

## ■ Features

- Industrial standard SIP-4 package
- $\pm 10\%$  input range
- Operating temperature range  $-40^{\circ}\text{C} \sim +105^{\circ}\text{C}$
- Comply to BS EN/EN55032 radiated Class B without additional components
- Low no load input current
- Efficiency up to 90%
- Protections: Short circuit (Continuous)
- 1500VDC I/O isolation
- 3 years warranty

## ■ Applications

- Telecom/datacom system
- Wireless network
- Industrial control facility
- Instrument
- Analyzer
- Detector
- Data switch

## ■ GTIN CODE

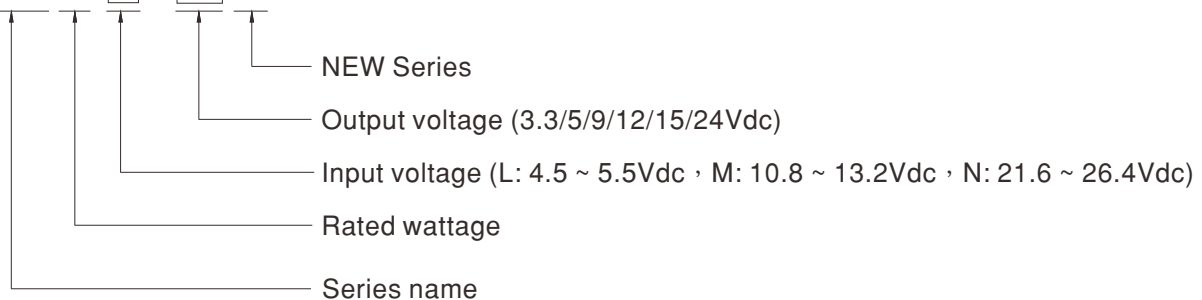
MW Search: <https://www.meanwell.com/serviceGTIN.aspx>

## ■ Description

SMU02-N series is an unregulated 2 Watt DC/DC converter in standard SIP-4 plastic package, with  $\pm 10\%$  input voltage range. It features isolated voltage of 1500VDC, extremely low no load current, wide working temperature range from  $-40 \sim +105^{\circ}\text{C}$ , and suits all kinds of systems like industrial control, automation field, and so on.

## ■ Model Encoding

SMU 02 L - 12 N





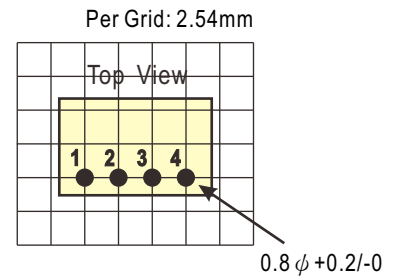
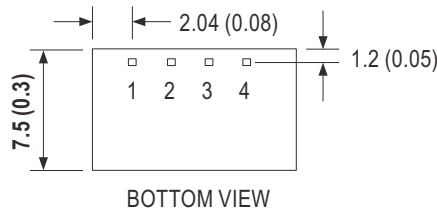
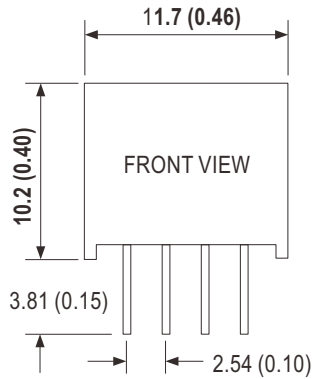
| MODEL SELECTION TABLE |                       |               |           |                |                |                   |                       |
|-----------------------|-----------------------|---------------|-----------|----------------|----------------|-------------------|-----------------------|
| ORDER NO.             | INPUT                 |               |           | OUTPUT         |                | EFFICIENCY (TYP.) | CAPACITOR LOAD (MAX.) |
|                       | INPUT VOLTAGE (RANGE) | INPUT CURRENT |           | OUTPUT VOLTAGE | OUTPUT CURRENT |                   |                       |
|                       |                       | NO LOAD       | FULL LOAD |                |                |                   |                       |
| SMU02L-03N            | 5V<br>(4.5 ~ 5.5V)    | 20mA          | 500mA     | 3.3V           | 600mA          | 81%               | 470μF                 |
| SMU02L-05N            |                       | 20mA          | 470mA     | 5V             | 400mA          | 85%               | 470μF                 |
| SMU02L-09N            |                       | 20mA          | 460mA     | 9V             | 222mA          | 87%               | 220μF                 |
| SMU02L-12N            |                       | 20mA          | 445mA     | 12V            | 167mA          | 90%               | 220μF                 |
| SMU02L-15N            |                       | 20mA          | 445mA     | 15V            | 133mA          | 90%               | 220μF                 |
| SMU02L-24N            |                       | 25mA          | 455mA     | 24V            | 84mA           | 88%               | 100μF                 |
| SMU02M-03N            | 12V<br>(10.8 ~ 13.2V) | 8mA           | 206mA     | 3.3V           | 600mA          | 81%               | 470μF                 |
| SMU02M-05N            |                       | 8mA           | 194mA     | 5V             | 400mA          | 86%               | 470μF                 |
| SMU02M-09N            |                       | 8mA           | 189mA     | 9V             | 222mA          | 88%               | 220μF                 |
| SMU02M-12N            |                       | 8mA           | 185mA     | 12V            | 167mA          | 90%               | 220μF                 |
| SMU02M-15N            |                       | 8mA           | 187mA     | 15V            | 133mA          | 89%               | 220μF                 |
| SMU02M-24N            |                       | 15mA          | 189mA     | 24V            | 84mA           | 88%               | 100μF                 |
| SMU02N-03N            | 24V<br>(21.6 ~ 26.4V) | 6mA           | 103mA     | 3.3V           | 600mA          | 81%               | 470μF                 |
| SMU02N-05N            |                       | 6mA           | 97mA      | 5V             | 400mA          | 86%               | 470μF                 |
| SMU02N-09N            |                       | 6mA           | 96mA      | 9V             | 222mA          | 87%               | 220μF                 |
| SMU02N-12N            |                       | 6mA           | 96mA      | 12V            | 167mA          | 87%               | 220μF                 |
| SMU02N-15N            |                       | 6mA           | 95mA      | 15V            | 133mA          | 88%               | 220μF                 |
| SMU02N-24N            |                       | 8mA           | 95mA      | 24V            | 84mA           | 88%               | 100μF                 |



| SPECIFICATION         |  |  |                        |                                       |
|-----------------------|--|--|------------------------|---------------------------------------|
| INPUT                 | VOLTAGE RANGE  | L: 4.5 ~ 5.5Vdc , M: 10.8 ~ 13.2Vdc , N: 21.6 ~ 26.4Vdc  |                        |                                       |
|                       | SURGE VOLTAGE (100ms max.)   | 5Vin models : 9Vdc ; 12Vin models : 18Vdc ; 24Vin models : 30Vdc   |                        |                                       |
|                       | FILTER   | Internal capacitor   |                        |                                       |
|                       | PROTECTION   | Fuse recommended. 5Vin models: 1000mA Slow-Blow Type, 12Vin models: 500mA Slow-Blow Type, 24Vin models: 300mA Slow-Blow Type |                        |                                       |
| OUTPUT                | VOLTAGE ACCURACY   | ±3% max.   |                        |                                       |
|                       | RATED POWER  | 2W   |                        |                                       |
|                       | RIPPLE & NOISE Note.2  | 100mVp-p max.  |                        |                                       |
|                       | LINE REGULATION Note.3   | ±1.5% for 1% input variation for 3.3V output, ±1.2% for 1% input variation for other output                                  |                        |                                       |
|                       | LOAD REGULATION Note.4   | 8% for other output, 12% for 3.3V output   |                        |                                       |
|                       | SWITCHING FREQUENCY (Typ.)   | 200KHz min.  |                        |                                       |
|                       | MINIMUM LOAD   | 10% of full load   |                        |                                       |
| PROTECTION            | SHORT CIRCUIT  | Continuous, automatic recovery   |                        |                                       |
| ENVIRONMENT           | COOLING  | Free-air convection  |                        |                                       |
|                       | WORKING TEMP.  | -40 ~ +105°C (Refer to "Derating Curve")   |                        |                                       |
|                       | CASE TEMPERATURE   | +115°C max.  |                        |                                       |
|                       | WORKING HUMIDITY   | 5% ~ 95% RH non-condensing   |                        |                                       |
|                       | STORAGE TEMP., HUMIDITY  | -55 ~ +125°C, 10 ~ 95% RH non-condensing   |                        |                                       |
|                       | TEMP. COEFFICIENT  | ±0.05% / °C  |                        |                                       |
|                       | SOLDERING TEMPERATURE  | 1.5mm from case of 3 ~ 5sec./265°C max.  |                        |                                       |
|                       | VIBRATION  | 10 ~ 500Hz, 2G 10min./1cycle, period for 60min. each along X, Y, Z axes  |                        |                                       |
| SAFETY & EMC (Note.5) | SAFETY STANDARDS   | EAC TP TC 020/2011 approved  |                        |                                       |
|                       | WITHSTAND VOLTAGE  | I/P-O/P:1.5KVDC  |                        |                                       |
|                       | ISOLATION RESISTANCE   | I/P-O/P:100M Ohms / 500VDC / 25°C / 70% RH   |                        |                                       |
|                       | ISOLATION CAPACITANCE (Typ.)   | 50pF   |                        |                                       |
|                       | EMC EMISSION   | Parameter  | Standard               | Test Level / Note( Note.6)            |
|                       |  | Conducted  | BS EN/EN55032(CISPR32) | N/A                                   |
|                       |  | Radiated   | BS EN/EN55032(CISPR32) | Class B without additional components |
|                       | EMC IMMUNITY   | Parameter  | Standard               | Test Level / Note                     |
|                       |  | ESD  | BS EN/EN61000-4-2      | Level 3, 8KV air                      |
|                       |  | Radiated Susceptibility  | BS EN/EN61000-4-3      | Level 2, 3V/m                         |
|                       |  | EFT/Bursts   | BS EN/EN61000-4-4      | Level 1, 0.5KV                        |
|                       |  | Surge  | BS EN/EN61000-4-5      | Level 2, 0.5KV Line-Line              |
|                       |  | Conducted  | BS EN/EN61000-4-6      | Level 2, 3Vrms                        |
| Magnetic Field        |  | BS EN/EN61000-4-8  | Level 1, 1A/m          |                                       |
| OTHERS                | MTBF   | 2000Khrs min. MIL-HDBK-217F(25°C)  |                        |                                       |
|                       | DIMENSION (L*W*H)  | 11.7*7.5*10.2mm (0.46*0.3*0.4 inch)  |                        |                                       |
|                       | CASE MATERIAL  | Non-Conductive black plastic (UL 94V-0 rated)  |                        |                                       |
|                       | PACKING  | 1.3g ; 42pcs/per tube, 6720pcs/160 tube/per carton   |                        |                                       |
| NOTE                  | <p>1.All parameters are specified at normal input(L:5Vdc, M:12Vdc, N:24Vdc), rated load, 25°C 70% RH ambient.</p> <p>2.Ripple &amp; noise are measured at 20MHz by using a 12" twisted pair terminated with a 0.1µf &amp; 47µf capacitor.</p> <p>3.Line regulation is measured from low line to high line at rated load.</p> <p>4.Load regulation is measured from 10% to 100% rated load.</p> <p>5.The final equipment must be re-confirm that it still meet EMC directives. For guidance on how to perform these EMC tests, please refer to "EMI testing of component power supplies."(as available on <a href="http://www.meanwell.com">http://www.meanwell.com</a>)</p> <p>6.An external input filter capacitor is required if the module has to meet BS EN/EN61000-4-4, BS EN/EN61000-4-5.<br/>The filter capacitor Power Mate suggest: 470µF/100V.</p> <p>※ Product Liability Disclaimer : For detailed information, please refer to <a href="https://www.meanwell.com/serviceDisclaimer.aspx">https://www.meanwell.com/serviceDisclaimer.aspx</a></p> |  |                        |                                       |

**Mechanical Specification**

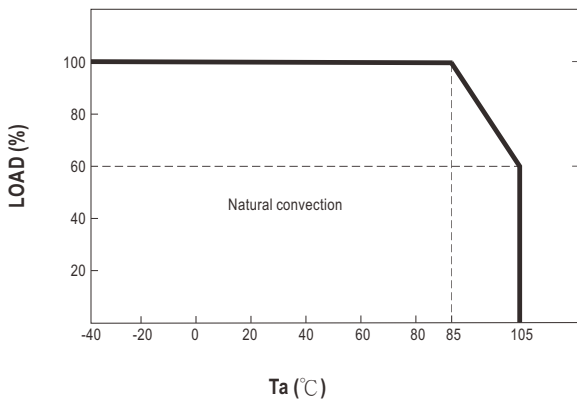
- All dimensions in mm(inch)
- Tolerance:  $x.x \pm 0.5\text{mm} (x.xx \pm 0.02")$   
 $x.xx \pm 0.25\text{mm} (x.xxx \pm 0.01")$
- Pin size is  $0.50 \times 0.30\text{mm} (0.02" \times 0.012")$
- Pin is Tolerance:  $x.xx \pm 0.05\text{mm} (x.xxx \pm 0.002")$



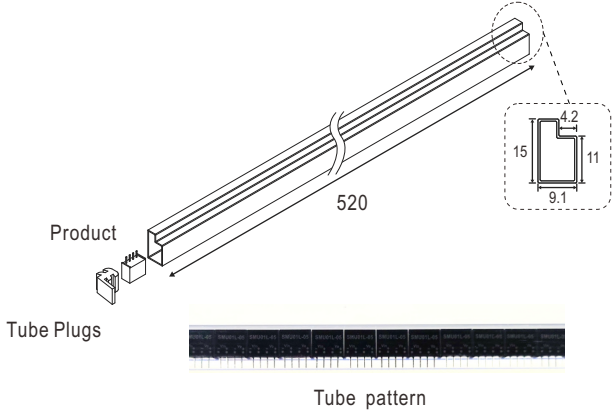
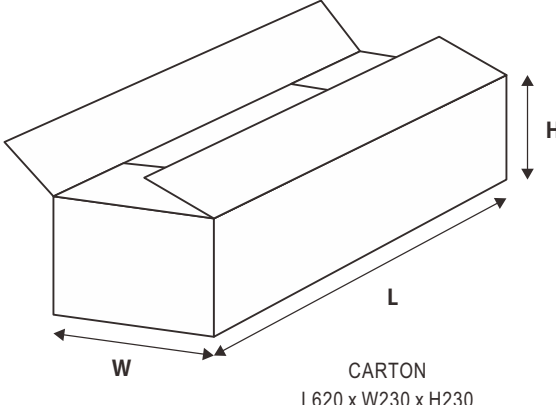
**Plug Assignment**

| Pin No. | Pin-Out |
|---------|---------|
| 1       | -Vin    |
| 2       | +Vin    |
| 3       | -Vout   |
| 4       | +Vout   |

**Derating Curve**



**■ Packing**

| Standard Tube Packing   | MPQ Per Tube (PCS) | One Tube G.W. | Max. Q'TY/ Carton(PCS) | One Carton G.W. |
|---|--------------------|---------------|------------------------|-----------------|
| <p>Unit : mm</p>   <p>CARTON<br/>L620 x W230 x H230</p> | 42                 | 75g           | 6720                   | 15.4Kg          |

**■ Installation Manual**

Please refer to : <http://www.meanwell.com/manual.html>