



# EC4BU SERIES 10 WATT 2:1 INPUT DC-DC CONVERTERS

## FEATURES

- \* 10W Isolated Output
- \* Efficiency to 87%
- \* 2:1 Input Range
- \* Regulated Outputs
- \* Fixed Switching Frequency
- \* Input Under Voltage Protection
- \* Over Current Protection
- \* Conductive EMI Meets EN55022 Class A
- \* Continuous Short Circuit Protection
- \* Without Tantalum Capacitors Inside
- \* 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		
EC4BU-05S33	4.7-9 VDC	3.3 VDC	0 mA	2500 mA	120 mA	1897 mA	87	2470uF
EC4BU-05S05	4.7-9 VDC	5 VDC	0 mA	2000 mA	120 mA	2299 mA	87	2000uF
EC4BU-05S12	4.7-9 VDC	12 VDC	0 mA	833 mA	50 mA	2298 mA	87	940uF
EC4BU-05S15	4.7-9 VDC	15 VDC	0 mA	666 mA	50 mA	2297 mA	87	690uF
EC4BU-05D05	4.7-9 VDC	±5 VDC	0 mA	±1000 mA	50 mA	2353 mA	85	1000uF
EC4BU-05D12	4.7-9 VDC	±12 VDC	0 mA	±416 mA	50 mA	2295 mA	87	440uF
EC4BU-05D15	4.7-9 VDC	±15 VDC	0 mA	±333 mA	50 mA	2297 mA	87	330uF
EC4BU-12S33	9-18 VDC	3.3 VDC	0 mA	2500 mA	30 mA	838 mA	82	2470uF
EC4BU-12S05	9-18 VDC	5 VDC	0 mA	2000 mA	30 mA	980 mA	85	2000uF
EC4BU-12S12	9-18 VDC	12 VDC	0 mA	833 mA	35 mA	957 mA	87	940uF
EC4BU-12S15	9-18 VDC	15 VDC	0 mA	666 mA	35 mA	956 mA	87	690uF
EC4BU-12D05	9-18 VDC	±5 VDC	0 mA	±1000mA	45 mA	980mA	85	1000uF
EC4BU-12D12	9-18 VDC	±12 VDC	0 mA	±416mA	45 mA	957mA	87	440uF
EC4BU-12D15	9-18 VDC	±15 VDC	0 mA	±333mA	45 mA	957mA	87	330uF
EC4BU-24S33	18-36 VDC	3.3 VDC	0 mA	2500 mA	25 mA	419 mA	82	2470uF
EC4BU-24S05	18-36 VDC	5 VDC	0 mA	2000 mA	25 mA	490 mA	85	2000uF
EC4BU-24S12	18-36 VDC	12 VDC	0 mA	833 mA	25 mA	478 mA	87	940uF
EC4BU-24S15	18-36 VDC	15 VDC	0 mA	666 mA	25 mA	478 mA	87	690uF
EC4BU-24D05	18-36 VDC	±5 VDC	0 mA	±1000mA	25 mA	490 mA	85	1000uF
EC4BU-24D12	18-36 VDC	±12 VDC	0 mA	±416mA	25 mA	478 mA	87	440uF
EC4BU-24D15	18-36 VDC	±15 VDC	0 mA	±333mA	25 mA	478 mA	87	330uF
EC4BU-48S33	36-75 VDC	3.3 VDC	0 mA	2500 mA	20 mA	212 mA	81	2470uF
EC4BU-48S05	36-75 VDC	5 VDC	0 mA	2000 mA	20 mA	245 mA	85	2000uF
EC4BU-48S12	36-75 VDC	12 VDC	0 mA	833 mA	20 mA	239 mA	87	940uF
EC4BU-48S15	36-75 VDC	15 VDC	0 mA	666 mA	20 mA	239 mA	87	690uF
EC4BU-48D05	36-75 VDC	±5 VDC	0 mA	±1000mA	20 mA	245 mA	85	1000uF
EC4BU-48D12	36-75 VDC	±12 VDC	0 mA	±416mA	20 mA	239 mA	87	440uF
EC4BU-48D15	36-75 VDC	±15 VDC	0 mA	±333mA	20 mA	239 mA	87	330uF

NOTE: 1. Nominal Input Voltage 5, 12, 24 or 48 VDC

# SPECIFICATIONS

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

## INPUT SPECIFICATIONS:

Input Voltage Range	5V	4.7 - 9V
	12V	9 - 18V
	24V	18 - 36V
	48V	36 - 75V
Under voltage lockout	5Vin power up: 4.4V, power down: 4.2V	
	12Vin power up: 8.4V, power down: 8V	
	24Vin power up: 17V, power down: 16V	
	48Vin power up: 34V, power down: 32V	
Input Surge Voltage (100mS max.)	5Vin	12Vdc max.
	12Vin	25Vdc max.
	24Vin	50Vdc max.
	48Vin	100Vdc max.
Input Filter	PI Type	

## OUTPUT SPECIFICATIONS:

Voltage Accuracy	±1.5% max.
Voltage Balance (Dual)	±2.0% max.
Transient Response: 25% Step Load Change	<500u sec.
Ripple and Noise, 20MHz BW (Measured with 0.1uF MLCC)	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% - 140% Nominal Output
Start up time	20ms. max.

## 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 ..... >5.5VDC to 75VDC or Open Circuit  
 Module Off ..... <1.2VDC
- Suffix "A" to the Model Number with Output Voltage Adjustable  
 External Trim Adj. Range  $\leq \pm 10\%$ , Single Output Models Only

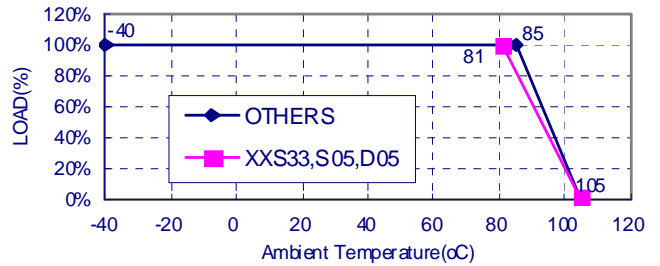
## GENERAL SPECIFICATIONS:

Efficiency	See Table
Isolation Voltage	1500 VDC min.
Isolation Resistance	10 <sup>9</sup> Ohms min.
Isolation Capacitance	1000pF typ.
Switching Frequency	350KHz 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
Derating, Above 85°C	Linearly to Zero Power at +105°C
Case Temperature (Note 4)	105°C
Cooling	Natural Convection
Storage Temperature Range	-55°C to +125°C
Humidity	95% RH max. Non condensing
MTBF	MIL-STD-217-F, GB, 25°C, Full Load 1200k hrs
Dimensions	2.00x1.00x0.4 inches (50.8x25.4x10.2mm)
Case Material	Black Coated Copper with Non-Conductive Base
Weight	35g

## NOTE:

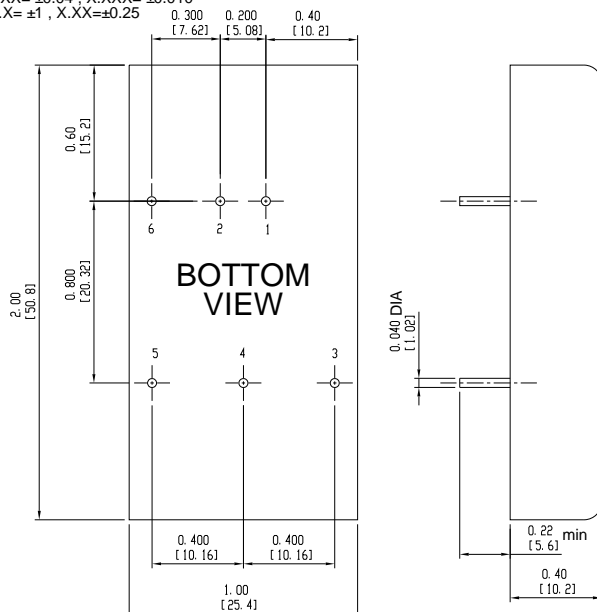
- Measured From High Line to Low Line
- Measured From Full Load to min. Load
- Maximum case temperature under any operating condition should not be exceeded 105°C.

Typical Derating curve for Natural Convection



## CASE 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



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