POWER MATE TECHNOLOGY CO.,LTD.

FEC30-SERIES

- **OFFER SINGLE AND DUAL OUTPUT**
- **30 WATTS MAXIMUM OUTPUT POWER**
- **2:1 WIDE INPUT VOLTAGE RANGE**
- **INTERNATIONAL SAFETY STANDARD APPROVAL**
- **SIX-SIDED CONTINUOUS SHIELD**
- **HIGH EFFICIENCY UP TO 90%**
- **STANDARD 2" x 1.6" x 0.4" PACKAGE**
- **FIXED SWITCHING FREQUENCY**

The FEC30 series offer 30 Watts of output power from a 2 x 1.6 x 0.4 inch package. The FEC30 series with 2:1 wide input voltage of 9-18VDC,18-36VDC and 36-75VDC and features 1600VDC of isolation, short-circuit and over-voltage protection,as well as six sided shielding. A safety approval to EN60950-1 and UL60950-1. All models are particularly suited to telecommunications, industrial, mobile telecom and test equipment applications.

UL E193009
TUV
CB
CE MARK

TECHNICAL SPECIFICATION

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

OUTPUT SPECIFICATIONS			
Output power			30 Watts max
Voltage accuracy	Full load and nominal Vin	Single/Dual	± 1%
Voltage adjustability			± 10%
Minimum load		Single/Dual	0%
Line regulation	LL to HL at Full Load	Single Dual	± 0.2% ± 0.5%
Load regulation	10% to 100% FL	Single Dual	± 0.5% ± 1%
Cross regulation (Dual)	Asymmetrical load 25% / 100% FL		± 5%
Ripple and noise	20MHz bandwidth (Measured with a 104pF/50V MLCC)		See table
Temperature coefficient			±0.02% / ºC, max
Transient response recovery time	25% load step change		300uS
Over voltage protection Zener diode clamp	1.5V output 1.8V output 2.5V output 3.3V output 5V output 12V output 15V output		3.9V 3.9V 3.9V 3.9V 6.2V 15V 18V
Over load protection	% of FL at nominal input		150%,max
Short circuit protection			Hiccup, automatics recovery

INPUT SPECIFICATIONS			
Input voltage range	12V nominal input 24V nominal input 48V nominal input		9 – 18VDC 18 – 36VDC 36 – 75VDC
Under voltage lockout	12V input 24V input 48V input	DC-DC ON DC-DC OFF DC-DC ON DC-DC OFF DC-DC ON DC-DC OFF	9VDC 8VDC 17.8VDC 16VDC 36VDC 33VDC
Input filter			L-C type
Input voltage variation	dv/dt		5V/ms,max (Complies with ETS300 132 part 4.4)
Input surge voltage 100mS max	12V input 24V input 48V input		36VDC 50VDC 100VDC
Input reflected ripple (Note1)	Nominal Vin and full load		30mAp-p
Start up time	Nominal Vin and constant resistive load	Power up Remote ON/OFF	25mS typ 25mS typ
Remote ON/OFF (Note 2) (Positive logic) Remote off input current	DC-DC ON DC-DC OFF Nominal Vin		Open or 3.5V < Vr < 12V Short or 0V < Vr < 1.2V 2.5mA

GENERAL SPECIFICATIONS		
Efficiency		See table
Isolation voltage	Input to Output Input (Output) to Case	1600VDC, min
Isolation resistance		10^9 ohms, 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		Non-conductive black plastic
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 3)		1.535×10^6 hrs

ENVIRONMENTAL SPECIFICATIONS		
Operating temperature range		-40ºC ~ +85ºC (with derating)
Maximum case temperature		100ºC
Storage temperature range		-55ºC ~ +105ºC
Over temperature protection		115ºC, typ
Thermal impedance (Note 4)	Nature convection Nature convection with heat-sink	10ºC/Watt 8.24ºC/Watt
Thermal shock		MIL-STD-810D
Vibration		10~55Hz, 10G, 30minutes along X,Y and Z
Relative humidity		5% to 95% RH

EMC CHARACTERISTICS (Note 5)		
Conducted emissions	EN55022	Class A
Radiated emissions	EN55022	Class A
ESD	EN61000-4-2	Perf. Criteria B
Radiated immunity	EN61000-4-3	Perf. Criteria A
Fast transient	EN61000-4-4	Perf. Criteria B
Surge	EN61000-4-5	Perf. Criteria B
Conducted immunity	EN61000-4-6	Perf. Criteria A

Model Number	Input Range	Output Voltage	Output Current	Output Ripple&Noise	Input Current (6)	Eff (7) (%)	Capacitor (8) Load max
FEC30-12S1P5	9-18 VDC	1.5 VDC	6000mA	50mVp-p	1014mA	78	85800uF
FEC30-12S1P8	9-18 VDC	1.8VDC	6000mA	50mVp-p	1169mA	81	65000uF
FEC30-12S2P5	9-18 VDC	2.5VDC	6000mA	50mVp-p	1582mA	83	33000uF
FEC30-12S3P3	9-18 VDC	3.3 VDC	6000mA	50mVp-p	2037mA	85	19500uF
FEC30-12S05	9-18 VDC	5 VDC	6000mA	50mVp-p	3012mA	87	10200uF
FEC30-12S12	9-18 VDC	12 VDC	2500mA	75 mVp-p	2976mA	88	3240uF
FEC30-12S15	9-18 VDC	15VDC	2000mA	75 mVp-p	2976mA	88	1100uF
FEC30-12D12	9-18 VDC	±12 VDC	±1250mA	100 mVp-p	3012mA	87	±1020uF
FEC30-12D15	9-18 VDC	±15 VDC	±1000mA	100 mVp-p	3012mA	87	±675uF
FEC30-24S1P5	18 – 36 VDC	1.5 VDC	6000mA	50mVp-p	493mA	80	85800uF
FEC30-24S1P8	18 – 36 VDC	1.8 VDC	6000mA	50mVp-p	580mA	82	65000uF
FEC30-24S2P5	18 – 36 VDC	2.5 VDC	6000mA	50mVp-p	780mA	84	33000uF
FEC30-24S3P3	18 – 36 VDC	3.3 VDC	6000mA	50mVp-p	1010mA	86	19500uF
FEC30-24S05	18 – 36 VDC	5 VDC	6000mA	50mVp-p	1490mA	88	10200uF
FEC30-24S12	18 – 36 VDC	12 VDC	2500mA	75 mVp-p	1470mA	89	3300uF
FEC30-24S15	18 – 36 VDC	15 VDC	2000mA	75 mVp-p	1470mA	89	1100uF
FEC30-24D12	18 – 36 VDC	±12 VDC	±1250mA	100 mVp-p	1488mA	88	±1020uF
FEC30-24D15	18 – 36 VDC	±15 VDC	±1000mA	100 mVp-p	1488mA	88	±675uF
FEC30-48S1P5	36 – 75 VDC	1.5 VDC	6000mA	50mVp-p	244mA	81	85800uF
FEC30-48S1P8	36 – 75 VDC	1.8 VDC	6000mA	50mVp-p	290mA	83	65000uF
FEC30-48S2P5	36 – 75 VDC	2.5 VDC	6000mA	50mVp-p	390mA	85	33000uF
FEC30-48S3P3	36 – 75 VDC	3.3 VDC	6000mA	50mVp-p	500mA	87	19500uF
FEC30-48S05	36 – 75 VDC	5 VDC	6000mA	50mVp-p	740mA	89	10200uF
FEC30-48S12	36 – 75 VDC	12 VDC	2500mA	75 mVp-p	730mA	90	3300uF
FEC30-48S15	36 – 75 VDC	15 VDC	2000mA	75 mVp-p	730mA	90	1100uF
FEC30-48D12	36 – 75 VDC	±12 VDC	±1250mA	100 mVp-p	744mA	88	±1020uF
FEC30-48D15	36 – 75 VDC	±15 VDC	±1000mA	100 mVp-p	744mA	88	±675uF

Note

1. Please add an external filter at converter input terminals when measuring input reflected ripple, as figure 1.
   L: Simulated source impedance of 12uH.
   C: Nippon chemi-con KMF series, 220 μF/100V.
2. The ON/OFF control pin voltage is referenced to negative input
3. BELLCORE TR-NWT-000332. Case I: 50% Stress, Temperature at 40ºC. (Ground fixed and controlled environment)
4. Heat sink is optional and P/N: 7G-0011A.
5. An external filter capacitor is required for EMC testing. The capacitor should be capable of handing 1A ripple current for 12V/24V/48V models. Power mate suggest:
   C: Nippon chemi-con KMF series, 220 μF/100V, ESR 90mΩ.
6. Maximum value at nominal input voltage and full load.
7. Typical value at nominal input voltage and full load.
8. Test by minimum Vin and constant resistive load.

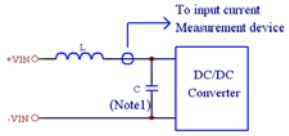
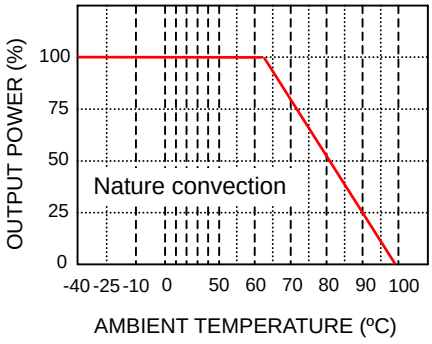
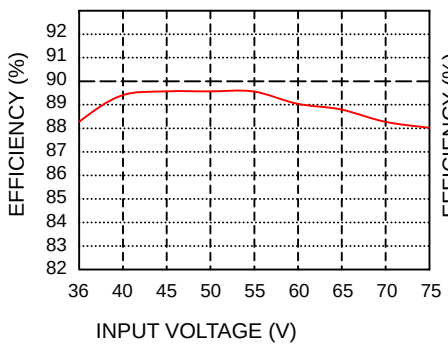


Figure 1

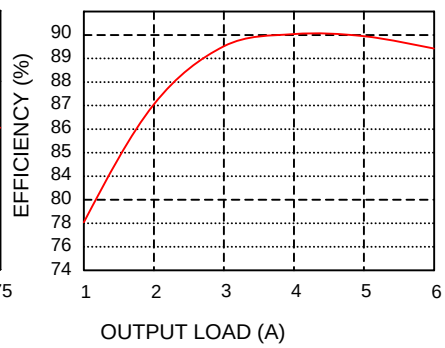
FEC30-48S05
Derating Curve without Heat-Sink



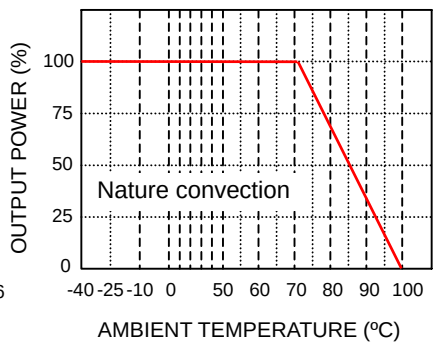
FEC30-48S05
Efficiency VS Input voltage

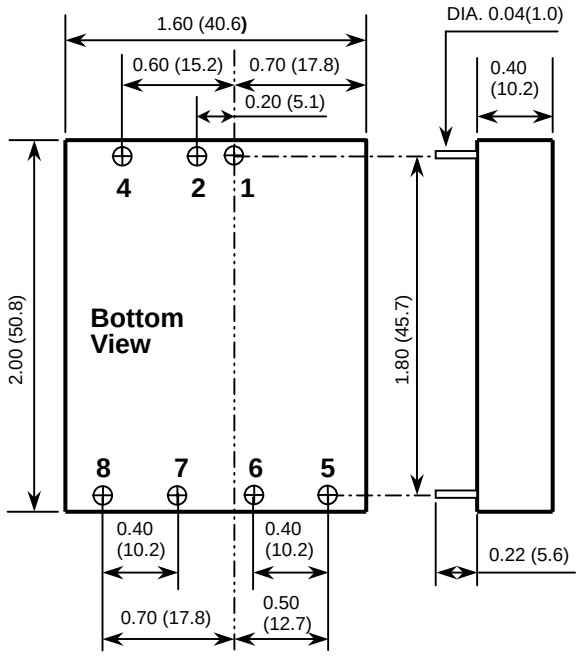


FEC30-48S05
Efficiency VS Output load



FEC30-48S05 (Note 5)
Derating Curve with Heat-Sink





1. All dimensions in Inches (mm)
   Tolerance x.xx±0.02(x.x±0.5)
2. Pin pitch tolerance ±0.014(±0.35)

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