



FEATURES

- 30 WATTS MAXIMUM OUTPUT POWER
- OUTPUT CURRENT UP TO 8A
- STANDARD 2.00 X 1.60 X 0.40 INCH PACKAGE
- HIGH EFFICIENCY UP TO 88%
- 4:1 WIDE INPUT VOLTAGE RANGE
- SIX-SIDED CONTINUOUS SHIELD
- FIXED SWITCHING FREQUENCY
- OFFER SINGLE AND DUAL OUTPUT
- 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 2011/65/EU

APPLICATIONS

Wireless Network
Telecom/Datacom
Industry Control System
Measurement Equipment
Semiconductor Equipment

OPTIONS

Negative logic Remote On/Off

DESCRIPTION

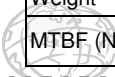
The FEC30W series offer 30 watts of output power from a 2.00 x 1.60 x 0.40 inch package. The FEC30W series with 4:1 wide input voltage of 10~40VDC and 18~75VDC and features 1600VDC of isolation, short-circuit and over-voltage protection.

TECHNICAL SPECIFICATION

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

OUTPUT SPECIFICATIONS			
Output power	30 Watts, max.		
Voltage accuracy	± 1%		
Minimum load	See Table		
Voltage adjustability	± 10%		
Line regulation	LL to HL at Full Load	± 0.5%	
Load regulation	No Load to Full Load	Single Dual	± 0.5% ± 1%
Cross regulation (Dual)	Asymmetrical load 25% / 100% FL		± 5%
Ripple and noise	20MHz bandwidth (Measured with a 0.1µF/50V MLCC)	See table	
Temperature coefficient	± 0.02% / °C, max.		
Transient response recovery time	25% load step change	250µS	
Over voltage protection Zener diode clamp	1.5VDC output	3.9VDC	
	1.8VDC output	3.9VDC	
	2.5VDC output	3.9VDC	
	3.3VDC output	3.9VDC	
	5VDC output	6.2VDC	
	12VDC output 15VDC output	15VDC 18VDC	
Over load protection	% of FL at nominal input	150%, max.	
Short circuit protection	Hiccup, automatics recovery		
GENERAL SPECIFICATIONS			
Efficiency	See table		
Isolation voltage	Input to Output Input (Output) to Case	1600VDC, min. 1600VDC, min.	1minute 1minute
Isolation resistance	10 ⁹ ohms, min.		
Isolation capacitance	1000pF, max.		
Switching frequency	300KHz±10%.		
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 1.60 X 0.40 Inch (50.8 X 40.6 X 10.2 mm)		
Weight	48g (1.69oz)		
MTBF (Note 1)	BELLCORE TR-NWT-000332 MIL-HDBK-217F	1.315 x 10 ⁶ hrs 3.456 x 10 ⁵ hrs	

INPUT SPECIFICATIONS			
Input voltage range	24VDC nominal input 48VDC nominal input	10 – 40VDC 18 – 75VDC	
Input filter	L-C type		
Input surge voltage	24VDC input 48VDC input	50VDC 100ms,max 100VDC 100ms,max	
Input reflected ripple current	20mA _{p-p}		
Start up time	Nominal input and constant resistive load	Power up Remote ON/OFF	10mS 10mS
Start-up voltage	24VDC input 48VDC input	10VDC 18VDC	
Shutdown voltage	24VDC input 48VDC input	8VDC 16VDC	
Remote ON/OFF (Note 6)	(Positive logic)(Standard)	DC-DC ON DC-DC OFF	Open or 3V < Vr < 12V Short or 0V < Vr < 1.2V
(Negative logic)(Option)	DC-DC ON DC-DC OFF	Short or 0V < Vr < 1.2V Open or 3V < Vr < 12V	
Input current of remote control pin	Nominal input	-0.5mA ~ +0.5mA	
Remote off state input current	Nominal input	3mA	
ENVIRONMENTAL SPECIFICATIONS			
Operating ambient temperature	-40°C ~ +85°C (with derating)		
Maximum case temperature	100°C		
Over temperature protection	115°C.		
Storage temperature range	-55°C ~ +105°C		
Thermal impedance	Natural convection	10°C/Watt	
(Note 7)	Natural convection with heat-sink	8.24°C/Watt	
Thermal shock	MIL-STD-810F		
Vibration	MIL-STD-810F		
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 (Note 9)	EN61000-4-4	± 2KV	Perf. Criteria A
Surge (Note 9)	EN61000-4-5	± 1KV	Perf. Criteria B
Conducted immunity	EN61000-4-6	10 Vr.m.s	Perf. Criteria A



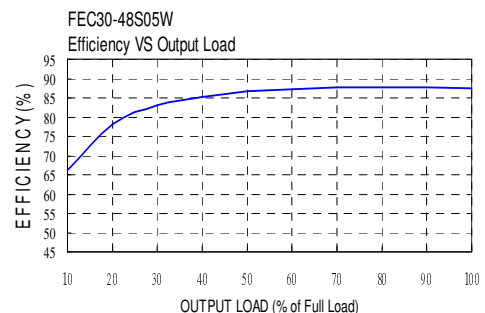
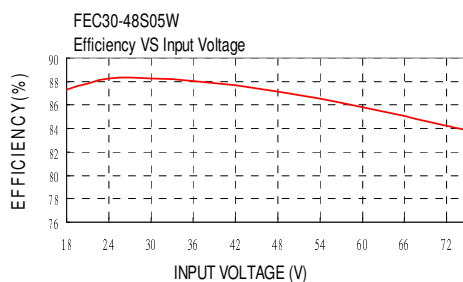
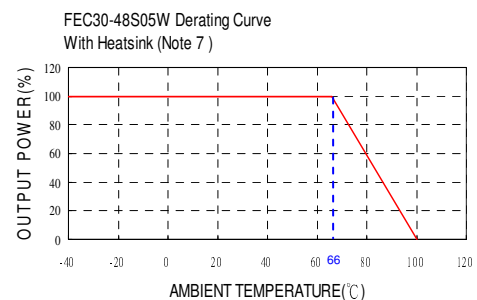
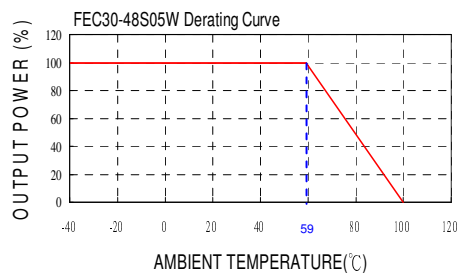


Model Number	Input Range	Output Voltage	Output Current		Output ⁽⁴⁾ Ripple & Noise	Input Current		Eff ⁽⁴⁾ (%)	Capacitor ⁽⁵⁾ Load max
			Min. load	Full load		No load ⁽³⁾	Full load ⁽²⁾		
FEC30-24S1P5W	10 ~ 40 VDC	1.5 VDC	0mA	8000mA	60mVp-p	35mA	658mA	80	65000μF
FEC30-24S1P8W	10 ~ 40 VDC	1.8 VDC	0mA	8000mA	60mVp-p	35mA	759mA	83	65000μF
FEC30-24S2P5W	10 ~ 40 VDC	2.5 VDC	0mA	8000mA	60mVp-p	40mA	1029mA	85	33000μF
FEC30-24S3P3W	10 ~ 40 VDC	3.3 VDC	0mA	6000mA	60mVp-p	50mA	994mA	87	19500μF
FEC30-24S05W	10 ~ 40 VDC	5 VDC	0mA	6000mA	75mVp-p	65mA	1506mA	87	10200μF
FEC30-24S12W	10 ~ 40 VDC	12 VDC	0mA	2500mA	100mVp-p	65mA	1506mA	87	3300μF
FEC30-24S15W	10 ~ 40 VDC	15 VDC	0mA	2000mA	100mVp-p	70mA	1488mA	88	1100μF
FEC30-24D12W	10 ~ 40 VDC	±12VDC	0mA	±1250mA	100mVp-p	30mA	1563mA	84	±1000μF
FEC30-24D15W	10 ~ 40 VDC	±15VDC	0mA	±1000mA	100mVp-p	35mA	1543mA	85	±680μF
FEC30-48S1P5W	18 ~ 75 VDC	1.5 VDC	0mA	8000mA	60mVp-p	20mA	329mA	80	65000μF
FEC30-48S1P8W	18 ~ 75 VDC	1.8 VDC	0mA	8000mA	60mVp-p	20mA	380mA	83	65000μF
FEC30-48S2P5W	18 ~ 75 VDC	2.5 VDC	0mA	8000mA	60mVp-p	25mA	508mA	86	33000μF
FEC30-48S3P3W	18 ~ 75 VDC	3.3 VDC	0mA	6000mA	60mVp-p	30mA	497mA	87	19500μF
FEC30-48S05W	18 ~ 75 VDC	5 VDC	0mA	6000mA	75mVp-p	30mA	744mA	88	10200μF
FEC30-48S12W	18 ~ 75 VDC	12 VDC	0mA	2500mA	100mVp-p	35mA	753mA	87	3300μF
FEC30-48S15W	18 ~ 75 VDC	15 VDC	0mA	2000mA	100mVp-p	45mA	744mA	88	1100μF
FEC30-48D12W	18 ~ 75 VDC	±12VDC	0mA	±1250mA	100mVp-p	25mA	772mA	85	±1000μF
FEC30-48D15W	18 ~ 75 VDC	±15VDC	0mA	±1000mA	100mVp-p	25mA	762mA	86	±680μF

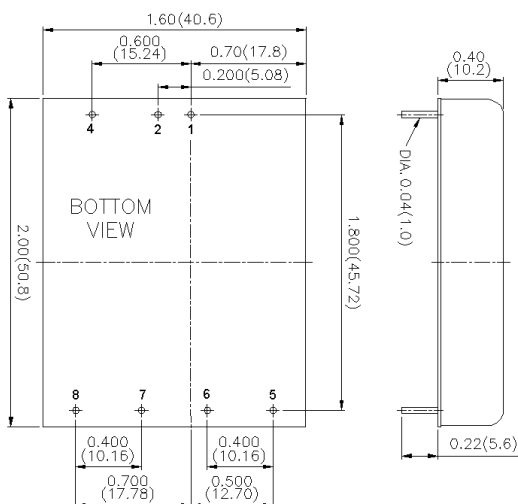
Note

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 and full load.
3. Typical value at nominal input and no load.
4. Typical value at nominal input and full load.
5. Test by minimum input and constant resistive load.
6. The CTRL pin voltage is referenced to -INPUT.
To order negative logic ON-OFF control add the suffix-N (Ex: FEC30-24S05W-N).
7. Heat-sink is optional and P/N: 7G-0011C-F.
8. The FEC30W series can meet EN55022 Class A with parallel an external capacitor to the input pins.
Recommend: 24VDC input : 6.8μF/50V 1812 MLCC .
48VDC input : 2pcs of 2.2μF/100V 1812 MLCC.
9. An external input filter capacitor is required if the module has to meet EN61000-4-4, EN61000-4-5.
The filter capacitor Power Mate suggest: Nippon chemi-con KY series, 220 μ F/100V, ESR 48m Ω .

CAUTION: This power module is not internally fused. An input line fuse must always be used.



Mechanical Drawing:

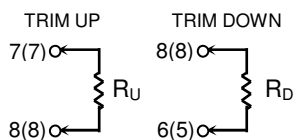


1. All dimensions in **Inch** (mm)
Tolerance: X.XX±0.02 (X.X±0.5)
X.XXX±0.01 (X.XX±0.25)
2. Pin pitch tolerance ±0.01 (0.25)
3. Pin dimension tolerance ±0.004 (0.1)

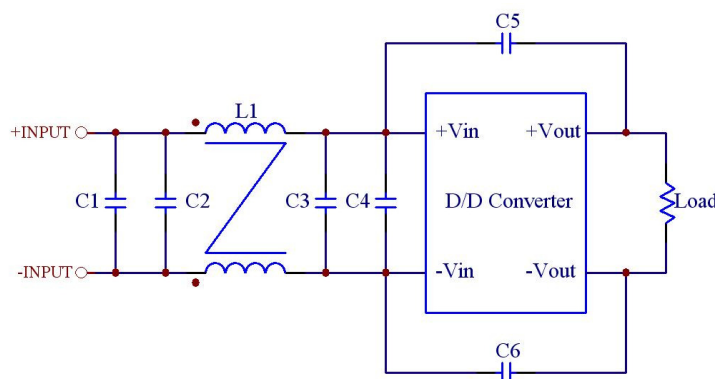
PIN CONNECTION		
PIN	SINGLE	DUAL
1	+ INPUT	+ INPUT
2	- INPUT	- INPUT
4	CTRL	CTRL
5	NO PIN	+ OUTPUT
6	+ OUTPUT	COMMON
7	- OUTPUT	- OUTPUT
8	TRIM	TRIM

EXTERNAL OUTPUT TRIMMING

Output can be externally trimmed by using the method shown below.
() FOR DUAL OUTPUT TRIM



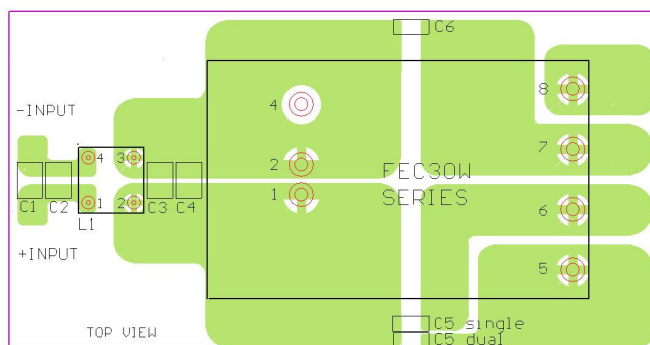
Recommended EMI Filter:



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
FEC30-24xxxW	6.8μF/50V 1812 MLCC	N/A	6.8μF/50V 1812 MLCC	N/A	1000pF/2KV MLCC	450μH Common Choke PMT-048
FEC30-48xxxW	2.2μF/100V 1812 MLCC	2.2μF/100V 1812 MLCC	2.2μF/100V 1812 MLCC	2.2μF/100V 1812 MLCC	1000pF/2KV MLCC	450μH Common Choke PMT-048



Recommended EN55022 Class B Filter Circuit Layout