



2W SMD Package DC-DC Unregulated Converter

**DETN02 series**



### ■ Features

- SMD package with industry standard pinout
- Operating temperature range -40 ~ +100°C
- Comply to BS EN/EN55032 radiated Class A without additional components
- High efficiency up to 83%
- Protection: Short circuit
- 3KVDC I/O isolation
- Low cost
- Optional reel packing
- 3 years warranty

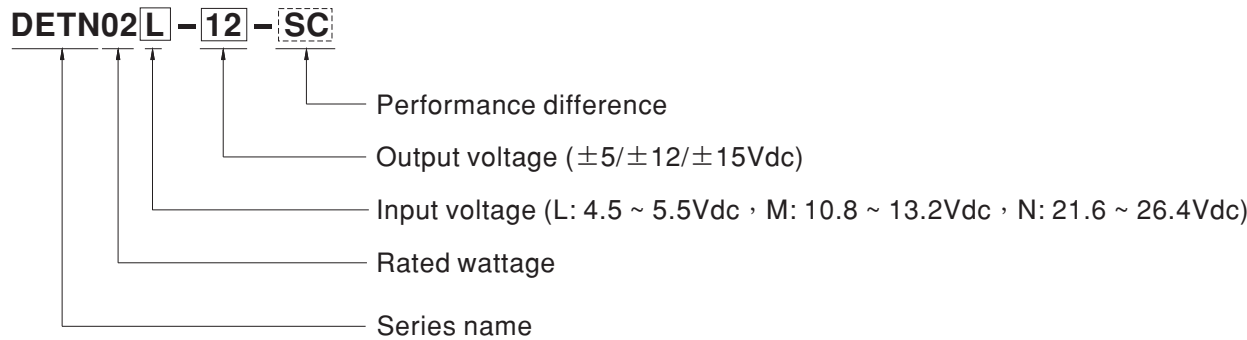
### ■ Applications

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

### ■ Description

DETN02 series is 2W isolated and unregulated module type DC-DC converter with SMD package. It features international standard pins, a high efficiency up to 83%, wide working temperature range -40~+100°C, 3KVDC I/P-O/P isolation voltage, compliance to BS EN/EN55032 radiated Class A without additional components, short circuit protection, etc. The models account for different input voltage 5V/12V/24V±10%, and various output voltage, ±5V/±12V/±15V for Dual output which are suitable for all kinds of systems, Such as industrial control, telecommunication field, distributed power architecture, and so on.

### ■ Model Encoding



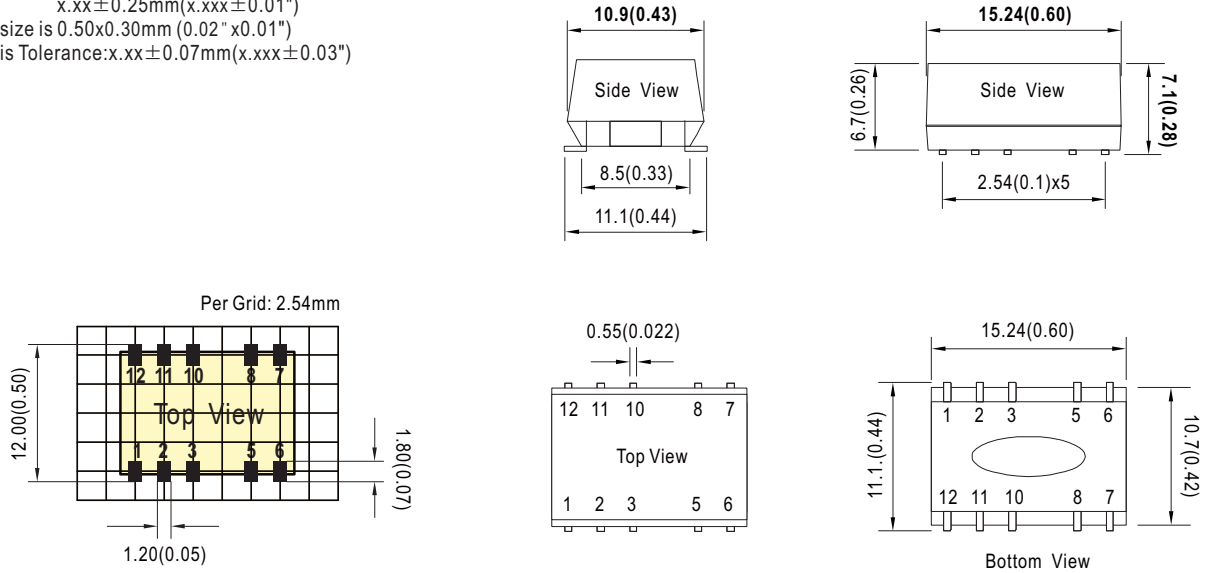
| Type  | Description                                                          | Note     |
|-------|----------------------------------------------------------------------|----------|
| Blank | -40~+100°C working temperature with max. 0.5 second short protection | In Stock |
| SC    | -40~+105°C working temperature with continuous short protection      | Optional |

| MODEL SELECTION TABLE |                              |               |           |                   |                   |                      |                          |
|-----------------------|------------------------------|---------------|-----------|-------------------|-------------------|----------------------|--------------------------|
| ORDER NO.             | INPUT                        |               |           | OUTPUT            |                   | EFFICIENCY<br>(TYP.) | CAPACITOR LOAD<br>(MAX.) |
|                       | INPUT VOLTAGE<br>(RANGE)     | INPUT CURRENT |           | OUTPUT<br>VOLTAGE | OUTPUT<br>CURRENT |                      |                          |
|                       |                              | NO LOAD       | FULL LOAD |                   |                   |                      |                          |
| DETN02L-05            | Normal 5V<br>(4.5 ~ 5.5V)    | 60mA          | 513mA     | ±5V               | ±20 ~ 200mA       | 78%                  | 220μF                    |
| DETN02L-12            |                              | 60mA          | 500mA     | ±12V              | ±8 ~ 84mA         | 80%                  | 220μF                    |
| DETN02L-15            |                              | 60mA          | 494mA     | ±15V              | ±6 ~ 67mA         | 81%                  | 220μF                    |
| DETN02M-05            | Normal 12V<br>(10.8 ~ 13.2V) | 30mA          | 208mA     | ±5V               | ±20 ~ 200mA       | 80%                  | 220μF                    |
| DETN02M-12            |                              | 30mA          | 203mA     | ±12V              | ±8 ~ 84mA         | 82%                  | 220μF                    |
| DETN02M-15            |                              | 30mA          | 200mA     | ±15V              | ±6 ~ 67mA         | 83%                  | 220μF                    |
| DETN02N-05            | Normal 24V<br>(21.6 ~ 26.4V) | 15mA          | 107mA     | ±5V               | ±20 ~ 200mA       | 78%                  | 220μF                    |
| DETN02N-12            |                              | 15mA          | 104mA     | ±12V              | ±8 ~ 84mA         | 80%                  | 220μF                    |
| DETN02N-15            |                              | 15mA          | 104mA     | ±15V              | ±6 ~ 67mA         | 80%                  | 220μF                    |

| SPECIFICATION               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                    |                        |                                        |
|-----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|------------------------|----------------------------------------|
| INPUT                       | VOLTAGE RANGE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | L: 4.5 ~ 5.5Vdc<br>M: 10.8 ~ 13.2Vdc<br>N: 21.6 ~ 26.4Vdc                                                                          |                        |                                        |
|                             | SURGE VOLTAGE (100ms max.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 5Vin models : 9Vdc<br>12Vin models : 16Vdc<br>24Vin models : 30Vdc                                                                 |                        |                                        |
|                             | FILTER                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Internal capacitor                                                                                                                 |                        |                                        |
|                             | PROTECTION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Fuse recommended.<br>5Vin models: 800mA Slow-Blow Type<br>12Vin models: 300mA Slow-Blow Type<br>24Vin models: 170mA Slow-Blow Type |                        |                                        |
|                             | INTERNAL POWER DISSIPATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 500mW                                                                                                                              |                        |                                        |
| OUTPUT                      | VOLTAGE ACCURACY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | ± 2.0%                                                                                                                             |                        |                                        |
|                             | RATED POWER                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 2W                                                                                                                                 |                        |                                        |
|                             | RIPPLE & NOISE   Note.2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 75mVp-p                                                                                                                            |                        |                                        |
|                             | LINE REGULATION   Note.3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 1.2% for 1% input variation                                                                                                        |                        |                                        |
|                             | LOAD REGULATION   Note.4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | ± 8%                                                                                                                               |                        |                                        |
|                             | SWITCHING FREQUENCY (Typ.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 100KHz                                                                                                                             |                        |                                        |
| PROTECTION                  | SHORT CIRCUIT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Standard model: 0.5 second max.<br>Optional models (SC-suffix): Continuous                                                         |                        |                                        |
| ENVIRONMENT                 | COOLING                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Free-air convection                                                                                                                |                        |                                        |
|                             | WORKING TEMP.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Standard model: -40 ~ +100℃ (Refer to "Derating Curve") ; Optional models (SC-suffix): -40 ~ +105℃                                 |                        |                                        |
|                             | CASE TEMPERATURE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | +105℃ max.                                                                                                                         |                        |                                        |
|                             | WORKING HUMIDITY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 20% ~ 90% RH non-condensing                                                                                                        |                        |                                        |
|                             | STORAGE TEMP., HUMIDITY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | -55 ~ +125℃, 10 ~ 95% RH non-condensing                                                                                            |                        |                                        |
|                             | TEMP. COEFFICIENT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 0.03% / °C (0 ~ 90℃)                                                                                                               |                        |                                        |
|                             | SOLDERING TEMPERATURE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 1.5mm from case of 1 ~ 10sec./240℃ max.                                                                                            |                        |                                        |
|                             | VIBRATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 10 ~ 500Hz, 2G 10min./1cycle, period for 60min. each along X, Y, Z axes                                                            |                        |                                        |
| SAFETY & EMC<br>( Note.5,6) | SAFETY STANDARDS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | EAC TP TC 020/2011 approved                                                                                                        |                        |                                        |
|                             | WITHSTAND VOLTAGE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | I/P-O/P:3KVDC                                                                                                                      |                        |                                        |
|                             | ISOLATION RESISTANCE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | I/P-O/P:100M Ohms / 500VDC / 25℃ / 70% RH                                                                                          |                        |                                        |
|                             | ISOLATION CAPACITANCE (Typ.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 80pF                                                                                                                               |                        |                                        |
|                             | EMC EMISSION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Parameter                                                                                                                          | Standard               | Test Level / Note( Note.6)             |
|                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Conducted                                                                                                                          | BS EN/EN55032(CISPR32) | N/A                                    |
|                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Radiated                                                                                                                           | BS EN/EN55032(CISPR32) | Class A                                |
|                             | EMC IMMUNITY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Parameter                                                                                                                          | Standard               | Test Level / Note                      |
|                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | ESD                                                                                                                                | BS EN/EN61000-4-2      | Level 3, ±8KV air, Level 2±4KV contact |
|                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Radiated Susceptibility                                                                                                            | BS EN/EN61000-4-3      | Level 2, 3V/m                          |
|                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | EFT/Burest                                                                                                                         | BS EN/EN61000-4-4      | Level 1, 0.5KV at power                |
|                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Surge                                                                                                                              | BS EN/EN61000-4-5      | Level 2, 0.5KV Line-Line               |
|                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Conducted                                                                                                                          | BS EN/EN61000-4-6      | Level 2, 3V(e.m.f.)                    |
|                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Magnetic Field                                                                                                                     | BS EN/EN61000-4-8      | Level 1, 1A/m                          |
|                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                    |                        |                                        |
| OTHERS                      | MTBF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 888Khrs min.   MIL-HDBK-217F(25℃)                                                                                                  |                        |                                        |
|                             | DIMENSION (L*W*H)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 15.24*10.9*7.1mm (0.6*0.43*0.28 inch)                                                                                              |                        |                                        |
|                             | CASE MATERIAL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Non-Conductive black plastic (UL 94V-0 rated)                                                                                      |                        |                                        |
|                             | PACKING                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 1.2g                                                                                                                               |                        |                                        |
| NOTE                        | 1.All parameters are specified at normal input(L:5Vdc, M:12Vdc, N:24Vdc), rated load, 25℃ 70% RH ambient.<br>2.Ripple & noise are measured at 20MHz by using a 12" twisted pair terminated with a 0.1μf & 47μf capacitor.<br>3.Line regulation is measured from low line to high line at rated load.<br>4.Load regulation is measured from 10% to 100% rated load.<br>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 http://www.meanwell.com)<br>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.<br>※ Product Liability Disclaimer : For detailed information, please refer to https://www.meanwell.com/serviceDisclaimer.aspx |                                                                                                                                    |                        |                                        |

## Mechanical Specification

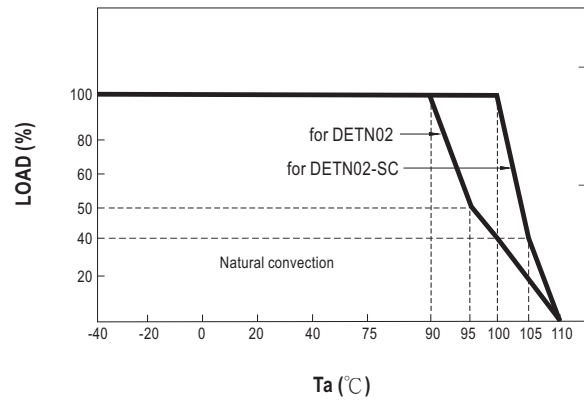
- All dimensions in mm(inch)
- Tolerance:  $x.xx \pm 0.5\text{mm}$  ( $x.xx \pm 0.02''$ )  
 $x.xx \pm 0.25\text{mm}$  ( $x.xxx \pm 0.01''$ )
- Pin size is  $0.50 \times 0.30\text{mm}$  ( $0.02'' \times 0.01''$ )
- Pin is Tolerance:  $x.xx \pm 0.07\text{mm}$  ( $x.xxx \pm 0.03''$ )



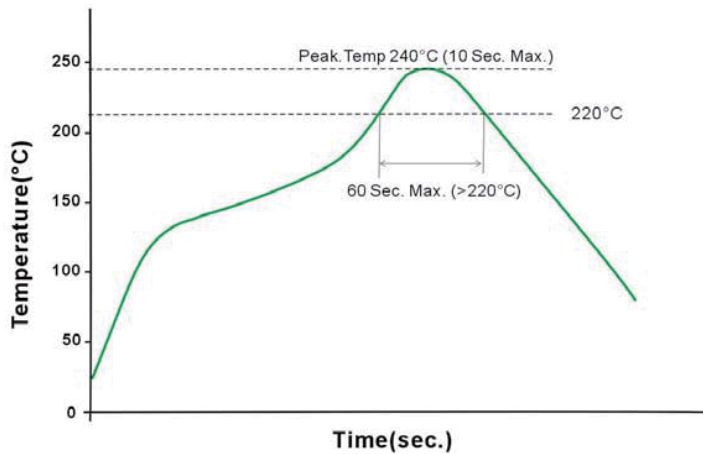
## Plug Assignment

| Pin No.      | Pin-Out |
|--------------|---------|
| 1            | -Vin    |
| 2            | +Vin    |
| 5            | Common  |
| 6            | -Vout   |
| 8            | +Vout   |
| 3,7,10,11,12 | N.C.    |

## Derating Curve



## Reflow Soldering Curve



Remark: The curve applies only to the hot air reflow soldering.



2W SMD Package DC-DC Unregulated Converter

DETNO2 series

■ Packing

| Standard Tube Packing                                                                                                                                                                                                                 | MPQ<br>Per Tube<br>(PCS) | One Box<br>G.W. | Max. Q'TY/<br>Carton(PCS) | One Carton<br>G.W. |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|-----------------|---------------------------|--------------------|
| <p>Unit : mm</p> <p>0.55±0.2<br/>12.0±0.4<br/>7.7±0.3<br/>17.0±0.4<br/>13.5±0.4<br/>8.3±0.4<br/>525±2</p> <p>TUBE PATTERN</p> <p>CARTON<br/>L600 x W230 x H220</p>                                                                    | 32                       | 0.061Kg         | 3840                      | 8.12Kg             |
| Optional Reel Packing                                                                                                                                                                                                                 | MPQ<br>Per Tube<br>(PCS) | One Box<br>G.W. | Max. Q'TY/<br>Carton(PCS) | One Carton<br>G.W. |
| <p>Unit : mm</p> <p>330<br/>Reel Width=32<br/>Reel Width=32</p> <p>INNER BOX<br/>L355*W338*H50</p> <p>OUTER CARTON<br/>L375*W284*H370</p> <p>W=32(+0.3/-0.1)<br/>Ao=11.4(±0.1)<br/>Bo=15.5(±0.1)<br/>Ko=7.4(±0.1)<br/>P1=16(±0.1)</p> | 500                      | 1.3Kg           | 2500                      | 7.3Kg              |

■ Installation Manual

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