

**FEATURES**

- Single Output Up to 14A
- High Efficiency up to 91%
- RoHS Directive Compliant
- Fixed Switching Frequency
- No Minimum Load Required
- Six-Sided Continuous Shield
- 2:1 Wide Input Voltage Range
- Approved for Basic Insulation
- 60 Watts Maximum Output power
- Standard 2.02" x 2.02" x 0.4" Package



UL  
TUV  
CB  
CE MARK (Pending)



**SPECIFICATIONS: DD Series**

*All specifications apply @ 25°C ambient unless otherwise noted*

**INPUT SPECIFICATIONS**

Input Voltage Range .....	24V nominal input .....	18 - 36VDC
	48V nominal input .....	36 - 75VDC
Under Voltage Lockout		
24V nominal input.....	DC-DC ON .....	17VDC typ.
	DC-DC OFF .....	15VDC typ.
48V nominal input.....	DC-DC ON .....	34VDC typ.
	DC-DC OFF .....	32VDC typ.
Input Filter .....		Pi Type
Input Voltage Variation.....	dv/dt .....	5V/ms max (Complies with ETS300 132 part 4.4)
Input Surge Voltage (100ms max) .....	24V input .....	50VDC
	48V input .....	100VDC
Input Reflected Ripple Current (nominal Vin and FL) .....		20mA <sub>p-p</sub>
Start Up Time (nominal Vin and constant resistive load)		
Power Up.....		20ms max.
Remote ON/OFF .....		20ms max.
Remote ON/OFF (See Note 2)		
Positive Logic .....	DC-DC ON .....	Open or 3V < Vr < 12V
	DC-DC OFF .....	Short or 0V < Vr < 1.2V
Negative Logic .....	DC-DC ON .....	Short or 0V < Vr < 1.2V
	DC-DC OFF .....	Open or 3V < Vr < 12V
Remote Off Input Current (nominal Vin) .....		3mA

**OUTPUT SPECIFICATIONS**

Output Voltage .....	see table
Voltage Accuracy (nom Vin and full load) .....	±1%
Voltage Adjustability (See Note 1) .....	±10%
Output Current .....	see table
Output Power .....	60 watts max.
Line Regulation (LL to HL at FL).....	±0.2%
Load Regulation (no load to 100% load).....	±0.5%
Minimum Load .....	0mA
Output Ripple & Noise .....	see table
Transient Response Recovery Time (25% load step change).....	250us

**PROTECTION SPECIFICATIONS**

Over Voltage Protection .....	3.3V Output.....	3.7V - 5.4V
	(Ctrl. voltage clamp)	
	5V Output.....	5.6V - 7.0V
	12V Output.....	13.5V - 19.6V
	15V Output.....	16.8V - 20.5V
Over Load Protection (% of FL at nominal input) .....		150% max.
Short Circuit Protection.....		Hiccup, automatic recovery
Over Temperature Protection .....		110°C typ.

**GENERAL SPECIFICATIONS**

Efficiency .....	see table
Switching Frequency .....	300KHz typ.
Isolation Voltage (Input to Output).....	1600VDC min.
Isolation Voltage (Input to Case).....	1600VDC min.
Isolation Voltage (Output to Case) .....	1600VDC min.
Case Grounding (connect case to -Vin with decoupling Y cap) .....	TBD
Isolation Resistance .....	10 <sup>9</sup> ohms min.
Isolation Capacitance .....	1500pF max.

**ENVIRONMENTAL SPECIFICATIONS**

Operating Ambient Temperature .....	-40°C to +50°C (without derating)	
	+50°C to +105°C (with derating)	
Storage Temperature .....	-55°C ~ +125°C	
Maximum Case Temperature .....	+105°C	
Relative Humidity.....	5% to 95% RH	
Temperature Coefficient.....	±0.02% / °C max.	
Thermal Impedance (See Note 4)		
Without Heat-Sink.....	9.2°C / Watt	
With Heat-Sink.....	7.6°C/Watt	
Thermal Shock .....	MIL-STD-810D	
Vibration .....	10~55Hz, 10G, 30 minutes along X, Y, and Z	
MTBF (See Note 3) .....	Bellcore TR-NWT-000332..... 1.093 x 10 <sup>6</sup> hrs	
	MIL-STD-217F .....	1.096 x 10 <sup>5</sup> hrs

**SPECIFICATIONS (CONTINUED)**

*All specifications apply @ 25°C ambient unless otherwise noted*

**PHYSICAL SPECIFICATIONS**

Weight.....	60g (2.11 oz)
Dimensions .....	2.02 x 2.02 x 0.40 inches (51.3 x 51.3 x 10.2 mm)
Case Material.....	Nickel-coated copper
Base Material .....	Non-conductive black FR4
Potting material .....	Epoxy (UL94-V0)
Shielding .....	six – sided

**SAFETY & EMC (See Note 5)**

Approvals and Standards .....	IEC60950-1, UL60950-1, EN60950-1
Conducted Emissions.....	EN55022 ..... Class A
Radiated Emissions.....	EN55022 ..... Class A
ESD .....	EN61000-4-2..... Perf. Criteria B
Radiated Immunity.....	EN61000-4-3..... Perf. Criteria A
Fast Transient.....	EN61000-4-4..... Perf. Criteria B
Surge.....	EN61000-4-5..... Perf. Criteria B
Conducted Immunity.....	EN61000-4-6..... Perf. Criteria A

*Due to advances in technology, specifications subject to change without notice*

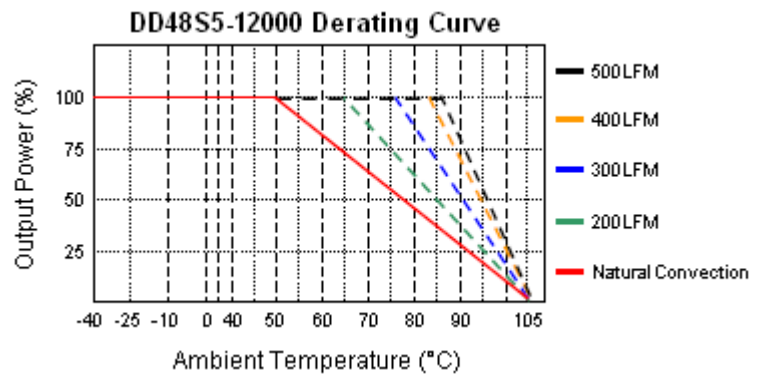
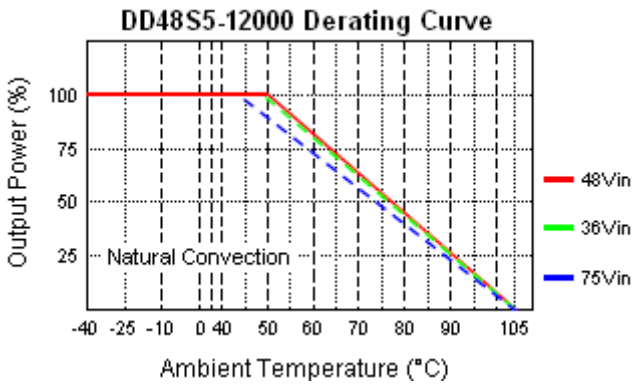
**OUTPUT VOLTAGE / CURRENT RATING CHART**

Model Number	Input Range	Output Voltage	Output Current		Output Ripple & Noise	Input Current		Efficiency <sup>(8)</sup>	Max Capacitive Load <sup>(9)</sup>
			Min. Load	Full Load		No load <sup>(6)</sup>	Full Load <sup>(7)</sup>		
DD24S3.3-14000	24VDC (18 – 36 VDC)	3.3 VDC	0mA	14,000mA	75mVp-p	90mA	2264mA	89%	36,000µF
DD24S5-12000		5 VDC	0mA	12,000mA	75mVp-p	100mA	2874mA	91%	20,400µF
DD24S12-5000		12 VDC	0mA	5000mA	100mVp-p	120mA	2907mA	90%	3550µF
DD24S15-4000		15 VDC	0mA	4000mA	100mVp-p	120mA	2907mA	90%	2300µF
DD48S3.3-14000	48VDC (36 – 75 VDC)	3.3 VDC	0mA	14,000mA	75mVp-p	90mA	1132mA	89%	36,000µF
DD48S5-12000		5 VDC	0mA	12,000mA	75mVp-p	100mA	1437mA	91%	20,400µF
DD48S12-5000		12 VDC	0mA	5000mA	100mVp-p	100mA	1453mA	90%	3550µF
DD48S15-4000		15 VDC	0mA	4000mA	100mVp-p	100mA	1453mA	90%	2300µF

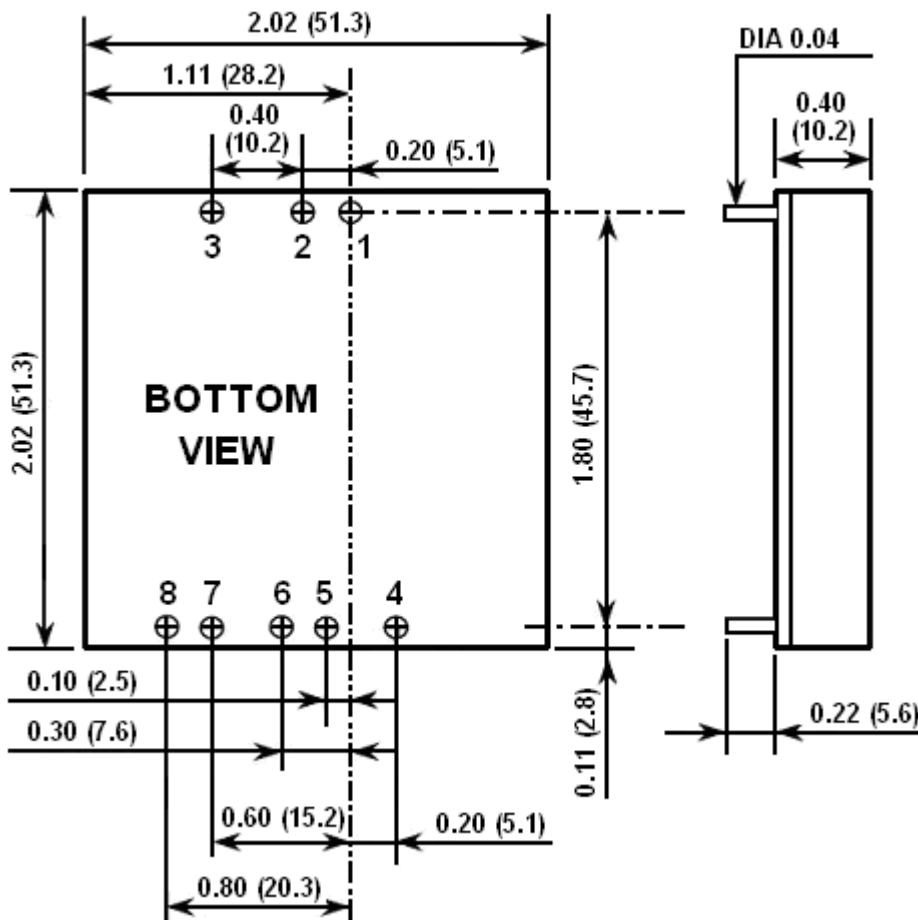
**NOTES**

- Maximum output deviation is 10% inclusive of remote sense and trim. If remote sense is not being used, the +sense should be connected to its corresponding +OUTPUT and likewise the -sense should be connected to its corresponding –OUTPUT.
- The ON/OFF control function: There are positive (standard) and negative logic (option). The pin voltage is referenced to negative input. To order negative logic ON/OFF control add the suffix “R” to the part number (Ex: DD48S5-12000R)
- BELLCORE TR-NWT-000332. Case I: 50% Stress, Temperature at 40°C. (Ground fixed and controlled environment). MIL-STD-217F Notice2 @ Ta=25°C, Full Load (Ground, Benign, controlled environment).
- Heat sink is optional. Please call factory for ordering details.
- The DD series required an external filter to meet EN55022 class A. (TBD)
- Typical Value at nominal input voltage.
- Maximum value at nominal input voltage and full load
- Typical Value at nominal input voltage and full load.
- Test by minimum Vin and constant resistive load.

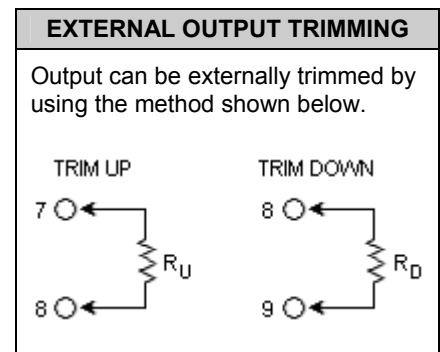
**DERATING CURVES & EFFICIENCY GRAPHS**



**MECHANICAL DRAWING**



PIN CONNECTION	
PIN	SINGLE
1	+Input
2	-Input
3	CTRL
4	-Sense
5	+Sense
6	+Output
7	-Output
8	Trim



- All dimensions in inches (mm)  
Tolerance: X.XX±0.02 (X.X±0.5)
- Pin pitch tolerance ±0.014 (0.35)