



**POWER MATE
TECHNOLOGY CO.,LTD.**

FEC15-SERIES

VER:03 1 / 2



- 15 WATTS OUTPUT POWER
- 2:1 WIDE INPUT VOLTAGE RANGE
- INTERNATIONAL SAFETY STANDARD APPROVAL
- SIX-SIDED CONTINUOUS SHIELD
- HIGH EFFICIENCY UP TO 88%
- STANDARD 2" X 1" X 0.4" PACKAGE
- FIXED SWITCHING FREQUENCY

The FEC15 series offer 15 watts of output power from a 2 x 1 x 0.4 inch package. The FEC15 series with 2:1 wide input voltage of 9-18, 18-36 and 36-75VDC. The FEC15 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 25°C otherwise noted

OUTPUT SPECIFICATIONS				
Output power			15 Watts max	
Voltage accuracy	Full load and nominal Vin		± 1%	
Minimum load (Note 1)			10% of FL	
Line regulation	LL to HL at Full Load		± 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	Single Dual	50mVp-p 75mVp-p	
Temperature coefficient			±0.02% / °C, max	
Transient response recovery time	25% load step change		250uS	
Over voltage protection (Zener diode clamp)	3.3V output		3.9V	
	5V output		6.2V	
	12V output		15V	
	15V output		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		9 – 18VDC	
	24V nominal input		18 – 36VDC	
	48V nominal input		36 – 75VDC	
Input filter			Pi type	
Input surge voltage 100mS max	12V input		36VDC	
	24V input		50VDC	
	48V input		100VDC	
Input reflected ripple (Note 2)	Nominal Vin and full load		20mA _{p-p}	
Start up time	Nominal Vin and constant resistive load	Power up	20mS typ	
Remote ON/OFF (Note 3) (Positive logic)	DC-DC ON	Open or 3.5V < Vr < 12V		
	DC-DC OFF	Short or 0V < Vr < 1.2V		
	(Negative logic)	DC-DC ON	Short or 0V < Vr < 1.2V	
		DC-DC OFF	Open or 3.5V < Vr < 12V	
Remote off input current	Nominal input		20mA	

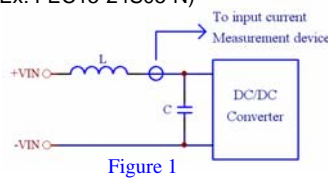
GENERAL SPECIFICATIONS		
Efficiency		See table
Isolation voltage		1600VDC, min
Isolation resistance		10 ⁹ ohms, min
Isolation capacitance		300pF, max
Switching frequency	Single output	500KHz, typ
	Dual output	300KHz, typ
Approvals and standard		IEC60950-1, UL60950-1, EN60950-1
Case material		Nickel-coated copper
Base material		Non-conductive black plastic
Potting material		Epoxy (UL94-V0)
Dimensions		2.00 X 1.00 X 0.40 Inch (50.8 X 25.4 X 10.2 mm)
Weight		27g (0.95oz)
MTBF (Note 4)		2.041 x 10 ⁶ hrs
ENVIRONMENTAL SPECIFICATIONS		
Operating temperature range		-40°C ~ +85°C (with derating)
Maximum case temperature		100°C
Storage temperature range		-55°C ~ +105°C
Thermal impedance (Note 5)	Nature convection	12°C/Watt
	Nature convection with heat-sink	10°C/Watt
Thermal shock		MIL-STD-810D
Vibration		10~55Hz, 10G, 30minutes along X,Y and Z
Relative humidity		5% to 95% RH
EMC CHARACTERISTICS		
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



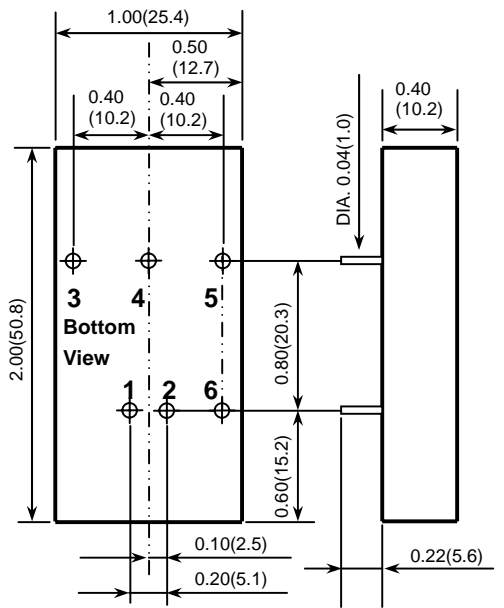
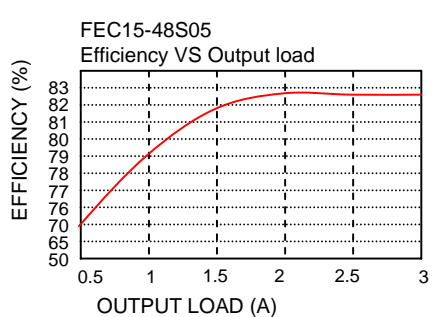
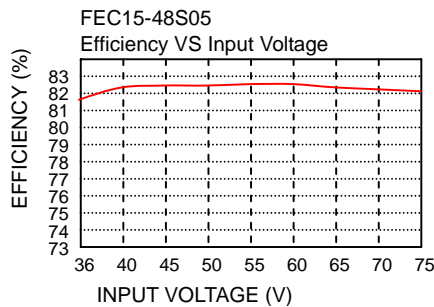
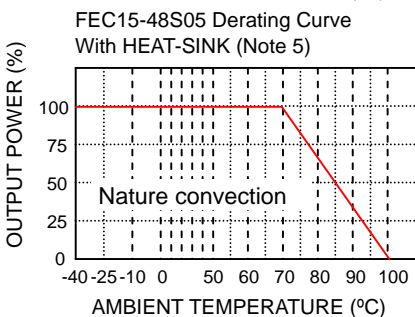
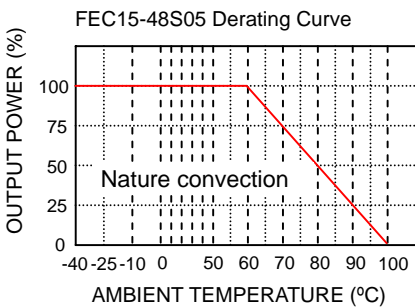
Model Number	Input Range	Output Voltage	Output Current	Input Current ⁽⁶⁾	Eff ⁽⁷⁾ (%)	Capacitor ⁽⁸⁾ Load max
FEC15-12S33	9 – 18 VDC	3.3 VDC	4000mA	1467mA	79	10200uF
FEC15-12S05	9 – 18 VDC	5 VDC	3000mA	1603mA	82	7050uF
FEC15-12S12	9 – 18 VDC	12 VDC	1250mA	1524mA	86	1035uF
FEC15-12S15	9 – 18 VDC	15 VDC	1000mA	1524mA	86	705uF
FEC15-12D05	9 – 18 VDC	± 5 VDC	± 1500mA	1582mA	83	± 1020uF
FEC15-12D12	9 – 18 VDC	± 12 VDC	± 625mA	1524mA	86	± 495uF
FEC15-12D15	9 – 18 VDC	± 15 VDC	± 500mA	1563mA	84	± 165uF
FEC15-24S33	18 – 36 VDC	3.3 VDC	4000mA	724mA	80	10200uF
FEC15-24S05	18 – 36 VDC	5 VDC	3000mA	781mA	84	7050uF
FEC15-24S12	18 – 36 VDC	12 VDC	1250mA	772mA	85	1035uF
FEC15-24S15	18 – 36 VDC	15 VDC	1000mA	772mA	85	705uF
FEC15-24D05	18 – 36 VDC	± 5 VDC	± 1500mA	781mA	84	± 1020uF
FEC15-24D12	18 – 36 VDC	± 12 VDC	± 625mA	762mA	86	± 495uF
FEC15-24D15	18 – 36 VDC	± 15 VDC	± 500mA	762mA	86	± 165uF
FEC15-48S33	36 – 75 VDC	3.3 VDC	4000mA	357mA	81	10200uF
FEC15-48S05	36 – 75 VDC	5 VDC	3000mA	396mA	83	7050uF
FEC15-48S12	36 – 75 VDC	12 VDC	1250mA	377mA	87	1035uF
FEC15-48S15	36 – 75 VDC	15 VDC	1000mA	381mA	86	705uF
FEC15-48D05	36 – 75 VDC	± 5 VDC	± 1500mA	386mA	85	± 1020uF
FEC15-48D12	36 – 75 VDC	± 12 VDC	± 625mA	372mA	88	± 495uF
FEC15-48D15	36 – 75 VDC	± 15 VDC	± 500mA	377mA	87	± 165uF

Note

- The FEC15 series required a minimum 10% loading on the output to maintain specified regulation. Operation under no-load condition will not damage these devices, however they may not meet all listed specification
- Please add an external filter at converter input terminals when measuring input reflected ripple, as figure 1.
L: Simulated source impedance of 12 μH C: Nippon chemi-con KMF series 100 μF/100V
- The ON/OFF control is option function. There are positive logic and negative logic. The pin voltage is referenced to negative input
To order positive logic ON-OFF control add the suffix-P (Ex: FEC15-24S05-P)
To order negative logic ON-OFF control add the suffix-N (Ex: FEC15-24S05-N)
- BELLCORE TR-NWT-000332. Case 1: 50% Stress, Temperature at 40°C. (Ground fixed and controlled environment)
- Heat sink is optional and P/N: 7G-0020A
- Maximum value at nominal input voltage and full load
- Typical value at nominal input voltage and full load
- Test by minimum Vin and constant resistive load.



PIN CONNECTION		
PIN	SINGLE	DUAL
1	+ INPUT	+ INPUT
2	- INPUT	- INPUT
3	+ OUTPUT	+ OUTPUT
4	NO PIN	COMMON
5	- OUTPUT	- OUTPUT
6	CTRL (Option)	CTRL (Option)



- All dimensions in Inches (mm)
Tolerance $x.xx \pm 0.02 (x.xx \pm 0.5)$
- Pin Pitch tolerance $\pm 0.014 (0.35)$