



**VDB03 Series**

**3 Watts**

**3W SINGLE AND DUAL OUTPUT**

**2:1 INPUT**

**1"x1" Package**

**ISOLATED & REGULATED**

**SMALL PACKAGE**

**5 Pin DIP PACKAGE**

**U.S.A**

**RoHS**

**FEATURES**

- 2:1 Input Range
- 2:1 9~18VDC, 18~36VDC 36~75VDC
- Efficiency up to 78%
- **Operating Temperature:** -40°C~+85°C
- 1.5KVDC Isolation
- Single and dual Output
- Metal Shielding Package
- No Heat Sink Required
- Industry Standard Pin out
- MTBF>500,000 hours
- Short circuit protection

**APPLICATIONS**

The VDB03 Series are specially designed for applications where a 2:1 range input voltage power supplies are isolated from the input power supply in a distributed power supply system on a circuit board.

These products apply to:

- 1) Where the voltage of the input power supply is 2:1 range.
- 2) Where isolation is necessary between input and output (Isolation =1500VDC)
- 3) Where the regulation of the output voltage and the output ripple noise are demanded.

**Recommended Circuit**

All VDB03 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 & 2). If you want to further decrease the input/output ripple, you can increase capacitance properly or choose capacitors with low ESR. However, the capacitance should not be too high.(See table 1).If you want to use the products in high EMI, please choose our metal packaged products.

**Input Current**

When it is used in unregulated power supply, be sure that the fluctuating range of the power supply and the rippled voltage do not exceed the module standard. Input current of power supply should afford the startup current of this kind of DC/DC module. (See figure 2)

Part Number	Input Voltage (VDC)		Max*	Output Voltage (VDC)		Output Current (mA)		Efficiency (% Typ)	Package Style
	Nominal	Range		Max	Min	Max	Min		
VDB03-12S33	12	9~18	20	3.3	600	60	74	DIP	
VDB03-12S05	12	9~18	20	5	600	60	75	DIP	
VDB03-12S12	12	9~18	20	12	250	25	76	DIP	
VDB03-12S15	12	9~18	20	15	200	20	76	DIP	
VDB03-24S33	24	18~36	40	3.3	600	60	74	DIP	
VDB03-24S05	24	18~36	40	5	600	60	75	DIP	
VDB03-24S12	24	18~36	40	12	250	25	76	DIP	
VDB03-24S15	24	18~36	40	15	200	20	76	DIP	
VDB03-48S33	48	36~75	78	3.3	600	60	74	DIP	
VDB03-48S05	48	36~75	78	5	600	60	75	DIP	
VDB03-48S12	48	36~75	78	12	250	25	76	DIP	
VDB03-48S15	48	36~75	78	15	200	20	76	DIP	
VDB03-12D05	12	9~18	20	±5	±300	±30	74	DIP	
VDB03-12D12	12	9~18	20	±12	±130	±13	76	DIP	
VDB03-12D15	12	9~18	20	±15	±100	±10	76	DIP	
VDB03-24D05	24	18~36	40	±5	±300	±30	75	DIP	
VDB03-24D12	24	18~36	40	±12	±130	±13	77	DIP	
VDB03-24D15	24	18~36	40	±15	±100	±10	77	DIP	
VDB03-48D05	48	36~75	78	±5	±300	±30	77	DIP	
VDB03-48D12	48	36~75	78	±12	±130	±13	78	DIP	
VDB03-48D15	48	36~75	78	±15	±100	±10	78	DIP	



## ISOLATION SPECIFICATIONS

Item	Test conditions	Min	Typ	Max	Units
Isolation voltage	Flash tested for 60 seconds	1500			VDC
Isolation resistance	Test at 1500VDC	>100			MΩ

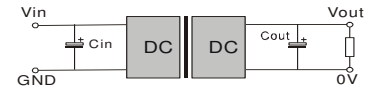
## OUTPUT SPECIFICATIONS

Item	Test conditions	Min	Typ	Max	Units
5W output power	See below products program	0.5		5	W
Positive Voltage accuracy	Refer to recommended circuit		< ±1		
Load regulation	From 10% to 100% load		< ±0.5		%
Line regulation	Input Voltage From Low to High		< ±0.2		
Temperature drift (Vout)	Refer to recommended circuit			±0.02	%/°C
Ripple	20Hz-300KHz bandwidth		30	50	mVp-p
Noise	DC-20MHz bandwidth		50	150	mVp-p
Switching frequency	100% load, nominal input voltage		300		KHz

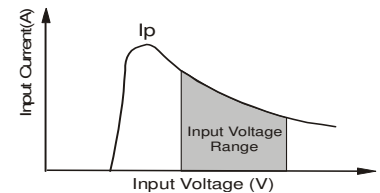
Note:  
 1. All specifications measured at  $T_A=25^\circ\text{C}$ , humidity<75%, nominal input voltage and rated output load unless otherwise specified.  
 2. See below recommended circuits for more details.

## COMMON SPECIFICATION

Output Short Circuit Protection	Continuous
Temperature Rise at Full Load	30°C (typ)
Cooling	Free Air Convection
No-load Power Consumption	300mW (typical)
Operating Temperature Range	-40°C~+85°C ( with derating )
Storage Temperature Range	-55°C ~+125°C
Lead Temperature***	300°C (1.5mm from case for 10 seconds)
Storage Humidity Range	5% ~ 90% RH
Case Material	Metal
MTBF (MIL-HDBK-217F2)	>500,000 hours
Weight	12g(0.42ozs)

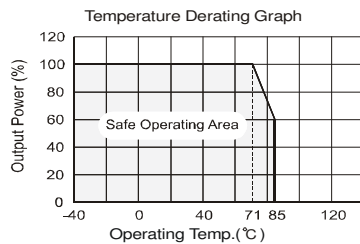


(Figure 1)



(Figure 2)

## TYPICAL CHARACTERISTICS

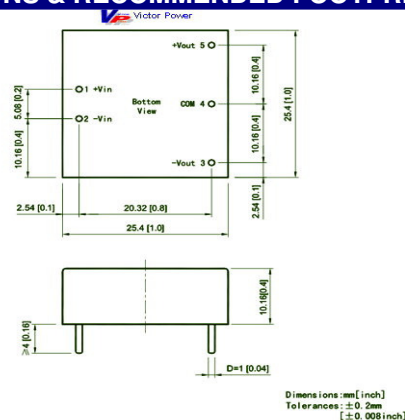


## FOOTPRINT DETAILS

PIN	1	2	3	4	5
SINGLE	+Vin	-Vin	-Vout	NC	+Vout
DUAL	+Vin	-Vin	-Vout	COM	+Vout

Note: All Pins on 2.54mm pitch; All Pin diameters are 0.50 mm (Tolerance: ±0.10); All dimensions in mm.

## OUTLINE DIMENSIONS & RECOMMENDED FOOTPRINT



## Requirement on Output Load

To ensure this module operate efficiently and reliably, a minimum load is specified for this kind of DC/DC converter in addition to a maximum load (namely full load). During operation, make sure the specified range of input voltage is not exceeded, the minimum out put load is not less than **10%** Of the full load, and that this product **should never be operated under no load!!!** If the actual load is less below the specified minimum load, the output ripple of this type of DC/DC converter will increase drastically and at the same time efficiency & reliability of the circuit will decrease deeply. If the actual output power from the load in your circuit is very small, please connect a resistor with proper resistance at the output end to in parallel to increase the load, or use our company's other products with a lower rated output power.

## External Capacitor

Although this series of DC/DC converter can work without external capacitor, in order to keep an optimum performance, however, it needs external capacitor. (See Table 1)

**The products cannot be used in parallel and in plug and play.**

## External Capacitor Table (See Table 1)

Vin	Cin	Cout(-40+85°C)
12 V & 24V & 48V	100uF	100uF / 1A (electrolytic capacitor)

The dual output information will be available upon request.