

# FEC15W SERIES

DC / DC Single & Dual Output: 15 Watts



## Features

- 4:1 wide Input range option 9~36V & 18~75V
- Single & Dual outputs
- Industry Standard 2 x 1in package
- High efficiency up to 83%
- Regulated output & Short circuit protection
- 1600V isolation
- Five sided continuous copper shield
- Remote ON / OFF ( Negative or Positive) - option
- High operating temperature +85°C
- Zero load operation
- Safety EN60950, UL1950
- EMC Compliant

## Specifications:

<b>Input Voltage</b>	24VDC ( 9 ~ 36 ) 48VDC ( 18 ~ 75 )
<b>Input Filter</b>	Pi type
<b>Input Surge Voltage.</b> ( 100mS )	24V: 50VDC. 48V: 100VDC
<b>Input Reflected Ripple Current</b>	20mA pk-pk ( @ nominal input & 100% load
<b>Start Up time</b>	20mS constant resistive load
<b>Remote ON/OFF</b> ( Positive logic ) ( Negative logic ) ( Option )	DC-DC ON Open or 3.0V < Vr < 12V DC-DC OFF Short or 0V < Vr < 1.2V DC-DC ON Short or 0V < Vr < 1.2V DC-DC OFF Open or 3.0V < Vr < 12V Input current of remote control pin: 0.5mA Remote off state input current: 2.5mA
<b>Output power</b>	15 watts
<b>Voltage Accuracy</b>	±1.0%
<b>Minim Load</b>	Zero
<b>Line Regulation</b>	Single ±0.2% Dual ±0.5%
<b>Load Regulation</b>	Single ±0.5% , Dual ±1% ( 0% -100% load )
<b>Cross Regulation</b>	±5% Asymmetrical load: 25-100% load )
<b>Ripple &amp; noise</b>	See table. 20MHZ bandwidth
<b>Temp. Coefficient</b>	±0.02% / °C
<b>Transient Response</b>	250uS ( 25% load step change )
<b>Over Voltage Protection</b>	3.3V: 3.9V 5.0V: 6.2V 12V: 15V 15V: 18V
<b>Overload Protection</b>	Typically 150% of load
<b>Short Circuit protection</b>	Continuous hiccup mode

<b>Efficiency</b>	Model dependant 86 ~ 88%
<b>Isolation</b>	1600VDC
<b>Isolation Cap.</b>	1500pF
<b>Case Grounding</b>	Connect case to -Vin with decoupling Y cap.
<b>Switching Freq.</b>	Standard 400KHz
<b>Safety</b>	EN60950-1, UL60950-1
<b>Case Material</b>	Nickel-coated copper
<b>Base Material</b>	Non-conductive black plastic
<b>Potting</b>	Epoxy UL94-V0
<b>Dimensions</b>	50.8 x 25.4 x 10.2mm
<b>Weight</b>	27g
<b>MTBF</b>	1.697 x 10 <sup>6</sup> Hrs
<b>Operating Temp</b>	-40°C to +76°C ( without derating ) -40°C to +100°C ( with derating )
<b>Case Temp</b>	+100°C maximum case temperature
<b>Thermal Impedance</b>	12°C / watt Standard convection 10°C / watt with optional heatsink
<b>Thermal shock</b>	MIL-STD-810F
<b>Vibration</b>	10-55Hz, 10G, 30min along X, Y,Z
<b>Humidity</b>	5-95% RH
<b>EMC</b>	EN55022 Class A Consult office for Class B design
<b>ESD</b>	EN61000-4-2
<b>Radiated Immunity</b>	EN61000-4-3
<b>Fast Transients</b>	EN61000-4-4
<b>Surge</b>	EN61000-4-5
<b>Conducted Immunity</b>	EN61000-4-6

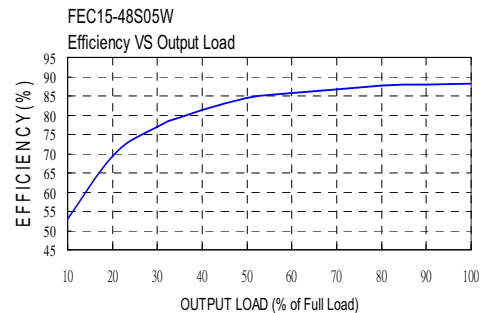
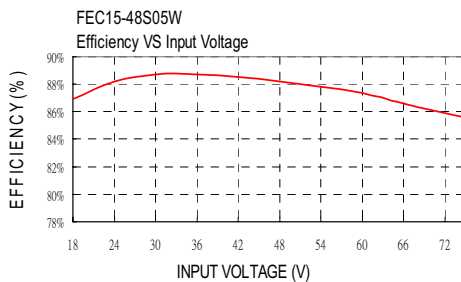
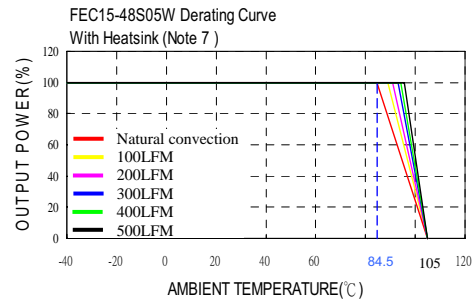
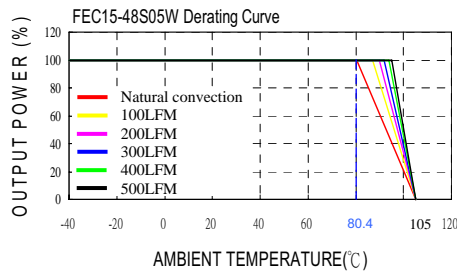
# FEC15W SERIES

DC / DC Single & Dual Output: 15 Watts

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

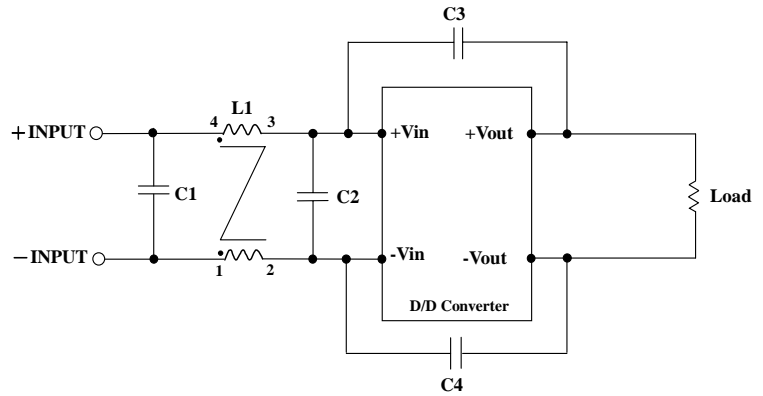
**Notes:**

1. MTBF as per BELLCORE TR-NWT-000332. Case 1: 50% Stress, Temperature at 40°C. (Ground fixed and controlled environment)  
MIL-STD-217F Notice2 @Ta=25 °C, Full load(Ground, Benign, controlled environment)
2. Typical values at nominal input voltage and full resistive load.
3. The ON/OFF control pin voltage is referenced to -Vin.  
To order positive logic ON/OFF control add the suffix **-P** (eg: FEC15-48S05W-P) Negative logic ON/OFF control add the suffix **-N** (eg: FEC15-48S05W-N )
4. Heat sink is optional and **P/N: 7G-0020A**
5. 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.
6. An external filter capacitor is required if the module has to meet EN61000-4-5. Recommend Nippon chemi-con KY series, 220µF/100V, ESR 48mΩ.



# FEC15W SERIES

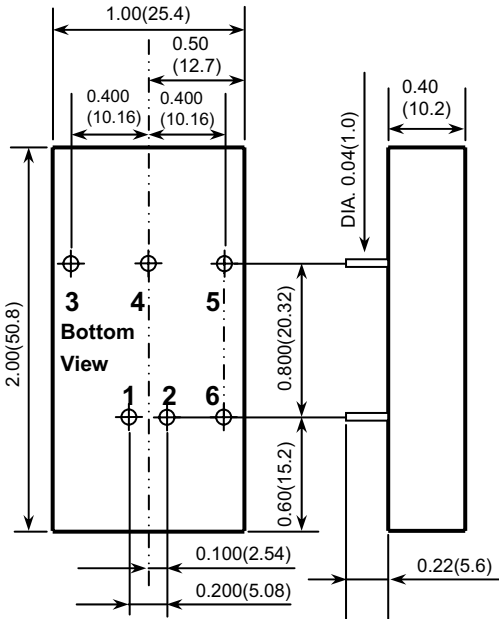
DC / DC Single & Dual Output: 15 Watts



### Recommended Filter for EN55022 Class B Compliance

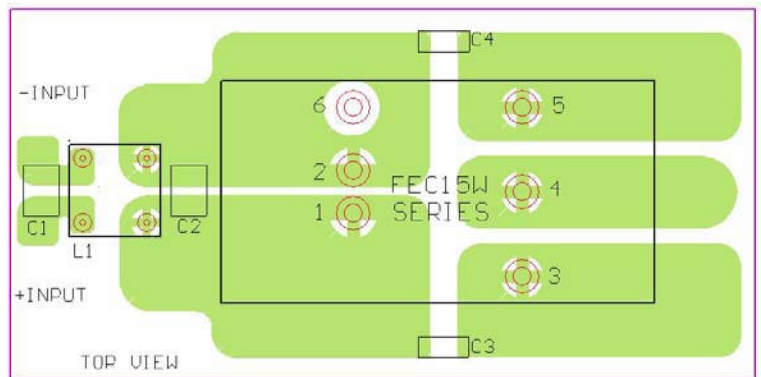
The components used in the above figure, together with the manufacturers' part numbers for these components, are as follows:

	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



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

Pin Assignment		
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