

75 to 150 Watt 2.28x2.40 Inch Package M 2:1 Input Range



- o Efficiency up to 89%
- o 500 kHz Switching Frequency
- o 2:1 Input Range
- o Regulated Single Output
- o Continuous Short Circuit Protection
- o Half Brick Size Meet Industrial Standard
- o Without Tantalum Capacitor inside



MODEL NUMBER	INPUT VOLTAGE	OUTPUT VOLTAGE	OUTPUT CURRENT	INPUT CURRENT		%EFF	CAPACITOR LOAD MAX.
				NO LOAD	FULL LOAD		
150MRS48W2.5LC	36-75 VDC	2.5 VDC	30 A	25 mA	2000 mA	77	30000 μ F
150MRS48W3.3LC		3.3 VDC	30 A		2500 mA	82	
150MRS48W5LC		5 VDC	30 A		3600 mA	86	
150MRS48W12LC		12 VDC	12.5 A		3500 mA	89	12500 μ F
150MRS48W15LC		15 VDC	10 A				10000 μ F
150MRS48W24LC		24 VDC	6.25 A				62500 μ F

SPECIFICATIONS

All Specifications Typical At Nominal Line, Full Load, and 25°C Unless Otherwise Noted

INPUT SPECIFICATIONS

Input Voltage Range			2:1
Undervoltage lockout	48 Vin power up 48 Vin power down		34 V 32.5 V
Positiv Logic Remote ON/OFF ³⁾		Logic Compatibility Module ON Module OFF	Open Collector Ref. to -Input Open Circuit <0.8 VDC
Input Filter			Pi Type

OUTPUT SPECIFICATIONS

Voltage Accuracy			±1% max.
Transient Response	25% Step Load Change		<500µ sec.
External Trim Adj. Range			±10%
Ripple and Noise at 20 MHz BW	2.5V, 3.3V, 5V		40 mV RMS max. 100 mV p-p max.
	12V, 15V		60 mV RMS max. 150 mV p-p max.
	24 V		100 mV RMS max. 240 mV p-p max.
Temperature Coefficient			±0.03%/°C
Short Circuit Protection			Continuous
Line Regulation ¹⁾			±0.2% max.
Load Regulation ²⁾			±0.2% max.
Over Voltage Protection trip Range, % Vo nom.			115-140%
Current Limit			110% ~ 140% Nominal Output
Start Up Time			5 ms

NOTE:

1. Measured from High Line to Low Line.
2. Measured from Full Load to Zero Load.
3. Add Suffix "R" to the Module Number with Negative Logic Remote ON/OFF.

SPECIFICATIONS

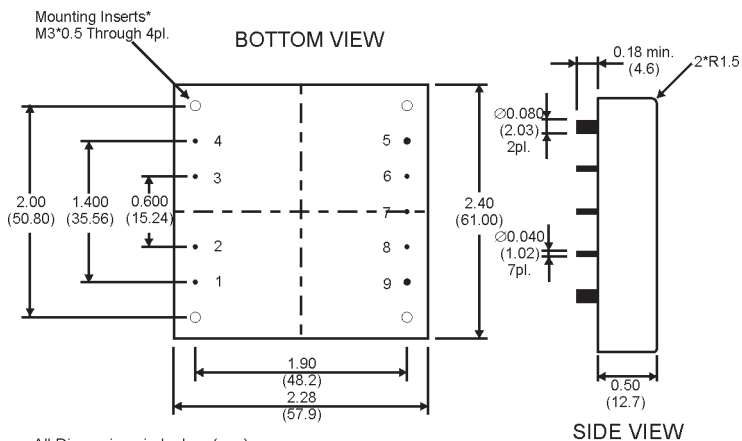
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GENERAL SPECIFICATION

Efficiency		see table
Isolation Voltage	Input / Output Input / Case Output / Case	1500 VDC min. 1500 VDC min. 1500 VDC min.
Isolation Resistance		10 MOhms min.
Isolation Capacitance		1000 pF
Switching Frequency		500 kHz
Operating Case Temperature Range		-40°C to +100°C
Storage Temperature Range		-40°C to +105°C
Humidity		95% RH max. non condensing
MTBF (MIL-STD-217F, GB, 25°C, Full Load)		900 khrs
Thermal Shutdown (Case Temperature)		+100°C
Dimensions		2.28x2.4x0.5 Inches (57.9x61.0x12.7 mm)
Case Material		Aluminum
Weight		100 g

MECHANICAL SPECIFICATIONS

Case „M“



*Clear Mounting Insert (3.2 mm DIA) on Request

PIN CONNECTIONS

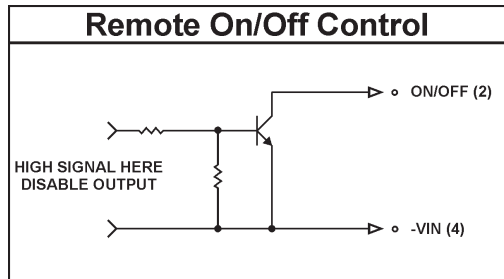
PIN CONNECTIONS	
1	+INPUT
2	REMOTE CONTROL
3	CASE
4	-INPUT
5	-OUTPUT
6	-SENSE
7	TRIM
8	+SENSE
9	+VOUT

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Application Notes**Remote ON/OFF Control**

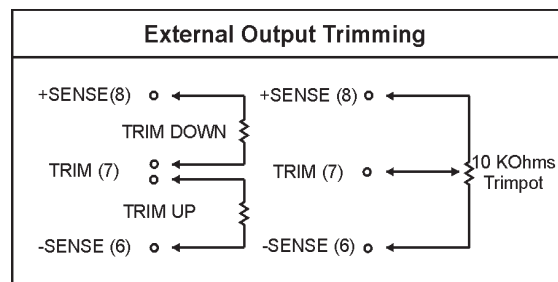
The 150MRS allows the user to switch the module on and off electronically by remote on/off feature. The 150MRS are available in "positive logic" or "negative logic" (option) versions for remote on/off.



Logic State (PIN2)	Negative Logic	Positive Logic
Logic Low-Switch Closed	Module on	Module off
Logic High-Switch Open	Module off	Module on

External Output Trimming

Output may optionally be externally trimmed ($\pm 10\%$) with a fixed resistor or an external trimpot as shown.



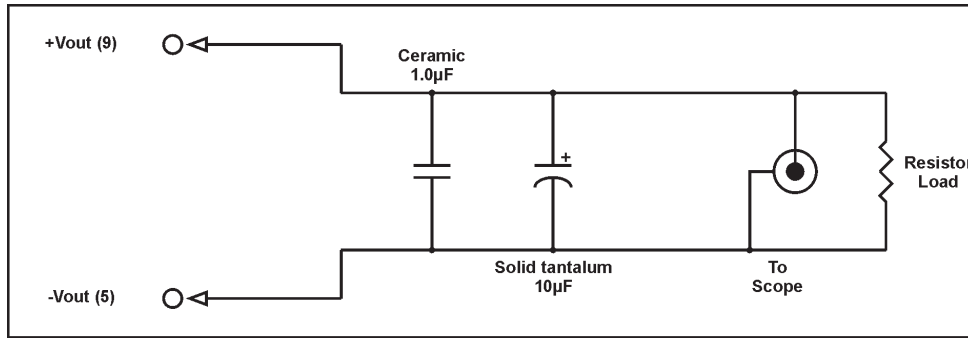
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Application Notes

Output Noise

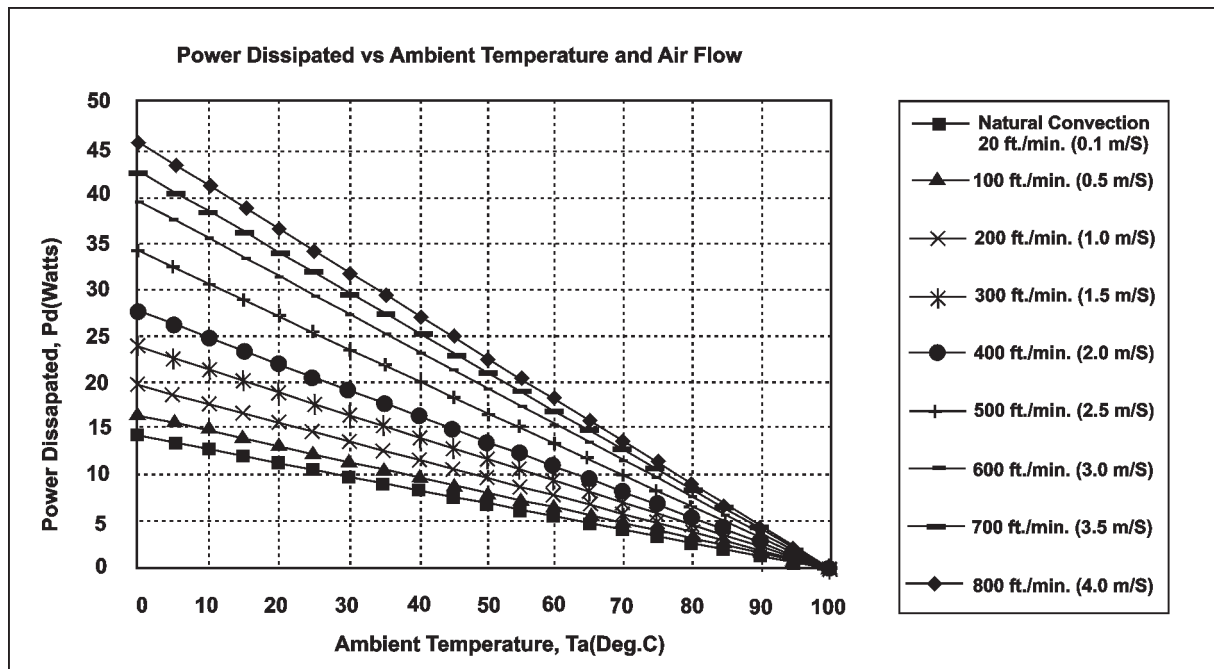
The output noise is measured with 10µF tantalum capacitor and 1.0µF ceramic capacitor across output.



Output Noise Test Circuit schematic

Derating

The operating case temperature range of 150MRS... series is -40°C to +100°C. When operating the 150MRS... series, proper derating or cooling is needed. The following curve is the derating curve of 150MRS... without heat sink.



Forced Convection Power Derating without Heat Sink

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Application Notes

Where:

The power dissipation (Pd):

$$P_d = P_i - P_o = P_o (1 - \eta) / \eta$$

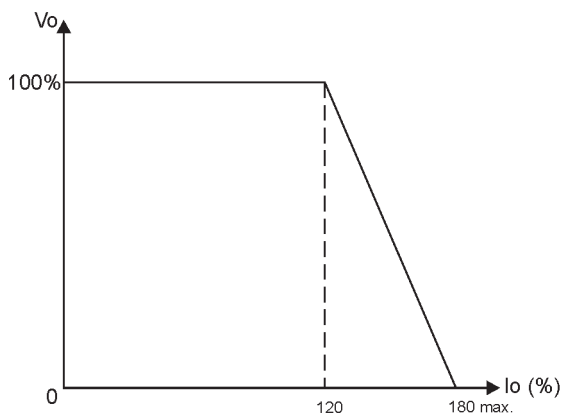
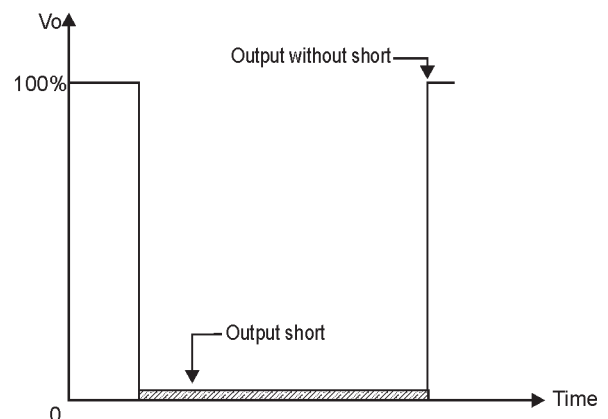
The thermal resistance are list below:

Chart of Thermal Resistance vs Air Flow:

AIR FLOW RATE	TYPICAL R _{ca}
Natural Convection 20ft./min. (0.1m/s)	7.12 °C/W
100 ft./min. (0.5m/s)	6.21 °C/W
200 ft./min. (1.0m/s)	5.17 °C/W
300 ft./min. (1.5m/s)	4.29 °C/W
400 ft./min. (2.0m/s)	3.64 °C/W
500 ft./min. (2.5m/s)	2.96 °C/W
600 ft./min. (3.0m/s)	2.53 °C/W
700 ft./min. (3.5m/s)	2.37 °C/W
800 ft./min. (4.0m/s)	2.19 °C/W

The temperature rise (ΔT):

$$\Delta T = \Delta P_d * R_{ca}$$

Current Limit Curve**Output Short, Vo Characteristics****NOTICE:**

The information in this document has been carefully checked. However, no responsibility is assumed for inaccuracies! Specifications can be changed without notice. The latest and most complete information can be found on our website.