# SVRB_D-30W Series

***30W, WIDE INPUT, ISOLATED & REGULATED SINGLE OUTPUT DC-DC CONVERTER***

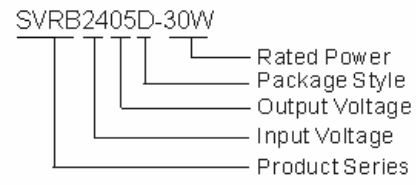
## FEATURES

- Efficiency up to 89%
- 2:1 Wide Input Voltage Range
- 1.5KVDC Input/Output Isolation
- Over Voltage Protection
- Output Short Circuit Protection
- Operating Temperature: -40℃ ~ +85℃
- Internal SMD Construction
- Metal Shielding Package
- Industry Standard Pinout
- MTBF>1,000,000 hours
- RoHS Compliance

## APPLICATION

The SVRB_D-30W series offer 30W of output, with 2:1 wide input voltage of 9-18, 18-36 and 36-75VDC and features 1500VDC isolation, short-circuit and over current protection, as well as six sided shielding. All models are particularly suited to tele-communications, industrial, test equipments power and other fields.

## MODEL SELECTION




GERMANY

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## PRODUCT PROGRAM

| Part Number | Input | | | Output | | Capacitance[3] (max, μF) | Efficiency (%, Typ) |
|---|---|---|---|---|---|---|---|
| | Voltage (VDC) | | | Voltage (VDC) | Rated Current [2] (mA) | | |
| | Nominal | Range | Max. [1] | | | | |
| SVRB1203D-30W | 12 | 9-18 | 20 | 3.3 | 6000 | 19500 | 85 |
| SVRB1205D-30W | | | | 5 | 6000 | 10200 | 86 |
| SVRB1212D-30W | | | | 12 | 2500 | 3240 | 86 |
| SVRB1215D-30W | | | | 15 | 2000 | 1100 | 86 |
| SVRB2403D-30W | 24 | 18-36 | 40 | 3.3 | 6000 | 19500 | 87 |
| SVRB2405D-30W | | | | 5 | 6000 | 10200 | 88 |
| SVRB2412D-30W | | | | 12 | 2500 | 3300 | 89 |
| SVRB2415D-30W | | | | 15 | 2000 | 1100 | 89 |
| SVRB4803D-30W | 48 | 36-75 | 80 | 3.3 | 6000 | 19500 | 87 |
| SVRB4805D-30W | | | | 5 | 6000 | 10200 | 89 |
| SVRB4812D-30W | | | | 12 | 2500 | 3300 | 87 |
| SVRB4815D-30W | | | | 15 | 2000 | 1100 | 88 |

Add suffix “H” for heat sink mounted, for example SVRB2405D-30WH.

## COMMON SPECIFICATIONS

| Item | Test conditions | Min. | Typ. | Max. | Units |
|---|---|---|---|---|---|
| Storage humidity | | 5 | -- | 95 | % |
| Operating temperature | | -40 | -- | 85 | ℃ |
| Storage temperature | | -55 | -- | 125 | |
| Maximum case temp. | | -- | -- | 105 | |
| Lead temperature | 1.5mm from case for 10 seconds | | | 300 | |
| Isolation voltage | Test for 1 minute and 1 mA max | 1500 | -- | -- | VDC |
| Isolation resistance | | 1000 | -- | -- | MΩ |
| Isolation capacitance | 100kHz / 0.1V | -- | 1000 | -- | pF |
| Switching frequency | Nominal, full load | -- | 300 | -- | kHz |
| MTBF | MIL-HDBK-217F | 1000 | -- | -- | k hours |
| Weight | | -- | 50 | -- | g |
| Case material | | Copper, Nickel plated | | | |

## INPUT SPECIFICATIONS

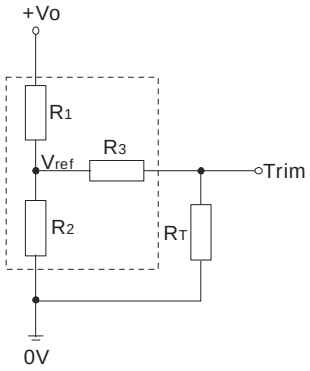
| Item | Test conditions | | Min. | Typ. | Max. | Units |
|---|---|---|---|---|---|---|
| Under voltage lockout | Nominal input (12V) | Module ON | -- | -- | 9.0 | VDC |
| | | Module OFF | 8.0 | -- | -- | |
| | Nominal input (24V) | Module ON | -- | -- | 17.8 | |
| | | Module OFF | 16.0 | -- | -- | |
| | Nominal input (48V) | Module ON | -- | -- | 35.5 | |
| | | Module OFF | 33.0 | -- | -- | |
| Start up time | | | -- | 10 | -- | ms |
| Input filter | | | L-C | | | |
| CTRL[4] | Module ON | | 3.5-12VDC or open circuit | | | |
| | Module OFF | | 0-1.2VDC | | | |

## OUTPUT SPECIFICATIONS

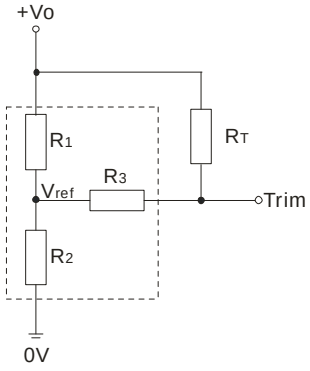
| Item | Test conditions | Min. | Typ. | Max. | Units |
|---|---|---|---|---|---|
| Output voltage accuracy | Refer to recommended circuit | -- | ±1 | ±3 | % |
| Load regulation | From 10% to 100% load | -- | ±0.5 | ±1 | |
| Line regulation | Input voltage from low to high | -- | ±0.2 | ±0.5 | |
| Ripple and noise | Tested under 20MHz Brand | 50 | 75 | 150 | mV |
| Transient recovery time | 25%load change | -- | 200 | 300 | us |
| Transient peak deviation | | | ±3 | ±5 | % |
| Over load protection | Input voltage range | 120 | 130 | 150 | % |
| Output Short Circuit | Input voltage range | Hiccup, automatics recovery | | | |
| Over voltage protection | 3.3V output | -- | 3.9 | -- | VDC |
| | 5V output | -- | 6.2 | -- | |
| | 12V output | -- | 15 | -- | |
| | 15V output | -- | 18 | -- | |
| Temperature drift (Vout) | | -- | ±0.02 | -- | %/℃ |
| Trim | | -- | ±10%Vo | -- | VDC |

## OUTLINE DIMENSIONS & FOOTPRINT DETAILS

**Application circuit for TRIM (Part in broken line is the interior of models)**




Trim up

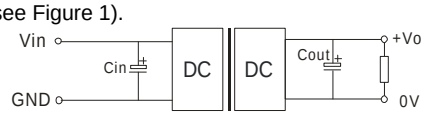



Trim down

## APPLICATION NOTE

**1) Recommended circuit**

All the SVRB_D-30W series have been tested according to the following recommended testing circuit before leaving factory. This series should be tested under load. Never be tested under no load (see Figure 1).




(Figure 1)

If you want to further decrease the output ripple, you can increase capacitance properly or choose capacitors with low ESR. However, the capacitance can't exceed the maximum capacitor load in the list.

**2) Recommended capacitance**

To ensure these series can operate efficiently and reliably, the recommended capacitance of input and output sees the below table.

| Capacitance / Output Voltage | Cout | Cin (12V,24V, 48V input) |
|---|---|---|
| 3.3V,5V | 220μF | 100μF |
| 12V,15V | 100μF | |

**3) No parallel connection or plug and play**

## DERATING&EFFICIENCY CURVE

**1) Temperature derating curve**



Specifications subject to change without notice.

**Formula for resistance of Trim**

$$\text{up: } R_T = \frac{aR_2}{R_2 - a} - R_3 \qquad a = \frac{Vref}{Vo' - Vref} \cdot R_1$$

$$\text{down: } R_T = \frac{aR_1}{R_1 - a} - R_3 \qquad a = \frac{Vo' - Vref}{Vref} \cdot R_2$$

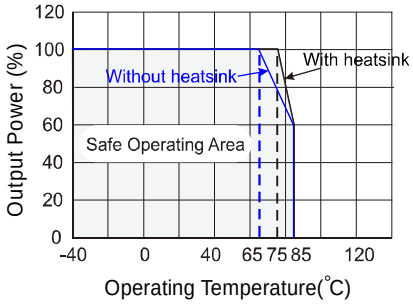
Note: Value for R1, R2, R3, and Vref refer to the following table.

$R_T$: Resistance of Trim

a: User-defined parameter, no actual meanings.

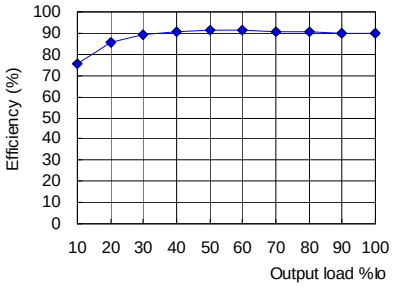
Vo': The trim up/down voltage

| Parameter \ Vo | 3.3(VDC) | 5(VDC) | 12(VDC) | 15(VDC) |
|---|---|---|---|---|
| R1(KΩ) | 4.801 | 2.883 | 10.971 | 14.497 |
| R2(KΩ) | 2.863 | 2.864 | 2.864 | 2.864 |
| R3(KΩ) | 15 | 10 | 17.8 | 17.8 |
| Vref(V) | 1.24 | 2.5 | 2.5 | 2.5 |



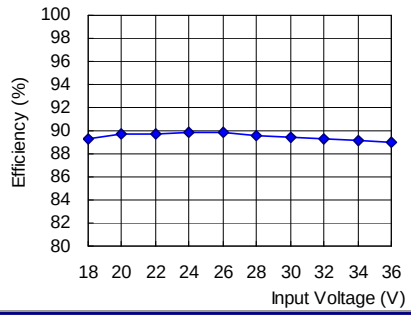

**2) Curve of Efficiency VS output load**

**SVRB2405D-30W**




**3) Curve of Efficiency VS input Voltage**

**SVRB2405D-30W**




## OUTLINE DIMENSIONS & FOOTPRINT DETAILS



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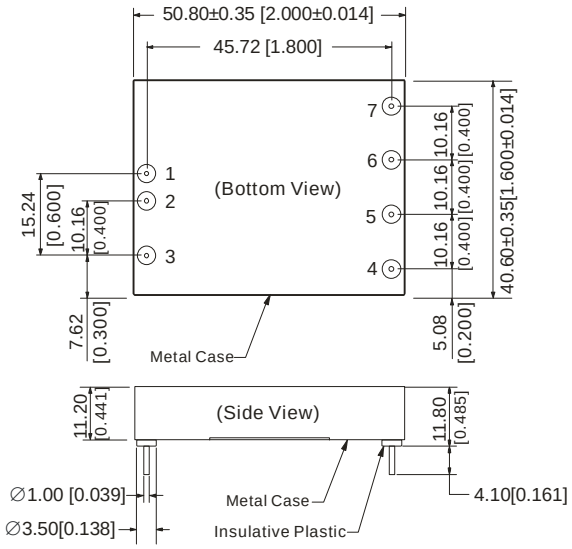
SVRB_D-30W

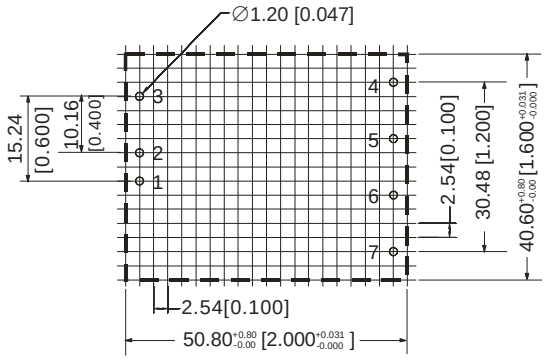
## MECHANICAL DIMENSIONS



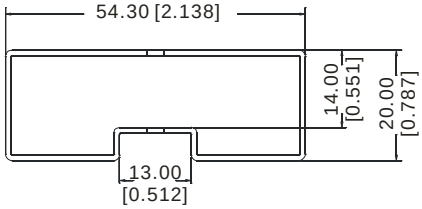

| FOOTPRINT DETAILS | |
|---|---|
| Pin | Function |
| 1 | Vin |
| 2 | GND |
| 3 | Ctrl |
| 4 | Trim |
| 5 | 0V |
| 6 | +Vo |

Unit:mm[inch]
Pin diameter tolerances:± 0.10mm[± 0.004inch]
General tolerances:± 0.25mm[± 0.010inch]

## RECOMMENDED FOOTPRINT

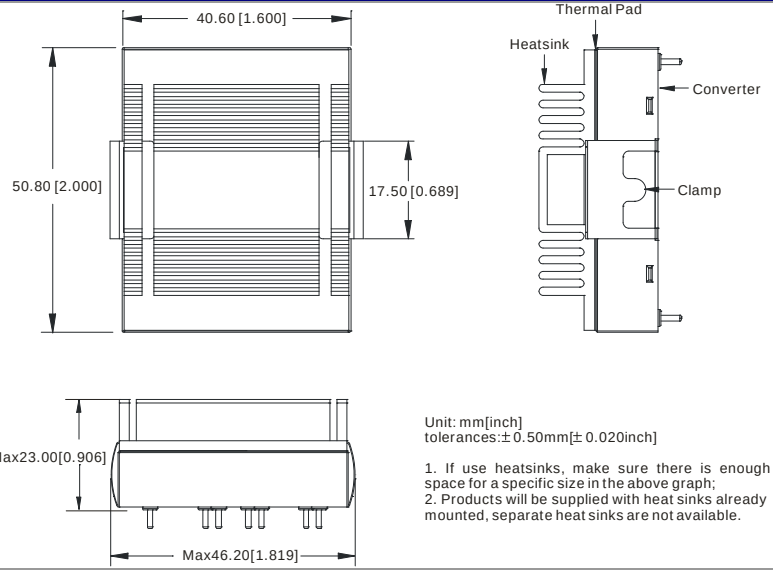



## TUBE OUTLINE DIMENSIONS (WITHOUT HEATSINK)




Unit :mm[inch]
General tolerances: ±0.50mm[±0.020inch]
L=230mm[9.055inch] Pcs/Tube:4

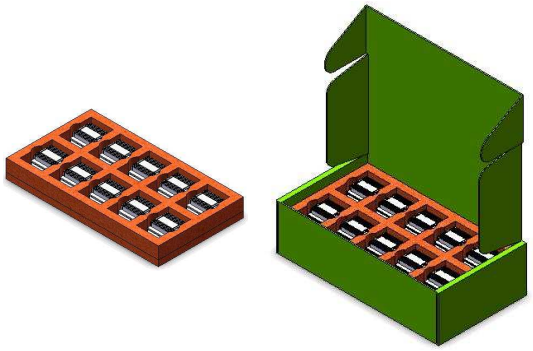
## HEATSINK ASSEMBLY




Unit: mm[inch]
tolerances:± 0.50mm[± 0.020inch]

1. If use heatsinks, make sure there is enough space for a specific size in the above graph;
2. Products will be supplied with heat sinks already mounted, separate heat sinks are not available.

## PACKAGE DIAGRAM (WITH HEATSINK)



Package box:
L*W*H=355*192*93mm
Package quantity: 20pcs

## NOTES

1. Input voltage can't exceed this value, or will cause the permanent damage.
2. Minimum operating current for 10% of rated current, if less than 10% rated current, output ripple may increase rapidly, the amplitude ≤ 1V.
3. Capacitor MAX load tested at nominal input voltage and constant resistive load.
4. The CTRL control pin voltage is referenced to GND.
5. Only typical model listed. Non-standard models will be different from the above, please contact us for more details.
6. All specifications are measured at TA=25℃, humi dity<75%, nominal input voltage and rated output load unless otherwise specified.
7. In this datasheet, all the test methods of indications are based on corporate standards.



Specifications subject to change without notice.