POWER MATE TECHNOLOGY CO.,LTD.

P-DUKE

FEC30W-SERIES

FEATURES

- 30 WATTS MAXIMUM OUTPUT POWER
- OUTPUT CURRENT UP TO 8A
- STANDARD 2.0 X 1.6 X 0.4 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 2002/95/EC

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 x 1.6 x 0.4 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 25ºC unless otherwise noted

OUTPUT SPECIFICATIONS			
Output power			30 Watts, max.
Voltage accuracy	Full load and nominal Vin		± 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% / ºC, max.
Transient response recovery time	25% load step change		250µS
Over voltage protection Zener diode clamp	1.5V output 1.8V output 2.5V output 3.3V output 5V output 12V output 15V output		3.9VDC 3.9VDC 3.9VDC 3.9VDC 6.2VDC 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.
Isolation resistance		10^9ohms, min.
Isolation capacitance		1000pF, max.
Switching frequency		300KHz, 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 1.60 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	24V nominal input 48V nominal input		10 – 40VDC 18 – 75VDC
Input filter			L-C type
Input surge voltage 100mS max	24V input 48V input		50VDC 100VDC
Input reflected ripple current	Nominal Vin and full load		20mAp-p
Start up time	Nominal Vin and constant resistive load	Power up Remote ON/OFF	10mS, typ. 10mS, typ.
Start-up voltage	24V input 48V input		10VDC 18VDC
Shutdown voltage	24V input 48V 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 Vin		-0.5mA ~ +0.5mA
Remote off state input current	Nominal Vin		3mA

ENVIRONMENTAL SPECIFICATIONS		
Operating ambient temperature		-40ºC ~ +85ºC (with derating)
Maximum case temperature		100ºC
Over temperature protection		115ºC, typ.
Storage temperature range		-55ºC ~ +105ºC
Thermal impedance (Note 7)	Nature convection Nature convection with heat-sink	10ºC/Watt 8.24ºC/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 ± 8KV Contact ± 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

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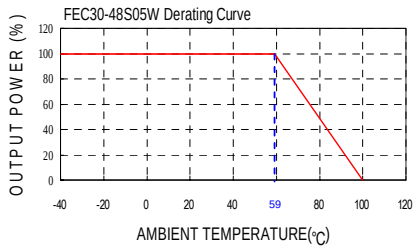
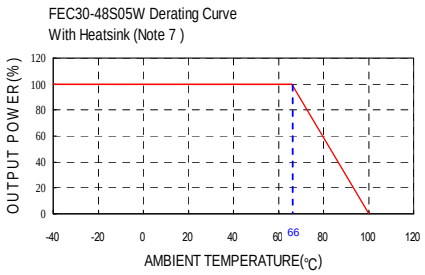
30 WATTS DC-DC CONVERTER

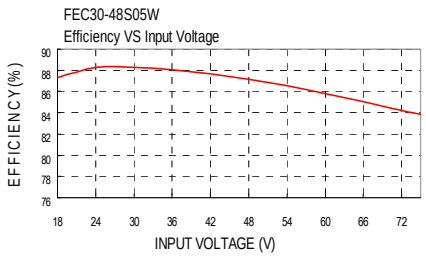
Model Number	Input Range	Output Voltage	Output Current		Output (4) Ripple & Noise	Input Current		Eff (4) (%)	Capacitor (5) Load max
			Min. load	Full load		No load (3)	Full load (2)		
FEC30-24S1P5W	10 – 40 VDC	1.5 VDC	0mA	8000mA	60mVp-p	35mA	658mA	80	65000µF
FEC30-24S1P8W	10 – 40 VDC	1.8 VDC	0mA	8000mA	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

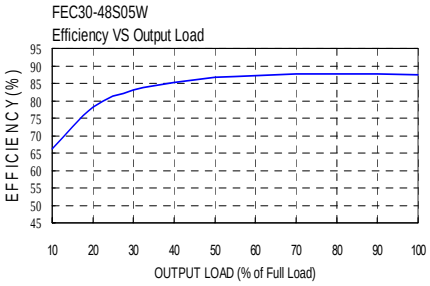
Note

1. BELLCORE TR-NWT-000332. Case 1: 50% Stress, Temperature at 40ºC.
   MIL-HDBK-217F Notice2 @Ta=25 ºC, 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 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: 24Vin : 6.8µF/50V 1812 MLCC .
   48Vin : 2.2µF/100V*2 PCS 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, 220µF/100V, ESR 48mΩ.









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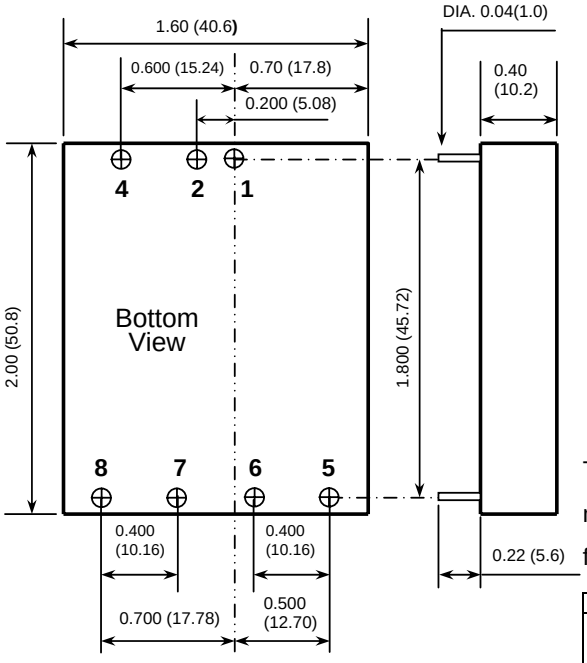
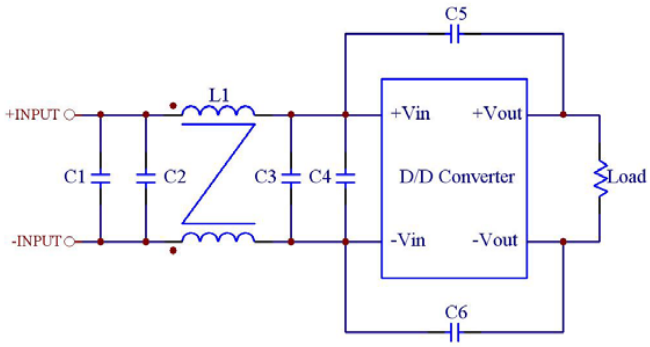
30 WATTS DC-DC CONVERTER



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)



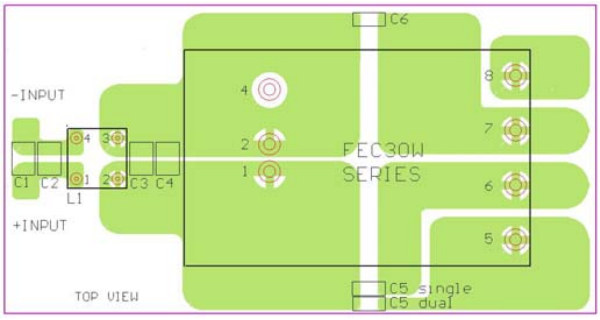
Recommended Filter for EN55022 Class B Compliance

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

	C1	C2	C3	C4	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

PIN CONNECTION

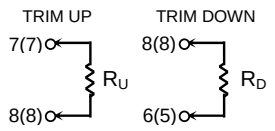
PIN	SINGLE	DUAL
1	+ INPUT	+ INPUT
2	- INPUT	- INPUT
4	CTRL	CTRL
5	NO PIN	+ OUTPUT
6	+ OUTPUT	COMMON
7	- OUTPUT	- OUTPUT
8	TRIM	TRIM



Recommended EN55022 Class B Filter Circuit Layout

EXTERNAL OUTPUT TRIMMING

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



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