FEC40 Series

40 WATT DC/DC CONVERTER
SINGLE, DUAL & TRIPLE OUTPUTS

FEATURES

- *40 WATT OUTPUT POWER*
- *UP TO TRIPLE OUTPUTS*
- *EXTREMELY RELIABLE*
- *SIX SIDED CONTINOUS SHIELD*
- *HIGH EFFICIENCY UP TO 90%*
- *SHORT CIRCUIT PROTECTION*
- *DIRECT PCB-SOLDERING*
- *INDUSTRY STANDARD 2 X 2 X.04 PACKAGE*
- *INTERNATIONAL SAFETY STANDARD APPROVALS*

SAFETIES/APPROVALS

UL, TUV, CE

ELECTRICAL SPECIFICATIONS

All specifications are typical at nominal input, full load

INPUT SPECIFICATIONS

Input Voltage Range.....2 : 1
Input Filter..... PI-Network

OUTPUT SPECIFICATIONS

Output Voltage Accuracy..... .±1%
Voltage Adjustability
Single & Dual…….±1%
Triple.....……±3%
Minimum Load
Single & Dual …….0%
Triple ……10% of FL
Over-Current Protection. .…..150% max
Line Regulation
Single/Dual…….±0.5%
Triple…… ……..±1%(Main)/ ±5%(Auxiliary)
Load Regulation……..….±0.5%
(Load Rate 10% ~ 100%)

GENERAL SPECIFICATIONS

Isolation Voltage……...1600VDC min
MTBF..... >1.398 x 10^{6} hours
Isolation Resistance.....10^{9}ohms min
Isolation Capacitance……1000pF max
Switching Frequency…….300Khz typical

ENVIRONMENTAL SPECIFICATIONS

Operating Temperature .....-40°C ~ +85°C
Temperature Coefficient.....±0.02%/ °C
Humidity..... 5%~95% RH
Storage Temperature..... -55°C ~ +105°C

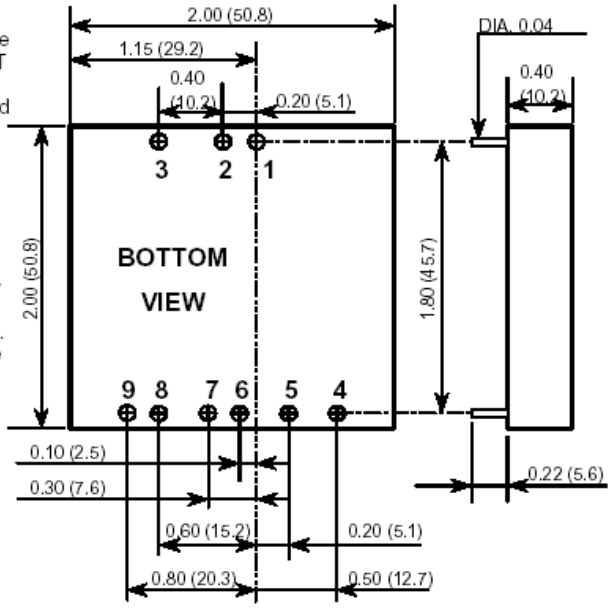
PHYSICAL SPECIFICATIONS

Case Material.....Nickel-Coated Copper
Base Material.....Non-Conductive
Black Plastic

Model Number	Input Range	Output Voltage	Output Current	Output Ripple & Noise	Input Current [13]	Eff [14] (%)	Capacitor [15] Load max
FEC40-24S3P3	18 – 36 VDC	3.3 VDC	8000mA	50mVp-p	1325mA	87	21000uF
FEC40-24S05	18 – 36 VDC	5 VDC	8000mA	50mVp-p	1961mA	89	13600uF
FEC40-24S12	18 – 36 VDC	12 VDC	3333mA	75mVp-p	2048mA	88	2360uF
FEC40-24S15	18 – 36 VDC	15 VDC	2666mA	75mVp-p	1985mA	89	1510uF
FEC40-24D3305	18 – 36 VDC	3.3 / 5 VDC	4A / 4A (total 8A) [12]	100mVp-p	1729mA	84	11000 / 6800uF
FEC40-24T3312	18 – 36 VDC	3.3 / ±12 VDC	6000mA / ±400mA	50 / 75mVp-p	1512mA	85	13000 / ±330uF
FEC40-24T3315	18 – 36 VDC	3.3 / ±15 VDC	6000mA / ±300mA	50 / 75mVp-p	1481mA	85	13000 / ±110uF
FEC40-24T0512	18 – 36 VDC	5 / ±12 VDC	6000mA / ±400mA	50 / 75mVp-p	1989mA	87	6800 / ±330uF
FEC40-24T0515	18 – 36 VDC	5 / ±15 VDC	6000mA / ±300mA	50 / 75mVp-p	1958mA	87	6800 / ±110uF
FEC40-48S3P3	36 – 75 VDC	3.3 VDC	8000mA	50mVp-p	655mA	88	21000uF
FEC40-48S05	36 – 75 VDC	5 VDC	8000mA	50mVp-p	969mA	90	13600uF
FEC40-48S12	36 – 75 VDC	12 VDC	3333mA	75mVp-p	1000mA	89	2360uF
FEC40-48S15	36 – 75 VDC	15 VDC	2666mA	75mVp-p	992mA	89	1510uF
FEC40-48D3305	36 – 75 VDC	3.3 / 5 VDC	4A / 4A (total 8A) [12]	100mVp-p	854mA	85	11000 / 6800uF
FEC40-48T3312	36 – 75 VDC	3.3 / ±12 VDC	6000mA / ±400mA	50 / 75mVp-p	747mA	86	13000 / ±330uF
FEC40-48T3315	36 – 75 VDC	3.3 / ±15 VDC	6000mA / ±300mA	50 / 75mVp-p	732mA	86	13000 / ±110uF
FEC40-48T0512	36 – 75 VDC	5 / ±12 VDC	6000mA / ±400mA	50 / 75mVp-p	982mA	88	6800 / ±330uF
FEC40-48T0515	36 – 75 VDC	5 / ±15 VDC	6000mA / ±300mA	50 / 75mVp-p	967mA	88	6800 / ±110uF

Note

1. Maximum output deviation is 10% inclusive of remote sense and trim. If remote sense is not being used, the +Vsense should be connected to its corresponding +OUTPUT and likewise the sense should be connected to its corresponding –OUTPUT.
2. The triple output required a minimum 10% 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
3. Load regulation for triple output:
   Main output(V1):10 to 100% with 10% to 100% balanced on auxiliaries.
   Auxiliary outputs(V2 and V3):10% to 100% balanced on all outputs.
4. Cross regulation for triple output:
   Main output 100% load, auxiliary 100%,other auxiliary25% to 100%.
   Auxiliary outputs(V2 and V3):main output 100% load, auxiliary 100%, other auxiliary 25% to 100% or main output 25%,auxiliary 25%,other auxiliary 25% to 100%.
5. The models of FEC40-XXD3305 are specified with a 1uF ceramic output capacitors.
6. An external filter capacitor is required for normal operation. The capacitor should be capable of handing 1A ripple current for 48V/24V models. Power mate suggest: Nippon chemi-con KMF series, 220μF/100V, ESR 90mΩ.
7. Simulated source impedance of 12uH. 12uH inductor in series with +Vin.
8. The ON/OFF control pin voltage is referenced to negative input.
9. Switching frequency for dual output:
   master (5Vo) 300KHz slave (3.3Vo) 500KHz
10. BELLCORE TR-NWT-000332. Case I: 50% Stress, Temperature at 40°C. (Ground fixed and controlled environment).
11. Heat sink is optional and P/N : 7G-0026A.
12. Any condition of dual output (3.3V/5V) rated Iout current, not to exceed 8A of total output currents. The product safety approval pending..
13. Maximum value at nominal input voltage and full load.
14. Typical value at nominal input voltage and full load.
15. Test by minimum Vin and constant resistor load.



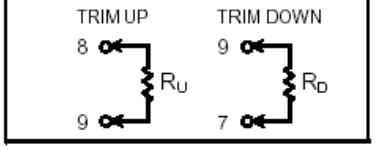
1. All dimensions in Inches (mm)
2. Pin pitch tolerance ±0.014(0.35)

PIN CONNECTION

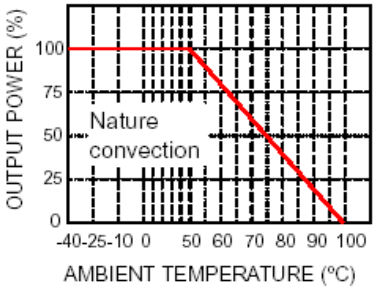
PIN	SINGLE	DUAL	TRIPLE
1	+ INPUT	+ INPUT	+ INPUT
2	- INPUT	- INPUT	- INPUT
3	CTRL	CTRL	CTRL
4	NC	3.3V	+ AUX
5	- SENSE (Note1)	3.3V RTN (COM)	COMMON
6	+ SENSE (Note1)	NC	- AUX
7	+ OUTPUT	NC	+ OUTPUT
8	- OUTPUT	5V	- OUTPUT (COM)
9	TRIM	5V RTN (COM)	NC

EXTERNAL OUTPUT TRIMMING

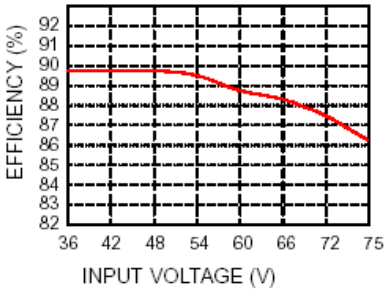
Output can be externally trimmed by using the method shown below.



FEC40-48S05
Derating Curve



FEC40-48S05
Efficiency VS Input voltage



FEC40-48S05
Efficiency VS Output load