



- 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.



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 | 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% / °C, max |
| Transient response recovery time | 25% load step change | | 300uS |
| Over voltage protection Zener diode clamp | 1.5V output | | 3.9V |
| | 1.8V output | | 3.9V |
| | 2.5V output | | 3.9V |
| | 3.3V output | | 3.9V |
| | 5V output | | 6.2V |
| | 12V output 15V output | | 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 | | 9 – 18VDC |
| | 24V nominal input | | 18 – 36VDC |
| | 48V nominal input | | 36 – 75VDC |
| Under voltage lockout | 12V input | DC-DC ON | 9VDC |
| | | DC-DC OFF | 8VDC |
| | 24V input | DC-DC ON | 17.8VDC |
| | | DC-DC OFF | 16VDC |
| | 48V input | DC-DC ON | 36VDC |
| | | DC-DC OFF | 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 | | 36VDC |
| | 24V input | | 50VDC |
| | 48V input | | 100VDC |
| Input reflected ripple (Note1) | Nominal Vin and full load | | 30mA _{p-p} |
| Start up time | Nominal Vin and constant resistive load | Power up | 25mS typ |
| | | Remote ON/OFF | 25mS typ |
| Remote ON/OFF (Note 2) (Positive logic) | DC-DC ON DC-DC OFF | Open or 3.5V < Vr < 12V Short or 0V < Vr < 1.2V | |
| Remote off input current | Nominal Vin | | 2.5mA |

| GENERAL SPECIFICATIONS | | | |
|------------------------------|----------------------------------|--|--|
| Efficiency | | | See table |
| Isolation voltage | Input to Output | | 1600VDC, min |
| | 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 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 |
| Over temperature protection | | | 115°C, typ |
| Thermal impedance (Note 4) | Nature convection | | 10°C/Watt |
| | Nature convection with heat-sink | | 8.24°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 (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

- 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 μ F/100V.
- The ON/OFF control pin voltage is referenced to negative input
- BELLCORE TR-NWT-000332. Case I: 50% Stress, Temperature at 40°C. (Ground fixed and controlled environment)
- Heat sink is optional and P/N: 7G-0011A.
- An external filter capacitor is required for EMC testing. The capacitor should be capable of handling 1A ripple current for 12V/24V/48V models. Power mate suggest: C: Nippon chemi-con KMF series, 220 μ F/100V, ESR 90mΩ.
- 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.

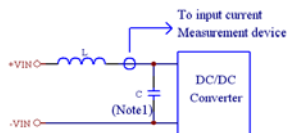
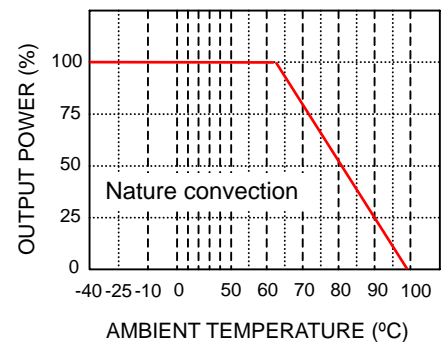
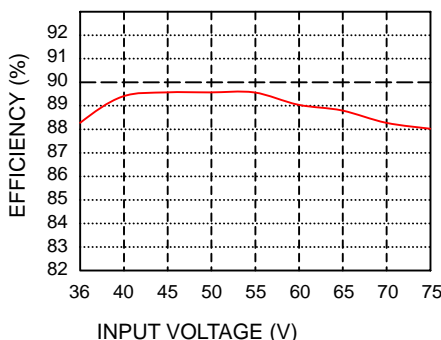


Figure 1

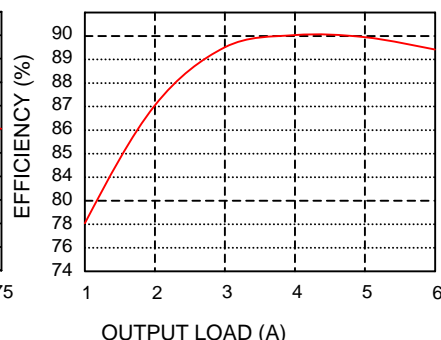
FEC30-48S05
Derating Curve without Heat-Sink



FEC30-48S05
Efficiency VS Input voltage



FEC30-48S05
Efficiency VS Output load



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

