B1200RU Series

Ultra-Wide Input 12W Single & Dual Output DC/DC Converters

Key Features:

- **12W Output Power**
- **UL Approved (File E245422)**
- **4:1 Input Voltage Range**
- **1,500 VDC Isolation**
- **Compact 1 x 2 Inch Case**
- **Single & Dual Outputs**
- **Optional Remote ON/OFF**
- **Industry Standard Pin-Out**

Electrical Specifications

Specifications typical @ +25°C, nominal input voltage & rated output current, unless otherwise noted. Specifications subject to change without notice.

Input

Parameter	Conditions	Min.	Typ.	Max.	Units
Input Start Voltage	24 VDC Input	8.0	8.5	9.0	VDC
	48 VDC Input	14.0	16.0	18.0	
Input Filter	π (Pi) Filter (Complies with EN55022 Class "A")				
Reverse Polarity Input Current				1.0	A
Short Circuit Input Power				3,500	mW

Output

Parameter	Conditions	Min.	Typ.	Max.	Units
Output Voltage Accuracy			±0.5	±1.0	%
Output Voltage Balance	Dual Output , Balanced Loads		±0.5	±1.0	%
Line Regulation	Vin = Min to Max		±0.1	±0.5	%
Load Regulation	Iout = 10% to 100%		±0.2	±0.5	%
Ripple & Noise (20 MHz) (Note 1)			50	75	mV P - P
Ripple & Noise (20 MHz)	Over Line, Load & Temp.			100	mV P - P
Ripple & Noise (20 MHz)				15	mV rms
Output Power Protection		120			%
Transient Recovery Time (Note 2)	25% Load Step Change		150	250	µSec
Transient Response Deviation			±1.5	±2.5	%
Temperature Coefficient			±0.01	±0.02	%/°C
Output Short Circuit	Continuous				

General

Parameter	Conditions	Min.	Typ.	Max.	Units
Isolation Voltage	60 Seconds	1,500			VDC
Isolation Test Voltage	Flash Tested For 1 Sec	1,650			VDC
Isolation Resistance	500 VDC	1,000			MΩ
Isolation Capacitance	100 kHz, 1V		500	600	pF
Switching Frequency		350	400	450	kHz

Environmental

Parameter	Conditions	Min.	Typ.	Max.	Units
Operating Temperature Range	Ambient	-40	+25	+71	°C
Operating Temperature Range	Case	-40		+90	°C
Storage Temperature Range		-40		+125	°C
Cooling	Free Air Convection (See Curves on Page 2)				
Humidity	RH, Non-condensing			95	%
RFI	Six-Side Shielded Metal Case				

Physical

Case Size	2.0 x 1.0 x 0.40 Inches (50.8 x 25.4 x 10.2 mm)
Case Material	Metal with Non-Conductive Base (UL94-V0)
Weight	1.13 Oz (32g)

Reliability Specifications

Parameter	Conditions	Min.	Typ.	Max.	Units
MTBF	MIL HDBK 217F, 25°C, Gnd Benign	700			kHours
Safety Standards					UL 1950, EN 60950, IEC 60950
Safety Approvals					UL, cUL; File No. E245422

Absolute Maximum Ratings

Parameter	Conditions	Min.	Typ.	Max.	Units
Input Voltage Surge (1 Sec)	24 VDC Input	-0.7		42.0	VDC
	48 VDC Input	-0.7		84.0	
Lead Temperature	1.5 mm From Case For 10 Sec			260.0	°C
Internal Power Dissipation	All Models			5,000	mW

Caution: Exceeding Absolute Maximum Ratings may damage the module. These are not continuous operating ratings.

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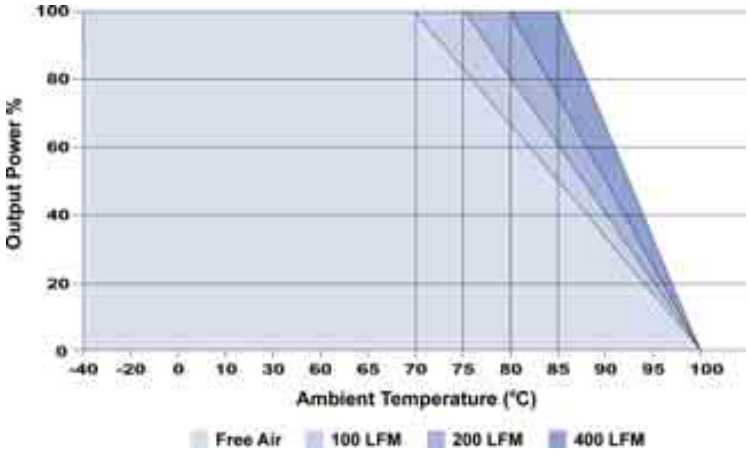
Model Selection Guide

Model Number	Input				Output			Over Voltage Protection (VDC)	Efficiency (%, Typ)	Fuse Rating Slow-Blow (mA)
	Voltage (VDC)		Current (mA)		Voltage (VDC)	Current (mA, Max)	Current (mA, Min)			
	Nominal	Range	Full-Load	No-Load						
B1201RU	24	9.0 - 36.0	423	10	3.3	2,400	240.0	3.9	78	1,500
B1202RU	24	9.0 - 36.0	508	10	5.0	2,000	200.0	6.8	82	1,500
B1203RU	24	9.0 - 36.0	595	10	12.0	1,000	100.0	15.0	84	1,500
B1204RU	24	9.0 - 36.0	595	10	15.0	800	80.0	18.0	84	1,500
B1205RU	24	9.0 - 36.0	508	10	±5.0	±1000	±100.0	±6.8	82	1,500
B1206RU	24	9.0 - 36.0	595	10	±12.0	±500	±50.0	±15.0	84	1,500
B1207RU	24	9.0 - 36.0	595	10	±15.0	±400	±40.0	±18.0	84	1,500
B1211RU	48	18.0 - 75.0	212	5	3.3	2,400	240.0	3.9	78	750
B1212RU	48	18.0 - 75.0	254	5	5.0	2,000	200.0	6.8	82	750
B1213RU	48	18.0 - 75.0	298	5	12.0	1,000	100.0	15.0	84	750
B1214RU	48	18.0 - 75.0	298	5	15.0	800	80.0	18.0	84	750
B1215RU	48	18.0 - 75.0	254	5	±5.0	±1000	±100.0	±6.8	82	750
B1216RU	48	18.0 - 75.0	298	5	±12.0	±500	±50.0	±15.0	84	750
B1217RU	48	18.0 - 75.0	298	5	±15.0	±400	±40.0	±18.0	84	750

Notes:

1. When measuring output ripple, it is recommended that an external 0.47 µF ceramic capacitor be placed from the +Vout pin to the -Vout pin for single output units and from each output to common for dual output units. For noise sensitive applications, the use of 3.9 µF capacitors will reduce the output ripple.
2. Transient recovery is measured to within a 1% error band for a load step change of 75% to 100%.
3. Operation at no-load will not damage these units. However, they may not meet all specifications.
5. Dual output units may be connected to provide a 10 VDC, 24 VDC or 30 VDC output. To do this, connect the load across the positive (+Vout) and negative (-Vout) outputs and float the output common.
6. The converter should be connected to a low ac-impedance source. An input source with a highly inductive impedance may affect the stability of the converter. In applications where the converter output loading is high and input power is supplied over long lines, it may be necessary to use a capacitor on the input to insure start-up.
   In this case, it is recommended that a low Equivalent Series Resistance (ESR <1.0Ω at 100 kHz) capacitor be mounted close to the converter. A 10.0 µF is recommended for 24V input models; a 4.7µF for 48V units.
7. It is recommended that a fuse be used on the input of a power supply for protection. See the table above for the correct rating.

Derating Curve



Remote ON/OFF (Optional, see below)

Parameter	Min	Max	Units
Supply On	2.5	5.5 or Open	VDC
Supply Off	-0.7	0.8	VDC
Standby Input Current		10	mA
Control Input Current (On)		50.0	µA
Control Input Current (Off)		-100.0	mA
Control Common	Referenced to Neg. Input (pin 2)		

Remote ON/OFF Notes:

1. Maximum sink current at the on/off pin (pin 6) during a logic low is 100 µA.
2. Maximum allowable leakage current of a switch connected to the on/off terminal (Pin 6) at logic high (2.5V to 100V) is 50 µA.

Capacitive Load

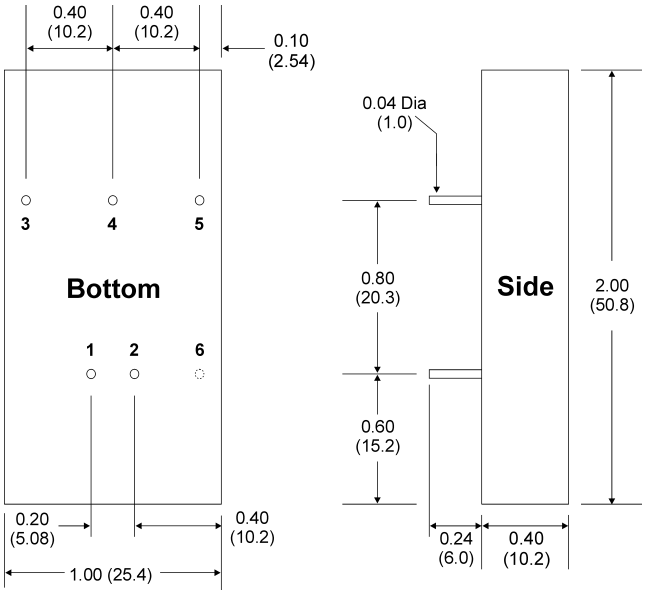
Single Output (µF Max)
470

Dual Output (µF Max)
±150

Pin Connections

Pin	Single	Dual
1	+Vin	+Vin
2	-Vin	-Vin
3	+Vout	+Vout
4	No Pin	Common
5	-Vout	-Vout
6	Remote On/Off	Remote On/Off

Mechanical Dimensions



Mechanical Notes:

- All dimensions are typical in inches (mm)
- Tolerance x.xx = ±0.01 (±0.25)
- Leads are gold plated for improved solderability.

For Remote On/Off Option, add suffix "R" to model number (i.e. B1205RU-R)

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