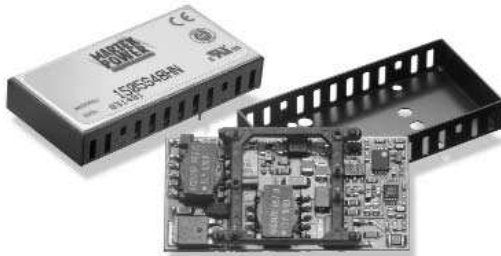




# 1500 HN series

## Single Output DC/DC Converter



### DESCRIPTIONS

The 1500HN, single output power modules are 12 to 15 watt DC/DC converters available in a single output configuration providing 3.3 VDC to 15 VDC outputs in a compact, industry standard 1.0" X 2.0" X 0.375" package. These 400kHz, switching converters are available in 12, 24 and 48 VDC inputs making them one of the most versatile product lines in the market with efficiencies up to 89%. Advanced surface mount construction allows these converters to achieve outstanding thermal performance eliminating the need for thermal potting compounds and thereby enhancing manufacturing efficiency to reduce costs.

### OUTPUT CHARACTERISTICS

|                            | Min | Typ   | Max | Unit/Comments                                                    |
|----------------------------|-----|-------|-----|------------------------------------------------------------------|
| Output Voltage Set Point   |     | ±1    |     | % Output voltage at nominal line & FL                            |
| Total Band Error           | -2  |       | +2  | % Output voltage including line/load regulation setting          |
| Line Regulation            |     | ±0.5  |     | % Output voltage measured from min. input line to maximum        |
| Load Regulation            |     | ±0.5  |     | % Output voltage measured from FL to 10% load                    |
| Temperature Coefficient    |     | ±0.01 |     | % per degree C                                                   |
| Ripple/Noise               |     | 60    | 100 | mV p-p measured at 20 MHz bandwidth with external 1 µf capacitor |
| Output Voltage and Current |     |       |     | Refer to model selection chart                                   |
| Load Transient Response    |     | ±2    |     | % deviation of Vout voltage for a 25% load change for 200µS      |
| Short Circuit Protection   |     |       |     | Indefinite, Automatic Recovery                                   |
| Overvoltage Protection     |     | 125   |     | %; Clamp type (5VDC output set at 6.8VDC)                        |

### FEATURES

- Up to 89% Efficiency
- Single Output, 15 watt converter
- Available in 12, 24 and 48 VDC Inputs
- Industry Standard 1.0" X 2.0" X 0.375" Package
- Remote On/Off, Input Over Voltage and Short Circuit Protection

### INPUT CHARACTERISTICS

|                              | Min  | Typ  | Max  | Units/Comments                   |
|------------------------------|------|------|------|----------------------------------|
| Input Voltage                |      |      |      |                                  |
| 12 VDC Input Models          | 9    | 12   | 18   | VDC                              |
| 24 VDC Input Models          | 18   | 24   | 36   | VDC                              |
| 48 VDC Input Models          | 36   | 48   | 75   | VDC                              |
| Under Voltage Shut Down      |      |      |      |                                  |
| 12 VDC Input Models          | 7.8  |      |      | VDC                              |
| 24 VDC Input Models          | 15.0 |      |      | VDC                              |
| 48 VDC Input Models          | 28.1 |      |      | VDC                              |
| Minimum Input Current        |      |      |      |                                  |
| 12 VDC Input Models          | 0    |      |      | mA                               |
| 24 VDC Input Models          | 0    |      |      | mA                               |
| 48 VDC Input Models          | 0    |      |      | mA                               |
| Full Load Input Current      |      |      |      |                                  |
| 12 VDC Input Models          |      |      | 1.63 | A                                |
| 24 VDC Input Models          |      |      | 0.78 | A                                |
| 48 VDC Input Models          |      |      | 0.39 | A                                |
| Input Fuse Requirements      |      |      |      |                                  |
| 12 VDC Input Models          |      |      | 3    | Amps; Slow blow type             |
| 24 VDC Input Models          |      |      | 2    | Amps; Slow blow type             |
| 48 VDC Input Models          |      |      | 1    | Amps; Slow blow type             |
| Efficiency by Model          |      |      |      |                                  |
| 1503S12HN                    |      | 78   |      | %; FL Nominal Line               |
| 1505S12HN                    |      | 82   |      | %; FL Nominal Line               |
| 1512S12HN                    |      | 86   |      | %; FL Nominal Line               |
| 1515S12HN                    |      | 86   |      | %; FL Nominal Line               |
| 1503S24HN                    |      | 80   |      | %; FL Nominal Line               |
| 1505S24HN                    |      | 84   |      | %; FL Nominal Line               |
| 1512S24HN                    |      | 86   |      | %; FL Nominal Line               |
| 1515S24HN                    |      | 87   |      | %; FL Nominal Line               |
| 1503S48HN                    |      | 80   |      | %; FL Nominal Line               |
| 1505S48HN                    |      | 84   |      | %; FL Nominal Line               |
| 1512S48HN                    |      | 86   |      | %; FL Nominal Line               |
| 1515S48HN                    |      | 89   |      | %; FL Nominal Line               |
| Switching Frequency          | 360  | 400  | 440  | kHz; Factory set                 |
| Remote Shut Down             | Off  | 0    | 0.80 | VDC; Referenced to input         |
|                              | On   | 3.5  |      | VDC or open; Referenced to input |
| Input - Output Capacitance   |      | 1200 |      | pF                               |
| Input Filter                 |      |      |      | LC type                          |
| Isolation Voltage            |      |      |      |                                  |
| 12 VDC & 24 VDC Input Models |      |      |      |                                  |
| Input to Output              |      | 750  |      | VDC                              |
| Input to Baseplate           |      | 750  |      | VDC                              |
| Output to Baseplate          |      | 750  |      | VDC                              |
| 48 VDC Input Models          |      |      |      |                                  |
| Input to Output              |      | 1100 |      | VDC                              |
| Input to Baseplate           |      | 1100 |      | VDC                              |
| Output to Baseplate          |      | 750  |      | VDC                              |
| Isolation Resistance         |      | 100  |      | MOHms                            |



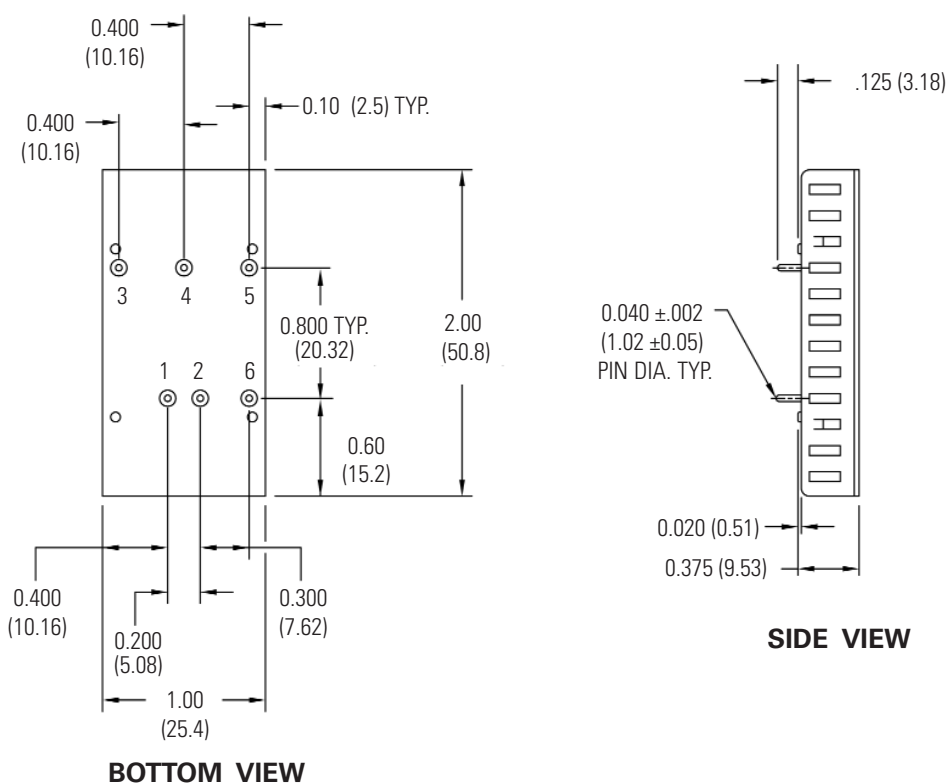
## MODEL SELECTION CHART

|           | Input Voltage (VDC) | Output Voltage (VDC) | Full Load Output Current (A) |
|-----------|---------------------|----------------------|------------------------------|
| 1503S12HN | 12                  | 3.3                  | 3.5                          |
| 1505S12HN | 12                  | 5.0                  | 3.0                          |
| 1512S12HN | 12                  | 12.0                 | 1.25                         |
| 1515S12HN | 12                  | 15.0                 | 1.00                         |
| 1503S24HN | 24                  | 3.3                  | 3.5                          |
| 1505S24HN | 24                  | 5.0                  | 3.0                          |
| 1512S24HN | 24                  | 12.0                 | 1.25                         |
| 1515S24HN | 24                  | 15.0                 | 1.00                         |
| 1503S48HN | 48                  | 3.3                  | 3.5                          |
| 1505S48HN | 48                  | 5.0                  | 3.0                          |
| 1512S48HN | 48                  | 12.0                 | 1.25                         |
| 1515S48HN | 48                  | 15.0                 | 1.00                         |

## GENERAL CHARACTERISTICS

|                       | Min | Typ | Max    | Unit/Comments              |
|-----------------------|-----|-----|--------|----------------------------|
| Operating Temp. Range | -40 |     | +105   | °C; measured at baseplate  |
| Storage Temp. Range   | -55 |     | +125   | °C; measured at baseplate  |
| Material Flammability |     |     |        | UL94V-0                    |
| Altitude: Operating   |     |     | 10,000 | Feet                       |
| Non-Operating         |     |     | 40,000 | Feet                       |
| Relative Humidity     | 5   |     | 95     | % Humidity, non-condensing |
| Weight                |     |     | 16     | Grams                      |
| Size                  |     |     |        | 1.0" X 2.0" X 0.375"       |
| Case Material         |     |     |        | Black coated aluminum      |
| Agency Approvals      |     |     |        | UL/CUL1950                 |

## OUTLINE DRAWING



## PIN OUT CHART

| Pins | FUNCTION       |
|------|----------------|
| 1    | + Vin          |
| 2    | - Vin          |
| 3    | + Vout         |
| 4    | NO PIN         |
| 5    | - Vout         |
| 6    | *REMOTE ON/OFF |

### Notes:

1. Unless otherwise specified dimensions are in inches (mm).

| Tolerances | Inches         | mm           |
|------------|----------------|--------------|
|            | X.XX = ±0.02   | X.X = ±0.5   |
|            | X.XXX = ±0.010 | X.XX = ±0.25 |

2. Controlling dimension in inches.

3. Case is vented on 2" long sides only.

\* Optional - present on -R Models only.

All specifications are typical at nominal input, nominal load and 25° C unless otherwise specified.  
External, low ESR, 10 microfarad (minimum) capacitor across output is recommended for operation.



## How To ORDER

### HOW TO ORDER

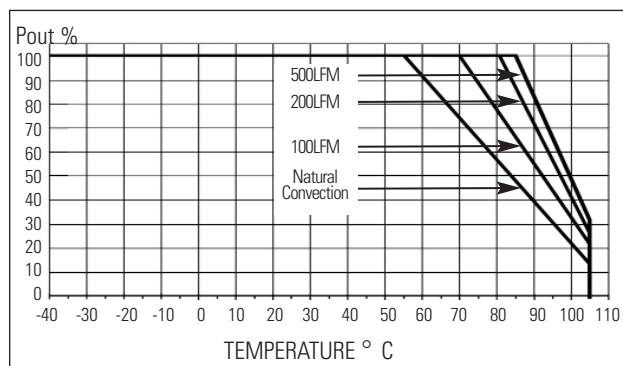
**15 XX S XX HN - Y**

Wattage ———— **15**  
 Output Voltage ———— **XX**  
 Single Output ———— **S**  
 Input Voltage ———— **XX**  
 Hi-Density, Non-Encap ———— **HN**  
 ROHS Compliant ———— **- Y**

**R Options:** To add the remote on/off feature to the converter please add a "-R" at the end of the part number. An additional pin (pin#6) will be added to the converter. Consult mechanical drawing for location.

## DERATING CURVES

**MODEL 1500HN Single 3.3V & 5V**



**MODEL 1500HN Single 12 & 15V**

