(Note 2)			•		2.8	A
Ripple Rejection	$\frac{\Delta V_{IN}}{\Delta V_{OUT}}$	f =120 Hz, ΔV_{IN} = 10V		54		dB
		(Note 3)	•	52		dB
Output Noise Voltage	N_O	T_A = 25°C, f =10 Hz to 100KHz			40	µV/V
(Note 3)						RMS
Long Term Stability	$\frac{\Delta V_{OUT}}{\Delta t}$	T_A = 25°C, t = 1000 hrs.			150	mV
(Note 3)						

ELECTRICAL CHARACTERISTICS -5 Volt

V_{IN} = -10V, I_o = 500mA, -55°C ≤ T_A ≤ 125°C (unless otherwise specified)

Parameter	Symbol	Test Conditions		Min.	Max.	Unit
Output Voltage	V_{OUT}	T_A = 25°C		-4.95	-5.05	V
		V_{IN} = -7.5V to -20V	•	-4.85	-5.15	V
Line Regulation	V_{RLINE}	V_{IN} = -7.5V to -20V			12	mV
(Note 1)			•		25	mV
		V_{IN} = -8.0V to -12V			5	mV
			•		12	mV
Load Regulation	V_{RLOAD}	I_O = 5mA to 1.5 Amp			20	mV
(Note 1)			•		25	mV
		I_O = 250mA to 750 mA			15	mV
			•		30	mV
Standby Current Drain	I_{SCD}				2.5	mA
			•		3.0	mA
Standby Current Drain Change With Line	ΔI_{SCD} (Line)	V_{IN} = -7.0V to -20V	•		0.4	mA
Standby Current Drain Change With Load	ΔI_{SCD} (Load)	I_O = 5mA to 1000mA	•		0.4	mA
Dropout Voltage	V_{DO}	ΔV_{OUT} = 100mV, I_O = 1.0A	•		2.5	V
Peak Output Current	$I_{O\,(pk)}$	T_A = 25°C		1.5	3.3	A
Short Circuit Current	I_{DS}	V_{IN} = -35V			1.2	A
(Note 2)			•		2.8	A
Ripple Rejection	$\frac{\Delta V_{IN}}{\Delta V_{OUT}}$	f =120 Hz, ΔV_{IN} = -10V		63		dB
		(Note 3)	•	60		dB
Output Noise Voltage	N_O	T_A = 25°C, f =10 Hz to 100KHz			40	µV/V
(Note 3)						RMS
Long Term Stability	$\frac{\Delta V_{OUT}}{\Delta t}$	T_A = 25°C, t = 1000 hrs.			75	mV
(Note 3)						

Notes:

1. Load and Line Regulation are specified at a constant junction temperature. Pulse testing with low duty cycle is used. Changes in output voltage due to heating effects must be taken into account separately.
2. Short Circuit protection is only assured up to V_{IN} =+35V, positive regulator; .V_{IN} = -35V, negative regulator.
3. If not tested, shall be guaranteed to the specified limits.

   The • denotes the specifications which apply over the full operating temperature range.

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ELECTRICAL CHARACTERISTICS -12 Volt V_{IN} = -19V, I_O = 500mA, -55°C ≤ T_A ≤ 125°C (unless otherwise specified)

Parameter	Symbol	Test Conditions		Min.	Max.	Unit
Output Voltage	V_{OUT}	T_A = 25°C		-11.88	-12.12	V
		V_{IN} = -14.5V to -27V	•	-11.64	-12.36	V
Line Regulation	V_{RLINE}	V_{IN} = -14.5V to -27V			20	mV
(Note 1)			•		50	mV
		V_{IN} = -16V to -22V			10	mV
			•		30	mV
Load Regulation	V_{RLOAD}	I_O = 5mA to 1.5 Amp			32	mV
(Note 1)			•		60	mV
		I_O = 250mA to 750 mA			16	mV
			•		30	mV
Standby Current Drain	I_{SCD}				3.5	mA
			•		4.0	mA
Standby Current Drain	ΔI_{SCD}	V_{IN} = -14.5V to -27V	•		0.8	mA
Change With Line	(Line)					
Standby Current Drain	ΔI_{SCD}	I_O = 5mA to 1000mA	•		0.5	mA
Change With Load	(Load)					
Dropout Voltage	V_{DO}	ΔV_{OUT} = 100mV, I_O = 1.0A	•		1.8	V
Peak Output Current	$I_{O\,(pk)}$	T_A = 25°C, I_O = 5mA to 1A		1.5	3.3	A
Short Circuit Current	I_{DS}	V_{IN} = -35V			1.2	A
(Note 2)			•		2.8	A
Ripple Rejection	$\frac{\Delta V_{IN}}{\Delta V_{OUT}}$	f =120 Hz, ΔV_{IN} = -10V		56		dB
		(Note 3)	•	53		dB
Output Noise Voltage	N_O	T_A = 25°C, f =10 Hz to 100KHz			40	µV/V
(Note 3)						RMS
Long Term Stability	$\frac{\Delta V_{OUT}}{\Delta t}$	T_A = 25°C, t = 1000 hrs.			120	mV
(Note 3)						

ELECTRICAL CHARACTERISTICS -15 Volt V_{IN} = -23V, I_O = 500mA, -55°C ≤ T_A ≤ 125°C (unless otherwise specified)

Parameter	Symbol	Test Conditions		Min.	Max.	Unit
Output Voltage	V_{OUT}	T_A = 25°C		-14.85	-15.15	V
		V_{IN} = -17.5V to -30V	•	-14.55	-15.45	V
Line Regulation	V_{RLINE}	V_{IN} = -17.5V to -30V			25	mV
(Note 1)			•		50	mV
		V_{IN} = -20V to -26V			15	mV
			•		25	mV
Load Regulation	V_{RLOAD}	I_O = 5mA to 1.5 Amp			35	mV
(Note 1)			•		75	mV
		I_O = 250mA to 750 mA			21	mV
			•		45	mV
Standby Current Drain	I_{SCD}				6.0	mA
			•		6.5	mA
Standby Current Drain	ΔI_{SCD}	V_{IN} = -17.5V to -30V	•		0.8	mA
Change With Line	(Line)					
Standby Current Drain	ΔI_{SCD}	I_O = 5mA to 1000mA	•		0.5	mA
Change With Load	(Load)					
Dropout Voltage	V_{DO}	ΔV_{OUT} = 100mV, I_O = 1.0A	•		2.5	V
Peak Output Current	$I_{O\,(pk)}$	T_A = 25°C		1.5	3.3	A
Short Circuit Current	I_{DS}	V_{IN} = -35V			1.2	A
(Note 2)			•		2.8	A
Ripple Rejection	$\frac{\Delta V_{IN}}{\Delta V_{OUT}}$	f =120 Hz, ΔV_{IN} = -10V		53		dB
		(Note 3)	•	50		dB
Output Noise Voltage	N_O	T_A = 25°C, f =10 Hz to 100KHz			40	µV/V
(Note 3)						RMS
Long Term Stability	$\frac{\Delta V_{OUT}}{\Delta t}$	T_A = 25°C, t = 1000 hrs.			150	mV
(Note 3)						

Notes:

1. Load and Line Regulation are specified at a constant junction temperature. Pulse testing with low duty cycle is used. Changes in output voltage due to heating effects must be taken into account separately.
2. Short Circuit protection is only assured up to V_{IN} = -35V.
3. If not tested, shall be guaranteed to the specified limits.
   The • denotes the specifications which apply over the full operating temperature range.

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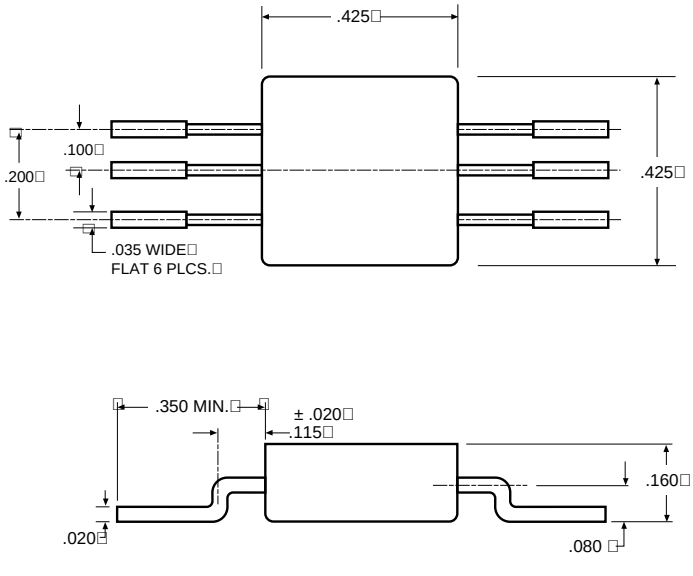
ABSOLUTE MAXIMUM RATINGS (Per Regulator)

Input Voltage, Positive Regulator . . . . . +35 V
Input Voltage, Negative Regulator . . . . . -35 V
Operating Junction Temperature Range. . . . . - 55°C to + 150°C
Storage Temperature Range . . . . . - 65°C to + 150°C
Typical Power/Thermal Charateristics:
Rated Power @ 25° C
T_C 17.5W
T_A 3W
Thermal Resistance
θ_{JC} . . . . . 3°C/W
θ_{JA} . . . . . 42°C/W
Thermal Shutdown, I_O = 5mA, V_{IN} @ Voltage . . . . . 175°C

MECHANICAL OUTLINE



NOTES:
- Case is metal/hermetically sealed
- Isolated Tab

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