

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



- o Efficiency up to 85%
- 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



MODEL NUMBER	INPUT VOLTAGE	OUTPUT VOLTAGE	OUTPUT CURRENT	INPUT CURRENT		%EFF
				NO LOAD	FULL LOAD	
100MRS24W2.5LC	18-36 VDC	2.5 VDC	20 A	50 mA	2705 mA	77
100MRS24W3.3LC		3.3 VDC	20 A		3480 mA	79
100MRS24W5LC		5 VDC	20 A		5020 mA	83
100MRS24W12LC		12 VDC	8.3 A		4880 mA	85
100MRS24W15LC		15 VDC	6.7 A		4925 mA	
100MRS24W24LC		24 VDC	4.17 A		4905 mA	
100MRS48W2.5LC	36-75 VDC	2.5 VDC	20 A	50 mA	1335 mA	78
100MRS48W3.3LC		3.3 VDC	20 A		1720 mA	80
100MRS48W5LC		5 VDC	20 A		2480 mA	84
100MRS48W12LC		12 VDC	8.3 A		2442 mA	85
100MRS48W15LC		15 VDC	6.7 A		2463 mA	
100MRS48W24LC		24 VDC	4.17 A			
150MRS48W2.5LC	36-75 VDC	2.5 VDC	30 A	25 mA	2600 mA	74
150MRS48W3.3LC*		3.3 VDC	30 A		2600 mA	79
150MRS48W5LC*		5 VDC	30 A		3700 mA	83
150MRS48W12LC		12 VDC	12.5 A		3600 mA	85
150MRS48W15LC		15 VDC	10 A			
150MRS48W24LC		24 VDC	6.25 A			

*Add Suffix "W" for Wide Input Range 16.8 to 75 VDC

SPECIFICATIONS

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

INPUT SPECIFICATIONS

Input Voltage Range Suffix "W" (Wide Input 4:1)		2:1 16.8 - 75 VDC
Undervoltage lockout	24 Vin power up	17 V
	24 Vin power down	16 V
	48 Vin power up	34 V
	48 Vin power down	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

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.

GENERAL SPECIFICATION

Efficiency		see table
Isolation Voltage	Input / Output	1500 VDC min.
	Input / Case	1500 VDC min.
	Output / Case	1500 VDC min.
Isolation Resistance		10 MOhms min.
Switching Frequency		500 kHz
Recommended Reflow Soldering Pb-free*		see diagram
Operating Case Temperature Range		-40°C to +100°C
Storage Temperature Range		-40°C to +105°C
Thermal Shutdown (Case Temperature)		+100°C
Dimensions		2.28x2.4x0.5 Inches (57.9x61.0x12.7 mm)
Case Material		Aluminum

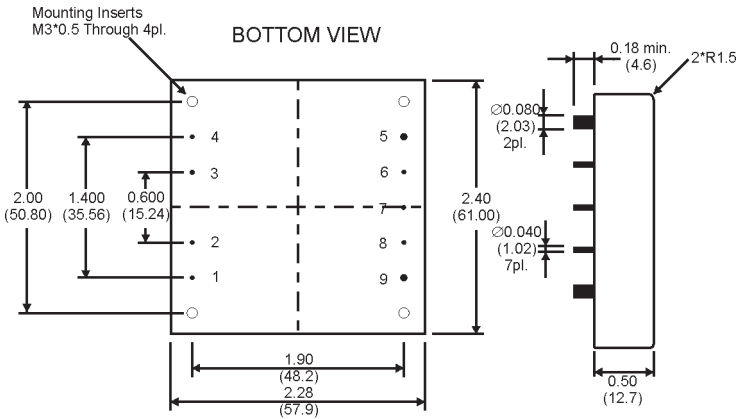
*) We do not recommend vapor phase soldering!

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MECHANICAL SPECIFICATIONS

Case „M“



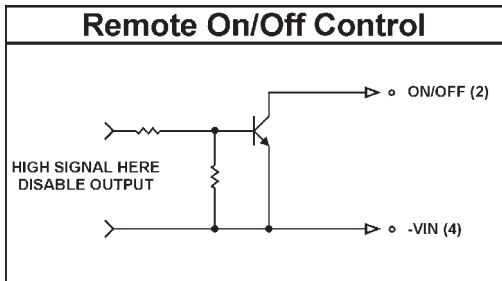
PIN CONNECTIONS	
1	+INPUT
2	REMOTE CONTROL
3	CASE
4	-INPUT
5	-OUTPUT
6	-SENSE
7	TRIM
8	+SENSE
9	+OUTPUT

All Dimensions in Inches (mm).
Tolerance: x.xx=±0.02, x.xxx=±0.010 Inches
(x.x=±0.5, x.xx=±0.250 mm)

Application Notes

Remote ON/OFF Control

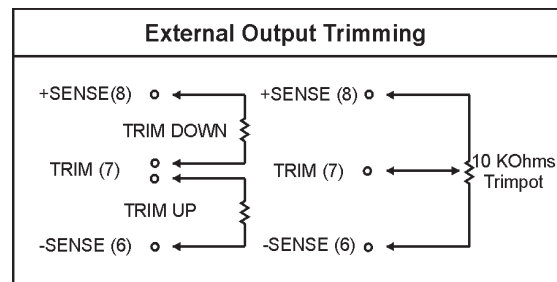
The 100MRS/150MRS allows the user to switch the module on and off electronically by remote on/off feature. The 100MRS/150MRS are available in "positive logic" or "negative logic" (option) versions for remote on/off.



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 (±10%) with a fixed resistor or an external trimpot as shown.



External Output

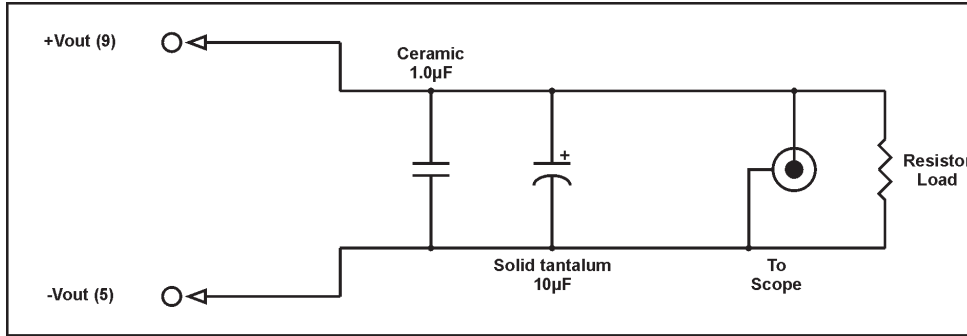
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Application Notes

Output Noise

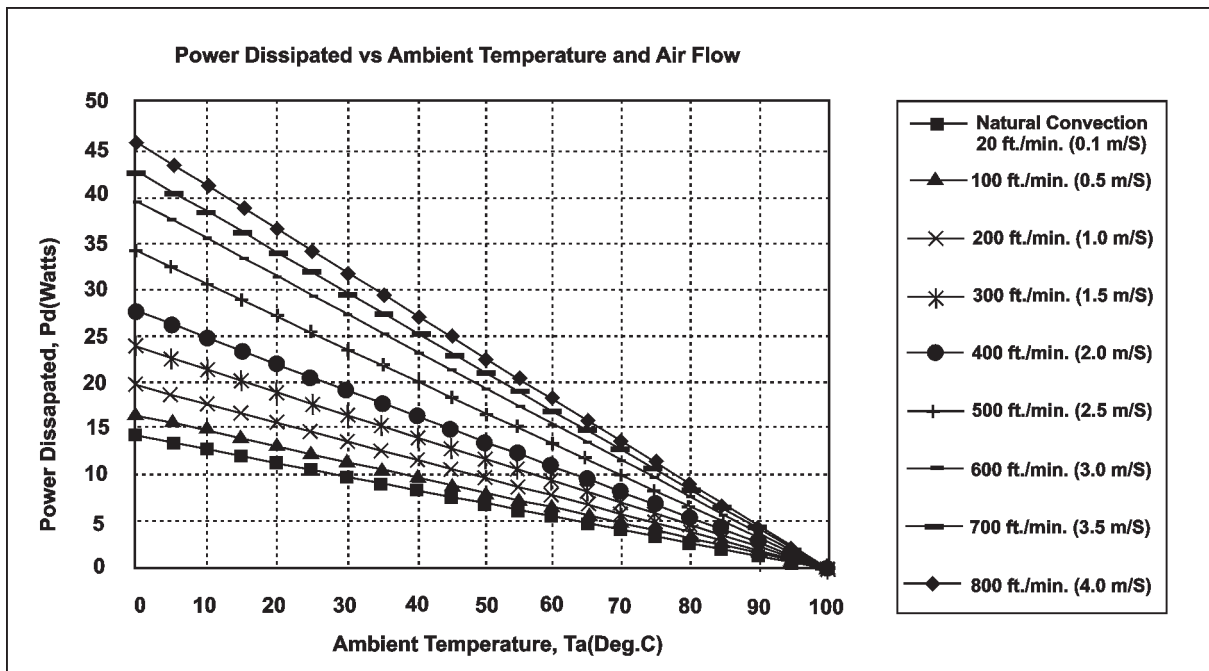
The output noise is measured with 10µF tantalum capacitor and 1.0µF ceramic capacitor across output.



Output Noise Test Circuit schematic

Derating

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



Forced Convection Power Derating without Heat Sink

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Where:

The power dissipation (Pd):

$$Pd = Pi - Po = Po (1 - \eta) / \eta$$

The thermal resistance are list below:

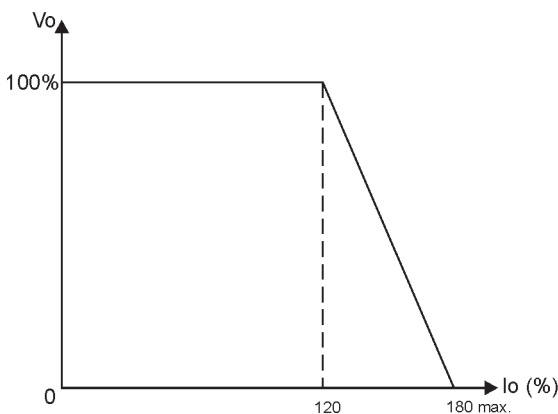
Chart of Thermal Resistance vs Air Flow:

AIR FLOW RATE	TYPICAL Rca
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

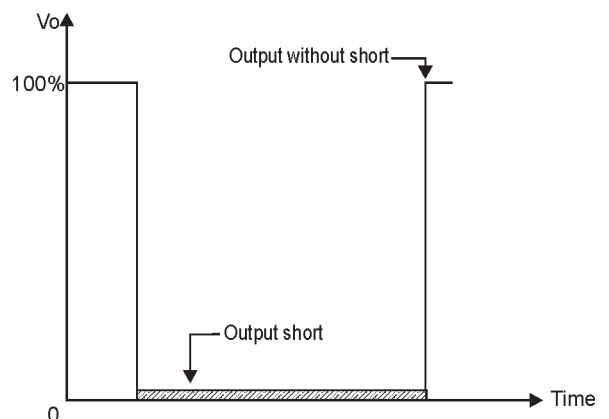
The temperature rise (ΔT):

$$\Delta T = \Delta Pd * Rca$$

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.