# SPV40-29BxxR4

## Product Feature

◆Package Type：89.00*63.50*25.00mm

◆Input voltage range：200-1500VDC

◆Input Power：40W

◆Operating temperature range：-40℃ - +70℃

◆Isolation voltage：4000VAC

◆High efficiency up：83%（Typ.）

◆Input characteristics :Equipped with input undervoltage protection and anti reverse connection protection;

◆Output characteristic :Output short-circuit protection, overcurrent protection, overvoltage protection, and over-temperature protection etc.

◆Fields of application：Photovoltaic tracking systems, combiner boxes, SVG,energy storage systems, and other fields.


## Selection Guide

| Part No. | Input Voltage (VDC) | Output Power （W) | Voltage (VDC) | Current Max (A) | Full Load Efficiency (Typ） | Capacitive Load (μF)Max. |
|---|---|---|---|---|---|---|
| SPV40-29B12R4 | 200 - 1500 | 40 | 12 | 3.33 | 82 | 2200 |
| SPV40-29B15R4 | | 40 | 15 | 2.67 | 83 | 1500 |
| SPV40-29B24R4 | | 40 | 24 | 1.67 | 83 | 820 |

Note: 1. All the above data were tested within the parameter range of typical application circuits;

2.The product images are for reference only. Please refer to the actual product for details.

## Input Specifications

| Item | Operating Conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|
| Input voltage range | | 200 | -- | 1500 | V |
| Input current | 200VDC | -- | -- | 0.32 | A |
| | 600VDC | -- | -- | 0.1 | |
| Impact current | 600VDC | -- | 60 | -- | |
| | 1200VDC | -- | 100 | -- | |
| Undervoltage protection | | Under-voltage protection point: <195V, under-voltage release point: ≥200V | | | |
| Fuses | | 4A/1500VDC、must be connected | | | |
| Hot plug | | Unavailable | | | |

# SPV40-29BxxR4

## Output Specifications

| Item | Operating Conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|
| Output Voltage Accuracy | | -- | ±1.0 | ±5.0 | % |
| Linear Regulation Rate | loaded to capacity | -- | ±0.5 | ±3.0 | |
| Load Regulation Rate | 0% -100% load 3.3DC output | -- | ±0.5 | ±3.0 | |
| Ripple Noise | 20MHz bandwidth (peak-to-peak) | -- | 100 | 200 | mV |
| Temperature Drift Coefficient | | -- | ±0.02 | -- | %/℃ |
| Stand-by Power Consumption | Full voltage range | -- | 0.5 | 3 | W |
| Min. Load | | 0 | -- | -- | % |
| Over Current Protection | | More than 105%Io, self-recovery | | | |
| Short-Circuit Protection | | Hiccup type, can long-term short circuit protection, self-recovery | | | |
| Hold-up Time | 600VDC input | -- | 5 | -- | ms |
| Note: The test method for ripple and noise adopts the proximity test method, with a 10uF electrolytic capacitor and a 1uF ceramic capacitor | | | | | |

## General Specifications

| Item | Operating Conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|
| Insulation voltage | Input-output, test time 1 minute, leakage current<5mA | 4000 | -- | -- | VAC |
| Power Derating | -40℃ - -25℃ | 2.67 | -- | -- | %/℃ |
| | +50℃ - +70℃ | 2.50 | -- | -- | |
| | 2000m - 5000m | 6.70 | -- | -- | %/Km |
| Operating Temperature | | -40 | -- | +70 | ℃ |
| Storage Temperature | | -40 | -- | +85 | |
| Storage Humidity | | -- | -- | 95 | %RH |
| Soldering Profile | Wave-soldering | 260 ± 5℃; time: 5 - 10s | | | |
| | Manual-welding | 360 ± 10℃; time: 3 - 5s | | | |
| Safety Class | | Complies with UL1741, CSA-C22.2 No.107.1, EN62109-1 | | | |
| MTBF | MIL-HDBK-217F@25℃ | ≥300,000h | | | |

# SPV40-29BxxR4

## Mechanical Specifications

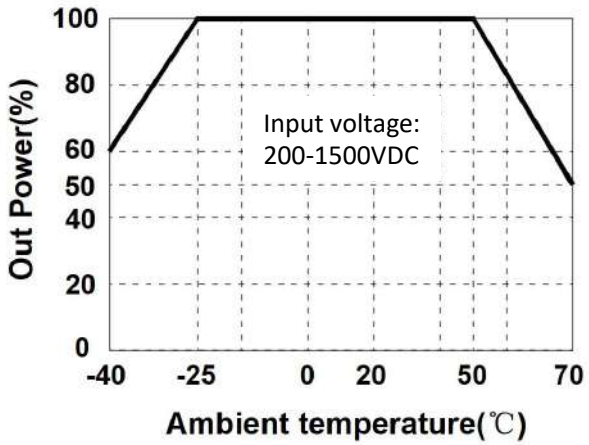
| | |
|---|---|
| Case Material | Black plastic; flame-retardant and heat-resistant（UL94V-0） |
| Package Dimensions | 89.00 x 63.50 x 25.00mm |
| Weight | 195.0g Typ. |
| Cooling Method | Free air convection |

## EMC Specifications

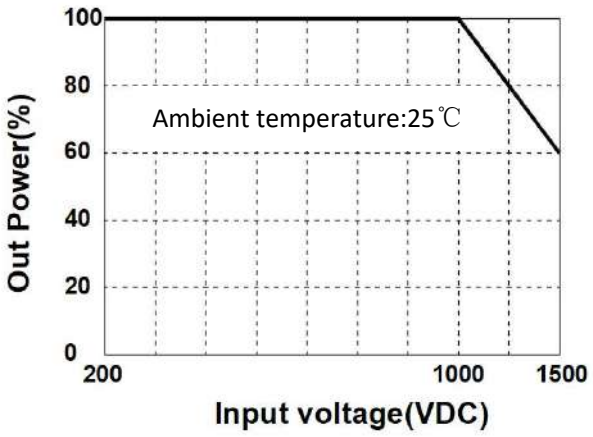
| | | | |
|---|---|---|---|
| EMI | CE | CISPR32/EN55032 CLASS A (Recommended Circuit（Figure 2）) | |
| | RE | CISPR32/EN55032 CLASS A (Recommended Circuit（Figure 2）) | |
| EMS | RS | IEC/EN61000-4-3 10V/m | perf. Criteria A |
| | EFT | IEC/EN61000-4-4 ±2KV<br>±4KV (Recommended Circuit（Figure 2）) | perf. Criteria B |
| | Surge | IEC/EN61000-4-5 line to line ±1KV<br>line to line ±2KV (Recommended Circuit（Figure 2）) | perf. Criteria A |
| | CS | IEC/EN61000-4-6 10Vr.m.s | perf. Criteria A |
| | ESD | IEC/EN61000-4-2 Contact ±6KV/Air ±8KV | perf. Criteria A |

## Typical Characteristic Curves

Temperature Derating Curve



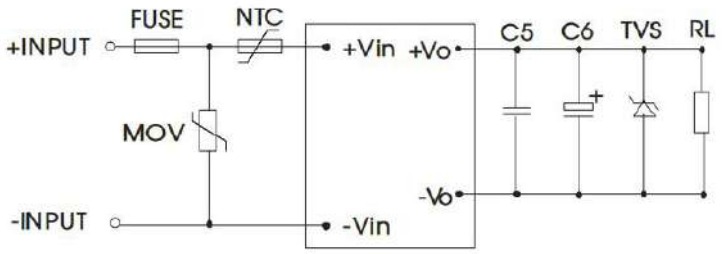

Input Voltage Derating Curve




Note: 1. For input voltages of 1000-1200VDC, voltage derating should be carried out on the basis of temperature derating.

2.This product is suitable for use in a natural wind-cooled environment.

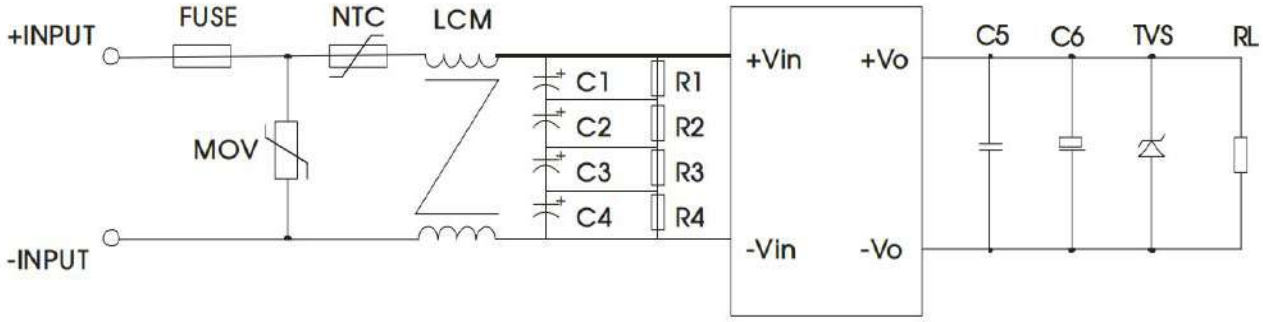
## Typical Circuit Design and Application

| Application circuit (Figure 1) | Recommendation of capacitive load value table | | |
|---|---|---|---|
|  | Output voltage | 12/15VDC | 24VDC |
| | FUSE | 4A/1500VDC，Must be connected | |
| | MOV | 20D162K | |
| | NTC | 10D-20 | |
| | C5（μF） | 1 | |
| | C6（μF） | 220 | 120 |
| | TVS | SMBJ20A | SMBJ30A |



## EMS Solutions - Recommended Circuitst

EMS Solutions - Recommended Circuitst（Figure 2）

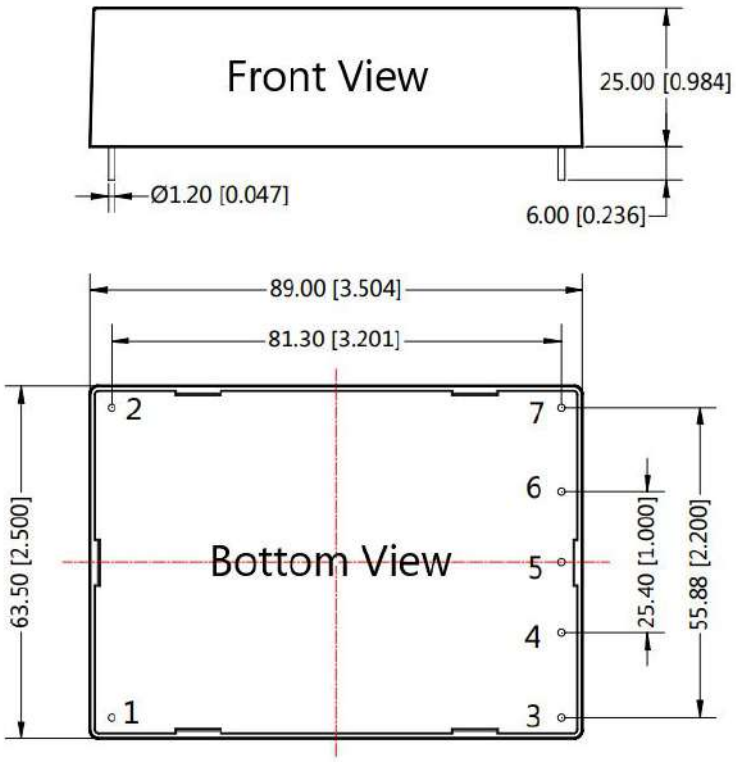



| Recommended parameter values for EMC solution circuits | |
|---|---|
| Model | Recommended value |
| MOV | 20D162K |
| C1, C2, C3, C4 | 47μF/450V |
| R1, R2, R3, R4 | 1MΩ/2W |
| NTC | 10D-20 |
| LCM | 10mH |
| FUSE | 4A/ 1500VDC Must be connected |

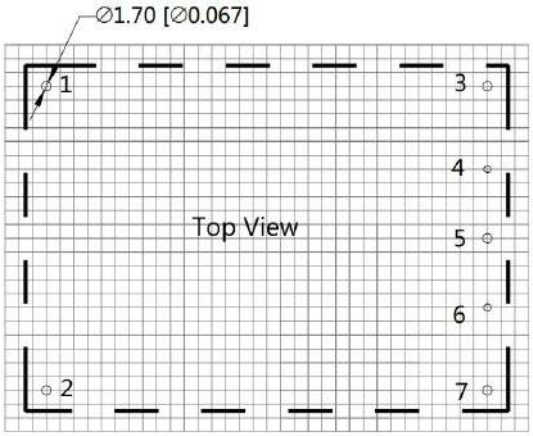
# SPV40-29BxxR4

## Dimensions and Recommended Layout

| Dimensions | PCB Printing Layout |
|---|---|




Note:
Unit: mm[inch]
Pin section tolerances:±0.10[±0.004]
General tolerances:±0.50[±0.020]




Grid size：2.54*2.54mm

**Pin FunctionTable**

| Pin | Function |
|---|---|
| 1 | +Vin |
| 2 | -Vin |
| 3 | +Vout |
| 4 | -Vout |

## Packaging instructions

| Packaging Information | | |
|---|---|---|
| Product quantity (pcs/ tray) | Inner carton quantity(pcs/carton) | Outer carton quantity (pcs/carton) |
| 12 | 36 | 72 |

**Note：**

- The input voltage should not exceed the specified range value, otherwise it may cause permanent and irreparable damage;
- It is recommended to use at a load of over 5%. If the load is below 5%, the ripple index of the product may exceed the specifications, but it does not affect the reliability of the product;
- The maximum capacitive load is tested within the input voltage range and under full load conditions;
- Unless otherwise specified, all indicators in this manual are measured at Ta=25 ℃, humidity<75% RH, nominal input voltage, and output rated load;
- All indicator testing methods in this manual are based on our company's corporate standards;
- Our company can provide product customization, and specific requirements can be directly contacted by our technical personnel;
- Product specifications are subject to change without prior notice.