# SB_XT-1WR6

Fixed input voltage
Unregulated single output
DC/DC Converter

## • Product Feature

- Constant voltage input(5-24VDC±5%)
- Patch (SMD) package
- Operating temperature range: -40℃~+ 105℃
- Isolation voltage 3000VDC 0.5mA 1Minute
- External patch design
- Bare board
- Comply with the RoHS directive
- Heat dissipation mode: natural cooling
- It has good shielding and anti-interference performance and electromagnetic compatibility、lightning protection、output overcurrent、short circuit protection、overheating protection、self-recovery and other functions.

## • Product Feature

the latest product developed by our company, with a volume of 12.7*10.41*5.0mm. This product has the characteristics of high efficiency and low power consumption, the product meets the requirements of green environmental protection, has good shielding and anti-interference performance and electromagnetic compatibility, short-circuit protection, self-recovery and other functions.

## • Application Area

Communication interface converter (RS232/485) cellular phone, semiconductor laser, operational amplifier power supply, portable instrument, automatic control device, etc.

## Converter Parameters

| Part No. | Input Voltage (V) | Output Voltage (V±4%) | Full load output current(mA) | Efficiency | Isolatio withstand voltage (VDC) | Weight ±1 | Packaging |
|---|---|---|---|---|---|---|---|
| SB-0303 XT-1WR6 | ±3.3VDC（±5%） | 3.3VDC | 303 | ≥72% | 3000VDC | 2.5 | SMD |
| SB-0305 XT-1WR6 | | 5VDC | 200 | ≥75% | 3000VDC | 2.5 | SMD |

# SB_XT-1WR6

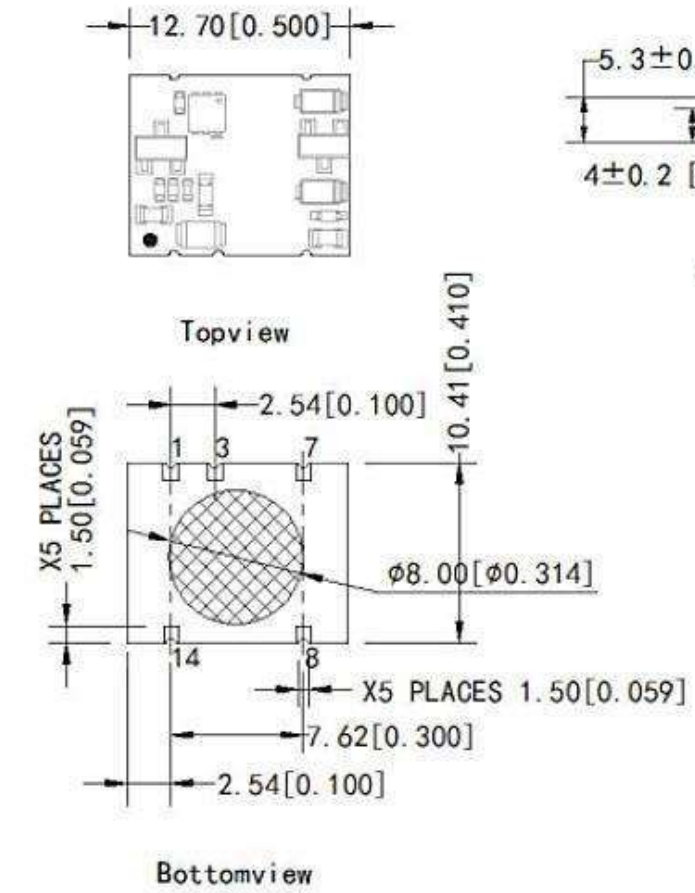
## Converter Parameters

| Part No. | Input Voltage (V) | Output Voltage (V±4%) | Full load output current(mA) | Efficiency | Isolatio withstand voltage (VDC) | Weight ±1 | Packaging |
|---|---|---|---|---|---|---|---|
| SB-0505 XT-1WR6 | ±5VDC（±5%） | 5VDC | 200 | ≥72% | 3000VDC | 2.5 | SMD |
| SB-0512 XT-1WR6 | | 12VDC | 83 | ≥75% | 3000VDC | 2.5 | SMD |
| SB-0515 XT-1WR6 | | 15VDC | 66 | ≥75% | 3000VDC | 2.5 | SMD |
| SB-0524 XT-1WR6 | | 24VDC | 42 | ≥78% | 3000VDC | 2.5 | SMD |
| SB-1205 XT-1WR6 | ±12VDC（±5%） | 5VDC | 200 | ≥76% | 3000VDC | 2.5 | SMD |
| SB-1209 XT-1WR6 | | 9VDC | 1 1 1 | ≥76% | 3000VDC | 2.5 | SMD |
| SB-1212 XT-1WR6 | | 12VDC | 83 | ≥78% | 3000VDC | 2.5 | SMD |
| SB-1215 XT-1WR6 | | 15VDC | 66 | ≥76% | 3000VDC | 2.5 | SMD |
| SB-1224 XT-1WR6 | | 24VDC | 41 | ≥72% | 3000VDC | 2.5 | SMD |
| SB-2405 XT-1WR6 | ±24VDC（±5%） | 5VDC | 200 | ≥72% | 3000VDC | 2.5 | SMD |
| SB-2409 XT-1WR6 | | 9VDC | 1 1 1 | ≥76% | 3000VDC | 2.5 | SMD |
| SB-2412 XT-1WR6 | | 12VDC | 83 | ≥78% | 3000VDC | 2.5 | SMD |
| SB-2415 XT-1WR6 | | 15VDC | 66 | ≥70% | 3000VDC | 2.5 | SMD |
| SB-2424 XT-1WR6 | | 24VDC | 41 | ≥72% | 3000VDC | 2.5 | SMD |

# SB_XT-1WR6

## Overall dimensions and pin definition

12.70×10.41×5.00(mm)




[bare board]

| Pin | Function |
|---|---|
| 1 | GND |
| 3 | Vin |
| 7 | 0V |
| 8 | +XXVDC |
| 14 | NC |

# SB_XT-1WR6

## Electrical Characteristics

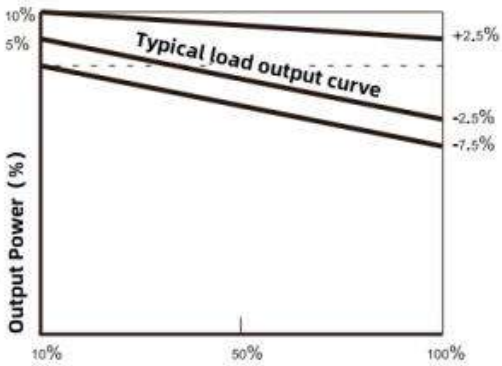
| Electrical Characteristics | | | | | |
|---|---|---|---|---|---|
| Item | Symbol | Condition<br>except as otherwise herein provided<br>Vi ,-40℃ ≤Tc≤85℃ | Limit Value | | Unit |
| | | | Min | Max | |
| Output Voltage | Vo | Full Load | Vo-4%Vo | Vo+4%Vo | V |
| Max Output Current | Iomax | - | - | Po/Uo | A |
| Output Ripple Voltage | Vp-p | Full Load， Vi， BW=20MHz，Normal Temperature | 50±10% | 300±10% | mV |
| Voltage regulation factor | Sv | Vimin、Vi、Vimax，Full Load | - | 2.00 | % |
| Load regulation | Si | Vi， Io =(10%~100%)Iomax | - | 1.00 | % |
| Efficiency | η | Vi，Full Load，Normal Temperature | 72.00 | - | % |
| Insulation Resistance | RI | Add 1000VDC between the input and output points<br>Room temperature, t≥3S | 50 | - | MΩ |

| General Characteristics | | |
|---|---|---|
| EMC | Magnetic field sensitivity test<br>Electrostatic discharge sensitivity test<br>Radiation sensitivity test<br>Conduction sensitivity test | GB6833.2-87<br>GB6833.3-87<br>GB6833.5-87<br>GB6833.6-87 |
| Temperature excursion | 0.03%/℃ | |
| Frequency | 50K HZ~300K HZ (MAX) | |
| Humidness | 90% (max) | |
| Leak Current | N0 | |
| MTBF | >500,000 Hours | |

## Temperature curve,error envelope curve

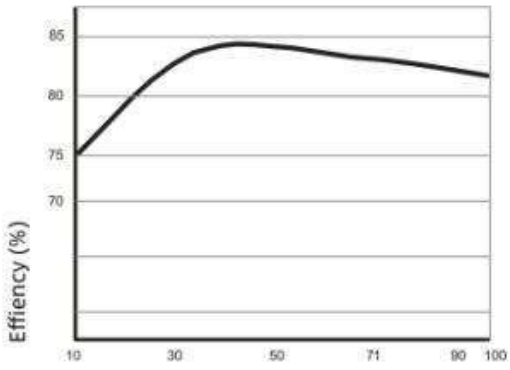
### • Typical efficiency curve


Temperature profile

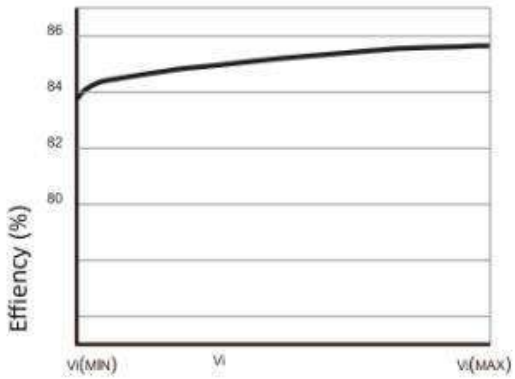



Error envelope graph

### • Typical efficiency curve



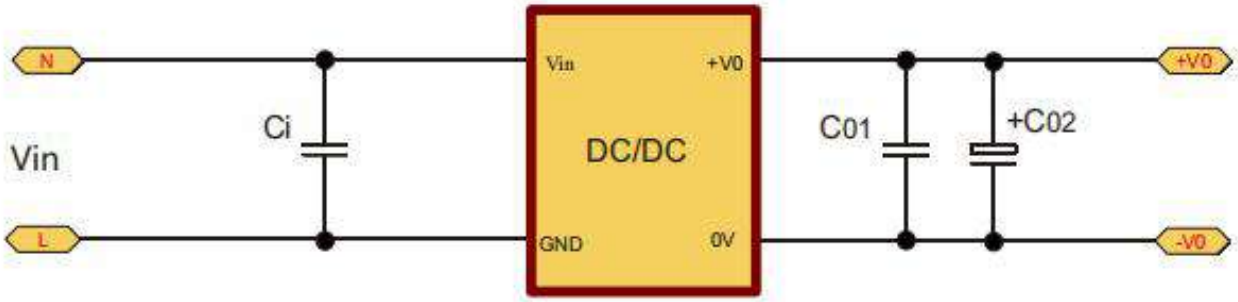

Efficiency/load graph




Efficiency/Input voltage graph

## Typical Application

### • Recommended Circuit



# Typical Application

## • Recommendation test

Filtering：In some circuits sensitive to noise and ripple, a filter capacitor can be externally connected to the input and output terminals of DC/DC to reduce ripple's impact on the system, but the value of the filter capacitance should be appropriate. If the capacitor is too large, it may cause startup problems. For each output line, under the condition of ensuring safe and reliable operation, The maximum capacity of its filtering capacitance can be referred to the external capacitance table. In order to obtain very low ripple, an "LC" filtering network can be connected to the input and output end of DC/DC converter, so that the filtering effect will be better. At the same time, it should be noted that the value of inductance and the frequency of "LC" filtering network should be staggered from the frequency of DC/DC module power supply to avoid mutual interference.

For each output line, it is recommended to see the capacitive load value (Table 1) under safe and reliable working conditions.

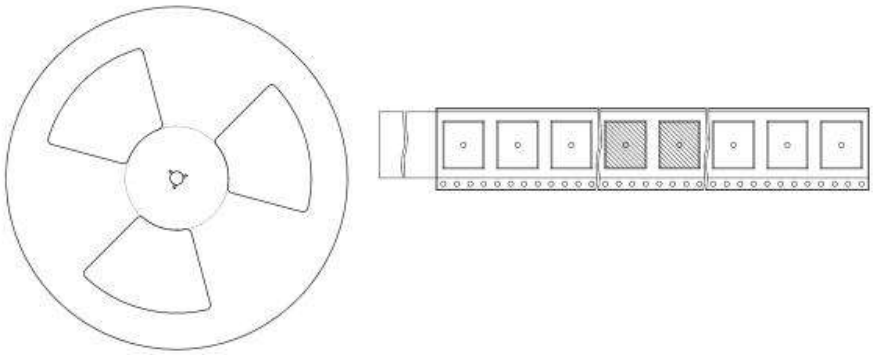
Table of recommended capacitive load values (Table 1)

| Input Voltage (Vin+) | Input Capacitor(Cin) | Output Voltage(Vout) | Output Capacitor Cout) |
|---|---|---|---|
| 5V | 1uF | 3.3V | 4.7uF |
| 12V | 4.7uF | 9V | 2.2uF |
| 24V | 1uF | 15V | 0.47uF |

# Explanatory matters

## • Packing

This series module is packed with 2 2 electrostatic packing tubes.



## • Transport

The modular package is allowed to be transported by any means of transport, which shall avoid direct rain or snow and mechanical damage.

## • Store

Modules should be stored in a warehouse where the ambient temperature is -40 degrees ~ 125 degrees, the relative humidity is 10%~90%, and the surrounding environment is free from acid, alkaline and other harmful gases.

The above are the performance indicators of the product series listed in this manual. Some indicators of non-standard products may exceed the above requirements. In case of any inconsistency between the manual and the product specification documents, please refer to the specification documents.