



UL E193009
TUV R50009835
CB JPTUV-003843
CE MARK

FEC30 SERIES

- 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
- OFFER 1.8V, 2.5V, 3.3V, 5V, 12V, 15VDC OUTPUT

The FEC30 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 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 and UL1950. All models are particularly suited to telecommunications, industrial, mobile telecom and test equipment applications.

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

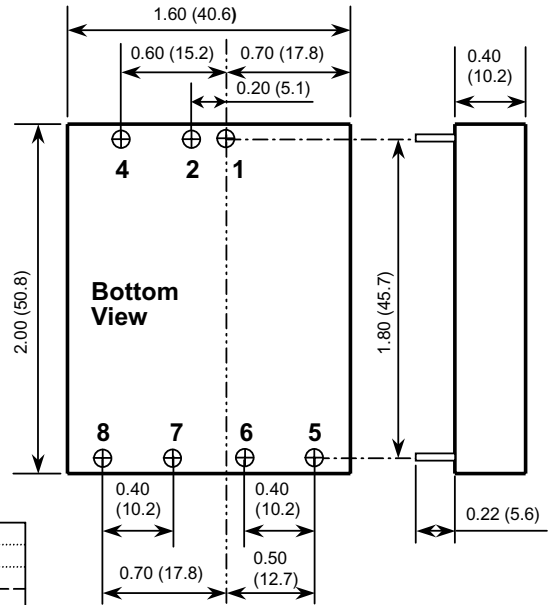
OUTPUT SPECIFICATIONS			
Output power			30 Watts max
Voltage accuracy	Full load and nominal Vin		± 1%
Voltage adjustability			± 10%
Minimum load			0%
Line regulation	LL to HL at Full Load		± 0.2%
Load regulation	10% to 100% FL		± 0.5%
Ripple and noise	20MHz bandwidth (Measured with a 104pF/50V MLCC)	12V / 15V Others	75mVp-p 50mVp-p
Temperature coefficient			±0.02% / °C, max
Transient response recovery time	25% load step change		300uS
Over voltage protection Zener diode clamp	1.8V output		3.9V
	2.5V output		3.9V
	3.3V output		3.9V
	5V output		6.2V
	12V output		15V
	15V output		18V
Over load protection	% of FL at nominal input		150% typ
Short circuit protection		Hiccup, automatics recovery	
INPUT SPECIFICATIONS			
Input voltage range	24V nominal input		18 – 36VDC
	48V nominal input		36 – 75VDC
Under voltage lockout	24V input	DC-DC ON	17.8VDC
		DC-DC OFF	16VDC
	48V input	DC-DC ON	36VDC
		DC-DC OFF	33VDC
Input filter (Note 1)			L-C type
Input voltage variation	dv/dt		5V/ms,max (Complies with ETS300 132 part 4.4)
Input surge voltage 100mS max	24V input		50VDC
	48V input		100VDC
Input reflected ripple (Note 2)	Nominal Vin and full load		30mA _{p-p}
Start up time	Nominal Vin and constant resistor load		25mS 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	
Remote off input current	Nominal Vin		2.5mA

GENERAL SPECIFICATIONS	
Efficiency	See table
Isolation voltage	1600VDC, min
Isolation resistance	10 ⁹ ohms, min
Isolation capacitance	1000pF, max
Switching frequency	300KHz, typ
Approvals and standard	IEC60950, UL1950, EN60950
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 4)	1.535 x 10 ⁵ hrs
ENVIRONMENTAL SPECIFICATIONS	
Operating temperature range	-40°C ~ +85°C (with derating)
Maximum case temperature	100°C
Storage temperature range	-55°C ~ +105°C
Over temperature protection	115°C, typ
Thermal impedance (Note 5)	Nature convection 10°C/Watt Nature convection with heat-sink 8.24°C/Watt
Thermal shock	MIL-STD-810D
Vibration	10~55Hz, 2G, 30minutes along X,Y and Z
Relative humidity	5% to 95% RH
EMC CHARACTERISTICS	
Conducted emissions	EN55022 Level A
Radiated emissions	EN55022 Level A
ESD	EN61000-4-2 Perf. Criteria2
Radiated immunity	EN61000-4-3 Perf. Criteria2
Fast transient	EN61000-4-4 Perf. Criteria2
Surge	EN61000-4-5 Perf. Criteria2
Conducted immunity	EN61000-4-6 Perf. Criteria2

Model Number	Input Range	Output Voltage	Output Current	Input Current ⁽⁶⁾	Eff ⁽⁷⁾ (%)	Capacitor Load max ⁽⁸⁾
FEC30-24S1P8	18 – 36 VDC	1.8 VDC	6000mA	580mA	82	65000uF
FEC30-24S2P5	18 – 36 VDC	2.5 VDC	6000mA	780mA	84	33000uF
FEC30-24S3P3	18 – 36 VDC	3.3 VDC	6000mA	1010mA	86	19500uF
FEC30-24S05	18 – 36 VDC	5 VDC	6000mA	1490mA	88	10200uF
FEC30-24S12	18 – 36 VDC	12 VDC	2500mA	1470mA	89	3300uF
FEC30-24S15	18 – 36 VDC	15 VDC	2000mA	1470mA	89	1100uF
FEC30-48S1P8	36 – 75 VDC	1.8 VDC	6000mA	290mA	83	65000uF
FEC30-48S2P5	36 – 75 VDC	2.5 VDC	6000mA	390mA	85	33000uF
FEC30-48S3P3	36 – 75 VDC	3.3 VDC	6000mA	500mA	87	19500uF
FEC30-48S05	36 – 75 VDC	5 VDC	6000mA	740mA	89	10200uF
FEC30-48S12	36 – 75 VDC	12 VDC	2500mA	730mA	90	3300uF
FEC30-48S15	36 – 75 VDC	15 VDC	2000mA	730mA	90	1100uF

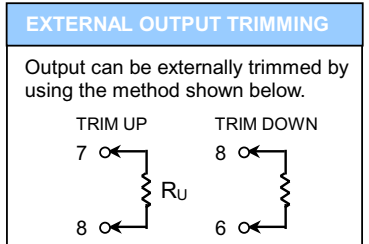
Note

1. An external filter capacitor is required for normal operation. The capacitor should be capable of handling 1A ripple current for 48V/24V models. Power mate suggest: Nippon chemi-con KMF series, 220 μ F/100V, ESR 90m Ω .
2. Simulated source impedance of 12uH. 12uH inductor in series with +Vin.
3. The ON/OFF control pin voltage is referenced to negative input
4. BELLCORE TR-NWT-000332. Case I: 50% Stress, Temperature at 40°C. (Ground fixed and controlled environment)
5. Heat sink is optional and P/N: 7G-0011A.
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 resistor load.

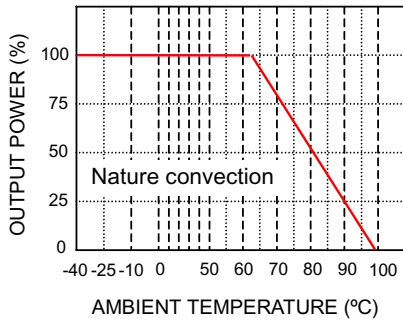


1. All dimensions in Inches (mm)
2. Pin pitch tolerance $\pm 0.014(0.35)$

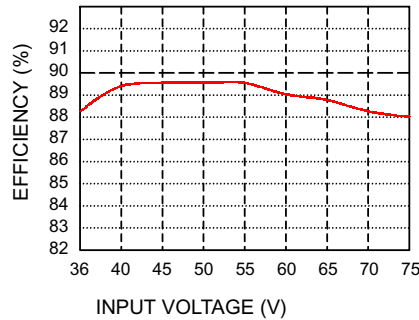
PIN CONNECTION	
PIN	DEFINE
1	+ INPUT
2	- INPUT
4	CTRL
5	NO PIN
6	+ OUTPUT
7	- OUTPUT
8	TRIM



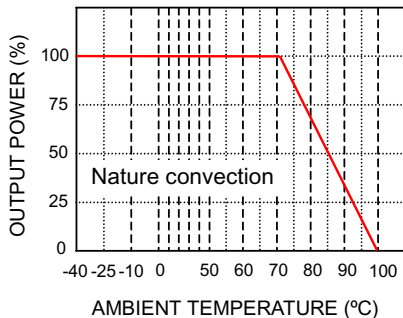
FEC30-48S05
Derating Curve without Heat-Sink



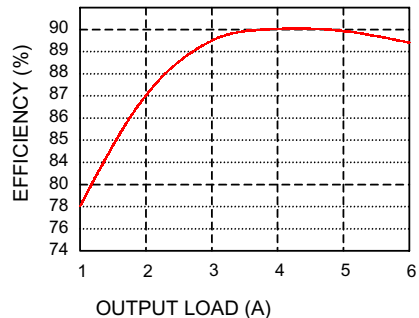
FEC30-48S05
Efficiency VS Input voltage



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



FEC30-48S05
Efficiency VS Output load





UL E193009
TUV R50018459
CB JPTUV-005033
CE MARK

FEC30W SERIES

- 1.8V, 2.5V, 3.3V, 5V, 12V, 15VDC OUTPUT
- OUTPUT CURRENT UP TO 8A
- 30 WATTS MAXIMUM OUTPUT POWER
- 4:1 WIDE INPUT VOLTAGE RANGE
- SAFETY APPROVAL PENDING
- SIX-SIDED CONTINUOUS SHIELD
- HIGH EFFICIENCY UP TO 88%
- STANDARD 2" x 1.6" x 0.4" PACKAGE
- FIXED SWITCHING FREQUENCY

The FEC30-W series offer 30 watts of output power from a 2 x 1.6 x 0.4 inch package. The FEC30-W series with 4:1 wide input voltage of 10-40VDC and 18-75VDC and features 1600VDC of isolation, short-circuit and over-voltage protection, as well as six sided shielding. The safety designed meet to EN60950 and UL60950. All models are particularly suited to telecommunications, industrial, mobile telecom and test equipment applications.

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

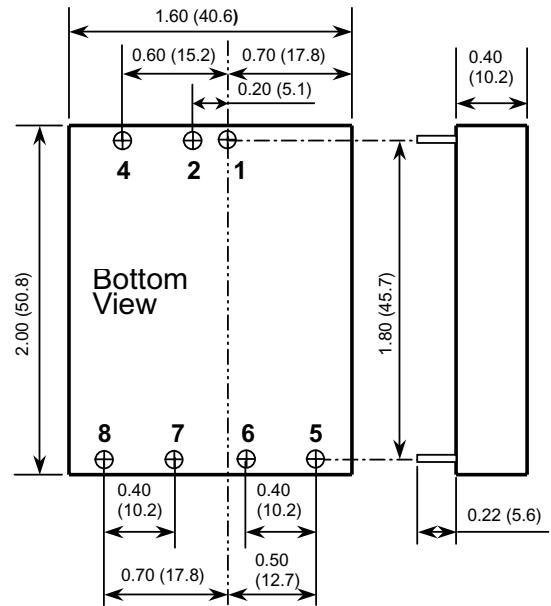
OUTPUT SPECIFICATIONS			
Output power			30 Watts max
Voltage accuracy	Full load and nominal Vin		± 1%
Voltage adjustability			± 10%
Minimum load			0%
Line regulation	LL to HL at Full Load		± 0.5%
Load regulation	10% to 100% FL		± 0.5%
Ripple and noise	20MHz bandwidth (Measured with a 104pF/50V MLCC)		75mVp-p
Temperature coefficient			±0.02% / °C, max
Transient response recovery time	25% load step change		300uS
Over voltage protection Zener diode clamp	1.8V output		3.9V
	2.5V output		3.9V
	3.3V output		3.9V
	5V output		6.2V
	12V output		15V
	15V output		18V
Over load protection	% of FL at nominal input		150% typ
Short circuit protection			Hiccup, automatics recovery
INPUT SPECIFICATIONS			
Input voltage range	24V nominal input		10 – 40VDC
	48V nominal input		18 – 75VDC
Under voltage lockout	24V input	DC-DC ON	10VDC
		DC-DC OFF	8VDC
	48V input	DC-DC ON	18VDC
		DC-DC OFF	16VDC
Input filter (Note 1)			L-C type
Input voltage variation	dv/dt		5V/ms,max (Complies with ETS300 132 part4.4)
Input surge voltage 100mS max	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 resistor load		10mS
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	
Remote off input current	Nominal Vin		3mA

GENERAL SPECIFICATIONS		
Efficiency	See table	
Isolation voltage	1600VDC, min	
Isolation resistance	10 ⁹ ohms, min	
Isolation capacitance	1000pF, max	
Switching frequency	300KHz, typ	
Approvals and standard	IEC60950, UL60950, EN60950	
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 4)	1.315 x 10 ⁶ hrs	
ENVIRONMENTAL SPECIFICATIONS		
Operating temperature range	-40°C ~ +85°C (with derating)	
Maximum case temperature	100°C	
Over temperature protection	115°C, typ	
Storage temperature range	-55°C ~ +105°C	
Thermal impedance (Note 5)	Nature convection	10°C/Watt
	Nature convection with heat-sink	8.24°C/Watt
Thermal shock	MIL-STD-810D	
Vibration	10~55Hz, 2G, 30minutes along X,Y and Z	
Relative humidity	5% to 95% RH	
EMC CHARACTERISTICS		
Conducted emissions	EN55022	Level A
Radiated emissions	EN55022	Level A
ESD	EN61000-4-2	Perf. Criteria2
Radiated immunity	EN61000-4-3	Perf. Criteria2
Fast transient	EN61000-4-4	Perf. Criteria2
Surge	EN61000-4-5	Perf. Criteria2
Conducted immunity	EN61000-4-6	Perf. Criteria2

Model Number	Input Range	Output Voltage	Output Current	Input Current ⁽⁶⁾	Eff ⁽⁷⁾ (%)	Capacitor Load max ⁽⁸⁾
FEC30-24S1P8W	10 – 40 VDC	1.8 VDC	8000mA	789mA	80	65000uF
FEC30-24S2P5W	10 – 40 VDC	2.5 VDC	8000mA	1029mA	85	33000uF
FEC30-24S3P3W	10 – 40 VDC	3.3 VDC	6000mA	994mA	87	19500uF
FEC30-24S05W	10 – 40 VDC	5 VDC	6000mA	1506mA	87	10200uF
FEC30-24S12W	10 – 40 VDC	12 VDC	2500mA	1506mA	87	3300uF
FEC30-24S15W	10 – 40 VDC	15 VDC	2000mA	1488mA	88	1100uF
FEC30-48S1P8W	18 – 75 VDC	1.8 VDC	8000mA	390mA	81	65000uF
FEC30-48S2P5W	18 – 75 VDC	2.5 VDC	8000mA	508mA	86	33000uF
FEC30-48S3P3W	18 – 75 VDC	3.3 VDC	6000mA	497mA	87	19500uF
FEC30-48S05W	18 – 75 VDC	5 VDC	6000mA	744mA	88	10200uF
FEC30-48S12W	18 – 75 VDC	12 VDC	2500mA	753mA	87	3300uF
FEC30-48S15W	18 – 75 VDC	15 VDC	2000mA	744mA	88	1100uF

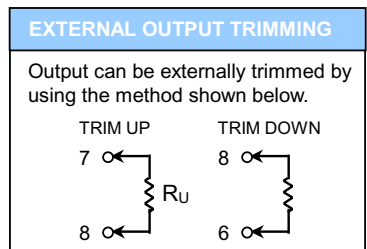
Note

1. An external filter capacitor is required for normal operation. The capacitor should be capable of handling 1A ripple current for 48V/24V models. Power mate suggest: Nippon chemi-con KMF series, 220 μ F/100V, ESR 90m Ω .
2. Simulated source impedance of 12uH. 12uH inductor in series with +Vin.
3. The ON/OFF control function. There are positive logic (standard) and negative logic (option). The pin voltage is referenced to negative input
To order negative logic ON/OFF control add the suffix-N (Ex: FEC30-24S05W-N).
4. BELLCORE TR-NWT-000332. Case I: 50% Stress, Temperature at 40°C. (Ground fixed and controlled environment).
5. Heat sink is optional and P/N: 7G-0011A.
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 resistor load.

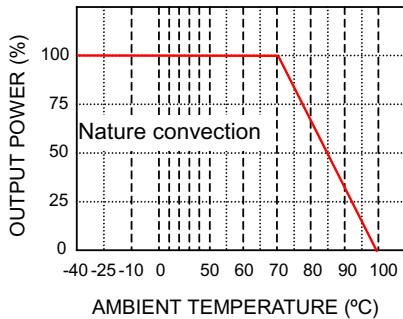


1. All dimensions in Inches (mm)
2. Pin pitch tolerance $\pm 0.014(0.35)$

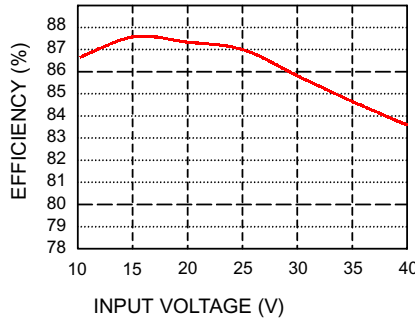
PIN CONNECTION	
PIN	DEFINE
1	+ INPUT
2	- INPUT
4	CTRL
5	NO PIN
6	+ OUTPUT
7	- OUTPUT
8	TRIM



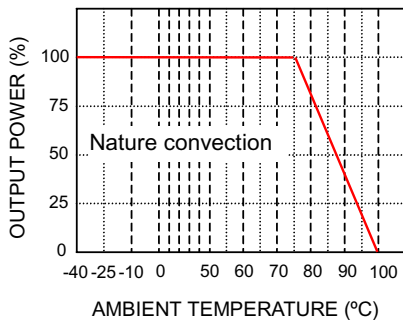
FEC30-24S3P3W
Derating Curve without Heat-Sink



FEC30-24S3P3W
Efficiency VS Input voltage



FEC30-24S3P3W (Note 5)
Derating Curve with Heat-Sink



FEC30-24S3P3W
Efficiency VS Output load

