



Features

- High efficiency – **Synchronous Rectifier Topology**
- Save 20% board space
- Standard pin out; **Fully replaceable** with 2"x1" standard case
- **2250V I/O Insulation** (input to output)
- Patented architecture and control
- 1.8V, 2.5V, 3.3V, or 5.0V outputs
- High power density up to 50W per cubic inch
- -40°C to +60°C operation at **Free air without derating**
- **Built-in EMC Filter**
- Input under-voltage lockout
- Output current limit and short circuit protection
- Output over-voltage and Over temperature protection



Description

The new **Power Version of ESB** series converters are targeted specifically at the telecommunication, industrial electronics, mobile telecommunication, and distributed power markets. These 10 members accept two wide input voltage ranges from 18 to 36 & 36 to 75 VDC and provide single low voltage outputs. All models feature built-in EMC filter, input under voltage lockout, over-temperature protection, output over-voltage protection, output current limiting, and short circuit protection.

The converters combine creative design concept and conservative component selection to achieve very high reliability, high performance and low cost.

Model Selection Guide

Typical @ Ta=+25°C under nominal line voltage and full load conditions unless noted.

Model	Input				Output			Efficiency @FL
	Voltage (V)		Current (A)		Voltage (V)	Current (A)	Power (W)	
	Nominal	Range	No load	Full load				Typ.
ESB4850- 6-E PV	48	36-75	0.05	0.7	5.0	6	30	89%
ESB4833- 8-E PV	48	36-75	0.05	0.625	3.3	8	26.4	88%
ESB4825- 8-E PV	48	36-75	0.05	0.48	2.5	8	20	87%
ESB4818- 8-E PV	48	36-75	0.05	0.35	1.8	8	14.4	85%
ESB4850- 7-E PV	48	36-75	0.05	0.82	5.0	7	35	89%
ESB4833-10-E PV	48	36-75	0.05	0.78	3.3	10	33	88%
ESB4825-10-E PV	48	36-75	0.05	0.6	2.5	10	25	87%
ESB4818-10-E PV	48	36-75	0.05	0.44	1.8	10	18	85%
ESB2450- 6-E PV	24	18-36	0.1	1.42	5.0	6	30	88%
ESB2433- 8-E PV	24	18-36	0.1	1.26	3.3	8	26.4	87%
ESB2425- 8-E PV	24	18-36	0.1	0.96	2.5	8	20	86%
ESB2418- 8-E PV	24	18-36	0.1	0.71	1.8	8	14.4	85%
ESB2450- 7-E PV	24	18-36	0.1	1.66	5.0	7	35	88%
ESB2433-10-E PV	24	18-36	0.1	1.58	3.3	10	33	87%
ESB2425-10-E PV	24	18-36	0.1	1.21	2.5	10	25	86%
ESB2418-10-E PV	24	18-36	0.1	0.88	1.8	10	18	85%

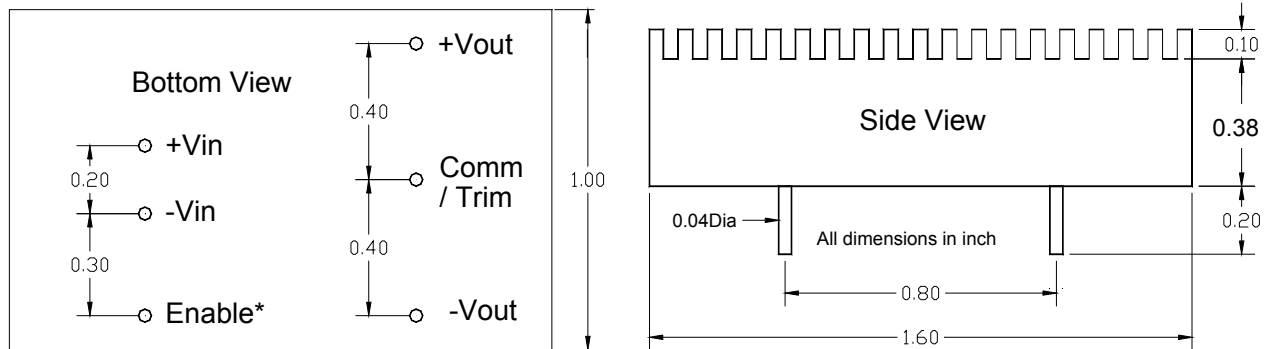
Enable polarity : “-1” for positive logic Built-In EMC Input Filter, “-P” for positive logic PI Input Filter.

“-0” for negative logic Built-In EMC Input Filter, “-N” for negative logic PI Input Filter.

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Electrical Specifications

Typical @ Ta=+25°C under nominal line voltage and full load conditions unless noted.

Input

Parameter	Notes and Conditions	Min.	Typ	Max.	Unit
Operating Input Voltage ranges	ESB24 models	18	24	36	VDC
	ESB48 models	36	48	75	VDC
Under-Voltage Lockout Turn-ON Threshold	ESB24 models	17.5			VDC
	ESB48 models	35			VDC
Under-Voltage Lockout Turn-OFF Threshold	ESB24 models			17	VDC
	ESB48 models			34	VDC
Input Current	See model selection guide, Standby mode (OFF, UVLO) 5mA				
High Input Level	Enable Function Input	3		5.5	VDC
Low Input Level		0		1.2	VDC
Input Filter	All models	PI / EMC Filter			

Output

Parameter	Notes and Conditions	Min.	Typ	Max.	Unit
Output Voltage Accuracy	10% Load			±1.0	%
Line Regulation	Low line to High line			±0.3	%
Load Regulation	10% to 100% load			±0.5	%
Ripple & Noise (20MHz bandwidth)	Over Line, Load & Temp.		50	100	mV pk-pk
				30	mV RMS
Temperature Coefficient				±0.04	% / °C
Transient Recovery Time	50-75% load step change		100	200	µSec.
Transient Peck Deviation	50-75% load step change			±2	%Vo
Start-Up Time			2	5	mSec.
Output Power Protection		100	120	140	%

General Specifications

Parameter	Notes and Conditions	Min.	Typ	Max.	Unit
Switching Frequency		270	300	330	KHz
Storage Temperature range	All models	-55		125	°C
Operating Case Temperature	All models	-40		115	°C
Isolation Voltage	All models, 1 Minute			2250	VDC
Isolation Resistance	All models, 500VDC	10			MΩ
Isolation Capacitance	All models			3000	pF
Humidity	All models			95	%
Calculated MTBF	BellCore TR-332 @ 50°C G.B.	TBD			Hours
Weight				26(0.9)	g (oz.)
Efficiency	See model selection guide				
Dimensions	1.6" x 1.0" x 0.46" (40.6 x 25.4 x 11.7mm)				

It is recommended to protect the input by fuses or other protection devices.

The information and specifications contained in this data sheet are believed to be correct at time of publication. All specifications are subject to change without notice. No rights under any patent accompany the sale of any such products or information contained herein.

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