



# EC9BW SERIES 30 WATT 4:1 INPUT DC-DC CONVERTERS



## FEATURES

- \* 30W Isolated Output
- \* Efficiency to 92%
- \* 2"x1" Six-Sided Shield Metal Case
- \* 4:1 Input Range
- \* Regulated Outputs
- \* Fixed Switching Frequency
- \* Input Under Voltage Protection
- \* Over Current Protection
- \* Remote On/Off
- \* Continuous Short Circuit Protection
- \* No Tantalum Capacitor Inside
- \* Safety Meets IEC/EN/UL 62368-1



MODEL NUMBER	INPUT VOLTAGE	OUTPUT VOLTAGE	OUTPUT CURRENT		INPUT CURRENT		% EFF.		CAPACITOR LOAD MAX.
			MIN.	MAX.	NO LOAD	FULL LOAD	(2)	(3)	
EC9BW-24S33	9-36 VDC	3.3 VDC	0 mA	7500 mA	100 mA	1172 mA	88	88.5	7500 $\mu$ F
EC9BW-24S05	9-36 VDC	5 VDC	0 mA	6000 mA	110 mA	1397 mA	89.5	89.5	6000 $\mu$ F
EC9BW-24S12	9-36 VDC	12 VDC	0 mA	2500 mA	50 mA	1374 mA	91	90.5	2500 $\mu$ F
EC9BW-24S15	9-36 VDC	15 VDC	0 mA	2000 mA	50 mA	1374 mA	91	90.5	2000 $\mu$ F
EC9BW-24D12	9-36 VDC	$\pm$ 12 VDC	0 mA	$\pm$ 1250 mA	60 mA	1374 mA	91	90.5	1250 $\mu$ F
EC9BW-24D15	9-36 VDC	$\pm$ 15 VDC	0 mA	$\pm$ 1000 mA	60 mA	1359 mA	92	91	1000 $\mu$ F
EC9BW-48S33	18-75 VDC	3.3 VDC	0 mA	7500 mA	50 mA	593 mA	87	87.5	7500 $\mu$ F
EC9BW-48S05	18-75 VDC	5 VDC	0 mA	6000 mA	50 mA	694 mA	89.5	90	6000 $\mu$ F
EC9BW-48S12	18-75 VDC	12 VDC	0 mA	2500 mA	30 mA	683 mA	91.5	90	2500 $\mu$ F
EC9BW-48S15	18-75 VDC	15 VDC	0 mA	2000 mA	30 mA	679 mA	92	91	2000 $\mu$ F
EC9BW-48D12	18-75 VDC	$\pm$ 12 VDC	0 mA	$\pm$ 1250m A	40 mA	683 mA	91.5	90.5	1250 $\mu$ F
EC9BW-48D15	18-75 VDC	$\pm$ 15 VDC	0 mA	$\pm$ 1000m A	40 mA	679 mA	92	91	1000 $\mu$ F

### NOTE:

1. Nominal Input Voltage 24 or 48 VDC
2. Measured at 12VDC for 24Vin, 24VDC for 48Vin
3. Measured at Nominal Input Voltage

# SPECIFICATIONS

All Specifications Typical at Nominal Line, Full Load, and 25°C Unless Otherwise Noted

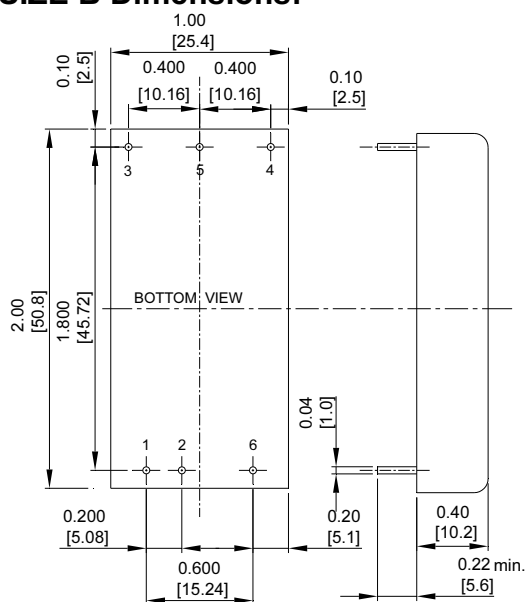
## INPUT SPECIFICATIONS:

Input Voltage Range	24VDC	9 – 36VDC
	48VDC	18 – 75VDC
Input Surge Voltage (100ms max.)	24VDC	50VDC max.
	48VDC	100VDC max.
Under Voltage Lockout	24Vin Power Up	8.8VDC typ.
	24Vin Power Down	8.0VDC typ.
	48Vin Power Up	17VDC typ.
	48Vin Power Down	16VDC typ.
Input Filter		PI Type
Positive Logic Remote on/off Control (note3&4)		

## OUTPUT SPECIFICATIONS:

Voltage Accuracy	±1% max.
Voltage Balance (Dual)	±1% max.
Transient Response: 75% - 100% Step Load Change	
Error Band	±5% Vout Nominal, Recovery Time <250us
Ripple & Noise, 20MHz BW (Measured with 0.1uF MLCC)	
Vo=3.3&5V	75mV pk-pk max.
Vo=12V&15V&±12V&±15V	100mV pk-pk max.
Temperature Coefficient	±0.02%/°C
Line Regulation (note1)	Single..... ±0.2% max.
	Dual..... ±0.5% max.
Load Regulation (note2)	Single..... ±0.5% max.
	Dual..... ±1.0% max.
Cross Regulation (Dual Output) Load Cross Variation 10%/100% ...	±5% max.
Over Voltage Protection	Zener or TVS Clamp
Current Limit	110% - 160% Nominal Output
Output Short Circuit Protection	Continuous (Hiccup Mode)
External Trim Adj. Range (Single Output Models Only)	±10%
Start up Time	5ms typ.

## SIZE B Dimensions:



PIN CONNECTION		
Pin	Single	Dual
1	+V Input	+V Input
2	-V Input	-V Input
3	+V Output	+V Output
4	Trim	-V Output
5	-V Output	Common
6	Remote On/Off	

NOTE: Pin Size is 0.04±0.004 Inch (1.0±0.1 mm)DIA  
 All Dimensions in Inches (mm)  
 Tolerances Inches: X.XX= ±0.02, X.XXX= ±0.010  
 Millimeters: X.X= ±1.0, X.XX= ±0.25

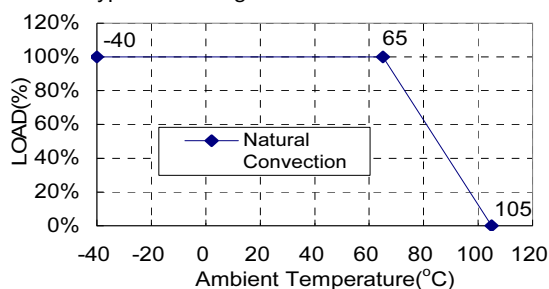
## GENERAL SPECIFICATIONS:

Efficiency	See Table
Isolation Voltage	1500 VDC min.
Isolation Resistance	10 <sup>9</sup> ohm min.
Isolation Capacitance	1000pF typ.
Switching Frequency	430KHz typ.
EMI/RFI	Six-Sided Continuous Shield
Operating Ambient Temperature Range	-40°C to +85°C
De-rating, Above 65°C	Linearly to Zero Power at +105°C
Case Temperature (note 5)	105°C max.
Cooling	Natural Convection
Storage Temperature Range	-55°C to +125°C
Thermal Shutdown, Case Temp.	110°C typ.
Humidity	95% RH max. Non-Condensing
MTBF ... MIL-HDBK-217F. GB. 25°C. Full Load ...	Single .... 900Khrs typ.
	Dual ..... 650Khrs typ.
Dimensions	2.00 x 1.00 x 0.40 inches (50.8 x 25.4 x 10.2 mm)
Case Material	Black Coated Copper with Non-Conductive Base
Weight	35g

## NOTE:

1. Measured from high line to low line.
2. Measured from full load to min. load.
3. Logic compatibility ..... CMOS or open collector TTL, referenced to -Vin.  
 Module on ..... >3.5VDC to 75VDC or open circuit  
 Module off ..... 0 to <1.2VDC
4. Suffix "N" to the model number with negative logic remote on/off  
 Module on ..... 0 to <1.2VDC  
 Module off ..... >3.5VDC to 75VDC or open circuit
5. Maximum case temperature under any operating condition should not be exceeded 105°C.

Typical Derating curve for Natural Convection



## EXTERNAL OUTPUT TRIM

