

# FEC30 SERIES

DC / DC Single & Dual Output: 30 Watts



## Features

- 2:1 wide Input range option 12V, 24V & 48VDC
- Single & Dual outputs
- Industry Standard 2 x 1.6in package
- High efficiency up to 82%
- Regulated output & Short circuit protection
- 1600V isolation
- Five sided continuous copper shield
- Remote ON / OFF- Standard
- High operating temperature +85°C
- Fixed switching frequency
- Zero load operation
- Optional heat sink: P/N: 7G-0011C-F

## Specifications:

<b>Input Voltage</b>	12VDC ( 9 ~ 18 ) 24VDC ( 18 ~ 36 ) 48VDC ( 36 ~ 75 )
<b>Input Filter</b>	L-C type
<b>Input Surge Voltage.</b> ( 100mS )	12V: 36VDC, 24V: 50VDC. 48V: 100VDC
<b>Input Reflected Ripple Current</b>	30mA pk-pk ( @ nominal input & 100% load
<b>Start Up time</b>	25mS constant resistive load
<b>Remote ON/OFF</b> ( Positive logic )	DC-DC ON    Open or $3.5V < V_r < 12V$ DC-DC OFF    Short or $0V < V_r < 1.2V$ Input current of remote control pin: 0.5mA Remote off state input current: 2.5mA
<b>Output power</b>	30 watts
<b>Voltage Accuracy</b>	±1.0%
<b>Voltage Trim</b>	±10% via external resistor network
<b>Minimum Load</b>	Zero load
<b>Line Regulation</b>	Single ±0.2% Dual ±0.5%
<b>Load Regulation</b>	Single ±0.5% , Dual ±1% ( Min load -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>	300uS ( 25% load step change )
<b>Over Voltage Protection</b>	1.5 ~ 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 78 ~ 88%
<b>Isolation</b>	1600VDC
<b>Isolation Cap.</b>	1000pF
<b>Switching Freq.</b>	300KHz
<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 40.6 x 10.2mm
<b>Weight</b>	48g
<b>MTBF</b>	1.535 x 10 <sup>6</sup> Hrs
<b>Operating Temp</b>	Standard: -45°C to +85°C ( with derating )
<b>Case Temp</b>	+100°C maximum case temperature
<b>Thermal Impedance</b>	10°C / watt Standard convection 8.24°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

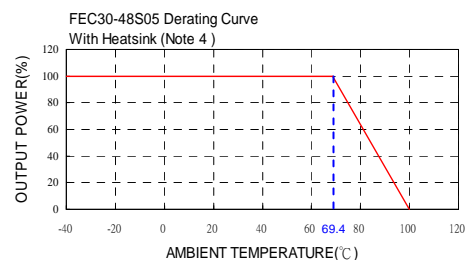
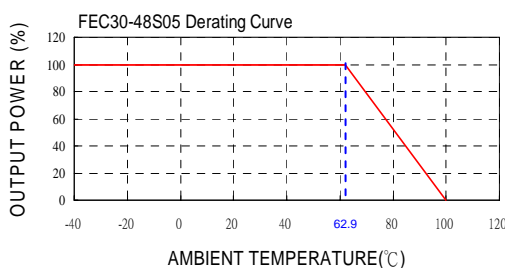
# FEC30 SERIES

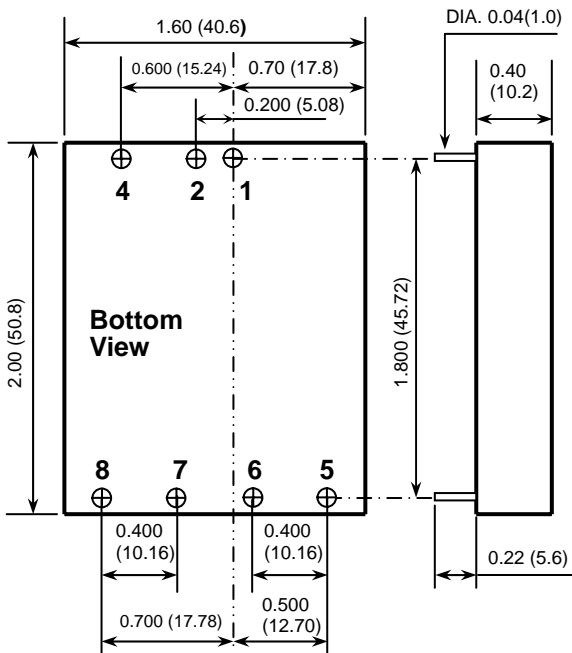
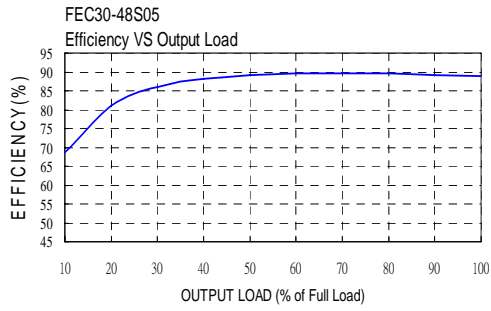
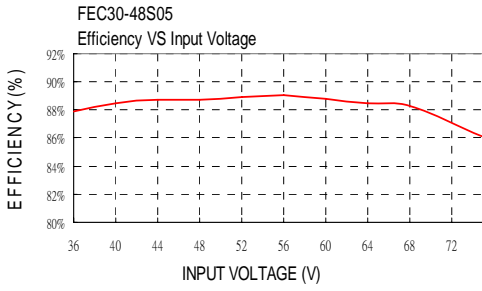
DC / DC Single & Dual Output: 30 Watts

Model V	Input V	Output V	Output Current		Output Ripple & Noise	Input Current		Eff (%)	Capacitor Load max
			Min. load	Full load		No load	Full load		
FEC30-12S1P5	9 – 18 V	1.5 V	0mA	6000mA	50mVp-p	100mA	1014mA	78	85800uF
FEC30-12S1P8	9 – 18 V	1.8 V	0mA	6000mA	50mVp-p	100mA	1169mA	81	65000uF
FEC30-12S2P5	9 – 18 V	2.5 V	0mA	6000mA	50mVp-p	110mA	1582mA	83	33000uF
FEC30-12S3P3	9 – 18 V	3.3 V	0mA	6000mA	50mVp-p	115mA	2037mA	85	19500uF
FEC30-12S05	9 – 18 V	5 V	0mA	6000mA	50mVp-p	95mA	3012mA	87	10200uF
FEC30-12S12	9 – 18 V	12 V	0mA	2500mA	75mVp-p	170mA	2976mA	88	3240uF
FEC30-12S15	9 – 18 V	15 V	0mA	2000mA	75mVp-p	210mA	2976mA	88	1100uF
FEC30-12D12	9 – 18 V	±12 V	0mA	±1250mA	100mVp-p	60mA	3012mA	87	±1020uF
FEC30-12D15	9 – 18 V	±15 V	0mA	±1000mA	100mVp-p	40mA	3012mA	87	±675uF
FEC30- 24S1P5	18 – 36 V	1.5 V	0mA	6000mA	50mVp-p	50mA	493mA	80	85800uF
FEC30- 24S1P8	18 – 36 V	1.8 V	0mA	6000mA	50mVp-p	35mA	580mA	82	65000uF
FEC30- 24S2P5	18 – 36 V	2.5 V	0mA	6000mA	50mVp-p	45mA	780mA	84	33000uF
FEC30- 24S3P3	18 – 36 V	3.3 V	0mA	6000mA	50mVp-p	50mA	1010mA	86	19500uF
FEC30- 24S05	18 – 36 V	5 V	0mA	6000mA	50mVp-p	50mA	1490mA	88	10200uF
FEC30- 24S12	18 – 36 V	12 V	0mA	2500mA	75mVp-p	80mA	1470mA	89	3300uF
FEC30- 24S15	18 – 36 V	15 V	0mA	2000mA	75mVp-p	90mA	1470mA	89	1100uF
FEC30- 24D12	18 – 36 V	±12 V	0mA	±1250mA	100mVp-p	30mA	1488mA	88	±1020uF
FEC30-24D15	18 – 36 V	±15 V	0mA	±1000mA	100mVp-p	30mA	1488mA	88	±675uF
FEC30- 48S1P5	36 – 75 V	1.5 V	0mA	6000mA	50mVp-p	20mA	244mA	81	85800uF
FEC30- 48S1P8	36 – 75 V	1.8 V	0mA	6000mA	50mVp-p	20mA	290mA	83	65000uF
FEC30- 48S2P5	36 – 75 V	2.5 V	0mA	6000mA	50mVp-p	25mA	390mA	85	33000uF
FEC30- 48S3P3	36 – 75 V	3.3 V	0mA	6000mA	50mVp-p	30mA	500mA	87	19500uF
FEC30- 48S05	36 – 75 V	5 V	0mA	6000mA	50mVp-p	35mA	740mA	89	10200uF
FEC30- 48S12	36 – 75 V	12 V	0mA	2500mA	75mVp-p	35mA	730mA	90	3300uF
FEC30- 48S15	36 – 75 V	15 V	0mA	2000mA	75mVp-p	55mA	730mA	90	1100uF
FEC30- 48D12	36 – 75 V	±12 V	0mA	±1250mA	100mVp-p	20mA	744mA	88	±1020uF
FEC30- 48D15	36 – 75 V	±15 V	0mA	±1000mA	100mVp-p	20mA	744mA	88	±675uF

**Notes:**

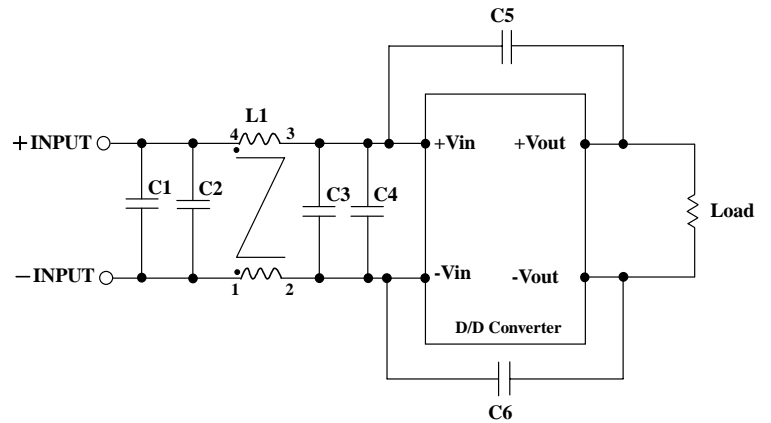
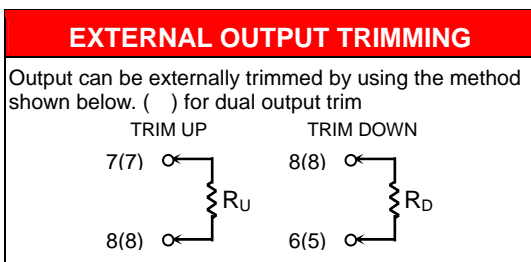
1. MTBF as per BELLCORE TR-NWT-000332. Case I: 50% Stress, Temperature at 40°C. (Ground fixed and controlled environment)
2. Typical values at nominal input voltage and full resistive load.
3. The ON/OFF control pin voltage is referenced to -Vin.
4. Heat sink is optional and P /N: 7G-0011C-F
5. The FEC30 series can meet EN55022 Class A with parallel an external capacitor to the input pins.  
Recommend: 12Vin : 6.8µF/50V 1812 MLCC . 24Vin : 6.8µF/50V 1812 MLCC , 48Vin : 2.2µF/100V 1812 MLCC.
6. An external filter capacitor is required if the module has to meet EN61000-4-5.  
Filter capacitor recommended: Nippon chemi-con KY series, 220µF/100V, ESR 48mΩ.





- 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)

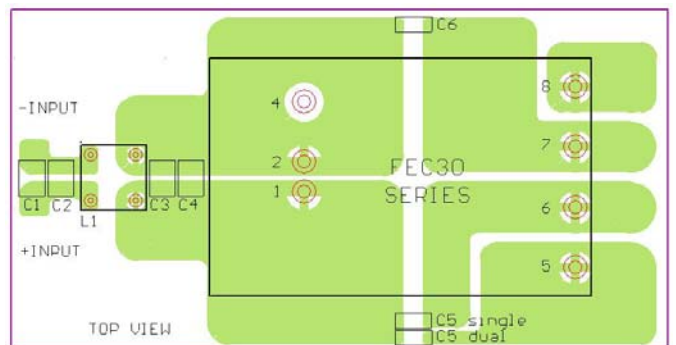
Pin Assignment		
PIN	SINGLE	DUAL
1	+ INPUT	+ INPUT
2	- INPUT	- INPUT
4	CTRL	CTRL
5	NO PIN	+ OUTPUT
6	+ OUTPUT	COMMON
7	- OUTPUT	- OUTPUT
8	TRIM	TRIM



**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	C5 & C6	L1
FEC30-12xxx	4.7uF/50V 1812 MLCC	N/A	4.7uF/50V 1812 MLCC	N/A	1000pF/2KV MLCC	450uH Common Choke PMT-048
FEC30-24xxx	6.8uF/50V 1812 MLCC	N/A	6.8uF/50V 1812 MLCC	N/A	1000pF/2KV MLCC	450uH Common Choke PMT-048
FEC30-48xxx	2.2uF/100V 1812 MLCC	2.2uF/100V 1812 MLCC	2.2uF/100V 1812 MLCC	2.2uF/100V 1812 MLCC	1000pF/2KV MLCC	450uH Common Choke PMT-048



**Recommended EN55022 Class B Filter Circuit Layout**