

40 Watt

2.0x2.0 Inch Package H3 4:1 Input Range



- o Efficiency up to 92%
- o 1600 VDC Isolation
- o 4:1 Wide Input Range
- o Adjustable Output Voltage
- o Remote ON/OFF-Control
- o Continuous Short Circuit Protection
- o Over Current Protection
- o Over Voltage Protection
- o Over Temperature Protection
- o Soft Start

MODEL NUMBER	INPUT VOLTAGE	OUTPUT VOLTAGE	OUTPUT CURRENT @ FULL LOAD	INPUT CURRENT		% EFF	CAPACITOR LOAD
				NO LOAD	FULL LOAD		
40H3RS24X3.3M	9-36 VDC	3.3 VDC	10 A	80 mA	1598 mA	89	25000 µF
40H3RS24X5M		5 VDC	8 A	100 mA	1893 mA	91	13000 µF
40H3RS24X12M		12 VDC	3.35 A	50 mA	1925 mA	90	2300 µF
40H3RS24X15M		15 VDC	2.65 A		1904 mA		1500µF
40H3RD24X12M		±12 VDC	±1.65 A	60 mA	1919 mA	89	±1200 µF
40H3RD24X15M		±15 VDC	±1.35 A		1962 mA		±750 µF
40H3RS48X3.3M		18-75 VDC	3.3 VDC	10 A	60 mA	799 mA	89
40H3RS48X5M	5 VDC		8 A	30 mA	936 mA	92	13000 µF
40H3RS48X12M	12 VDC		3.35 A		963 mA	90	2300 µF
40H3RS48X15M	15 VDC		2.65 A	941 mA	91	1500 µF	
40H3RD48X12M	±12 VDC		±1.65 A	948 mA	90	±1200 µF	
40H3RD48X15M	±15 VDC		±1.35 A	970 mA		±750 µF	

SPECIFICATIONS

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

INPUT SPECIFICATIONS

Input Voltage Range	4:1	
Under Voltage Lockout	Module ON/OFF 24 V Module ON/OFF 48 V	8.6 VDC/7.9 VDC 17.8 VDC/16 VDC
Start up Time (Nominal Vin and constant resistive load)	25 mS	
Input Filter	Pi Type	
Input Current (No-Load)	see table	
Maximum Input Current (Full-Load)	see table	
Input Reflected Ripple Current ¹⁾	20 mA p-p	
Remote ON/OFF (CTRL) ²⁾	ON: 3 - 12 VDC or open Circuit OFF: 0 - 1.2 VDC or Short Circuit Pin2 and Pin3 OFF idle Current: 5 mA	

OUTPUT SPECIFICATIONS

Voltage Accuracy	±1%	
Voltage Adjustability (Trim) ³⁾	±10% max.	
Maximum Output Current	see table	
Cross Regulation (Dual Output) ⁴⁾	±5%	
Over Voltage Protection (Zener Diode Clamp)	3.3 VDC	3.9 V
	5 VDC	6.2 V
	12 VDC	15 V
	15 VDC	18 V
	±12 VDC	±15 V
	±15 VDC	±18 V
Over Load Protection	130% of FL.	
Ripple and Noise ⁵⁾	3.3 & 5 VDC	50 mV p-p max.
	Dual	150 mV p-p max.
	all other	75 mV p-p max.
Temperature Coefficient	±0.02%/°C	
Capacitive Load ⁶⁾	see table	
Transient Recovery Time ⁷⁾	250 µs	
Transient Response Deviation ⁷⁾	±3% max.	
Short Circuit Protection	Indefinite (hiccup) (Automatic Recovery)	
Line Regulation	±0.5% max.	
Load Regulation	Single (Io=0% to 100%)	±0.5% max.
	Dual (Io=1% to 100%)	±1.0% max.

NOTE:

1. Measured Input reflected ripple current with a simulated source inductance of 12 µH.
2. The Remote ON/OFF Control Pin is referenced to -Vin (Pin2).
3. For the Single Output deviation is 10% inclusive of remote sense and trim. If remote sense is not being used, the +sense should be connected to its corresponding +OUTPUT and likewise the -sense should be connected to its corresponding -OUTPUT.
4. One load is 25% to 100% load, the other load is 100% load, the output voltage variable rate is within ±5%.
5. Measured with 20 MHz bandwidth and 1.0 µF ceramic Capacitor.
6. Tested by minimal Vin and constant resistive load.
7. Tested by normal Vin and 25% Load step change (75%-50%-25% of Io).

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GENERAL SPECIFICATION		
Efficiency		see table
Isolation Voltage (3 sec)	Input / Output Case/Input & Output	1600 VDC 1600 VDC
Isolation Resistance		1000 MOhms min.
Isolation Capacitance		2500 pF max.
Switching Frequency		270 kHz
Operating Ambient Temperature		-40°C to +85°C (see Derating Curve) -40°C to +55°C (for 100% Load)
Case Temperature		+105°C max.
Storage Temperature Range		-40°C to +125°C
Over Temperature Protection (Case)		+110°C
Cooling		Nature Convection
Humidity		95% rel H
Safety Standard (design to meet)		IEC/EN 60950-1
EMC Characteristics	Radiated Emmissions	EN55022 Class A
	Conducted Emissions ⁸⁾	EN55022 Class A
	ESD	EN61000-4-2 Perf. Criteria A
	RS	EN61000-4-3 Perf. Criteria A
	EFT ⁹⁾	EN61000-4-4 Perf. Criteria A
	Surge ⁹⁾	EN61000-4-5 Perf. Criteria A
	CS	EN61000-4-6 Perf. Criteria A
	PFMF	EN61000-4-8 Perf. Criteria A
Reliability Calculated MTBF (MIL-HDBK-217F)		>151 khrs
Dimensions		2.00 x 2.00 x 0.4 Inches (50.8 x 50.8 x 10.2 mm)
Case Material		Nickel-coated Copper
Pin Material		Ø1.0 mm Brass Solder-coated
Potting Material		Epoxy (UL94V-0 rated)
Weight		60 g

NOTE:

8. The 40H3RS/D-Series can meet EN55022 Class A with an external filter in parallel with the input pins.

9. An external filter capacitor is required if the module has to meet EN61000-4-4 and EN61000-4-5.

The filter capacitor M+R suggest: Nippon chemi-con KY series, 220µF/100V.

ABSOLUTE SPECIFICATIONS

These are stress ratings. Exposure of devices to any of these conditions may adversely affect long-term reliability.

Input Voltage (100 mS)	24 V	-0.7 VDC to 50 VDC
	48 V	-0.7 VDC to 100 VDC
Soldering Temperature (1.5 mm from case 10 sec. max.)		+260°C max

NOTE:

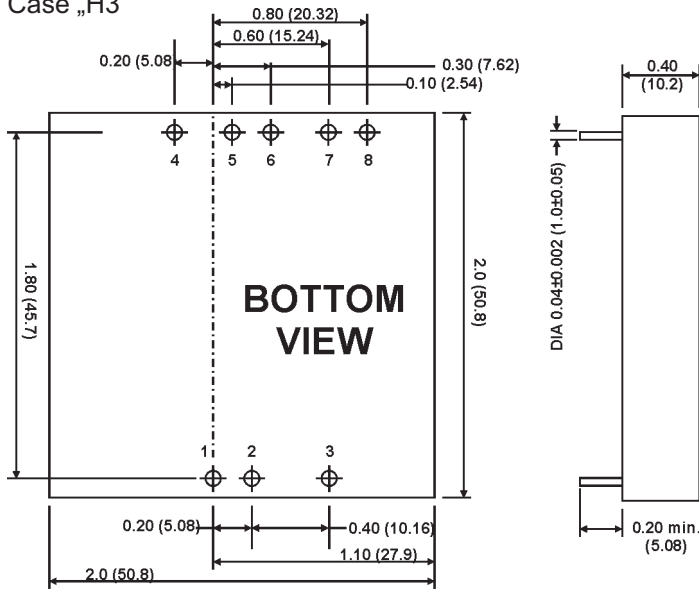
Exceeding the absolute ratings of the unit could cause damage. It is not allowed for continuous operating.

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MECHANICAL SPECIFICATIONS

Case „H3“



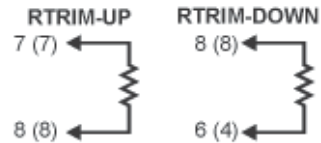
All Dimensions in Inches (mm).
 1. Pitch Tolerance: ± 0.35 (± 0.014)
 2. Case Tolerance: ± 0.5 (± 0.02)

PIN CONNECTIONS

Pin	Single	Dual
1	+INPUT	+INPUT
2	-INPUT	-INPUT
3	REMOTE CONTROL	REMOTE CONTROL
4	-SENSE	+OUTPUT
5	+SENSE	COMMON
6	+OUTPUT	COMMON
7	-OUTPUT	-OUTPUT
8	TRIM	TRIM

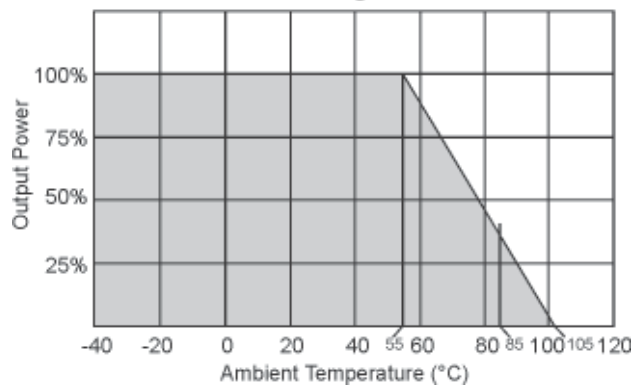
External Output Trimming

Output can be externally trimmed by using the method as below.
 () for dual output trim.



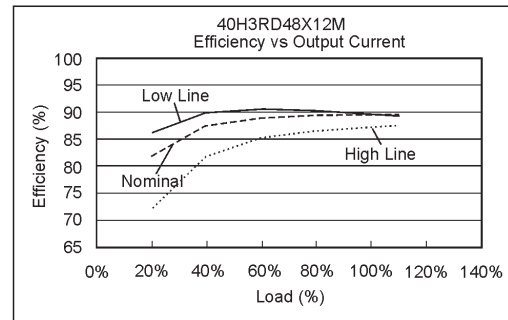
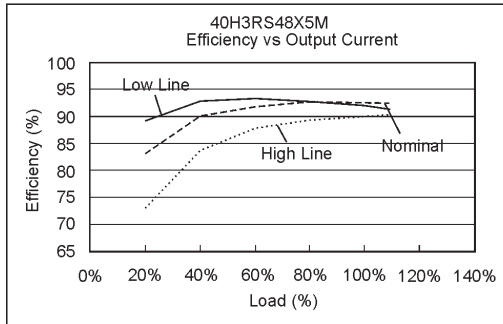
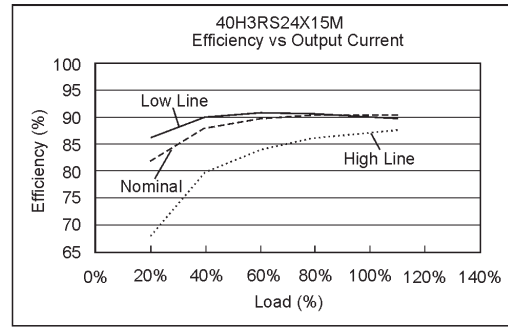
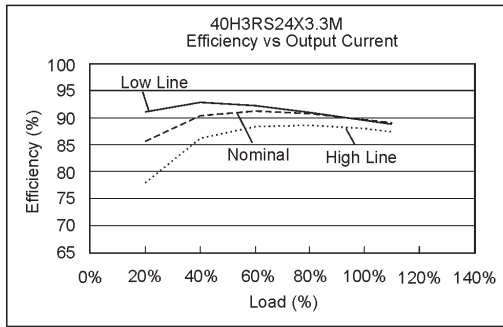
DIAGRAMS

Derating Curve



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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.