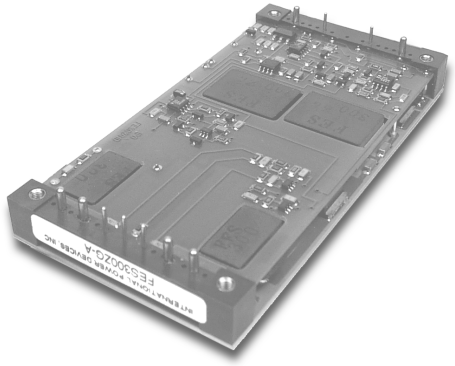
FES SERIES - 300 WATT

DESCRIPTION

FES single output DC/DC converters provide up to 300 Watts of output power and up to 60 Amperes of output current in a full brick package. The FES converters feature open-frame packaging, along with planar magnetics and a high efficiency topology, to provide maximum useable power density. The FES converters use 100% surface-mount construction and are fully compatible with production board washing processes.

FEATURES

- 60A "Full Brick"
- Very High Efficiency
- Open-Frame Packaging
- 100°C Baseplate Operation
- Planar Magnetics
- Excellent Transient Response
- 1500V Isolation
- Synchronous Rectification



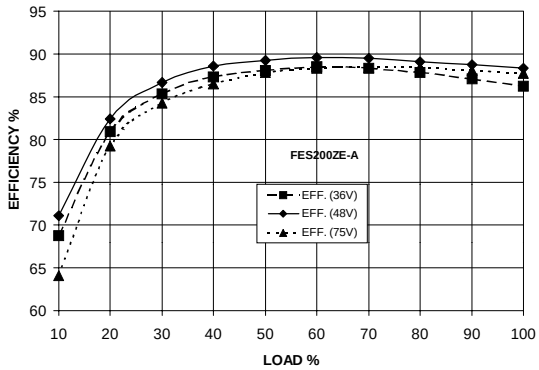
TECHNICAL SPECIFICATIONS

Input	
Voltage Range	
48 VDC Nominal	36 - 75 VDC
Undervoltage Lockout - Turn on / Turn off	34 / 32 VDC

Output	
Setpoint Accuracy	±1%
Line Regulation V_{in} Min. - V_{in} Max., I_{out} Rated	0.2% V_{out}
Load Regulation I_{out} Min. - I_{out} Max., V_{in} Nom.	0.2% V_{out}
Remote Sense Headroom	0.5 VDC
Minimum Output Current	10 % I_{out} Rated
Dynamic Regulation, Loadstep	25% I_{out}
Pk Deviation	4% V_{out}
Settling Time	500 µs
Voltage Trim Range	±10%
Current Limit Threshold Range, % of I_{out} Rated	110 - 140%
OVP Trip Range	120 - 140% V_{out} Nom.
OVP Type	Self Recovering
Short Circuit/Over Current Protection	Shutdown/Hiccup

General	
Turn-On Time	10 ms
Remote Shutdown	Positive Logic
Remote Shutdown Reference	V_{in} Negative
Switching Frequency	200 or 300 kHz
Isolation	
Input - Output	1500 VDC
Input - Case	1050 VDC
Output - Case	500 VDC
Temperature Coefficient	0.03%/°C
Case Temperature	
Operating Range	-40 To +100°C
Storage Range	-40 To +125°C
Thermal Shutdown Range	105 To 125°C
Vibration, 3 Axes, 5 Min Each	5 g, 10 - 55 Hz
MTBF† (Bellcore TR-NWT-000332)	Consult Factory
Safety	UL, CUL, TUV
Weight (Approx.)	4.4 oz

Efficiency vs. Load (48V Input)



Notes

† MTBF predictions may vary slightly from model to model.

Specifications typically at 25° C, normal line, and full load, unless otherwise stated.

Soldering Conditions: I/O pins, 260°C, ten seconds; fully compatible with commercial wave-soldering equipment.

Safety: Agency approvals may vary from model to model. Please consult factory for specific model information.

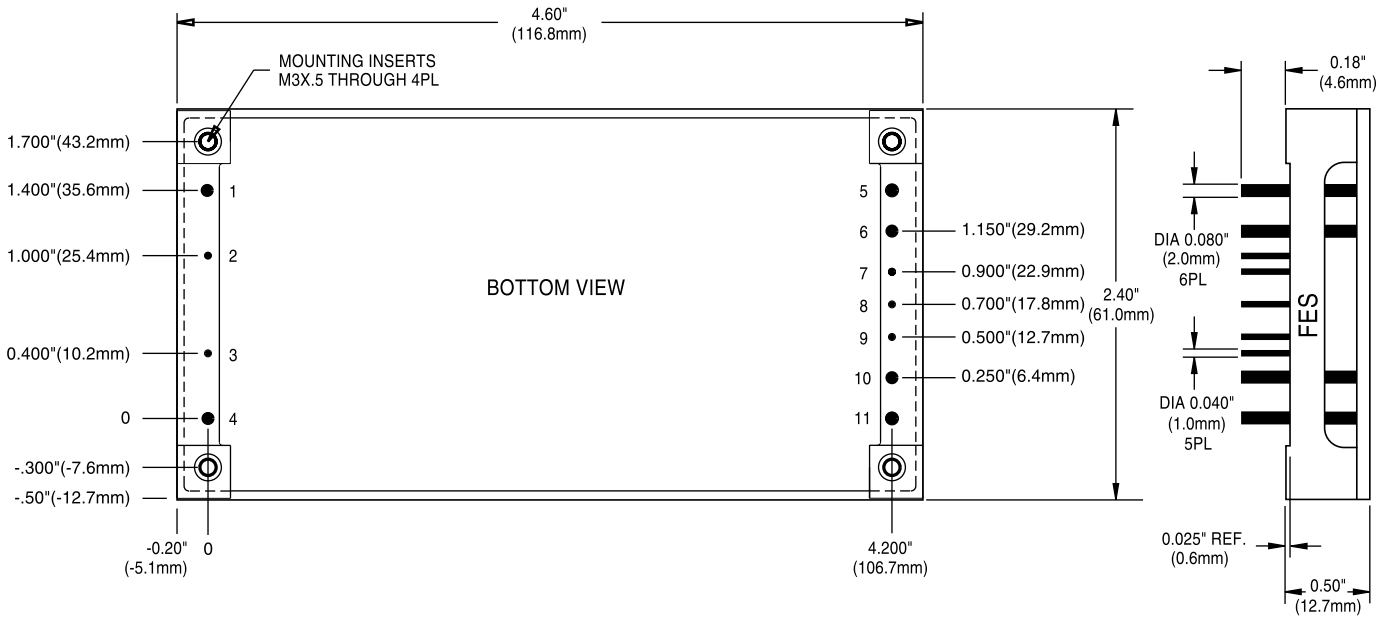
FES SERIES - 300 WATT

MODELS - (See the last page of this file for options.)

Vin (Volts)	Vin Range (Volts)	Iin Max.* (Amps)	Vout (Volts)	Iout Rated (Amps)	Ripple & Noise Pk-Pk (mV)	Efficiency Typ. **	Model
48	36 - 75	3.5	2.5	40	100	85%	FES100ZD-A
48	36 - 75	4.5	3.3	40	100	87%	FES132ZE-A
48	36 - 75	6.5	5.0	40	100	80%	FES200ZG-A
48	36 - 75	5.0	2.5	60	100	79%	FES150ZD-A
48	36 - 75	7.0	3.3	60	100	81%	FES200ZE-A
48	36 - 75	10.5	5.0	60	100	84%	FES300ZG-A

* Maximum input current at minimum input voltage, maximum rated output power.
** At nominal Vin, rated output.

MECHANICAL DRAWING



Thermal Impedance	
Natural Convection	5.4 °C/W
100 LFM	3.8 °C/W
200 LFM	2.5 °C/W
300 LFM	1.7 °C/W
400 LFM	1.6 °C/W

Note:
Thermal impedance data is dependent on many environmental factors. The exact thermal performance should be validated for specific application.

Pin	Function
1	$-V_{in}$
2	Case
3	Enable
4	$+V_{in}$
5	$-V_{out}$
6	$-V_{out}$
7	-Sense
8	Trim
9	+Sense
10	$+V_{out}$
11	$+V_{out}$

Tolerances	
Inches:	(Millimeters)
.XX ± 0.020	.X ± 0.5
.XXX ± .010	.XX ± 0.25
Pin:	
± 0.002	± 0.05

(Dimensions as listed unless otherwise specified.)

OPTIONS

When ordering equipment options, use the following suffix information. Select the option(s) that you prefer and add them to the model number. Example ordering options are located below the options table.

OPTION	SUFFIX	APPLICABLE SERIES	REMARKS
Negative Logic	N	HAS, HBD, HBS, HES, LES, QBS, QES, TES, TQD	TTL “Low” Turns Module ON TTL “High” Turns Module OFF
Lucent Compatible Trim	T	HAS, HBD, HBS, HES, QBS, QES	
Terminal Strip	TS	XWS, XWD, XWT	
Trim	1	IAS, LES	
Enable	2	IAD, IAS, LES, SMS	
Trim and Enable	3	IAS, LES	
Current Share	4	SMS	
Headerless	Y	Encapsulated EWS, IWS, OWS	
PIN LENGTH AND HEATSINK OPTIONS			Standard Pin Length is 0.180” (4.6mm)
0.110” (2.8mm) Pin Length	8	All Units (Except SMS)	
0.150” (3.8mm) Pin Length	9	All Units (Except SMS)	
0.24” (6.1mm) Horizontal Heatsink	1H	All Units (Except DIP, SIP, and SM Packages)	Includes Thermal Pad
0.24” (6.1mm) Vertical Heatsink	1V	All Units (Except DIP, SIP, and SM Packages)	Includes Thermal Pad
0.45” (11.4mm) Horizontal Heatsink	2H	All Units (Except DIP, SIP, and SM Packages)	Includes Thermal Pad
0.45” (11.4mm) Vertical Heatsink	2V	All Units (Except DIP, SIP, and SM Packages)	Includes Thermal Pad
0.95” (24.1mm) Horizontal Heatsink	3H	All Units (Except DIP, SIP, and SM Packages)	Includes Thermal Pad
0.95” (24.1mm) Vertical Heatsink	3V	All Units (Except DIP, SIP, and SM Packages)	Includes Thermal Pad

Example Options: HBS050ZG-ANT3V = HBS050ZG-A with negative logic, Lucent compatible trim, and 0.95” vertical heatsink.
LES015YJ-3N = LES015YJ with optional trim and enable, negative logic.
QBS066ZG-AT8 = QBS066ZG-A with Lucent compatible trim and 0.110” pin length.

NUCLEAR AND MEDICAL APPLICATIONS Power-One products are not authorized for use as critical components in life support systems, equipment used in hazardous environments, or nuclear control systems without the express written consent of the President of Power-One, Inc.

TECHNICAL REVISIONS The appearance of products, including safety agency certifications pictured on labels, may change depending on the date manufactured. Specifications are subject to change without notice.