

# PU-3 SERIES

3W UNREGULATED

# DANUBE

## FEATURES

- SINGLE IN LINE PACKAGE
- 3W UNREGULATED OUTPUT POWER
- 100% BURN-IN
- HIGH EFFICIENCY
- INTERNAL SMD TECHNOLOGY
- LOW COST
- NO HEATSINK REQUIRED
- UL 94V-0 PACKAGE MATERIAL
- CUSTOM SOLUTIONS AVAILABLE
- RoHS COMPLIANT
- 3 YEARS WARRANTY



## OUTPUT SPECIFICATIONS

|                                       |                  |
|---------------------------------------|------------------|
| Voltage Set-point Accuracy            | +/-2% max        |
| Temperature Coefficient               | +/-0.05%/°C      |
| Ripple & Noise(20MHz BW) <sup>1</sup> | 100mVp-p max     |
| Line Regulation <sup>2</sup>          | +/-1.2% max      |
| Load Regulation <sup>3</sup>          | +/-8% max        |
| Minimum Load                          | 10% of Full Load |
| Short Circuit Protection              | Momentary        |

## INPUT SPECIFICATIONS

|                     |                  |
|---------------------|------------------|
| Input Voltage Range | +/-10% max       |
| Input Filter        | Capacitor Type   |
| Protection          | Fuse Recommended |

## GENERAL SPECIFICATIONS

|                                |                          |                 |
|--------------------------------|--------------------------|-----------------|
| Efficiency                     | 80%-87%                  |                 |
| Isolation Voltage <sup>4</sup> | 3000 VDC min             | Standard Models |
| Isolation Resistance           | 10 <sup>9</sup> ohms min |                 |
| Isolation Capacitance          | 80pF max                 |                 |
| Switching Frequency            | 60KHz Typ                |                 |
| MTBF <sup>5</sup>              | >1,800,000 Hours         |                 |
| Weight                         | 2.9g Typ                 |                 |
| Case Material                  | Non-Conductive Plastic   |                 |
| Case Size                      | 19.6mm*7.5mm*10.2mm      |                 |

## ENVIRONMENTAL SPECIFICATIONS

|  |                     |
|--|---------------------|
| Operating Temperature (OUTPUT=5V)      | -40°C to +80 °C     |
| Operating Temperature (OUTPUT=12V&15V) | -40°C to +85 °C     |
| Storage Temperature                    | -55 °C to +125 °C   |
| Humidity                               | 95% max             |
| Cooling                                | Free-Air Convection |

ALL SPECIFICATIONS TYPICAL AT NOMINAL LINE, FULL LOAD AND 25°C UNLESS OTHERWISE NOTED.

<sup>1</sup> Measured with 1uF ceramic capacitor connects to the output pins.

<sup>2</sup> Line Regulation is for a 1.0% change in input Voltage.

<sup>3</sup> Load Regulation is for output load current change from 20% to 100%.

<sup>4</sup> 3000VDC for 3 seconds.

<sup>5</sup> MIL-HDBK-217F @25 °C , Ground Benign.

## ● SELECTION GUIDE(1) 3W OUTPUT

| MODEL NUMBER | INPUT VOLTAGE (VDC) | OUTPUT VOLTAGE (VDC) | OUTPUT CURRENT (mA) | INPUT <sup>6</sup> CURRENT(mA) |         | EFF (%) <sup>7</sup> | ISOLATION (VDC) | PACKAGE |
|--------------|---------------------|----------------------|---------------------|--------------------------------|---------|----------------------|-----------------|---------|
|              |                     |                      |                     | FULL LOAD                      | NO LOAD |                      |                 |         |
|              |                     |                      |                     | PUS-0505B3                     | 5       |                      |                 |         |
| PUS-0509B3   | 5                   | 9                    | 333                 | 706                            | 68      | 85                   | 3000            | B       |
| PUS-0512B3   | 5                   | 12                   | 250                 | 706                            | 68      | 85                   | 3000            | B       |
| PUS-0515B3   | 5                   | 15                   | 200                 | 698                            | 68      | 86                   | 3000            | B       |
| PUS-1205B3   | 12                  | 5                    | 600                 | 305                            | 28      | 83                   | 3000            | B       |
| PUS-1209B3   | 12                  | 9                    | 333                 | 294                            | 28      | 85                   | 3000            | B       |
| PUS-1212B3   | 12                  | 12                   | 250                 | 294                            | 28      | 86                   | 3000            | B       |
| PUS-1215B3   | 12                  | 15                   | 200                 | 287                            | 28      | 86                   | 3000            | B       |
| PUS-2405B3   | 24                  | 5                    | 600                 | 152                            | 15      | 83                   | 3000            | B       |
| PUS-2409B3   | 24                  | 9                    | 333                 | 147                            | 15      | 85                   | 3000            | B       |
| PUS-2412B3   | 24                  | 12                   | 250                 | 147                            | 15      | 86                   | 3000            | B       |
| PUS-2415B3   | 24                  | 15                   | 200                 | 144                            | 15      | 88                   | 3000            | B       |

*Note: Other input to output voltages may be available. Please contact factory.*

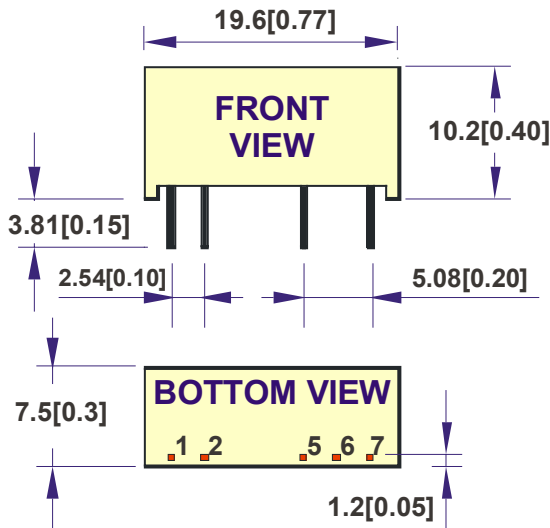
## ● PARTNUMBES STRUCTURE

| Model Name                         | Difference  |
|------------------------------------|---|
| PUv-x1x2x3x4<br>PUv-x1x2x3x4x5-zzz | <p>P=Series Name</p> <p>U=Unregulated</p> <p>v=Type of output voltage (S=Single output ; D=Dual output)</p> <p>x1=Input voltage<br/>(03.3~4.5V ; 05~8.5V ; 09~11.5V ; 12~14.5V ; 15~18V ; 19~24V)</p> <p>x2=Output voltage<br/>(03.3~4.5V ; 05~8.5V ; 09~11.5V ; 12~14.5V ; 15~18V ; 19~24V)</p> <p>x3=Difference Package</p> <p>X4=Type of output power</p> <p>X5=Function</p> <p>zzz= 0~9 , A~Z or blank for market purpose</p> |

<sup>6</sup> NOMINAL INPUT VOLTAGE.

<sup>7</sup> NOMINAL INPUT VOLTAGE, FULL LOAD.

## MECHANICAL DIMENSIONS & RECOMMENDED FOOTPRINT DETAILS



| PIN | SINGLE |
|-----|--------|
| 1   | +Vin   |
| 2   | -Vin   |
| 5   | -Vout  |
| 7   | +Vout  |

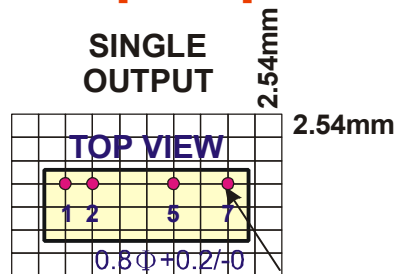
NOTE : All Dimensions In mm(Inches)

1. PinSize is 0.50x0.30mm[0.02x0.01"]

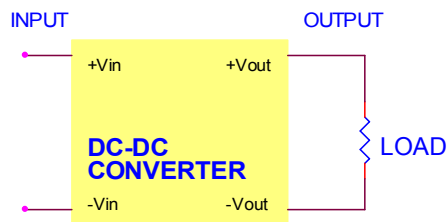
2. Pin is Tolerance .XX= ±0.05mm

3. Tolerance .X or .XX= ±0.5mm

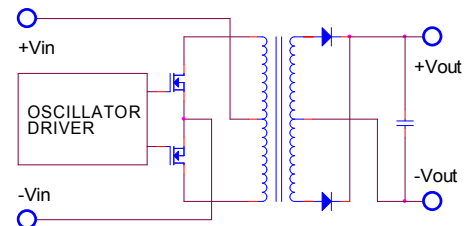
All dimensions are in mm[inches]



## SIMPLIFIED SCHEMATIC SINGLE OUTPUT



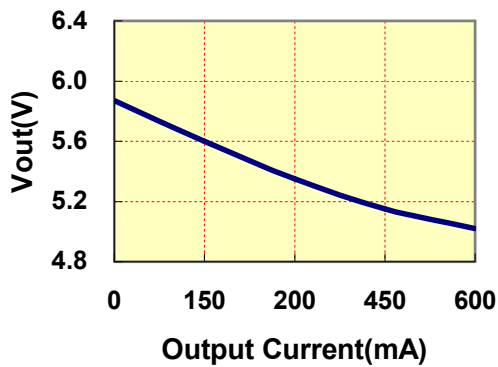
## TYPICAL APPLICATIONS SINGLE OUTPUT



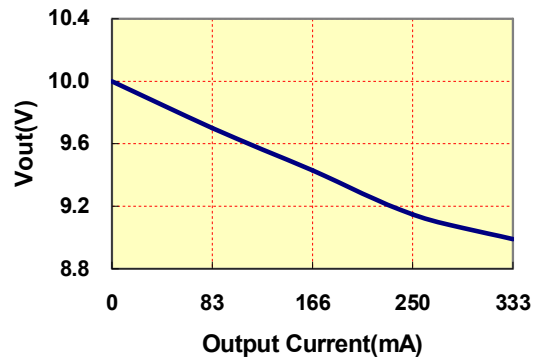
## TYPICAL PERFORMANCE CURVES

Specifications typical at TA=25°C, nominal input voltage, rated output current unless otherwise specified.

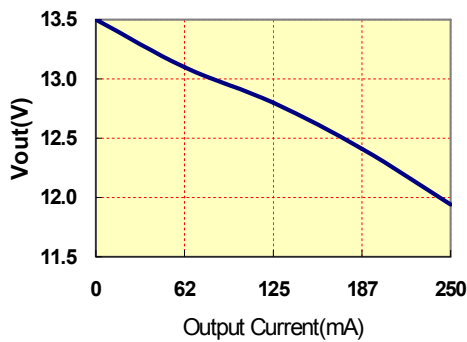
### VOUT VS LOAD(5Vout Models)



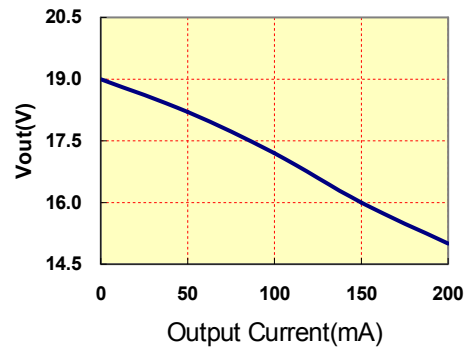
### VOUT VS LOAD(9Vout Models)



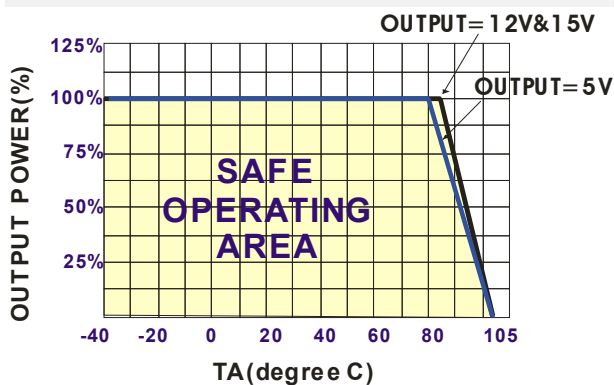
### VOUT VS LOAD(12Vout Models)



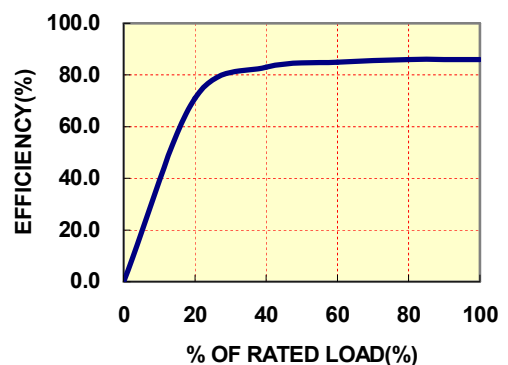
### VOUT VS LOAD(15Vout Models)



### DERATING CURVES



### EFFICIENCY VS LOAD



## ● INPUT FUSE SELECTION GUIDE

| 4.5-5.5V<br>INPUT VOLTAGE (VDC) | 10.8-13.2V<br>INPUT VOLTAGE (VDC) | 21.6-26.4V<br>INPUT VOLTAGE (VDC) |
|---------------------------------|-----------------------------------|-----------------------------------|
| 1800mA Slow-Blow Type           | 750mA Slow-Blow Type              | 400mA Slow-Blow Type              |

The diagram shows a yellow rectangular block labeled 'DC-DC CONVERTER'. On the left side, there are two terminals: '+Vin' (top) and '-Vin' (bottom). On the right side, there are two terminals: '+Vout' (top) and '-Vout' (bottom). A fuse is connected in series with the '+Vin' terminal. The input side is labeled 'INPUT' and the output side is labeled 'OUTPUT'.

**Note:** Certain applications may require the installation of external fuse in front of the input.

### **PU-3 SERIES APPLICATION NOTES:**

#### **EXTERNAL CAPACITANCE REQUIREMENTS:**

Output filtering is required for operation. A minimum of 10 $\mu$ F is needed. Output capacitance may be increased for additional filtering, not to exceed 220 $\mu$ F.

To meet the reflected ripple requirements of the converter, an input impedance of less than 0.5ohm from DC to 250KHz is required.

We Can Offer EMC-Filter According To EN55011/22 Class B.

#### **Negative Outputs:**

A negative output voltage may be obtained by connecting the +OUT to circuit ground and connecting -OUT as the negative output.

---

---

### **FOR MORE INFORMATION CALL:**

**Danube Enterprise Co., Ltd.**

Tel: 886-7-3755165

Fax: 886-7-3755330

E-mail: danube@ms10.hinet.net

Home Page

<http://www.danube.com.tw>

---

---