



POLYTRON DEVICES, Inc.

# 1 WATT SINGLE & DUAL OUTPUT

Unregulated  
SIP Package

DC/DC Converters



## FEATURES

- 1 Watt Unregulated Output Power
- Miniature Single – Inline Package (SIP)
- 3000Vdc Input/Output Isolation
- Single and Dual Output
- High Efficiency (Up to 80%)

SPU1 Series

## Specifications

All specifications are typical at nominal input, full load and 25°C, unless otherwise noted.

### INPUT

Input Voltage Range

|                         |                 |
|-------------------------|-----------------|
| 5V nominal input .....  | 4.5 - 5.5 Vdc   |
| 12V nominal input ..... | 10.8 - 13.2 Vdc |
| 15V nominal input ..... | 13.5 - 16.5 Vdc |
| 24V nominal input ..... | 21.6 - 26.4 Vdc |

Input Filter .....Capacitor

### OUTPUT

|                                                    |                                 |
|----------------------------------------------------|---------------------------------|
| Output Power .....                                 | 1 Watt max.                     |
| Voltage Accuracy (Full Load and Nominal Vin) ..... | ±5%                             |
| Minimum Load * .....                               | 10% fo FL                       |
| Line Regulation LL to HL at Full Load .....        | 1.3%/1% of Vin                  |
| Load Regulation (20% to 100% FL) .....             | (5V output...±10%) Others...±8% |
| Ripple and Noise (20 MHz Bandwidth) .....          | 100mV p-p                       |
| Temperature Coefficient .....                      | ±0.1%/°C, max.                  |
| Short Circuit Protection .....                     | Short term                      |

### GENERAL

|                                                              |                                                     |
|--------------------------------------------------------------|-----------------------------------------------------|
| Efficiency .....                                             | See Table                                           |
| Isolation Voltage (Input to Output) Standard...1000 Vdc min. | Suffix-HI...3000 Vdc min.                           |
| Isolation Resistance .....                                   | 10 <sup>9</sup> Ohms, min.                          |
| Isolation Capacitance .....                                  | 30pF, max.                                          |
| Switching Frequency .....                                    | 60KHz, min.                                         |
| Safety Standard .....                                        | IEC60950, UL60950, EN60950 (Built to meet)          |
| Case Material .....                                          | Non-Conductive Black Plastic                        |
| Base Material .....                                          | None                                                |
| Potting Material .....                                       | Epoxy (UL94-V0)                                     |
| Dimensions .....                                             | 0.77" x 0.24" x 0.40" inches (19.6 x 6.0 x 10.2 mm) |
| Weight .....                                                 | 2.0 g. (0.071 oz.)                                  |
| MTBF .....                                                   | 1.471 x 10 <sup>7</sup> Hours                       |

### ENVIRONMENTAL

|                                   |                                         |
|-----------------------------------|-----------------------------------------|
| Operating Temperature Range ..... | -25°C to +85°C (with derating)          |
| Storage Temperature Range .....   | -55°C to +105°C                         |
| Thermal Shock .....               | MIL-STD-810D                            |
| Vibration .....                   | 10~55Hz, 2G, 30minutes along X, Y and Z |
| Relative Humidity .....           | 5% to 95% RH                            |

\* The SPU1 Series requires a 10% minimum load on the output to maintain specified regulation. Operation under no-load condition will not damage these devices. However, they may not meet all listed specifications.

P.O. Box 398, Paterson, New Jersey 07544 U.S.A.

Tel: (973)345-5885 Fax: (973)345-1264 • Email: sales@polytrondevices.com • www.polytrondevices.com

## Selection Guide

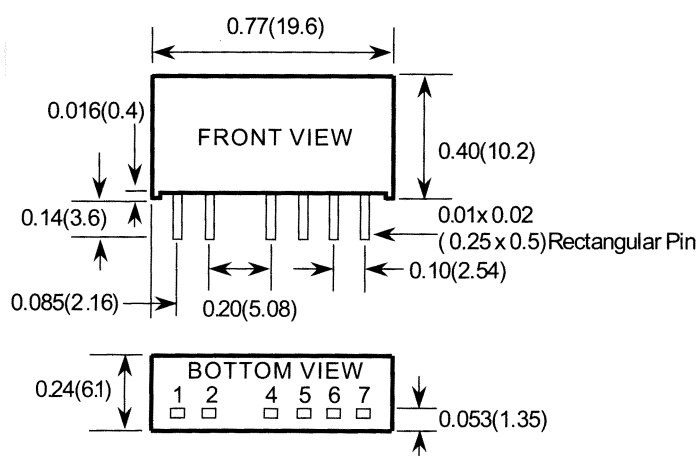
(Continued)

|               | Input Voltage<br>Nominal (Range)<br>(Vdc) | Output<br>Voltage<br>(Vdc) | Output<br>Current<br>(mA) | Efficiency<br>% | Model Number | Case |
|---------------|-------------------------------------------|----------------------------|---------------------------|-----------------|--------------|------|
|               |                                           |                            |                           |                 |              |      |
| SINGLE OUTPUT | 4.5 - 5.5                                 | 5                          | 200                       | 71              | SPU1-5S5     | SIP  |
|               | 4.5 - 5.5                                 | 12                         | 83                        | 78              | SPU1-5S12    | SIP  |
|               | 4.5 - 5.5                                 | 15                         | 67                        | 78              | SPU1-5S15    | SIP  |
|               | 10.8 - 13.2                               | 5                          | 200                       | 73              | SPU1-12S5    | SIP  |
|               | 10.8 - 13.2                               | 12                         | 83                        | 79              | SPU1-12S12   | SIP  |
|               | 10.8 - 13.2                               | 15                         | 67                        | 79              | SPU1-12S15   | SIP  |
|               | 13.5 - 16.5                               | 5                          | 200                       | 73              | SPU1-15S5    | SIP  |
|               | 13.5 - 16.5                               | 12                         | 83                        | 79              | SPU1-15S12   | SIP  |
|               | 13.5 - 16.5                               | 15                         | 67                        | 79              | SPU1-15S15   | SIP  |
|               | 21.6 - 26.4                               | 5                          | 200                       | 71              | SPU1-24S5    | SIP  |
|               | 21.6 - 26.4                               | 12                         | 83                        | 76              | SPU1-24S12   | SIP  |
|               | 21.6 - 26.4                               | 15                         | 67                        | 78              | SPU1-24S15   | SIP  |
| DUAL OUTPUT   | 4.5 - 5.5                                 | ±5                         | ±100                      | 72              | SPU1-5-5     | SIP  |
|               | 4.5 - 5.5                                 | ±12                        | ±42                       | 78              | SPU1-5-12    | SIP  |
|               | 4.5 - 5.5                                 | ±15                        | ±33                       | 78              | SPU1-5-15    | SIP  |
|               | 10.8 - 13.2                               | ±5                         | ±100                      | 74              | SPU1-12-5    | SIP  |
|               | 10.8 - 13.2                               | ±12                        | ±42                       | 80              | SPU1-12-12   | SIP  |
|               | 10.8 - 13.2                               | ±15                        | ±33                       | 80              | SPU1-12-15   | SIP  |
|               | 13.5 - 16.5                               | ±5                         | ±100                      | 74              | SPU1-15-5    | SIP  |
|               | 13.5 - 16.5                               | ±12                        | ±42                       | 80              | SPU1-15-12   | SIP  |
|               | 13.5 - 16.5                               | ±15                        | ±33                       | 80              | SPU1-15-15   | SIP  |
|               | 21.6 - 26.4                               | ±5                         | ±100                      | 72              | SPU1-24-5    | SIP  |
|               | 21.6 - 26.4                               | ±12                        | ±42                       | 78              | SPU1-24-12   | SIP  |
|               | 21.6 - 26.4                               | ±15                        | ±33                       | 79              | SPU1-24-15   | SIP  |

## Mechanical Specifications

| STANDARD |         |         |
|----------|---------|---------|
| PIN      | SINGLE  | DUAL    |
| 1        | +INPUT  | +INPUT  |
| 2        | -INPUT  | -INPUT  |
| 4        | -OUTPUT | -OUTPUT |
| 5        | NC      | COMMON  |
| 6        | +OUTPUT | +OUTPUT |

| Suffix HI Models (3000Vdc isolation) |         |         |
|--------------------------------------|---------|---------|
| PIN                                  | SINGLE  | DUAL    |
| 1                                    | +INPUT  | +INPUT  |
| 2                                    | -INPUT  | -INPUT  |
| 5                                    | -OUTPUT | -OUTPUT |
| 6                                    | NC      | COMMON  |
| 7                                    | +OUTPUT | +OUTPUT |



1. All Dimensions are in inches (mm)
2. Pin pitch tolerance  $\pm 0.014(0.35)$



POLYTRON DEVICES, Inc.

P.O. Box 398, Paterson, New Jersey 07544 U.S.A.

Tel: (973)345-5885 Fax: (973)345-1264 • Email: sales@polytrondevices.com • www.polytrondevices.com