



FEATURES

- 40 WATTS MAXIMUM OUTPUT POWER
- OUTPUT CURRENT UP TO 10A
- STANDARD 2" X 2" X 0.4" PACKAGE
- HIGH EFFICIENCY UP TO 88%
- 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 Remove On/Off

DESCRIPTION

The FEC40W series offer 40 watts of output power from a 2.00 x 2.00 x 0.4 inch package. The FEC40W series with 4:1 ultra wide input voltage of 9-36VDC 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			40 Watts, max.
Voltage accuracy	FL and nominal Vin	Single / Dual	± 1%
Minimum load (Note 6)			See Table
Voltage adjustability (Note 7)	Single and Dual output		± 10%
Line regulation	LL to HL at Full Load	Single/Dual	± 0.2%
Load regulation (Note 8)	Min. Load to Full Load	Single Dual	± 0.5% ± 1%
Load cross regulation (Note 9)		Dual	± 5%
Temperature coefficient			±0.02% / °C, max.
Transient response recovery time	25% load step change		250µS
Over voltage protection Zener diode clamp	3.3V output		3.9VDC
	5V output		6.2VDC
	12V output		15VDC
	15V output		18VDC
	±12V output ±15V output		±15VDC ±18VDC
Over load protection	% of FL at nominal input		150%, max.
Short circuit protection			Hiccup, automatics recovery
GENERAL SPECIFICATIONS			
Efficiency			See table
Isolation voltage	Input to Output Input(Output) to Case		1600VDC, min. 1600VDC, min.
Case grounding		Connect case to -Vin with decoupling Y Cap	
Isolation resistance			10 ⁹ ohms, min.
Isolation capacitance			2500pF, max.
Switching frequency			300KHz, 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 2.00 X 0.40 Inch (50.8 X 50.8 X 10.2 mm)
Weight			60g (2.11oz)
MTBF (Note 1)	BELLCORE TR-NWT-000332		1.105 x 10 ⁶ hrs
	MIL-HDBK-217F		1.511 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 100mS max	24V input		50VDC
	48V input		100VDC
Input reflected ripple current	Nominal Vin and full load		20mA _{p-p}
Start up time	Nominal Vin and constant resistive load	Power up	20mS, max.
		Remote ON/OFF	20mS, max.
Start-up voltage	24V input		9VDC
	48V input		18VDC
Shutdown voltage	24V input		8VDC
	48V input		16VDC
Remote ON/OFF (Note 10)			
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	24 Vin		10mA
	48 Vin		5mA

ENVIRONMENTAL SPECIFICATIONS			
Operating ambient temperature			-40°C ~ +50°C (without derating)
			+50°C ~ +105°C (with derating)
Maximum case temperature			+105°C
Storage temperature range			-55°C ~ +125°C
Over temperature protection			110°C, typ.
Thermal impedance (Note 11)	Without Heat-sink		9.2°C/Watt
	With Heat-sink		7.6°C/Watt
Thermal shock			MIL-STD-810F
Vibration			MIL-STD-810F
Relative humidity			5% to 95% RH

EMC CHARACTERISTICS			
EMI (Note 12)	EN55022		Class A
ESD	EN61000-4-2	Air ± 8KV	Perf. Criteria A
		Contact ± 6KV	
Radiated immunity	EN61000-4-3	10 V/m	Perf. Criteria A
Fast transient (Note 13)	EN61000-4-4	± 2KV	Perf. Criteria B
Surge (Note 13)	EN61000-4-5	± 1KV	Perf. Criteria A
Conducted immunity	EN61000-4-6	10 Vr.m.s	Perf. Criteria A

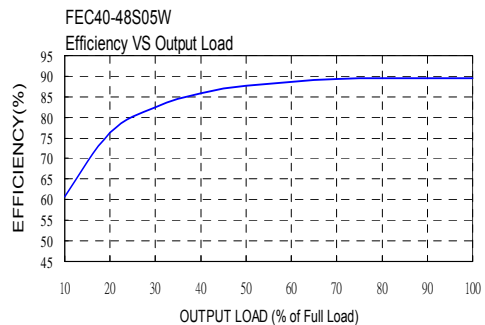
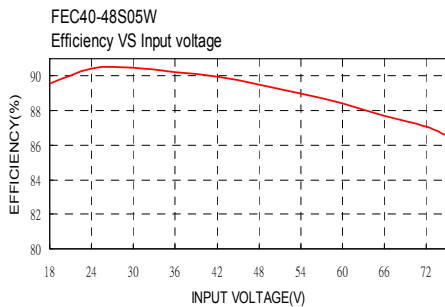
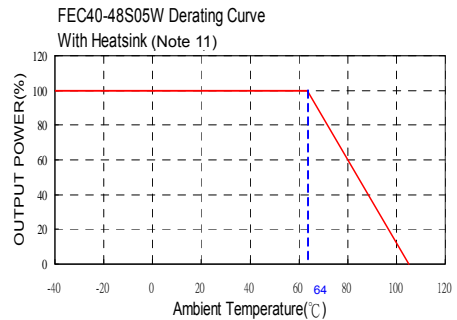
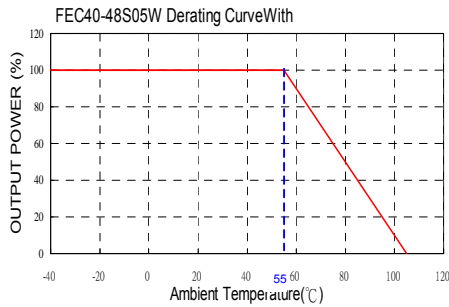


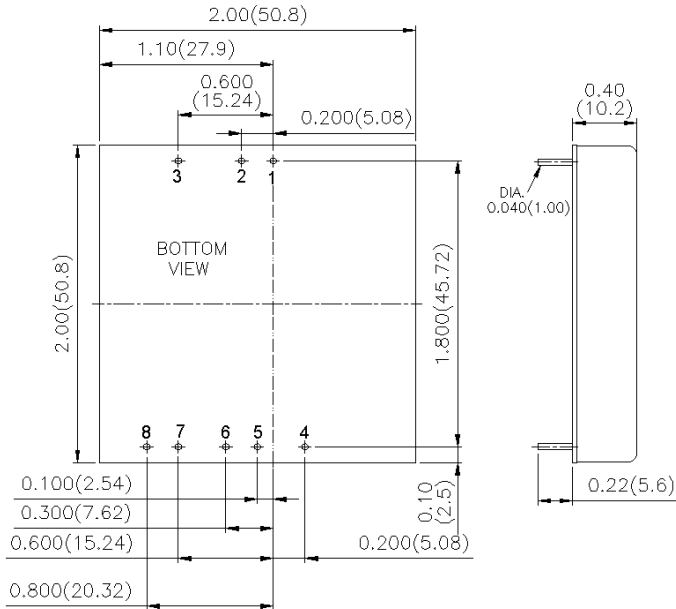


Model Number	Input Range	Output Voltage	Output Current		Output ⁽⁴⁾ Ripple & Noise	Input Current		Eff ⁽⁴⁾ (%)	Capacitor ⁽⁵⁾ Load max
			Min. load	Full load		No load ⁽³⁾	Full load ⁽²⁾		
FEC40-24S3P3W	9 – 36 VDC	3.3 VDC	0mA	10000mA	50mVp-p	80mA	1677mA	86	25750μF
FEC40-24S05W	9 – 36 VDC	5 VDC	0mA	8000mA	50mVp-p	100mA	2008mA	87	13600μF
FEC40-24S12W	9 – 36 VDC	12 VDC	50mA	3333mA	75mVp-p	50mA	2008mA	87	2360μF
FEC40-24S15W	9 – 36 VDC	15 VDC	50mA	2666mA	75mVp-p	50mA	2008mA	87	1510μF
FEC40-24D12W	9 – 36 VDC	± 12 VDC	±65 mA	± 1667mA	120mVp-p	60mA	2032mA	86	± 1200μF
FEC40-24D15W	9 – 36 VDC	± 15 VDC	±50 mA	± 1333mA	150mVp-p	70mA	2032mA	86	± 750μF
FEC40-48S3P3W	18 – 75 VDC	3.3 VDC	0mA	10000mA	50mVp-p	60mA	838mA	86	25750μF
FEC40-48S05W	18 – 75 VDC	5 VDC	0mA	8000mA	50mVp-p	65mA	992mA	88	13600μF
FEC40-48S12W	18 – 75 VDC	12 VDC	50mA	3333mA	75mVp-p	30mA	1004mA	87	2360μF
FEC40-48S15W	18 – 75 VDC	15 VDC	50mA	2666mA	75mVp-p	30mA	1004mA	87	1510μF
FEC40-48D12W	18 – 75 VDC	± 12 VDC	±65 mA	± 1667mA	120mVp-p	30mA	1016mA	86	± 1200μF
FEC40-48D15W	18 – 75 VDC	± 15 VDC	±60 mA	± 1333mA	150mVp-p	30mA	1016mA	86	± 750μF

Note

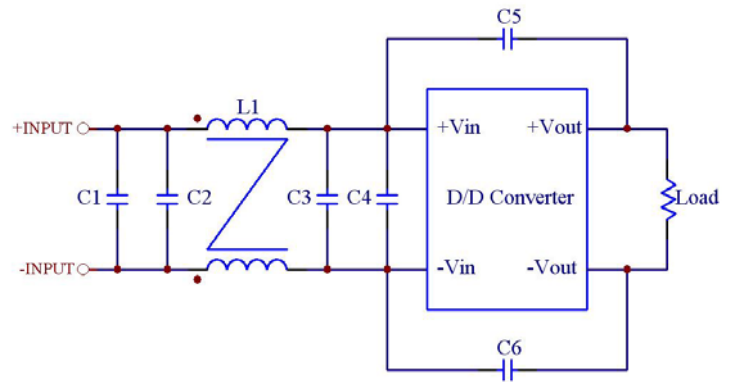
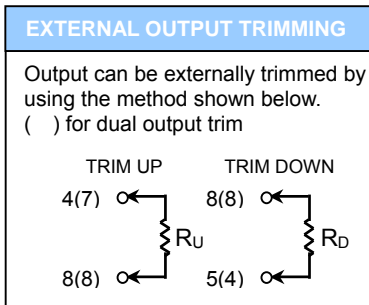
- BELLCORE TR-NWT-000332. Case 1: 50% Stress, Temperature at 40°C. MIL-HDBK-217F Notice2 @Ta=25 °C, Full load(Ground, Benign, controlled environment).
- Maximum value at nominal input voltage and full load.
- Typical value at nominal input voltage and no load.
- Typical value at nominal input voltage and full load.
- Test by minimum Vin and constant resistive load.
- The output requires minimum 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.
- For the single output: Maximum output deviation is 10% inclusive of remote sense and trim. If remote sense is not being used, the +sense should be connected to its corresponding +OUTPUT and likewise the -sense should be connected to its corresponding -OUTPUT.
- Load regulation for dual output : Min load to 100% load balanced on all outputs.
- Cross regulation for dual output : asymmetrical load 25% / 100% FL
- The ON/OFF pin voltage is referenced to -Vin
To order negative logic ON/OFF control add the suffix-N (Ex: FEC40-24S05W-N).
- Heat sink is optional and P/N : 7G-0026C-F.
- The FEC40W series can meet EN55022 Class A with parallel an external capacitor to the input pins.
Recommend : 24Vin : N/A
48Vin :2.2μF/100V*2 PCS 1812 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 μ F/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)

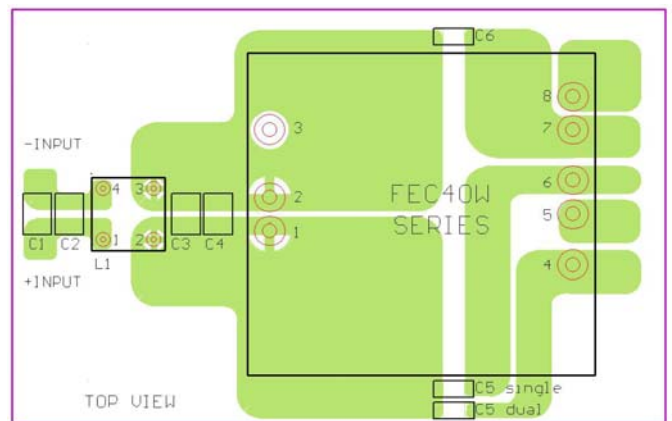
PIN CONNECTION		
PIN	SINGLE	DUAL
1	+INPUT	+INPUT
2	-INPUT	-INPUT
3	CTRL	CTRL
4	-SENSE	+OUTPUT
5	+SENSE	COM
6	+OUTPUT	COM
7	-OUTPUT	-OUTPUT
8	TRIM	TRIM



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
FEC40-24xxxW	4.7µF/50V 1812 MLCC	N/A	4.7µF/50V 1812 MLCC	N/A	1000pF/2KV MLCC	450µH Common Choke PMT-048
FEC40-48xxxW	2.2µF/100V 1812 MLCC	2.2µF/100V 1812 MLCC	2.2µF/100V 1812 MLCC	2.2µF/100V 1812 MLCC	1000pF/2KV MLCC	830µH Common Choke PMT-053



Recommended EN55022 Class B Filter Circuit Layout

