

# 15 Watt

# 2x2 Inch Package H 4:1 Input Range



- o Wide Input Range
- o Pi Input Filter
- o Efficiency up to 84%
- o Single, Dual & Triple Output
- o Remote On/Off Control



MODEL NUMBER	INPUT VOLTAGE	OUTPUT VOLTAGE	OUTPUT CURRENT		INPUT CURRENT		%EFF
			MIN.	MAX.	NO LOAD	FULL LOAD	
15HRS24X3.3LC	9-36 VDC	3.3 VDC	0 mA	3000 mA	15 mA	530 mA	78
15HRS24X5LC		5 VDC		3000 mA		770 mA	81
15HRS24X12LC		12 VDC		1250 mA		745 mA	84
15HRS24X15LC		15 VDC		1000 mA		760 mA	82
15HRD24X5LC		±5 VDC	±1500 mA	20 mA	770 mA	81	
15HRD24X12LC		±12 VDC	±625 mA		760 mA	82	
15HRD24X15LC		±15 VDC	±500 mA		750 mA	83	
15HRT24X5/12LC		5/±12 VDC	250/±100 mA	1500/±310 mA	780 mA	80	
15HRT24X5/15LC		5/±15 VDC	250/±100 mA	1500/±250 mA			
15HRS48X3.3LC		18-72 VDC	3.3 VDC		3000 mA	10 mA	270 mA
15HRS48X5LC	5 VDC		3000 mA		385 mA		81
15HRS48X12LC	12 VDC		1250 mA		375 mA		83
15HRS48X15LC	15 VDC		1000 mA		380 mA		82
15HRD48X5LC	±5 VDC		±1500 mA	15 mA	385 mA	81	
15HRD48X12LC	±12 VDC		±625 mA		375 mA	83	
15HRD48X15LC	±15 VDC		±500 mA		385 mA	81	
15HRT48X5/12LC	5/±12 VDC		250/±100 mA	1500/±310 mA			
15HRT48X5/15LC	5/±15 VDC		250/±100 mA	1500/±250 mA	390 mA	80	

**SPECIFICATIONS**

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

**INPUT SPECIFICATIONS**

Input Voltage Range		4:1
Input Surge Voltage (100 ms max.)	24 VDC 48 VDC	50 VDC max. 100 VDC max.
Input Filter		Pi Type

**OUTPUT SPECIFICATIONS**

Voltage Accuracy	Single & Dual +Output	±1% max.
	Dual -Output	±3% max.
	Triple 5V Output	±2% max.
	Triple 12V/15V Output	±3% max.
Voltage Balance, Dual Output at Full Load		±1% max.
Transient Response Single, 25% Step Load Change		<500 µsec.
Dual, Full Load to Half Load ±1% Error Band		
External Trim Adj. Range		±10%
Ripple and Noise, 20MHz BW		10 mV RMS max. 75 mV p-p max.
Temperature Coefficient		±0.02%/°C
Short Circuit Protection		Continuous
Line Regulation <sup>1)</sup>	Single & Dual Output	±0.2% max.
	Triple Output	±1.0% max.
Load Regulation <sup>2)</sup>	Single & Dual Output	±1.0% max.
	Triple Output	±5.0% max.
Start Up Time		300 ms

1. Line Regulation measured from High Line to Low Line.

2. Load Regulation measured from Full Load to 1/4 Load.

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<b>GENERAL SPECIFICATION</b>	
Efficiency	see table
Case Grounding	Connected to Output Common
Isolation Voltage	500 VDC min.
Isolation Resistance	1000 Mohms min.
Isolation Capacitance	1000 pF
Switching Frequency	300 kHz
Operating Temperature Range	-25°C to +71°C
Case Temperature <sup>1)</sup>	+100°C max.
Storage Temperature Range	-55°C to +105°C
Cooling	Natural Convection
Humidity	95% RH max. Non Condensing
Derating >+71°C	Linearly to Zero power at +100°C
Recommended Reflow Soldering Pb-free <sup>2)</sup>	see diagram
EMI/RFI	Six-Sided Continuous Shield
Case Material	Black Coated Copper with Non-Conductive Base
MTBF (MIL-STD-217F, GB, 25°C, Full Load)	1300 khrs
Dimensions	2.0 x 2.0 x 0.4 Inches (50.8 x 50.8 x 10.2 mm)
Weight	59 g

## NOTE

- Maximum case temperature under any operating condition should not be exceeded +100°C.
- We do not recommend vapor phase soldering!

<b>TRIPLE OUTPUT LOADING<sup>1)</sup></b>			
<b>OUTPUT (PIN NO.)</b>	<b>VOLTAGE</b>	<b>AMPERES</b>	
		<b>MIN.<sup>2)</sup></b>	<b>NOM.</b>
7	+5 VDC	0.25 A	1.5 A
8 & 5	±12 VDC	0.10 A	0.31 A
8 & 5	±15 VDC	0.10 A	0.25 A

## NOTE:

- Maximum total power from all outputs is limited to 15 watts but no output should be allowed to exceed its maximum current.
- Minimum current on each output is required to maintain specified regulation.

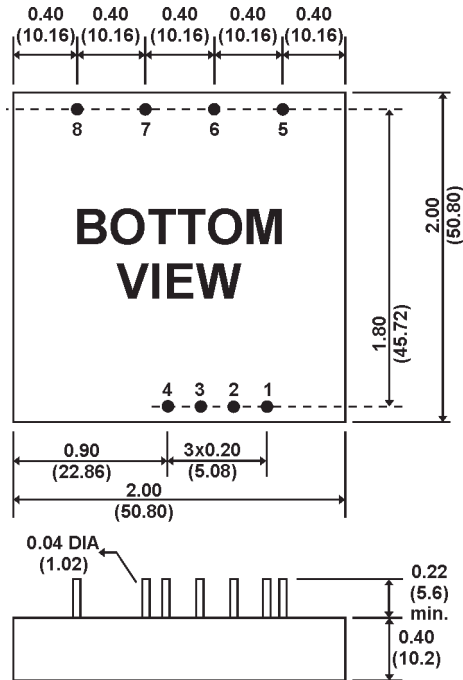
<b>REMOTE ON/OFF CONTROL</b>	
Logic Compatibility	CMOS or Open Collector TTL
Ec-ON	>+5.5VDC to 75 VDC or Open Circuit
Ec-OFF	<1.8VDC
Shutdown Idle Current	10mA
Control Common	Referenced to Input Minus

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### MECHANICAL SPECIFICATIONS

CASE "H"

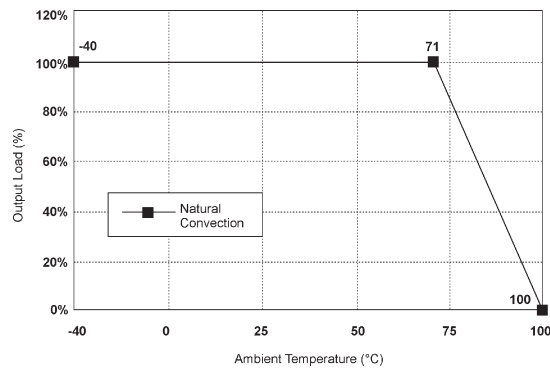


PIN CONNECTIONS			
PIN	SINGLE	DUAL	TRIPLE
1	REMOTE ON/OFF CONTROL		
2	NO PIN	NO PIN	NO PIN
3	-INPUT	-INPUT	-INPUT
4	+INPUT	+INPUT	+INPUT
5	TRIM	TRIM	-AUX. OUT
6	-OUTPUT	-OUTPUT	COMMON
7	+OUTPUT	COMMON	+5V OUT
8	NO PIN	+OUTPUT	+AUX. OUT

All Dimensions in Inches (mm)  
Tolerances: x.xx = 0.04 Inches (x.xxx = 0.010 mm)

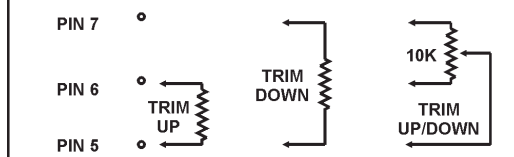
### APPLICATION NOTES & DIAGRAMS

#### Derating Diagram



#### External Output Trimming

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



**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.