



FEATURES

- 20 WATTS MAXIMUM OUTPUT POWER
- OUTPUT CURRENT UP TO 5.5A
- STANDARD 2.0 X 1.0 X 0.4 INCH PACKAGE
- HIGH EFFICIENCY UP TO 89%
- 4:1 ULTRA WIDE INPUT VOLTAGE RANGE
- SIX-SIDED CONTINUOUS SHIELD
- FIXED SWITCHING FREQUENCY
- CE MARK MEETS 2006/95/EC, 93/68/EEC AND 2004/108/EC
- UL60950-1, EN60950-1 AND IEC60950-1 LICENSED
- ISO9001 CERTIFIED MANUFACTURING FACILITIES
- COMPLIANT TO RoHS EU DIRECTIVE 2002/95/EC

APPLICATIONS

Wireless Network
Telecom/Datacom
Industry Control System
Measurement Equipment
Semiconductor Equipment

OPTIONS

Negative logic Remote On/Off

DESCRIPTION

The FED20W series offer 20 watts of output power from a 2 x 1 x 0.4 inch package. The FED20W series with 4:1 ultra wide input voltage of 9-36 and 18-75VDC and features 1600VDC of isolation, short-circuit and over-voltage protection.

TECHNICAL SPECIFICATION

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

| OUTPUT SPECIFICATIONS | | |
|----------------------------------|---|--|
| Output power | | 20 Watts, max. |
| Voltage accuracy | Full load and nominal Vin | ± 1% |
| Minimum load | | 0% |
| Voltage adjustability | Single output | ± 10% |
| Line regulation | LL to HL at Full Load | Single ± 0.2% |
| | | Dual ± 0.5% |
| Load regulation | No Load to Full Load | Single ± 0.5% |
| | | Dual ± 1% |
| Cross regulation (Dual) | Asymmetrical load 25% / 100% FL | ± 5% |
| Ripple and noise | 20MHz bandwidth (Measured with a 0.1µF/50V MLCC) | See table |
| Temperature coefficient | | ±0.02% / °C, max. |
| Transient response recovery time | 25% load step change | 250µS |
| Over voltage protection | 3.3V output | 3.9VDC |
| | 5V output | 6.2VDC |
| Zener diode clamp | 12V output | 15VDC |
| | 15V output | 18VDC |
| Over load protection | % of FL at nominal input | 150%, typ. |
| Short circuit protection | | Hiccup, automatics recovery |
| GENERAL SPECIFICATIONS | | |
| Efficiency | | See table |
| Isolation voltage | Input to Output | 1600VDC, min. |
| | Input(Output) to case | 1600VDC, min. |
| Case grounding | | Connect case to -Vin with decoupling Y Cap |
| Isolation resistance | | 10 ⁹ ohms, min. |
| Isolation capacitance | | 1500pF, max. |
| Switching frequency | | 400KHz, typ. |
| Approvals and standard | | IEC60950-1, UL60950-1, EN60950-1 |
| Case material | | Nickel-coated copper |
| Base material | | FR4 PCB |
| 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 1) | BELLCORE TR-NWT-000332 | 1.620 x 10 ⁶ hrs |
| | MIL-HDBK-217F | 6.590 x 10 ⁵ hrs |

| INPUT SPECIFICATIONS | | |
|-------------------------------------|---|--------------------------|
| Input voltage range | 24V nominal input | 9 – 36VDC |
| | 48V nominal input | 18 – 75VDC |
| Input filter | | Pi type |
| Input surge voltage | 24V input | 50VDC |
| | 100mS max | 48V input |
| Input reflected ripple current | Nominal Vin and full load | 20mA _{p-p} |
| Start up time | Nominal Vin and constant resistive load | Power up 20mS, typ. |
| | | Remote ON/OFF 20mS, typ. |
| Start-up voltage | 24V input | 9VDC |
| | 48V input | 18VDC |
| Shutdown voltage | 24V input | 7.5VDC |
| | 48V input | 15VDC |
| Remote ON/OFF (Note 6) | | |
| (Positive logic)(Standard) | DC-DC ON | Open or 3V < Vr < 12V |
| | DC-DC OFF | Short or 0V < Vr < 1.2V |
| (Negative logic)(Option) | DC-DC ON | Short or 0V < Vr < 1.2V |
| | DC-DC OFF | Open or 3V < Vr < 12V |
| Input current of remote control pin | Nominal Vin | -0.5mA ~ +0.5mA |
| Remote off state input current | Nominal Vin | 2.5mA |

| ENVIRONMENTAL SPECIFICATIONS | | |
|-------------------------------|----------------------------------|----------------------------------|
| Operating ambient temperature | | -40°C ~ +66°C (without derating) |
| | | +66°C ~ +105°C (with derating) |
| Maximum case temperature | | 105°C |
| Storage temperature range | | -55°C ~ +125°C |
| Thermal impedance (Note 7) | Nature convection | 12°C/Watt |
| | Nature convection with heat-sink | 10°C/Watt |
| Thermal shock | | MIL-STD-810F |
| Vibration | | MIL-STD-810F |
| Relative humidity | | 5% to 95% RH |

| EMC CHARACTERISTICS | | |
|-------------------------|-------------|----------------------------|
| EMI (Note 8) | EN55022 | Class A |
| ESD | EN61000-4-2 | Air ± 8KV |
| | | Contact ± 6KV |
| Radiated immunity | EN61000-4-3 | 10 V/m Perf. Criteria A |
| Fast transient (Note 9) | EN61000-4-4 | ± 2KV Perf. Criteria B |
| Surge (Note 9) | EN61000-4-5 | ± 1KV Perf. Criteria A |
| Conducted immunity | EN61000-4-6 | 10 Vr.m.s Perf. Criteria A |

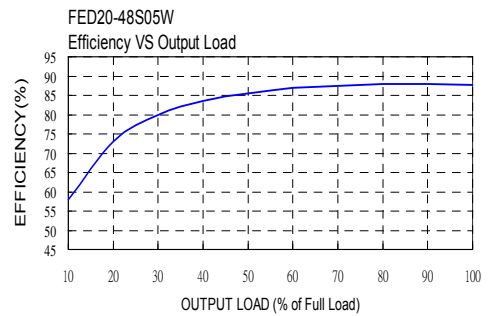
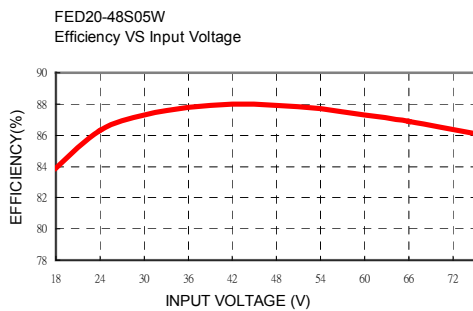
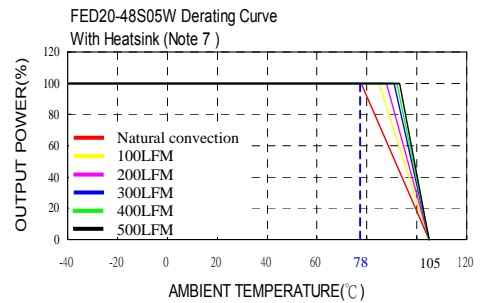
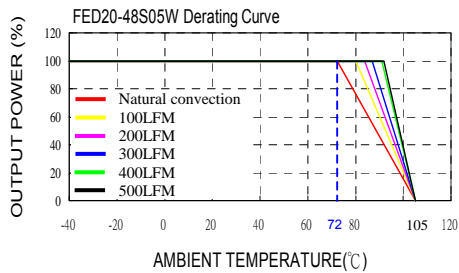


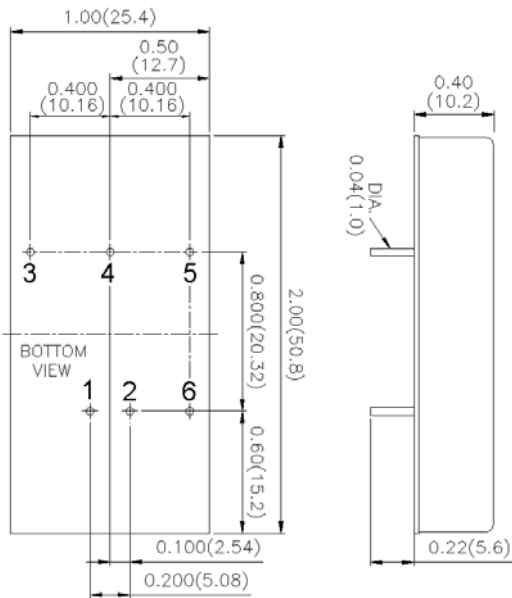


| Model Number | Input Range | Output Voltage | Output Current | | Output ⁽⁴⁾ Ripple & Noise | Input Current | | Eff ⁽⁴⁾ (%) | Capacitor ⁽⁵⁾ Load max |
|---------------|-------------|----------------|----------------|-----------|---|------------------------|--------------------------|---------------------------|--------------------------------------|
| | | | Min. load | Full load | | No Load ⁽³⁾ | Full Load ⁽²⁾ | | |
| FED20-24S3P3W | 9 – 36 VDC | 3.3 VDC | 0mA | 5500mA | 60mVp-p | 50mA | 934mA | 85 | 18000μF |
| FED20-24S05W | 9 – 36 VDC | 5 VDC | 0mA | 4000mA | 75mVp-p | 65mA | 992mA | 88 | 9600μF |
| FED20-24S12W | 9 – 36 VDC | 12 VDC | 0mA | 1670mA | 75mVp-p | 22mA | 1018mA | 86 | 1650μF |
| FED20-24S15W | 9 – 36 VDC | 15 VDC | 0mA | 1330mA | 75mVp-p | 22mA | 1014mA | 86 | 1050μF |
| FED20-24D05W | 9 – 36 VDC | ±5 VDC | 0mA | ±2000mA | 100mVp-p | 55mA | 992mA | 88 | ±4800μF |
| FED20-24D12W | 9 – 36 VDC | ±12 VDC | 0mA | ±833mA | 100mVp-p | 30mA | 1004mA | 87 | ±825μF |
| FED20-24D15W | 9 – 36 VDC | ±15 VDC | 0mA | ±667mA | 100mVp-p | 30mA | 1005mA | 87 | ±525μF |
| FED20-48S3P3W | 18 – 75 VDC | 3.3 VDC | 0mA | 5500mA | 60mVp-p | 35mA | 467mA | 85 | 18000μF |
| FED20-48S05W | 18 – 75 VDC | 5 VDC | 0mA | 4000mA | 75mVp-p | 35mA | 496mA | 88 | 9600μF |
| FED20-48S12W | 18 – 75 VDC | 12 VDC | 0mA | 1670mA | 75mVp-p | 15mA | 503mA | 87 | 1650μF |
| FED20-48S15W | 18 – 75 VDC | 15 VDC | 0mA | 1330mA | 75mVp-p | 15mA | 501mA | 87 | 1050μF |
| FED20-48D05W | 18 – 75 VDC | ±5 VDC | 0mA | ±2000mA | 100mVp-p | 35mA | 490mA | 89 | ±4800μF |
| FED20-48D12W | 18 – 75 VDC | ±12 VDC | 0mA | ±833mA | 100mVp-p | 17mA | 496mA | 88 | ±825μF |
| FED20-48D15W | 18 – 75 VDC | ±15 VDC | 0mA | ±667mA | 100mVp-p | 17mA | 496mA | 88 | ±525μF |

Note:

- BELLCORE TR-NWT-000332. Case 1: 50% Stress, Temperature at 40°C. MIL-HDBK-217F Notice2 @Ta=25 °C, Full load(Ground, Benign, controlled environment)
- Maximum value at nominal input voltage and full load.
- Typical value at nominal input voltage and no load.
- Typical value at nominal input voltage and full load.
- Test by minimum Vin and constant resistive load.
- The ON/OFF control pin voltage is referenced to -Vin. To order negative logic ON/OFF control add the suffix-N (Ex: FED20-48S05W-N)
- Heat sink is optional and P/N: 7G-0020C-F.
- The FED20W series can meet EN55022 Class A with parallel an external capacitor to the input pins. Recommend : 24Vin : NA. 48Vin : 1μF/100V 1210 MLCC.
- An external input filter capacitor is required if the module has to meet EN61000-4-4, EN61000-4-5. The filter capacitor Power Mate suggest: Nippon chemi-con KY series, 220 μF/100V, ESR 48mΩ.



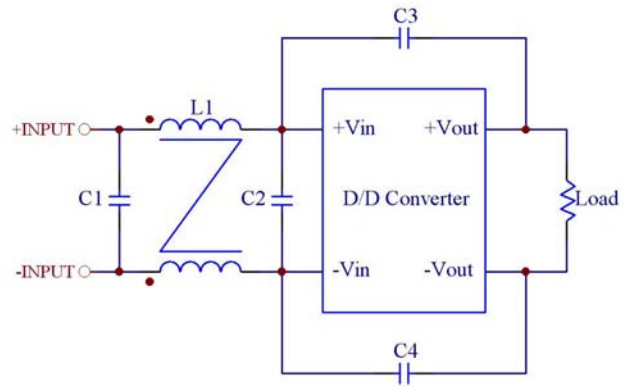
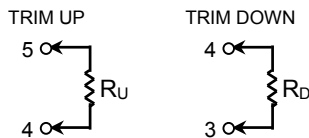


1. All dimensions in Inches (mm)
Tolerance: X.XX±0.02 (X.X±0.5)
X.XXX±0.01 (X.XX±0.25)
2. Pin pitch tolerance ±0.01(0.25)
3. Pin dimension tolerance ±0.004 (0.1)

| PIN CONNECTION | | |
|----------------|----------|----------|
| PIN | SINGLE | DUAL |
| 1 | + INPUT | + INPUT |
| 2 | - INPUT | - INPUT |
| 3 | + OUTPUT | + OUTPUT |
| 4 | TRIM | COMMON |
| 5 | - OUTPUT | - OUTPUT |
| 6 | CTRL | CTRL |

EXTERNAL OUTPUT TRIMMING

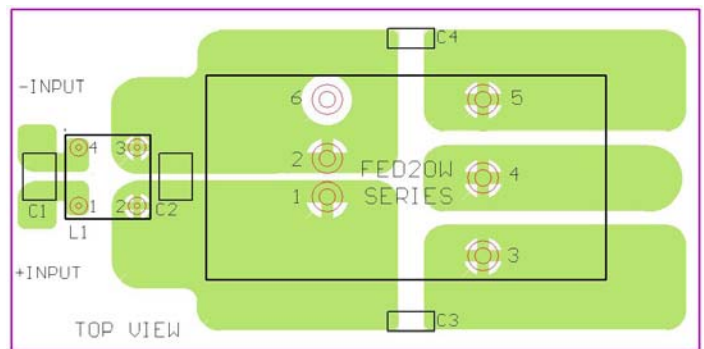
Output can be externally trimmed by using the method shown below.



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 | L1 |
|--------------|-------------------------|-------------------------|--------------------|--------------------|-------------------------------------|
| FED20-24xxxW | 4.7µF/50V 1812 MLCC | N/A | 1000pF/2KV MLCC | 1000pF/2KV MLCC | 450µH Common Choke PMT-048 |
| FED20-48xxxW | 2.2µF/100V 1812 MLCC | 2.2µF/100V 1812 MLCC | 1000pF/2KV MLCC | 1000pF/2KV MLCC | 325µH Common Choke PMT-050 |



Recommended EN55022 Class B Filter Circuit Layout

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- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Помощь Конструкторского Отдела и консультации квалифицированных инженеров;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Поставка электронных компонентов под контролем ВП;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- При необходимости вся продукция военного и аэрокосмического назначения проходит испытания и сертификацию в лаборатории (по согласованию с заказчиком);
- Поставка специализированных компонентов военного и аэрокосмического уровня качества (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Actel, Aeroflex, Peregrine, VPT, Syfer, Eurofarad, Texas Instruments, MS Kennedy, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

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JONHON

«JONHON» (основан в 1970 г.)

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«FORSTAR» (основан в 1998 г.)

ВЧ соединители, коаксиальные кабели, кабельные сборки и микроволновые компоненты:

(Применяются в телекоммуникациях гражданского и специального назначения, в средствах связи, РЛС, а так же военной, авиационной и аэрокосмической отраслях промышленности).



Телефон: 8 (812) 309-75-97 (многоканальный)

Факс: 8 (812) 320-03-32

Электронная почта: ocean@oceanchips.ru

Web: <http://oceanchips.ru/>

Адрес: 198099, г. Санкт-Петербург, ул. Калинина, д. 2, корп. 4, лит. А