



APPLICATIONS

Wireless Network
Telecom/Datacom
Industry Control System
Measurement
Semiconductor Equipment

FEATURES

- 15 WATTS OUTPUT POWER
- OUTPUT CURRENT UP TO 4.5A
- STANDARD 2" X 1" X 0.4" PACKAGE
- HIGH EFFICIENCY UP TO 88%
- 4:1 ULTRA WIDE INPUT VOLTAGE RANGE
- SIX-SIDED CONTINUOUS SHIELD
- FIXED SWITCHING FREQUENCY
- CE MARK MEETS 2006/95/EC, 93/68/EEC AND 2004/108/EC
- UL60950-1, EN60950-1 AND IEC60950-1 LICENSED
- ISO9001 CERTIFIED MANUFACTURING FACILITIES
- COMPLIANT TO RoHS EU DIRECTIVE 2002/95/EC

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OPTIONS

Positive logic & Negative logic Remote On/Off

DESCRIPTION

The FEC15W series offer 15 watts of output power from a 2 x 1 x 0.4 inch package. The FEC15W series with 4:1 ultra wide input voltage of 9-36 and 18-75 VDC.

TECHNICAL SPECIFICATION

All specifications are typical at nominal input, full load and 25°C otherwise noted

OUTPUT SPECIFICATIONS			
Output power		15 Watts, max	
Voltage accuracy	Full load and nominal Vin		± 1%
Minimum load		0%	
Line regulation	LL to hI at Full load	Single	± 0.2%
		Dual	± 0.5%
Load regulation	No load to Full load	Single	± 0.5%
		Dual	± 1%
Cross regulation (Dual)	Asymmetrical load 25% / 100% FL		± 5%
Ripple and noise	20MHz bandwidth (Measured with a 0.1uF/50V MLCC)		See table
Temperature coefficient		±0.02% / °C, max	
Transient response recovery time		25% load step change	250uS
Over voltage protection	3.3V output		3.9V
	5V output		6.2V
	12V output		15V
	15V output		18V
Over load protection	% of FL at nominal input		150%, typ
Short circuit protection		Hiccup, automatics recovery	
GENERAL SPECIFICATIONS			
Efficiency		See table	
Isolation voltage	Input to Output		1600VDC, min
	Input(Output) to case		1600VDC, min
Case grounding		Connect case to -Vin with decoupling Y Cap	
Isolation resistance		10 ⁹ ohms, min	
Isolation capacitance		1500pF, max	
Switching frequency		400KHz, typ	
Approvals and standard		IEC60950-1, UL60950-1, EN60950-1	
Case material		Nickel-coated copper	
Base material		FR4 PCB	
Potting material		Epoxy (UL94-V0)	
Dimensions		2.00 X 1.00 X 0.40 Inch (50.8 X 25.4 X 10.2 mm)	
Weight		27g (0.95oz)	
MTBF (Note 1)	BELLCORE TR-NWT-000332		1.819 x 10 ⁶ hrs
	MIL -HDBK-217F		9.205 x 10 ⁵ hrs

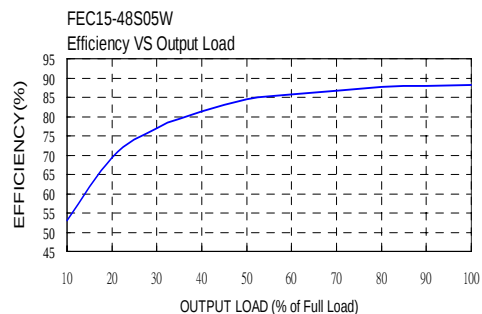
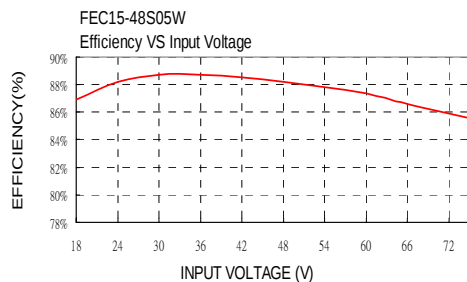
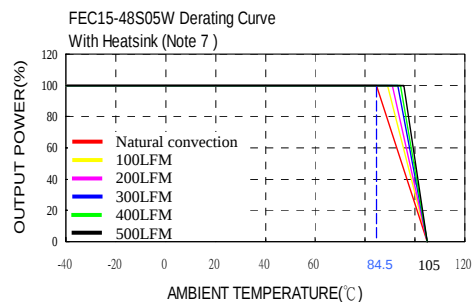
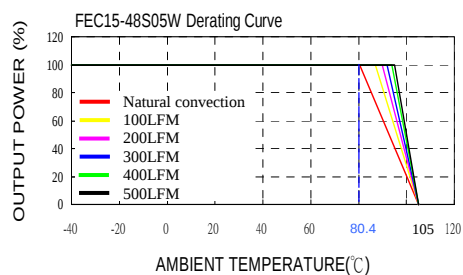
INPUT SPECIFICATIONS			
Input voltage range	24V nominal input 48V nominal input	9 – 36VDC 18 – 75VDC	
Input filter	Pi type		
Input voltage variation	dv/dt	5V/mS, max (Complies with ETS300 132 part 4.4)	
Input surge voltage 100mS max	24V input 48V input	50VDC 100VDC	
Input reflected ripple current	Nominal Vin and full load		20mA _{p-p}
Start up time	Nominal Vin and constant resistive load	Power up	20mS, typ
Start-up voltage	24V input 48V input	9VDC 18VDC	
Shutdown voltage	24V input 48V input	7.5VDC 15VDC	
Remote ON/OFF (Option) (Note 6)			
(Positive logic)	DC-DC ON	Open or 3 V < Vr < 12V	
	DC-DC OFF	Short or 0V < Vr < 1.2V	
(Negative logic)	DC-DC ON	Short or 0V < Vr < 1.2V	
	DC-DC OFF	Open or 3 V < Vr < 12V	
Input current of Remote control pin	Nominal Vin	-0.5mA ~ + 0.5mA	
Remote off state input current	Nominal Vin	2.5mA	
ENVIRONMENTAL SPECIFICATIONS			
Operating ambient temperature	-40°C ~ +76°C (without derating) +76°C ~ +105°C (with derating)		
Maximum case temperature	105°C		
Storage temperature range	-55°C ~ +125°C		
Thermal impedance (Note 7)	Nature convection	12°C/Watt	
	Nature convection with heat-sink	10°C/Watt	
Thermal shock	MIL-STD-810F		
Vibration	10~55Hz, 10G, 30minutes along X,Y and Z		
Relative humidity	5% to 95% RH		
EMC CHARACTERISTICS			
EMI (Note 8)	EN55022	Class A	
ESD	EN61000-4-2	Air Contact ± 8KV ± 6KV	Perf. Criteria B
Radiated immunity	EN61000-4-3	10 V/m	Perf. Criteria A
Fast transient	EN61000-4-4	± 2KV	Perf. Criteria B
Surge (Note 9)	EN61000-4-5	± 1KV	Perf. Criteria B
Conducted immunity	EN61000-4-6	10 Vr.m.s	Perf. Criteria A

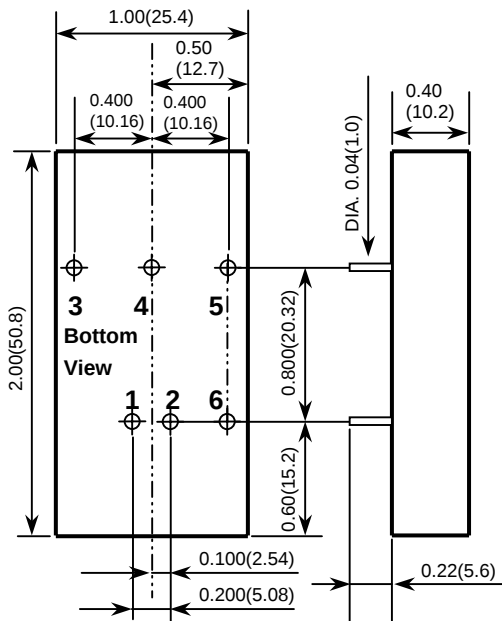


Model Number	Input Range	Output Voltage	Output Current		Output ⁽⁴⁾ Ripple & Noise	Input Current		Eff ⁽⁴⁾ (%)	Capacitor ⁽⁵⁾ Load max
			Min. load	Full load		No Load ⁽³⁾	Full Load ⁽²⁾		
FEC15-24S3P3W	9 – 36 VDC	3.3 VDC	0mA	4500mA	50mVp-p	50mA	755mA	86	14700uF
FEC15-24S05W	9 – 36 VDC	5 VDC	0mA	3000mA	50mVp-p	65mA	753mA	87	7200uF
FEC15-24S5P1W	9 – 36 VDC	5.1 VDC	0mA	3000mA	50mVp-p	65mA	768mA	87	7200uF
FEC15-24S12W	9 – 36 VDC	12 VDC	0mA	1250mA	75mVp-p	22mA	753mA	87	1250uF
FEC15-24S15W	9 – 36 VDC	15 VDC	0mA	1000mA	75mVp-p	22mA	753mA	87	800uF
FEC15-24D05W	9 – 36 VDC	± 5 VDC	0mA	± 1500mA	75mVp-p	55mA	753mA	87	± 3600uF
FEC15-24D12W	9 – 36 VDC	± 12 VDC	0mA	± 625mA	75mVp-p	30mA	744mA	88	± 625uF
FEC15-24D15W	9 – 36 VDC	± 15 VDC	0mA	± 500mA	75mVp-p	30mA	744mA	88	± 400uF
FEC15-48S3P3W	18 – 75 VDC	3.3 VDC	0mA	4500mA	50mVp-p	35mA	377mA	86	14700uF
FEC15-48S05W	18 – 75 VDC	5 VDC	0mA	3000mA	50mVp-p	35mA	372mA	88	7200uF
FEC15-48S5P1W	18 – 75 VDC	5.1 VDC	0mA	3000mA	50mVp-p	35mA	379mA	88	7200uF
FEC15-48S12W	18 – 75 VDC	12 VDC	0mA	1250mA	75mVp-p	15mA	377mA	87	1250uF
FEC15-48S15W	18 – 75 VDC	15 VDC	0mA	1000mA	75mVp-p	15mA	377mA	87	800uF
FEC15-48D05W	18 – 75 VDC	± 5 VDC	0mA	± 1500mA	75mVp-p	35mA	372mA	88	± 3600uF
FEC15-48D12W	18 – 75 VDC	± 12 VDC	0mA	± 625mA	75mVp-p	17mA	372mA	88	± 625uF
FEC15-48D15W	18 – 75 VDC	± 15 VDC	0mA	± 500mA	75mVp-p	17mA	372mA	88	± 400uF

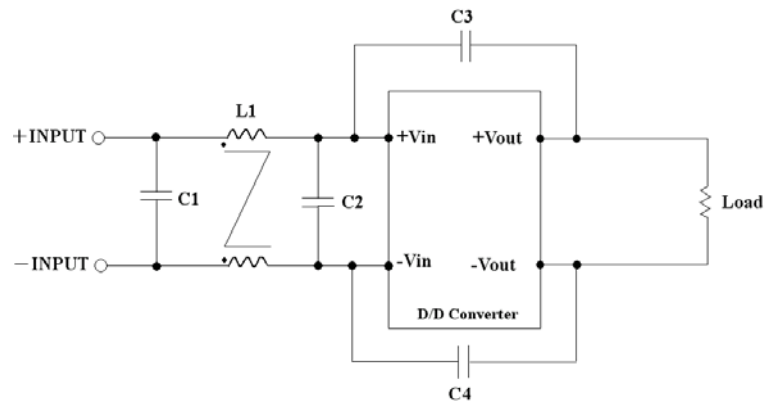
Note:

1. BELLCORE TR-NWT-000332. Case 1: 50% Stress, Temperature at 40°C.
MIL-HDBK-217F Notice2 @Ta=25 °C, Full load(Ground, Benign, controlled environment)
2. Maximum value at nominal input voltage and full load.
3. Typical value at nominal input voltage and no load.
4. Typical value at nominal input voltage and full load.
5. Test by minimum Vin and constant resistive load.
6. The ON/OFF control pin voltage is referenced to -Vin.
To order positive logic ON/OFF control add the suffix-P (Ex: FEC15-48S05W-P)
To order negative logic ON/OFF control add the suffix-N (Ex: FEC15-48S05W-N)
7. Heat sink is optional and P/N: 7G-0020A
8. The FEC15W series can meet EN55022 Class A with parallel an external capacitor to the input pins.
Recommend : 24Vin : NA.
48Vin : 1μF/100V 1210 MLCC.
9. An external filter capacitor is required if the module has to meet EN61000-4-5.
The filter capacitor Power Mate suggest: Nippon chemi-con KY series, 220 μF/100V, ESR 48mΩ.





1. All dimensions in Inches (mm)
Tolerance: X.XX±0.02 (X.X±0.5)
X.XXX±0.01 (X.XX±0.25)
2. Pin pitch tolerance ±0.01(0.25)
3. Pin dimension tolerance ±0.004 (0.1)

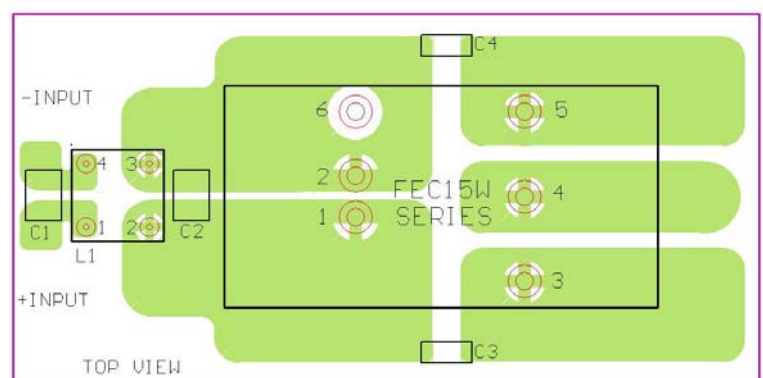


Recommended Filter for EN55022 Class B Compliance

The components used in the above figure, together with the manufacturers' part numbers for these components, are as follows:

	C1	C2	C3	C4	L1
FEC15-24XXXW	2.2uF/50V 1812 MLCC	N/A	1000pF/2KV MLCC	1000pF/2KV MLCC	450uH Common Choke PMT-048
FEC15-48XXXW	2.2uF/100V 1812 MLCC	2.2uF/100V 1812 MLCC	1000pF/2KV MLCC	1000pF/2KV MLCC	325uH Common Choke PMT-050

PIN CONNECTION		
PIN	SINGLE	DUAL
1	+ INPUT	+ INPUT
2	- INPUT	- INPUT
3	+ OUTPUT	+ OUTPUT
4	NO PIN	COMMON
5	- OUTPUT	- OUTPUT
6	CTRL (Option)	CTRL (Option)



Recommended EN55022 Class B Filter Circuit Layout