

FEATURES

- High Efficiency up to 88%
- RoHS Directive Compliant
- Fixed Switching Frequency
- Six-Sided Continuous Shield
- 40 Watts Maximum Output power
- Single and Dual Outputs Available
- 4:1 Ultra Wide Input Voltage Range
- Standard 2.02" x 2.02" x 0.4" Package



SPECIFICATIONS: DBW Series

All specifications apply @ 25°C ambient unless otherwise noted

INPUT SPECIFICATIONS

Input Voltage Range	24V nominal input	9 - 36VDC
	48V nominal input	18 - 75VDC
Under Voltage Lockout		
24V nominal input.....	DC-DC ON	9 VDC
	DC-DC OFF	8 VDC
48V nominal input.....	DC-DC ON	18 VDC
	DC-DC OFF	16 VDC
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 4)		
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		40 watts max.
Line Regulation (LL to HL at FL).....		±0.2%
Load Regulation (See Note 2)	Single Output	±0.5%
(min. load to 100% load)	Dual Output	±1%
Load Cross Regulation (See Note 3).....	Dual Output	±5%
Minimum Load (See Note 8)		see table
Ripple/Noise (See Note 9)		see table
Transient Response Recovery Time.....		250us (25% load step change)

PROTECTION SPECIFICATIONS

Over Voltage Protection	3.3V Output	3.9V
(Zener diode clamp)	5V Output	6.2V
	12V Output	15V
	15V Output	18V
	±12V Output	±15V
	±15V Output	±18V
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/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 +55°C (without derating)	
	+55°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 6)		
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 5)	Bellcore TR-NWT-000332	1.105 x 10 ⁶ hrs
	MIL-STD-217F	1.511 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 7)

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

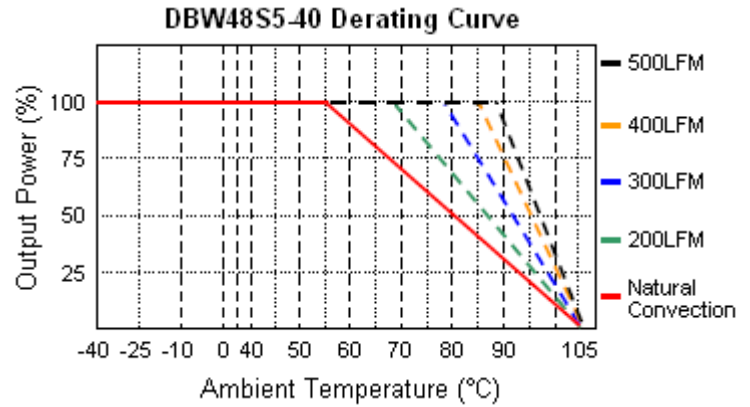
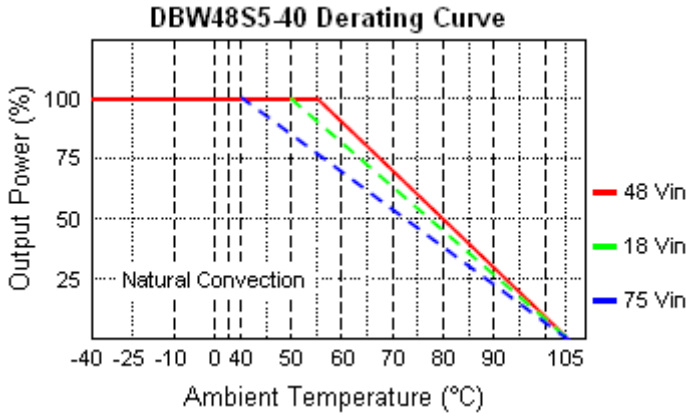
OUTPUT VOLTAGE / CURRENT RATING CHART

Model Number	Input Range	Output Voltage	Output Current		Output ⁽⁹⁾ Ripple & Noise	Input Current		Eff. ⁽¹²⁾	Max Capacitive Load ⁽¹³⁾
			Min. Load ⁽⁶⁾	Full Load		No load ⁽¹⁰⁾	Full Load ⁽¹¹⁾		
DBW24S3.3-33	24VDC (9 – 36 VDC)	3.3 VDC	0mA	10,000mA	50mVp-p	80mA	1677mA	86%	25,750µF
DBW24S5-40		5 VDC	0mA	8000mA	50mVp-p	100mA	1984mA	88%	13,600µF
DBW24S12-40		12 VDC	0mA	3333mA	75mVp-p	100mA	1984mA	88%	2360µF
DBW24S15-40		15 VDC	0mA	2666mA	75mVp-p	110mA	1984mA	88%	1510µF
DBW24D12-40		±12 VDC	±65mA	±1667mA	120mVp-p	30mA	1984mA	88%	±1200µF
DBW24D15-40		±15 VDC	±50mA	±1333mA	150mVp-p	30mA	1984mA	88%	±750µF
DBW48S3.3-33	48VDC (18 – 75 VDC)	3.3 VDC	0mA	10,000mA	50mVp-p	50mA	838mA	86%	25,750µF
DBW48S5-40		5 VDC	0mA	8000mA	50mVp-p	50mA	992mA	88%	13,600µF
DBW48S12-40		12 VDC	0mA	3333mA	75mVp-p	70mA	992mA	88%	2360µF
DBW48S15-40		15 VDC	0mA	2666mA	75mVp-p	70mA	992mA	88%	1510µF
DBW48D12-40		±12 VDC	±65mA	±1667mA	120mVp-p	20mA	992mA	88%	±1200µF
DBW48D15-40		±15 VDC	±60mA	±1333mA	150mVp-p	20mA	992mA	88%	±750µF

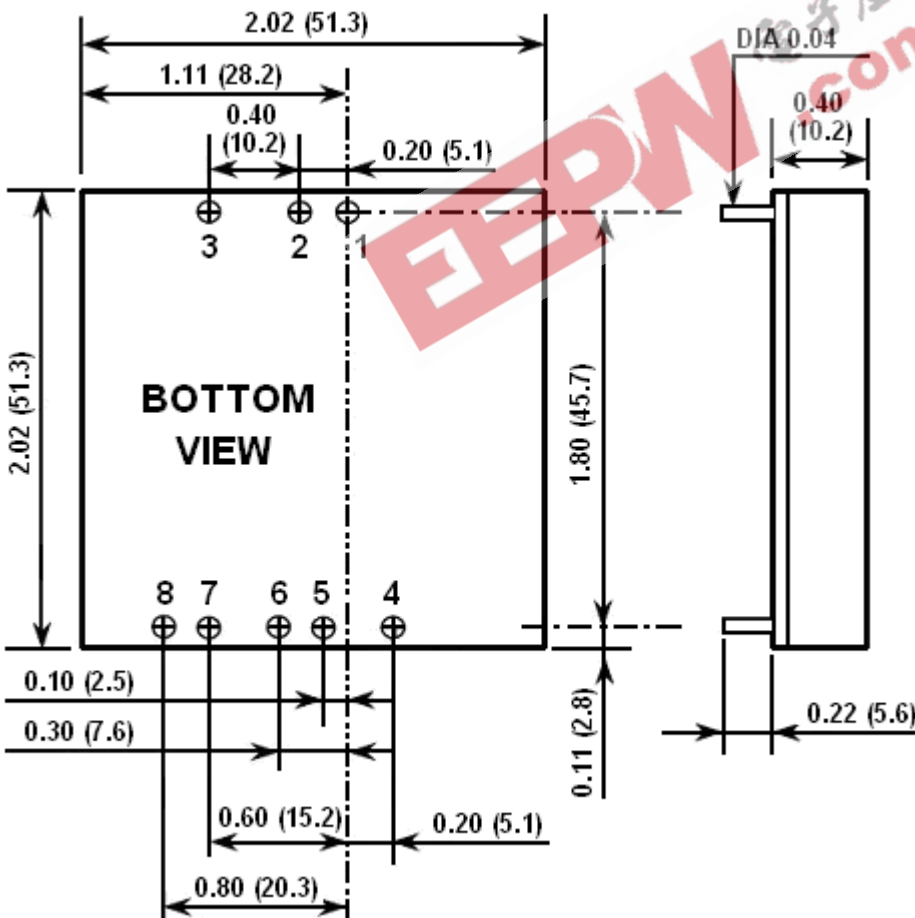
NOTES

- For single output: 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.
- Load regulation for dual output: Minimum load to 100% load balanced on all outputs.
- Cross regulation for dual output: asymmetrical load 25% / 100% full load.
- 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: DBW48S5-40R)
- 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 DBW series required an external filter to meet EN55022 class A.
- The dual output required a minimum loading on the output to maintain specified regulation. Operation under no-load condition will not damage these devices, however they may not meet all listed specifications.
- Output ripple & noise measured with a 0.1µF/50V MLCC.
- 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.

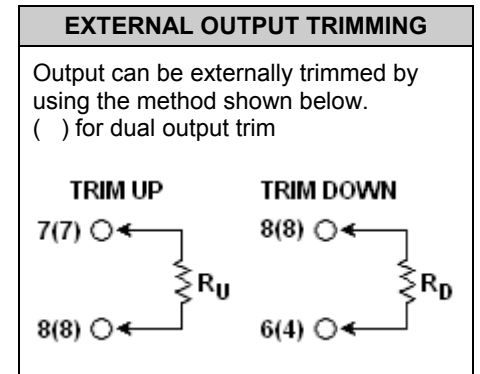
DERATING CURVES & EFFICIENCY GRAPHS



MECHANICAL DRAWING



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



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