



# EC5BW SERIES 15 WATT 4:1 INPUT DC-DC CONVERTERS

## FEATURES

- \* 15W Isolated Output
- \* Efficiency to 88%
- \* 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 (Option)
- \* Continuous Short Circuit Protection
- \* No Tantalum Capacitor Inside
- \* Conductive EMI Meets EN55022 Class A
- \* CE Mark Meets 2004/108/EC
- \* Safety Meets UL60950-1, EN60950-1, and IEC60950-1



MODEL NUMBER	INPUT VOLTAGE	OUTPUT VOLTAGE	OUTPUT CURRENT		INPUT CURRENT		% EFF.		CAPACITOR LOAD MAX.
			MIN.	MAX.	NO LOAD	FULL LOAD	(2)	(3)	
EC5BW-24S33	9-36 VDC	3.3 VDC	0 mA	4000 mA	60 mA	632 mA	87	87	4000µF
EC5BW-24S05	9-36 VDC	5 VDC	0 mA	3000 mA	70 mA	718 mA	87	87	3000µF
EC5BW-24S12	9-36 VDC	12 VDC	0 mA	1250 mA	30 mA	718 mA	87	87	1250µF
EC5BW-24S15	9-36 VDC	15 VDC	0 mA	1000 mA	30 mA	710 mA	88	88	1000µF
EC5BW-24D05	9-36 VDC	±5 VDC	0 mA	±1500mA	30 mA	735 mA	85	85	1500µF
EC5BW-24D12	9-36 VDC	±12 VDC	0 mA	±625mA	30 mA	718 mA	87	87	625µF
EC5BW-24D15	9-36 VDC	±15 VDC	0 mA	±500mA	30 mA	710 mA	88	88	470µF
EC5BW-48S33	18-75 VDC	3.3 VDC	0 mA	4000 mA	40 mA	313 mA	88	88	4000µF
EC5BW-48S05	18-75 VDC	5 VDC	0 mA	3000 mA	40 mA	355 mA	88	88	3000µF
EC5BW-48S12	18-75 VDC	12 VDC	0 mA	1250 mA	20 mA	359 mA	87	87	1250µF
EC5BW-48S15	18-75 VDC	15 VDC	0 mA	1000 mA	20 mA	359 mA	87	87	1000µF
EC5BW-48D05	18-75 VDC	±5 VDC	0 mA	±1500mA	20 mA	368 mA	85	85	1500µF
EC5BW-48D12	18-75 VDC	±12 VDC	0 mA	±625mA	20 mA	359 mA	87	87	625µF
EC5BW-48D15	18-75 VDC	±15 VDC	0 mA	±500mA	20 mA	359 mA	87	87	470µF

**NOTE:**

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

# 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

## OUTPUT SPECIFICATIONS:

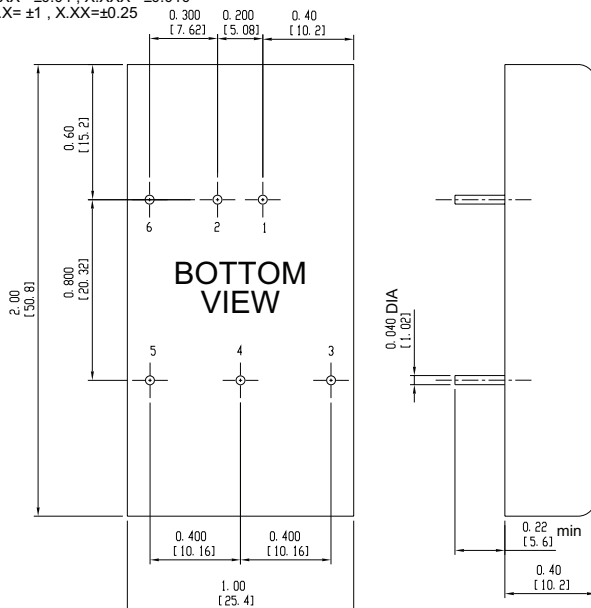
Voltage Accuracy	±1.5% max.
Voltage Balance (Dual)	±2.0% max.
Transient Response: 75% ~ 100% Step Load Change	
Error Band	±5% Vout nominal, Recovery Time < 250us
Ripple & Noise, 20MHz BW (Measured with 0.1uF MLCC)	
Vo=3.3 & 5V	75mV p-p max.
Vo=12V & 15V & ±12V & ±15V	100mV p-p max.
Temperature Coefficient	±0.03%/C max.
Short Circuit Protection	Continuous
Line Regulation (Note 1)	Single ±0.2% max.
	Dual ±0.5% max.
Load Regulation (Note 2)	Single ±0.2% 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% - 170% Nominal Output
Output Short Circuit Protection	Continuous (Hiccup Mode)
Start Up Time	10ms typ.

## OPTION:

- Suffix "T" to the Model Number With Remote Positive On/Off Control:  
 Logic Compatibility ..... CMOS or Open Collector TTL, Referenced to -Vin  
 Module On ..... >3.5VDC to 75VDC or Open Circuit  
 Module Off ..... <1.2VDC
- Suffix "A" to the Model Number with Output Voltage Adjustable  
 External Trim Adj. Range  $\geq \pm 10\%$ , Single Output Only

## SIZE B Dimensions:

All Dimensions In Inches (mm)  
 Tolerances Inches: X.XX=±0.04, X.XXX=±0.010  
 Millimeters: X.X=±1, X.XX=±0.25



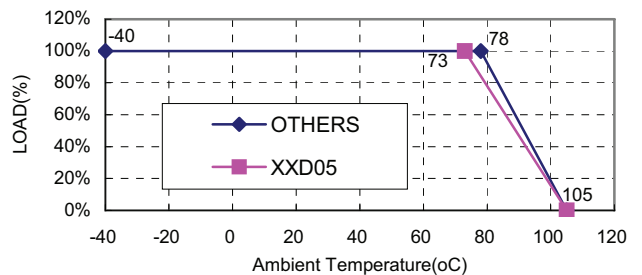
## GENERAL SPECIFICATIONS:

Efficiency	See Table
Isolation Voltage	1500 VDC min.
Isolation Resistance	10 <sup>9</sup> Ohms min.
Isolation Capacitance	1000pF typ.
Switching Frequency	400KHz typ.
EMI/RFI	Conductive EMI Meets EN55022 Class A
Case Grounding	Connect Case to -Vin with Decoupling Y Cap
Operating Ambient Temperature Range	-40°C to +85°C
De-rating, Above 78°C	Linearly to Zero Power at +105°C
Case Temperature (Note 3)	105°C
Cooling	Natural Convection
Storage Temperature Range	-55°C to +125°C
Humidity	95% RH max. Non-Condensing
MTBF	MIL-STD-217F, GB 25C, Full Load T.B.D. hrs
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

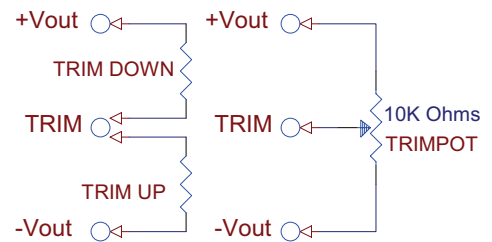
## NOTE:

- Measured From High Line to Low Line.
- Measured From Full Load to min. Load.
- Maximum Case Temperature Under Any Operating Condition Should Not Be Exceeded 105°C.

Typical Derating curve for Natural Convection



## EXTERNAL OUTPUT TRIM



PIN CONNECTION	
Pin	Function
1.	+Input
2.	-Input
3.	+Output
4.	Common/NP/Trim (Option)
5.	-V Output
6.	NP/Remote (Option)

\*NP-NO PIN ON SINGLE OUTPUT