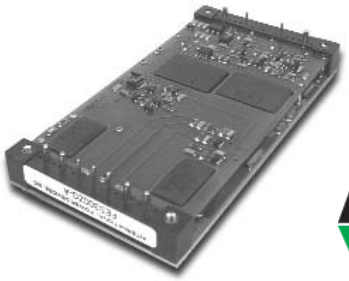
FES DC-DC Series Data Sheet
Single-Output, 300 Watts

power-one®
Changing the Shape of Power



RoHS Compliant

Features

- RoHS lead solder exemption compliant
- 60 A “full-brick”
- Very high efficiency
- Open-frame packaging
- 100 °C baseplate operation
- Planar magnetics
- Excellent transient response
- 1500 V isolation
- Synchronous rectification

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.

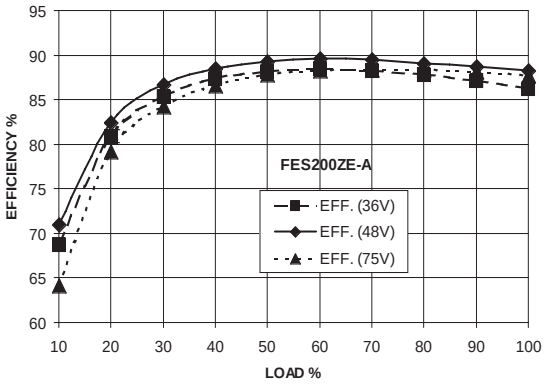
Technical Specifications

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.

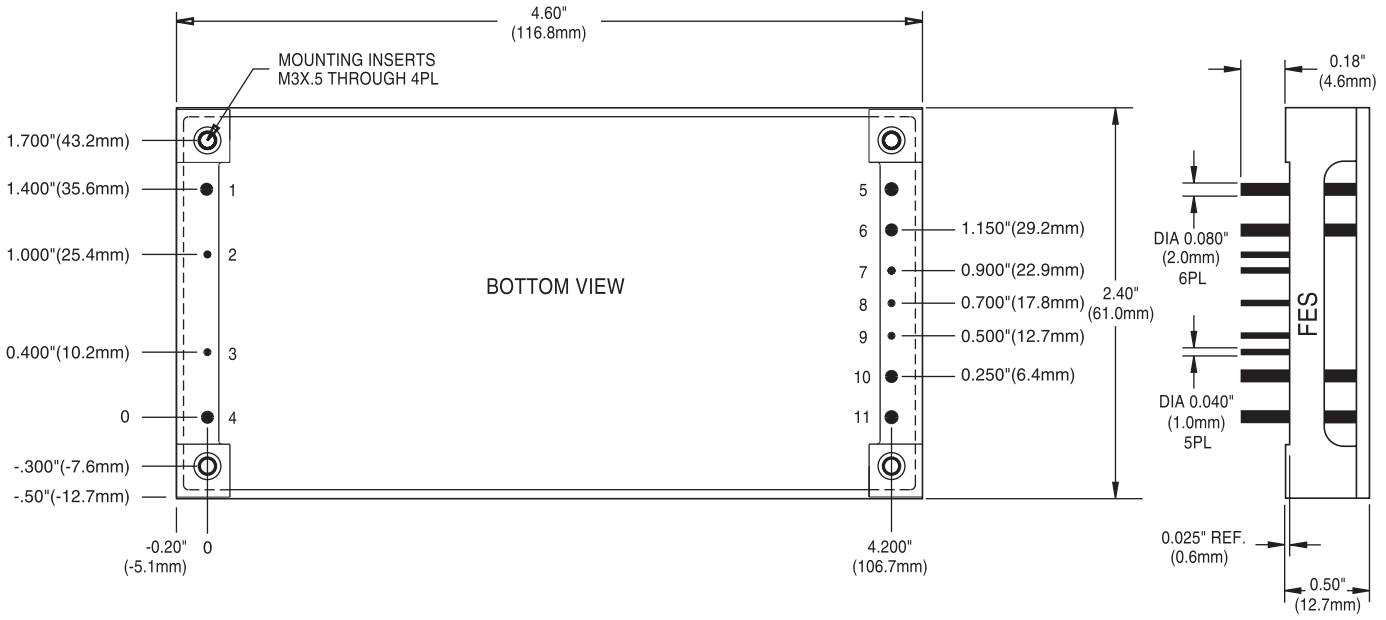
Model Selection

MODEL	INPUT VOLTAGE (VOLTS)	INPUT VOLTAGE RANGE (VOLTS)	MAXIMUM INPUT CURRENT (AMPS)*	OUTPUT VOLTAGE (VOLTS)	RATED OUTPUT CURRENT (AMPS)	RIPPLE & NOISE pk-pk (mV)	TYPICAL EFFICIENCY**
FES132ZE-A	48	36 - 75	4.5	3.3	40	100	87%
FES200ZG-A	48	36 - 75	6.5	5.0	40	100	80%
FES200ZE-A	48	36 - 75	7.0	3.3	60	100	81%
FES300ZG-A	48	36 - 75	10.5	5.0	60	100	84%

* Maximum input current at minimum input voltage, maximum rated output power.
** At nominal V_{in}, rated output.

Model numbers highlighted in yellow or shaded are not recommended for new designs.

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.)