



1400 PROVIDENCE HIGHWAY • BUILDING 2  
NORWOOD, MASSACHUSETTS 02062-5015



**B200 Series**  
**FIXED INPUT ISOLATED & UNREGULATED**  
**1W OUTPUT 6000VDC ISOLATION**  
**SINGLE OUTPUT DIP PACKAGE**

RoHS multi-country patent protection

**FEATURES**

- Efficiency to 76%
- Positive Voltage Output
- Small Footprint
- DIP Package
- Industry Standard Pin out
- No Heat sink Required
- 6KVDC Isolation
- Temperature Range: -40°C~+85°C
- No External Component Required
- RoHS Compliance

**APPLICATIONS**

The B200 Series are specially designed for applications where a group of polar 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 fixed (voltage variation  $\pm 10\%$ );
- 2) Where isolation is necessary between input and output (isolation voltage =6000VDC);
- 3) Where the regulation of the output voltage and the output ripple noise are not demanding.

Such as: purely digital circuits, ordinary low frequency analog circuits, and IGBT power device driving circuits.

These products don't apply to:

- 1) Where the input supply voltage is unfixed (variation  $\geq \pm 10\%$ ), otherwise our company's WRA series is recommended;
- 2) Circuits in which the output voltage regulation is demanding, otherwise our company's IB Series or WRB Series are recommended.

Part Number	Input		Output		Efficiency (% Typ)	Package Style	
	Voltage (VDC)		Voltage (VDC)	Current (mA)			
	Nominal	Range		Max			Min
B201	5	4.5~5.5	5	200	20	70	DIP
B205			9	111	12	70	DIP
B202			12	84	9	72	DIP
B203			15	67	7	72	DIP
B211	12	10.8~13.2	5	200	20	70	DIP
B215			9	111	12	74	DIP
B212			12	84	9	76	DIP
B213			15	67	7	76	DIP

**COMMON SPECIFICATIONS**

Short circuit protection	1 second
Temperature rise at full load	25°C MAX, 15°C TYP
Cooling	Free air convection
Operating temperature range	-40°C~+85°C
Storage temperature range	-55°C ~+125°C
Lead temperature*	300°C (1.5mm from case for 10 seconds)
Storage humidity range	$\leq 95\%$
Case material	Plastic (UL94-V0)
MTBF	>3,500,000 hours
*Lead temperature 1.5mm from case for 10 seconds.	

**ISOLATION SPECIFICATIONS**

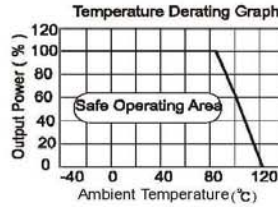
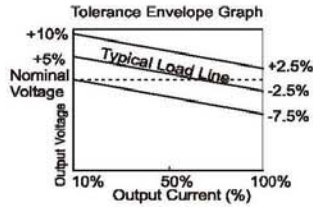
Item	Test conditions	Min	Typ	Max	Units
Isolation voltage	Flash tested for 1 minute	6000			VDC
Isolation resistance	Test at 500VDC	1000			MΩ

**OUTPUT SPECIFICATIONS**

Item	Test conditions	MIN	TYP	MAX	Units
Out put power	See below product program	0.1		1	W
Line regulation**	Nominal voltage $\pm 1\%$			$\pm 1.2$	%
Load regulation	10% to 100% (5V output)			15	%
Load regulation	10% to 100% (12V output)			10	%
Output voltage accuracy	100% full load	See tolerance envelope graph			
Temperature drift	100% full load			0.03	%°C
Output ripple	20MHz Bandwidth		150	250	mVp-p
Noise	20MHz Bandwidth		250	300	mVp-p
Switching frequency	Full load, nominal input(5V)		250		KHz
	Full load, nominal input(12V)		50		

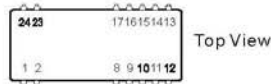
Note: 1.All specifications measured at TA=25°C, humidity<75%, nominal input voltage and rated output load unless otherwise specified.  
2. See below recommended circuits for more details.

## TYPICAL CHARACTERISTICS

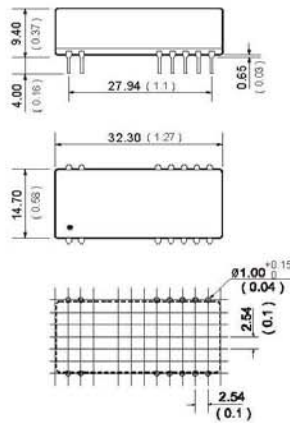


## PIN CONNECTIONS

Pin	Function
1	V <sub>in</sub>
2	GND
8, 17	NC
10, 15	0V
12, 13	+V <sub>o</sub>



## OUTLINE DIMENSIONS & RECOMMENDED FOOTPRINT DETAILS



Note: All Pins on a 2.54mm pitch; all Pin diameters are 0.50mm; Unit: mm(inch).

## APPLICATION NOTE

### Requirement on output load

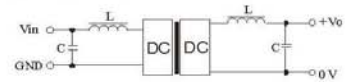
To ensure this module can operate efficiently and reliably, a minimum load is specified for this kind of dc/dc converter in addition to a maximum load (namely full load). During operation, make sure the specified range of input voltage is not exceeded, the minimum output load is **not less than 10%** of the full load, and that this product should never be operated under no load!

### Overload Protection

Under normal operating conditions, the output circuit of these products has no protection against over-current and short-circuits. The simplest method is to connect a self-recovery fuse in series at the input end or add a circuit breaker to the circuit.

## Filtering

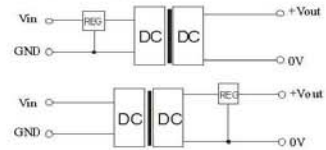
In some circuits which are sensitive to noise and ripple, a filtering capacitor may be added to the DC/DC output end and input end to reduce the noise and ripple. However, the capacitance of the output filter capacitor must be proper. If the capacitance is too big, a startup problem might arise. For every channel of output, provided the safe and reliable operation is ensured, the greatest capacitance of its filter capacitor sees the external capacitor table. To get an extremely low ripple, an "LC" filtering network may be connected to the input and output ends of the DC/DC converter, which may produce a more significant filtering effect. It should also be noted that the inductance and the frequency of the "LC" filtering network should be staggered with the DC/DC frequency to avoid mutual interference (see Figure 1).



(Figure 1)

## Output Voltage Regulation and Over-voltage Protection Circuit

The simplest device for output voltage regulation, over-voltage and over-current protection is a linear voltage stabilizer with overheat protection that is connected to the input or output end in series (see Figure 2).



(Figure 2)

## EXTERNAL CAPACITOR TABLE

V <sub>in</sub>	External capacitor	V <sub>out</sub>	External capacitor
5VDC	4.7uF	5VDC	4.7uF
12VDC	2.2uF	9VDC	2.2uF
24VDC	1uF	12VDC	1uF
--	--	15VDC	0.47uF

It's not recommend to connect any external capacitor in the application field with less than 0.5 watt output.