

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 _{p-p}
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 ⁹ 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 ⁶ hrs
	MIL-STD-217F
	1.096 x 10 ⁵ 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 ⁽⁸⁾	Max Capacitive Load ⁽⁹⁾
			Min. Load	Full Load		No load ⁽⁶⁾	Full Load ⁽⁷⁾		
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.

