

FEC40W SERIES

DC / DC Single & Dual Output: 40 Watts



Features

- 4:1 wide Input range option 9~36V & 18~75V
- Single & Dual outputs
- Industry Standard 2 x 2 in package
- High efficiency up to 82%
- Regulated output & Short circuit protection
- 1600V isolation
- Five sided continuous copper shield
- Remote ON / OFF- Standard Positive Logic
- Remote ON / OFF- Negative Logic - Option
- High operating temperature +85°C
- Fixed switching frequency
- Optional heat sink: P/N : 7G-0026A.

Specifications:

Input Voltage	24VDC (9 ~ 36) 48VDC (18 ~ 75)	Overload Protection	Typically 150% of load
Input Filter	Pi type	Short Circuit protection	Continuous hiccup mode
Input Surge Voltage. (100mS)	24V: 50VDC. 48V: 100VDC	Efficiency	Model dependant 86 ~ 87%
Input Reflected Ripple Current	20mA pk-pk @ nominal input & 100% load	Isolation	1600VDC
Start Up time	10mS constant resistive load	Isolation Cap.	25000pF
Remote ON/OFF (Positive logic – Standard)	DC-DC ON Open or 3.0V < Vr < 12V DC-DC OFF Short or 0V < Vr < 1.2V	Switching Freq.	300KHz
(Negative logic – Option)	DC-DC ON Short or 0V < Vr < 1.2V DC-DC OFF Open or 3.0V < Vr < 12V Input current of remote control pin: .5mA Remote off state input current: 10mA for 24Vin 5mA for 48Vin	Safety	EN60950-1, UL60950-1
Output power	40 watts	Case Material	Nickel-coated copper
Voltage Accuracy	±1.0%	Base Material	Non-conductive black plastic
Minimum Load	See table	Potting	Epoxy UL94-V0
Output Voltage Trim	±10% (single & Dual output)	Dimensions	50.8 x 50.8 x 10.2mm
Line Regulation	Single ±0.2% Dual ±0.2%	Weight	60g
Load Regulation	Single ±0.5% , Dual ±1% (Min load -100% load)	MTBF	1.511 x 10 ⁶ Hrs
Cross Regulation	±5% Asymmetrical load: 25-100% load)	Operating Temp	-40°C to +50°C (without derating) -40°C to +105°C (with derating)
Ripple & noise	See table. 20MHZ bandwidth	Case Temp	+100°C maximum case temperature
Temp. Coefficient	±0.02% / °C	Thermal Impedance	9.2°C / watt Standard convection 7.6°C / watt with optional heatsink
Transient Response	250uS (25% load step change)	Thermal shock	MIL-STD-810F
Over Voltage Protection	1.5V ~ 3.3V: 3.9V: 5.0V: 6.2V 12V: 15V 15V: 18V	Vibration	10-55Hz, 10G, 30min along X, Y,Z
		Humidity	5-95% RH
		EMC	EN55022 Class A Consult office for Class B design
		ESD	EN61000-4-2
		Radiated Immunity	EN61000-4-3
		Fast Transients	EN61000-4-4
		Surge	EN61000-4-5
		Conducted Immunity	EN61000-4-6

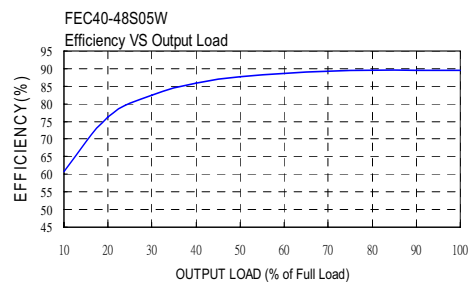
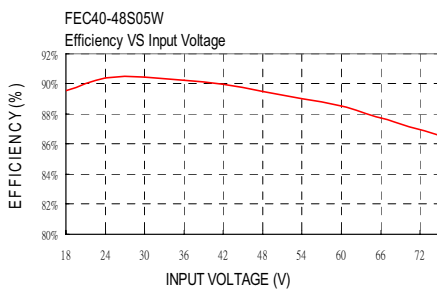
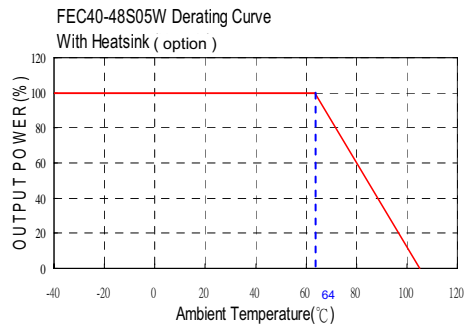
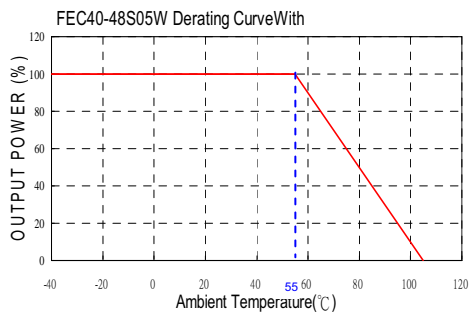
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Model	Input V	Output V	Output Current		Output Ripple & Noise	Input Current		Eff (%)	Capacitor Load max
			Min. load	Full load		No load	Full load		
FEC40-24S3P3W	9 – 36 V	3.3 V	0mA	10000mA	50mVp-p	80mA	1677mA	86	25750uF
FEC40-24S05W	9 – 36 V	5 V	0mA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

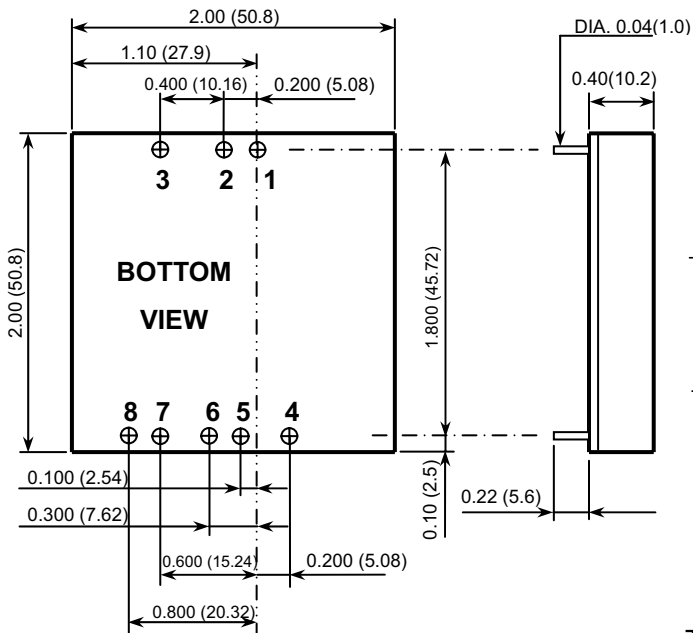
Note

- MTBF as per BELLCORE TR-NWT-000332. Case I: 50% Stress, Temperature at 40°C. (Ground fixed and controlled environment)
MIL-STD-217F Notice2 @Ta=25 °C, Full load(Ground, Benign, controlled environment)
- Typical values at nominal input voltage and full 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** (eg: FEC40-24S05W-N).
- Heat sink is optional and **P/N : 7G-0026A**.
- The FEC40W series can meet EN55022 Class A with parallel an external capacitor to the input pins.
Recommend : 24Vin : N/A 48Vin :2.2uF/100V*2 PCS 1812 MLCC.
- 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.

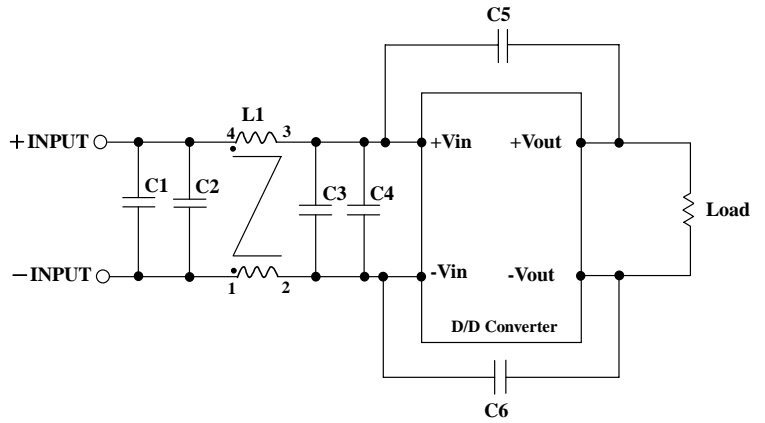


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- All dimensions in Inches (mm)
Tolerance: X.XX±0.02 (X.X±0.5)
X.XXX±0.01 (X.XX±0.25)
- Pin pitch tolerance ±0.01(0.25)
- Pin dimension tolerance ±0.004 (0.1)

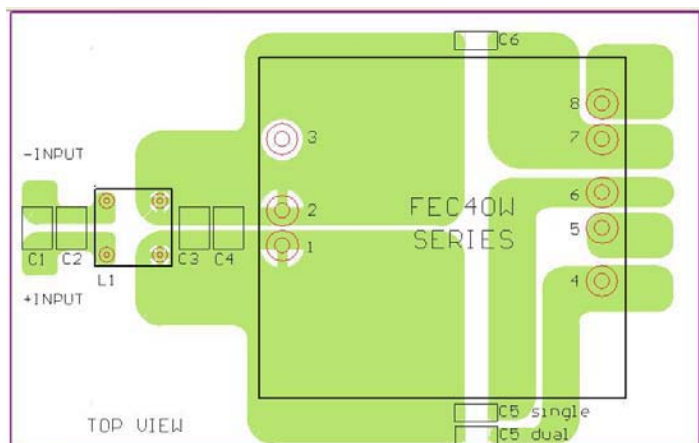
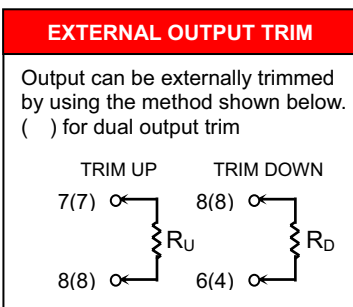


Recommended Filter for EN55022 Class B Compliance

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

Pin Assignment		
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 EN55022 Class B Filter Circuit Layout