

# 3 Watt

## 24 Pin DIL Package V 4:1 Input Range



- o Wide Input Range
- o Regulated Outputs
- o Single & Dual Outputs
- o Efficiency up to 80%
- o Continuous Short Circuit Protection
- o Option 3000 VDC I/O-Isolation



| MODEL NUMBER | INPUT VOLTAGE | OUTPUT VOLTAGE | OUTPUT CURRENT | INPUT CURRENT |           | %EFF |
|--------------|---------------|----------------|----------------|---------------|-----------|------|
|              |               |                |                | NO LOAD       | FULL LOAD |      |
| 3VRS24X3.3LC | 9-36 VDC      | 3.3 VDC        | 600 mA         | 15 mA         | 117 mA    | 70   |
| 3VRS24X5LC   |               | 5 VDC          | 600 mA         |               | 174 mA    | 72   |
| 3VRS24X12LC  |               | 12 VDC         | 250 mA         |               | 165 mA    | 76   |
| 3VRS24X15LC  |               | 15 VDC         | 200 mA         | 25 mA         | 179 mA    | 70   |
| 3VRD24X5LC   |               | ±5 VDC         | ±300 mA        |               | 174 mA    | 72   |
| 3VRD24X12LC  |               | ±12 VDC        | ±125 mA        |               | 174 mA    | 72   |
| 3VRD24X15LC  |               | ±15 VDC        | ±100 mA        |               | 174 mA    | 72   |
| 3VRS48X3.3LC | 18-72 VDC     | 3.3 VDC        | 600 mA         | 7.5 mA        | 58 mA     | 70   |
| 3VRS48X5LC   |               | 5 VDC          | 600 mA         |               | 87 mA     | 72   |
| 3VRS48X12LC  |               | 12 VDC         | 250 mA         |               | 78 mA     | 80   |
| 3VRS48X15LC  |               | 15 VDC         | 200 mA         | 12 mA         | 88 mA     | 71   |
| 3VRD48X5LC   |               | ±5 VDC         | ±300 mA        |               | 87 mA     | 72   |
| 3VRD48X12LC  |               | ±12 VDC        | ±125 mA        |               | 87 mA     | 72   |
| 3VRD48X15LC  |               | ±15 VDC        | ±100 mA        |               | 87 mA     | 72   |

**SPECIFICATIONS**

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

**INPUT SPECIFICATIONS**

|                     |            |
|---------------------|------------|
| Input Voltage Range | 4:1        |
| Input Filter        | Pi Network |

**OUTPUT SPECIFICATIONS**

|                              |                                          |                               |
|------------------------------|------------------------------------------|-------------------------------|
| Voltage Accuracy             |                                          | ±2% max.                      |
| Voltage Balance, Dual Output |                                          | ±1% max.                      |
| Temperature Coefficient      |                                          | ±0.05%/°C                     |
| Ripple and Noise, 20MHz BW   | Single & ±5V<br>Dual                     | 100mV p-p max.<br>1% p-p max. |
| Short Circuit Protection     |                                          | Continuous                    |
| Line Regulation <sup>1</sup> |                                          | ±0.5% max.                    |
| Load Regulation              | Single <sup>2</sup><br>Dual <sup>3</sup> | ±0.5% max.<br>±1.0% max.      |

## NOTE:

1. Measured from High Line to Low Line.
2. Measured from Full Load to 10% Load.
3. Measured from Full Load to 1/4 Load.

**GENERAL SPECIFICATION**

|                                        |                                 |                                                 |
|----------------------------------------|---------------------------------|-------------------------------------------------|
| Efficiency                             |                                 | see table                                       |
| Isolation Voltage                      |                                 | 500 VDC min.                                    |
| Suffix "H" *                           |                                 | 3000 VDC min.                                   |
| Isolation Resistance                   |                                 | 1000 Mohms                                      |
| Switching Frequency                    |                                 | 100 kHz min.                                    |
| Operating Temperature Range            |                                 | -25°C to +71°C                                  |
| Case Temperature                       | (Plastic Case)<br>(Copper Case) | +95°C max.<br>+100°C max.                       |
| Storage Temperature Range              |                                 | -40°C to +100°C                                 |
| Derating >+71°C                        |                                 | -3.5%/°C                                        |
| Recommended Reflow Soldering Pb-free** |                                 | see diagram                                     |
| Cooling                                |                                 | Free-Air Convection                             |
| Case Material                          |                                 | Non-Conductive Black Plastic                    |
| Suffix "M" *)                          |                                 | Black Coated Copper with Non-Conductive Base    |
| Dimensions                             |                                 | 1.25 x 0.8 x 0.4 Inches (31.8 x 20.3 x 10.2 mm) |
| MTBF (MIL-HDBK-217F)                   |                                 | 1.145.000 hrs min.                              |

\*) Suffix "HM" 1.5 KVDC Instead of 3KVDC Isolation

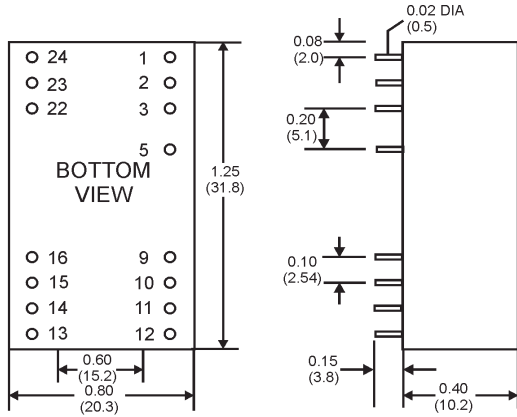
\*\*) We do not recommend vapor phase soldering!

**SPECIFICATIONS**

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**MECHANICAL SPECIFICATIONS**

CASE "V"



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

| PIN CONNECTIONS 500VDC |         |         |
|------------------------|---------|---------|
| PIN                    | SINGLE  | DUAL    |
| 1 & 24                 | +INPUT  | +INPUT  |
| 2 & 23                 | NC*     | -OUTPUT |
| 3 & 22                 | NC*     | COMMON  |
| 9 & 16                 | NO PIN  | NO PIN  |
| 10 & 15                | -OUTPUT | COMMON  |
| 11 & 14                | +OUTPUT | +OUTPUT |
| 12 & 13                | -INPUT  | -INPUT  |

\* Option "NO Pin" at Single Output add Suffix "NP" to Part No.

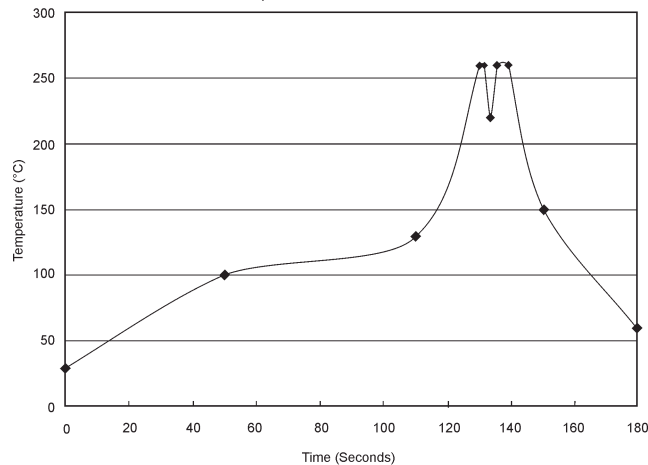
| PIN CONNECTIONS 1.5KVDC & 3KVDC |         |         |
|---------------------------------|---------|---------|
| PIN                             | SINGLE  | DUAL    |
| 1 & 24                          | NO PIN  | NO PIN  |
| 2 & 3                           | -INPUT  | -INPUT  |
| 5                               | NO PIN  | NO PIN  |
| 9                               | NC*     | COMMON  |
| 10 & 15                         | NC*     | NC*     |
| 11                              | NC      | -OUTPUT |
| 12 & 13                         | NO PIN  | NO PIN  |
| 14                              | +OUTPUT | +OUTPUT |
| 16                              | -OUTPUT | COMMON  |
| 22 & 23                         | +INPUT  | +INPUT  |

\* Option "NO PIN" add Suffix "NP" to Part No.

**DIAGRAMS**

**Lead Free Wave Soldering Profile**

(Soldering Material: Sn/Cu/Ni)



1. Ramp up rate during preheat: 1.5°C/Sec (From 50°C to 100°C)
2. Soaking temperature: 0.5°C/Sec (From 100°C to 130°C), 60±20 seconds
3. Peak temperature: 260°C, above 250°C 3-6 Seconds
4. Ramp up rate during cooling: -10.0°C/Sec (From 260°C to 150°C)

**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.