

FEC30 SERIES

DC / DC Single & Dual Output: 30 Watts



Features

- 2:1 wide Input range option 12V, 24V & 48VDC
- Single & Dual outputs
- Industry Standard 2 x 1.6in package
- High efficiency up to 82%
- Regulated output & Short circuit protection
- 1600V isolation
- Five sided continuous copper shield
- Remote ON / OFF- Standard
- High operating temperature +85°C
- Fixed switching frequency
- Zero load operation
- Optional heat sink: P/N: 7G-0011C-F

Specifications:

| | | | |
|--|--|---------------------------|---|
| Input Voltage | 12VDC (9 ~ 18) 24VDC (18 ~ 36) 48VDC (36 ~ 75) | Efficiency | Model dependant 78 ~ 88% |
| Input Filter | L-C type | Isolation | 1600VDC |
| Input Surge Voltage. (100mS) | 12V: 36VDC, 24V: 50VDC. 48V: 100VDC | Isolation Cap. | 1000pF |
| Input Reflected Ripple Current | 30mA pk-pk (@ nominal input & 100% load | Switching Freq. | 300KHz |
| Start Up time | 25mS constant resistive load | Safety | EN60950-1, UL60950-1 |
| Remote ON/OFF (Positive logic) | DC-DC ON Open or 3.5V < Vr < 12V DC-DC OFF Short or 0V < Vr < 1.2V Input current of remote control pin: 0.5mA Remote off state input current: 2.5mA | Case Material | Nickel-coated copper |
| Output power | 30 watts | Base Material | Non-conductive black plastic |
| Voltage Accuracy | ±1.0% | Potting | Epoxy UL94-V0 |
| Voltage Trim | ±10% via external resistor network | Dimensions | 50.8 x 40.6 x 10.2mm |
| Minimum Load | Zero load | Weight | 48g |
| Line Regulation | Single ±0.2% Dual ±0.5% | MTBF | 1.535 x 10 ⁶ Hrs |
| Load Regulation | Single ±0.5% , Dual ±1% (Min load -100% load) | Operating Temp | Standard: -45°C to +85°C (with derating) |
| Cross Regulation | ±5% Asymmetrical load: 25-100% load) | Case Temp | +100°C maximum case temperature |
| Ripple & noise | See table. 20MHZ bandwidth | Thermal Impedance | 10°C / watt Standard convection 8.24°C / watt with optional heatsink |
| Temp. Coefficient | ±0.02% / °C | Thermal shock | MIL-STD-810F |
| Transient Response | 300uS (25% load step change) | Vibration | 10-55Hz, 10G, 30min along X, Y, Z |
| Over Voltage Protection | 1.5 ~ 3.3V: 3.9V 5.0V: 6.2V 12V: 15V 15V: 18V | Humidity | 5-95% RH |
| Overload Protection | Typically 150% of load | EMC | EN55022 Class A Consult office for Class B design |
| Short Circuit protection | Continuous hiccup mode | ESD | EN61000-4-2 |
| | | Radiated Immunity | EN61000-4-3 |
| | | Fast Transients | EN61000-4-4 |
| | | Surge | EN61000-4-5 |
| | | Conducted Immunity | EN61000-4-6 |

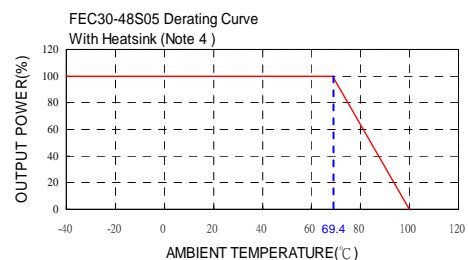
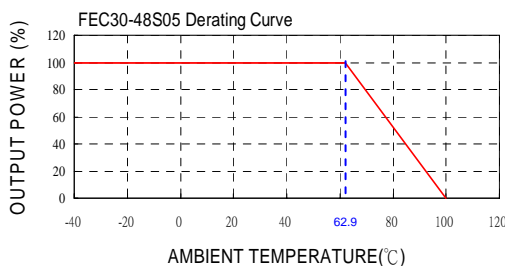
FEC30 SERIES

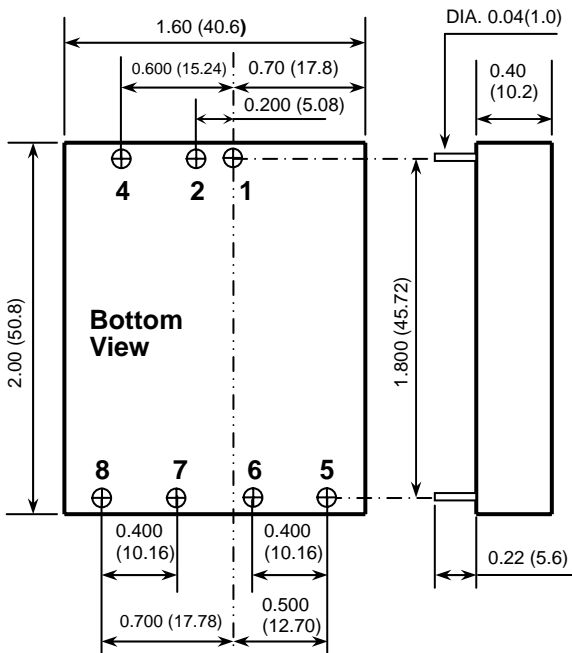
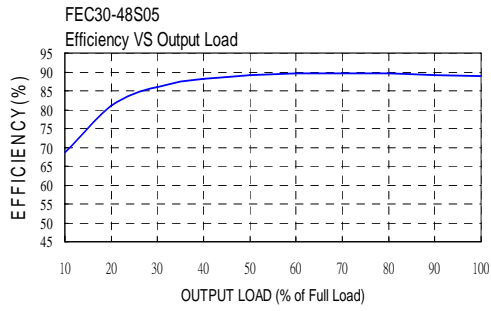
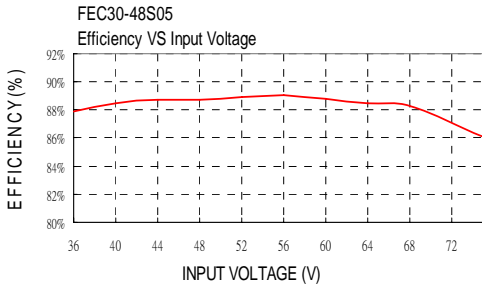
DC / DC Single & Dual Output: 30 Watts

| Model V | Input V | Output V | Output Current | | Output Ripple & Noise | Input Current | | Eff (%) | Capacitor Load max |
|---------------|-----------|----------|----------------|-----------|-----------------------|---------------|-----------|---------|--------------------|
| | | | Min. load | Full load | | No load | Full load | | |
| FEC30-12S1P5 | 9 – 18 V | 1.5 V | 0mA | 6000mA | 50mVp-p | 100mA | 1014mA | 78 | 85800uF |
| FEC30-12S1P8 | 9 – 18 V | 1.8 V | 0mA | 6000mA | 50mVp-p | 100mA | 1169mA | 81 | 65000uF |
| FEC30-12S2P5 | 9 – 18 V | 2.5 V | 0mA | 6000mA | 50mVp-p | 110mA | 1582mA | 83 | 33000uF |
| FEC30-12S3P3 | 9 – 18 V | 3.3 V | 0mA | 6000mA | 50mVp-p | 115mA | 2037mA | 85 | 19500uF |
| FEC30-12S05 | 9 – 18 V | 5 V | 0mA | 6000mA | 50mVp-p | 95mA | 3012mA | 87 | 10200uF |
| FEC30-12S12 | 9 – 18 V | 12 V | 0mA | 2500mA | 75mVp-p | 170mA | 2976mA | 88 | 3240uF |
| FEC30-12S15 | 9 – 18 V | 15 V | 0mA | 2000mA | 75mVp-p | 210mA | 2976mA | 88 | 1100uF |
| FEC30-12D12 | 9 – 18 V | ±12 V | 0mA | ±1250mA | 100mVp-p | 60mA | 3012mA | 87 | ±1020uF |
| FEC30-12D15 | 9 – 18 V | ±15 V | 0mA | ±1000mA | 100mVp-p | 40mA | 3012mA | 87 | ±675uF |
| FEC30- 24S1P5 | 18 – 36 V | 1.5 V | 0mA | 6000mA | 50mVp-p | 50mA | 493mA | 80 | 85800uF |
| FEC30- 24S1P8 | 18 – 36 V | 1.8 V | 0mA | 6000mA | 50mVp-p | 35mA | 580mA | 82 | 65000uF |
| FEC30- 24S2P5 | 18 – 36 V | 2.5 V | 0mA | 6000mA | 50mVp-p | 45mA | 780mA | 84 | 33000uF |
| FEC30- 24S3P3 | 18 – 36 V | 3.3 V | 0mA | 6000mA | 50mVp-p | 50mA | 1010mA | 86 | 19500uF |
| FEC30- 24S05 | 18 – 36 V | 5 V | 0mA | 6000mA | 50mVp-p | 50mA | 1490mA | 88 | 10200uF |
| FEC30- 24S12 | 18 – 36 V | 12 V | 0mA | 2500mA | 75mVp-p | 80mA | 1470mA | 89 | 3300uF |
| FEC30- 24S15 | 18 – 36 V | 15 V | 0mA | 2000mA | 75mVp-p | 90mA | 1470mA | 89 | 1100uF |
| FEC30- 24D12 | 18 – 36 V | ±12 V | 0mA | ±1250mA | 100mVp-p | 30mA | 1488mA | 88 | ±1020uF |
| FEC30-24D15 | 18 – 36 V | ±15 V | 0mA | ±1000mA | 100mVp-p | 30mA | 1488mA | 88 | ±675uF |
| FEC30- 48S1P5 | 36 – 75 V | 1.5 V | 0mA | 6000mA | 50mVp-p | 20mA | 244mA | 81 | 85800uF |
| FEC30- 48S1P8 | 36 – 75 V | 1.8 V | 0mA | 6000mA | 50mVp-p | 20mA | 290mA | 83 | 65000uF |
| FEC30- 48S2P5 | 36 – 75 V | 2.5 V | 0mA | 6000mA | 50mVp-p | 25mA | 390mA | 85 | 33000uF |
| FEC30- 48S3P3 | 36 – 75 V | 3.3 V | 0mA | 6000mA | 50mVp-p | 30mA | 500mA | 87 | 19500uF |
| FEC30- 48S05 | 36 – 75 V | 5 V | 0mA | 6000mA | 50mVp-p | 35mA | 740mA | 89 | 10200uF |
| FEC30- 48S12 | 36 – 75 V | 12 V | 0mA | 2500mA | 75mVp-p | 35mA | 730mA | 90 | 3300uF |
| FEC30- 48S15 | 36 – 75 V | 15 V | 0mA | 2000mA | 75mVp-p | 55mA | 730mA | 90 | 1100uF |
| FEC30- 48D12 | 36 – 75 V | ±12 V | 0mA | ±1250mA | 100mVp-p | 20mA | 744mA | 88 | ±1020uF |
| FEC30- 48D15 | 36 – 75 V | ±15 V | 0mA | ±1000mA | 100mVp-p | 20mA | 744mA | 88 | ±675uF |

Notes:

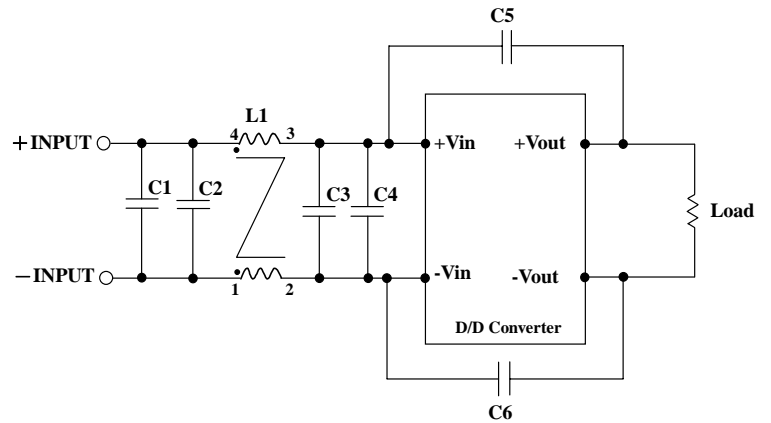
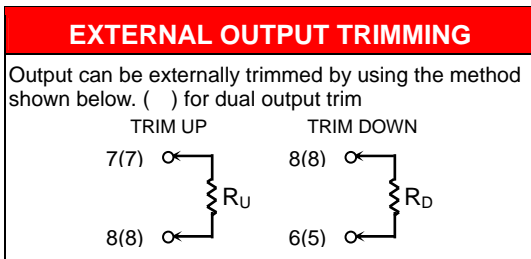
1. MTBF as per BELLCORE TR-NWT-000332. Case I: 50% Stress, Temperature at 40°C. (Ground fixed and controlled environment)
2. Typical values at nominal input voltage and full resistive load.
3. The ON/OFF control pin voltage is referenced to -Vin.
4. Heat sink is optional and P /N: 7G-0011C-F
5. The FEC30 series can meet EN55022 Class A with parallel an external capacitor to the input pins.
Recommend: 12Vin : 6.8µF/50V 1812 MLCC . 24Vin : 6.8µF/50V 1812 MLCC , 48Vin : 2.2µF/100V 1812 MLCC.
6. An external filter capacitor is required if the module has to meet EN61000-4-5.
Filter capacitor recommended: Nippon chemi-con KY series, 220µF/100V, ESR 48mΩ.





- All dimensions in Inches (mm)
Tolerance: X.XX±0.02 (X.X±0.5)
X.XXX±0.01 (X.XX±0.25)
- Pin pitch tolerance ±0.01(0.25)
- Pin dimension tolerance ±0.004 (0.1)

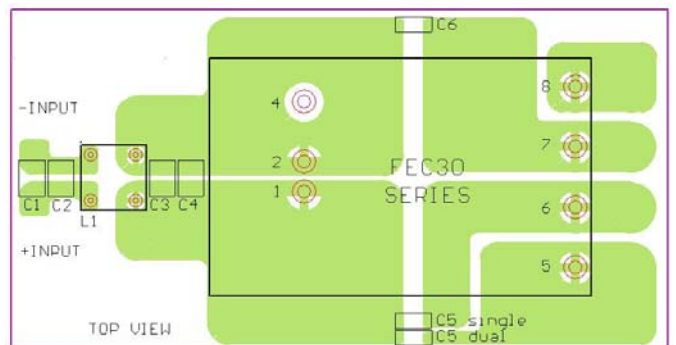
| Pin Assignment | | |
|----------------|----------|----------|
| PIN | SINGLE | DUAL |
| 1 | + INPUT | + INPUT |
| 2 | - INPUT | - INPUT |
| 4 | CTRL | CTRL |
| 5 | NO PIN | + OUTPUT |
| 6 | + OUTPUT | COMMON |
| 7 | - OUTPUT | - OUTPUT |
| 8 | TRIM | TRIM |



Recommended 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 |
|-------------|-------------------------|-------------------------|-------------------------|-------------------------|--------------------|-------------------------------------|
| FEC30-12xxx | 4.7uF/50V 1812 MLCC | N/A | 4.7uF/50V 1812 MLCC | N/A | 1000pF/2KV MLCC | 450uH Common Choke PMT-048 |
| FEC30-24xxx | 6.8uF/50V 1812 MLCC | N/A | 6.8uF/50V 1812 MLCC | N/A | 1000pF/2KV MLCC | 450uH Common Choke PMT-048 |
| FEC30-48xxx | 2.2uF/100V 1812 MLCC | 2.2uF/100V 1812 MLCC | 2.2uF/100V 1812 MLCC | 2.2uF/100V 1812 MLCC | 1000pF/2KV MLCC | 450uH Common Choke PMT-048 |



Recommended EN55022 Class B Filter Circuit Layout