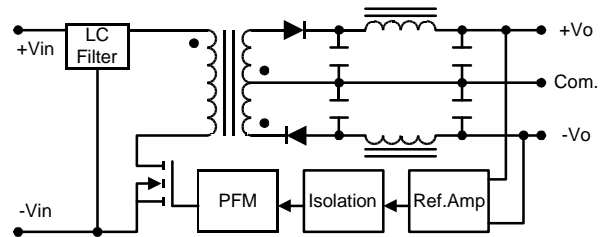
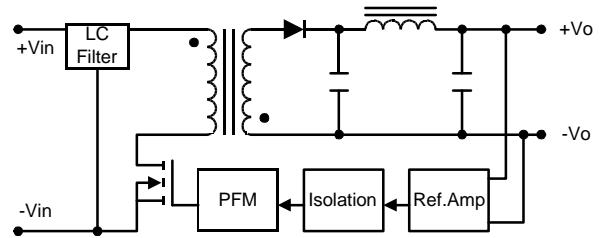


# TOTAL POWER INT'L

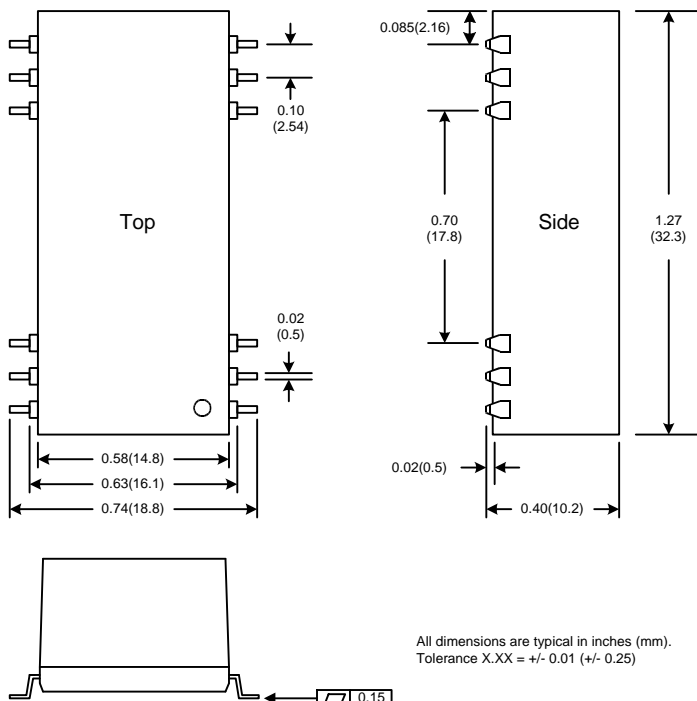
## MSIW1000 Series 3 Watt 2:1 Wide Input Range SMD DC/DC Single & Dual Output

### Key Features

- SMT Technology
- 2:1 Input Range
- High Efficiency up to 83 %
- I / O Isolation 1500VDC
- Short Circuit Protected
- CECC00802 Reflow
- MTBF > 1,000,000 Hours



### Mechanical Configuration



### Pin Connections

| Pin                | Single Output | Dual Output |
|--------------------|---------------|-------------|
| 1,2                | -Input        | -Input      |
| 10                 | NC            | Common      |
| 3,11,14,22         | NC            | NC          |
| 12                 | NC            | -Output     |
| 13                 | +Output       | +Output     |
| 15                 | -Output       | Common      |
| 23,24              | +Input        | +Input      |
| NC: No Connection. |               |             |

### Physical Characteristics

|               |   |
|---------------|---|
| Case Size     | 32.3×18.8×10.2 mm<br>1.27×0.74×0.4 inches |
| Case Material | Non-Conductive Black Plastic              |
| Weight        | 10g                                       |

# TOTAL POWER INT'L

## MSIW1000

### Absolute Maximum Ratings

Exceeding these values can damage the module. These are not continuous operating ratings.

| Parameter                          |                    | Min. | Max. | Unit. |
|------------------------------------|--------------------|------|------|-------|
| Input Surge Voltage<br>( 1000 mS ) | 12VDC Input Models | -0.7 | 25   | VDC   |
|                                    | 24VDC Input Models | -0.7 | 50   | VDC   |
|                                    | 48VDC Input Models | -0.7 | 100  | VDC   |
| Internal Power Dissipation         |                    | ---  | 2500 | mW    |

### Environmental Specifications

| Parameter             | Conditions          | Min. | Typ. | Max. | Unit |
|-----------------------|---------------------|------|------|------|------|
| Operating Temperature |                     | -40  | ---  | +71  | °C   |
| Storage Temperature   |                     | -40  | ---  | +125 | °C   |
| Humidity              |                     | ---  | ---  | 95   | %    |
| Cooling               | Free-Air Convection |      |      |      |      |

### Model Selection Guide

| Model Number | Input voltage<br>VDC | Output Voltage<br>VDC | Output Current<br>mA (Max.) | Output Current<br>mA (Min.) | Input Current<br>Max. Load<br>mA (Typ.) | Input Current<br>No Load<br>mA (Typ.) | Reflected<br>Ripple<br>Current<br>mA (Typ.) | Efficiency<br>% (Typ.) |
|--------------|----------------------|-----------------------|-----------------------------|-----------------------------|---|---------------------------------------|---|------------------------|
| MSIW1021     | 12<br>( 9 ~ 18 )     | 3.3                   | 700                         | 70                          | 257                                     | 20                                    | 25  | 75                     |
| MSIW1022     |                      | 5                     | 600                         | 60                          | 316                                     |                                       |   | 79                     |
| MSIW1023     |                      | 12                    | 250                         | 25                          | 305                                     |                                       |   | 82                     |
| MSIW1024     |                      | 15                    | 200                         | 20                          | 305                                     |                                       |   | 82                     |
| MSIW1025     |                      | ±5                    | ±300                        | ±30                         | 321                                     |                                       |   | 78                     |
| MSIW1026     |                      | ±12                   | ±125                        | ±12.5                       | 309                                     |                                       |   | 81                     |
| MSIW1027     |                      | ±15                   | ±100                        | ±10                         | 309                                     |                                       |   | 81                     |
| MSIW1031     | 24<br>( 18 ~ 36 )    | 3.3                   | 700                         | 70                          | 127                                     | 5                                     | 15  | 76                     |
| MSIW1032     |                      | 5                     | 600                         | 60                          | 156                                     |                                       |   | 80                     |
| MSIW1033     |                      | 12                    | 250                         | 25                          | 151                                     |                                       |   | 83                     |
| MSIW1034     |                      | 15                    | 200                         | 20                          | 151                                     |                                       |   | 83                     |
| MSIW1035     |                      | ±5                    | ±300                        | ±30                         | 158                                     |                                       |   | 79                     |
| MSIW1036     |                      | ±12                   | ±125                        | ±12.5                       | 152                                     |                                       |   | 82                     |
| MSIW1037     |                      | ±15                   | ±100                        | ±10                         | 152                                     |                                       |   | 82                     |
| MSIW1041     | 48<br>( 36 ~ 75 )    | 3.3                   | 700                         | 70                          | 63                                      | 3                                     | 10  | 76                     |
| MSIW1042     |                      | 5                     | 600                         | 60                          | 78                                      |                                       |   | 80                     |
| MSIW1043     |                      | 12                    | 250                         | 25                          | 75                                      |                                       |   | 83                     |
| MSIW1044     |                      | 15                    | 200                         | 20                          | 75                                      |                                       |   | 83                     |
| MSIW1045     |                      | ±5                    | ±300                        | ±30                         | 79                                      |                                       |   | 79                     |
| MSIW1046     |                      | ±12                   | ±125                        | ±12.5                       | 76                                      |                                       |   | 82                     |
| MSIW1047     |                      | ±15                   | ±100                        | ±10                         | 76                                      |                                       |   | 82                     |

Specifications typical at Ta=+25J ,resistive load,nominal input voltage,rated output current unless otherwise noted.

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# TOTAL POWER INT'L

## MSIW1000

### Input Specifications

| Parameter                      | Model            | Min.      | Typ. | Max. | Unit |
|--------------------------------|------------------|-----------|------|------|------|
| Start Voltage                  | 12V Input Models | 4.5       | 6    | 8    | VDC  |
|                                | 24V Input Models | 8         | 12   | 16   |      |
|                                | 48V Input Models | 16        | 24   | 32   |      |
| Under Voltage Shutdown         | 12V Input Models | ----      | ---- | 8    |      |
|                                | 24V Input Models | ----      | ---- | 16   |      |
|                                | 48V Input Models | ----      | ---- | 32   |      |
| Reverse Polarity Input Current | All Models       | ----      | ---- | 0.5  | A    |
| Short Circuit Input Power      |                  | ----      | ---- | 1500 | mW   |
| Input Filter                   |                  | Pi Filter |      |      |      |

### Output Specifications

| Parameter                    | Conditions                    | Min. | Typ.  | Max.  | Unit    |
|------------------------------|-------------------------------|------|-------|-------|---------|
| Output Voltage Accuracy      |                               | ---- | ±0.5  | ±1.0  | %       |
| Output Voltage Balance       | Dual Output Balance Load      | ---- | ±0.5  | ±1.0  | %       |
| Line Regulation              | V <sub>in</sub> =Min. to Max. | ---- | ±0.1  | ±0.3  | %       |
| Load Regulation              | I <sub>o</sub> =10% to 100%   | ---- | ±0.3  | ±1.0  | %       |
| Ripple & Noise (20MHz)       |                               | ---- | 50    | 75    | mV P-P  |
| Ripple & Noise (20MHz)       | Over Line, Load & Temp.       | ---- | ----  | 100   | mV P-P  |
| Ripple & Noise (20MHz)       |                               | ---- | ----  | 10    | mV rms. |
| Over Load                    |                               | 120  | ----  | ----  | %       |
| Transient Recovery Time      | 25% Load Step Change          | ---- | 200   | 500   | µS      |
| Transient Response Deviation |                               | ---- | ±2    | ±6    | %       |
| Temperature Coefficient      |                               | ---- | ±0.01 | ±0.02 | %/°C    |
| Output Short Circuit         | Continuous                    |      |       |       |         |

### General Specification

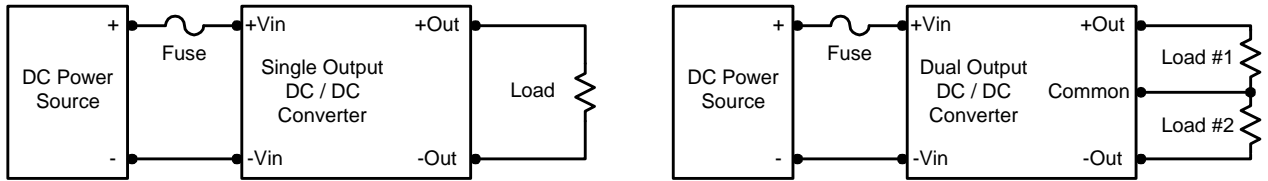
| Parameter             | Conditions | Min. | Typ. | Max. | Unit |
|-----------------------|------------|------|------|------|------|
| Isolation Voltage     | 60 Seconds | 1500 | ---- | ---- | VDC  |
| Isolation Resistance  | 500VDC     | 1000 | ---- | ---- | MΩ   |
| Isolation Capacitance | 100KHz, 1V | ---- | 65   | 100  | pF   |
| Switching Frequency   |            | ---- | 300  | ---- | KHz  |

### Input Fuse Selection Guide

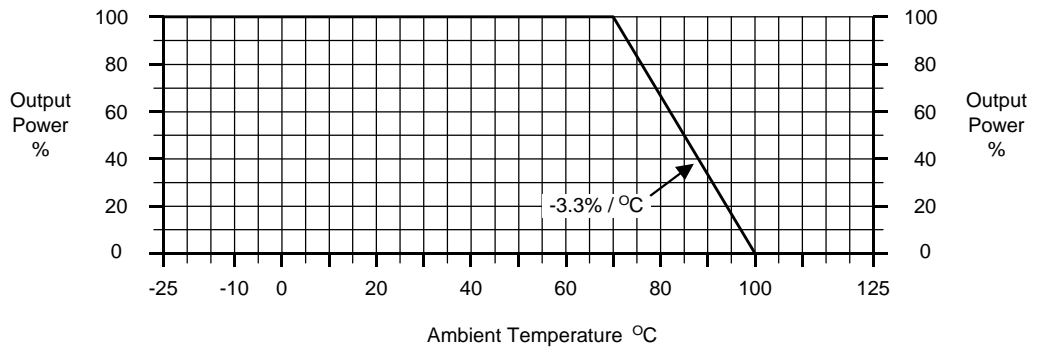
| 12V Input Models       | 24V Input Models       | 48V Input Models       |
|------------------------|------------------------|------------------------|
| 750mA Slow – Blow Type | 350mA Slow – Blow Type | 200mA Slow – Blow Type |

# TOTAL POWER INT'L MSIW1000

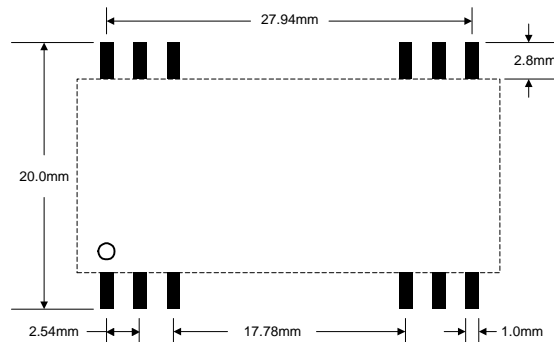
## Typical Applications



## Derating Curve



## Connecting Pin Patterns



## NOTE:

1. Specifications typical at  $T_a = +25^\circ\text{C}$ , resistive load, nominal input voltage, rated output current unless otherwise noted.
2. Transient recovery time is measured to within 1% error band for a step change in output load of 75% to 100%.
3. When measure output ripple & noise, an external 0.1uF ceramic capacitor is recommended to be placed from +Vout to -Vout (single output) and each output to common (dual output).
4. Other input and output voltage may be available, Please contact factory.
5. Specifications subject to change without notice.