



FEATURES

- 12 WATTS OUTPUT POWER
- OUTPUT CURRENT UP TO 3.5A
- STANDARD 1.25 X 0.80 X 0.40 INCH
- HIGH EFFICIENCY UP TO 88%
- 4:1 ULTRA WIDE INPUT VOLTAGE RANGE
- FIVE-SIDED CONTINUOUS SHIELD
- FIXED SWITCHING FREQUENCY (400KHz)
- STANDARD 24 PIN DIP PACKAGE
- 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
- Semiconductor Equipment

OPTIONS

SMD TYPE

DESCRIPTION

The FKC12W series offer 12 watts of output power from a package in an IC compatible 24pin DIP configuration. FKC12W series have 4:1 ultra wide input voltage of 9-36 and 18-75VDC. The FKC12W have features 1600VDC of isolation, short circuit protection and as well as five sided shielding.

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

OUTPUT SPECIFICATIONS			
Output power	12 Watts max		
Voltage accuracy	Full load and nominal Vin	±1.2%	
Minimum load	0%		
Line regulation	LL to HL at Full Load	± 0.2%	
Load regulation	No load to Full load	Single (DIP)	± 0.5%
		Single (SMD)	± 1%
		Dual (SMD,DIP)	± 1%
Cross regulation (Dual)	Asymmetrical load 25% / 100% FL	± 5%	
Ripple and noise	20MHz bandwidth	85mVp-p	
Temperature coefficient	±0.02% / °C, max		
Transient response recovery time	25% load step change	250uS	
Over voltage protection (only single)	3.3V output	3.9V	
	5.1V output	6.2V	
	12V output	15V	
	15V output	18V	
Over load protection	% of FL at nominal input	150% typ	
Short circuit protection	Continuous, automatic recovery		
GENERAL SPECIFICATIONS			
Efficiency	See table		
Isolation voltage	Input to Output	1600VDC, min	
	Input(Output) to Case	DIP	1600VDC, min
		SMD	1000VDC, min
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	Non-conductive black plastic		
Potting material	Epoxy (UL94-V0)		
Dimensions	1.25 X 0.80 X 0.40 Inch (31.8 X 20.3 X 10.2 mm)		
Weight	18g (0.63oz)		
MTBF (Note 1)	BELLCORE-TR-NWT-000332	2.350 x 10 ⁶ hrs	
	MIL-HDBK-217F	8.745 x 10 ⁵ hrs	
INPUT SPECIFICATIONS			
Input voltage range	24V nominal input	9 – 36VDC	
	48V nominal input	18 – 75VDC	
Input filter	PI type		
Input voltage variation	dv/dt	5V/ms,max	
		(Complies with ETS300 132 part 4.4)	
Input surge voltage	24V input	50VDC	
	100mS max	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	450mS,typ
Start-up voltage	24V input	9VDC	
	48V input	18VDC	
Shutdown voltage	24V input	8VDC	
	48V input	16VDC	
Remote ON/OFF (Note 6) (Positive logic)	DC-DC ON	Open or 3.0V < Vr < 12V	
	DC-DC OFF	Short or 0V < Vr < 1.2V	
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	Vo:5.1V,12V,15V, ±12V,±15V	-40°C to +69°C (without derating)	
		+69°C to +105°C (with derating)	
	Vo:3.3V,±5V	-40°C to +61°C (without derating)	
		+61°C to +105°C (with derating)	
Maximum case temperature	105°C		
Storage temperature range	-55°C to +125°C		
Thermal impedance	Nature convection	20°C/Watt	
Thermal shock	MIL-STD-810F		
Vibration	10~55Hz,10G, 30minutes along X,Y and Z		
Relative humidity	5% to 95% RH		
EMC CHARACTERISTICS			
EMI (Note 7)	EN55022	Class A	
ESD	EN61000-4-2	Air	± 8KV
		Contact	± 6KV
Radiated immunity	EN61000-4-3	10 V/m	Perf. Criteria A
Fast transient	EN61000-4-4	± 2KV	Perf. Criteria B
Surge (Note 8)	EN61000-4-5	± 1KV	Perf. Criteria B
Conducted immunity	EN61000-4-6	10 Vr.m.s	Perf. Criteria A

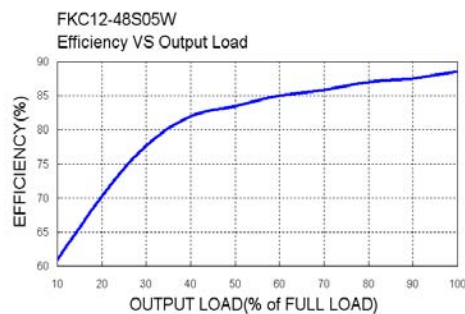
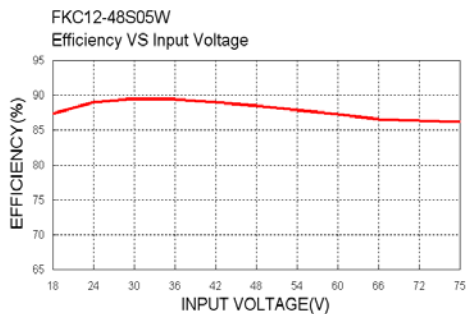
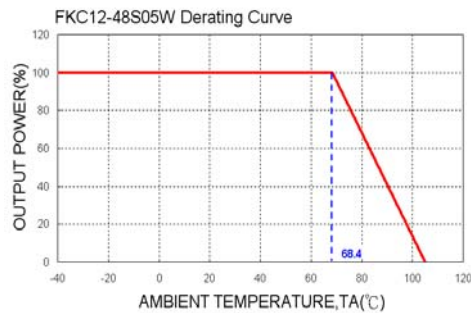


**12WATTS OUTPUT
DC-DC CONVERTER**

Model Number	Input Range	Output Voltage	Output Current		Output ⁽⁴⁾ Ripple & Noise	Input Current		Eff ⁽⁴⁾ (%)	Capacitor ⁽⁵⁾ Load max
			Min. Load	Max. Load		No load ⁽³⁾	Full Load ⁽²⁾		
FKC12-24S3P3W	9 – 36 VDC	3.3 VDC	0mA	3500mA	85mVp-p	55mA	602mA	84	2000uF
FKC12-24S05W	9 – 36 VDC	5.1 VDC	0mA	2400mA	85mVp-p	55mA	614mA	87	2000uF
FKC12-24S12W	9 – 36 VDC	12 VDC	0mA	1000mA	85mVp-p	13mA	602mA	87	430uF
FKC12-24S15W	9 – 36 VDC	15 VDC	0mA	800mA	85mVp-p	11mA	602mA	87	300uF
FKC12-24D05W	9 – 36 VDC	± 5 VDC	0mA	± 1200mA	85mVp-p	15mA	625mA	84	± 1250uF
FKC12-24D12W	9 – 36 VDC	± 12 VDC	0mA	± 500mA	85mVp-p	12mA	602mA	87	± 200uF
FKC12-24D15W	9 – 36 VDC	± 15 VDC	0mA	± 400mA	85mVp-p	20mA	602mA	87	± 120uF
FKC12-48S3P3W	18 – 75 VDC	3.3 VDC	0mA	3500mA	85mVp-p	17mA	301mA	84	2000uF
FKC12-48S05W	18 – 75 VDC	5.1 VDC	0mA	2400mA	85mVp-p	20mA	307mA	87	2000uF
FKC12-48S12W	18 – 75 VDC	12 VDC	0mA	1000mA	85mVp-p	6mA	302mA	87	430uF
FKC12-48S15W	18 – 75 VDC	15 VDC	0mA	800mA	85mVp-p	6mA	298mA	88	300uF
FKC12-48D05W	18 – 75 VDC	± 5 VDC	0mA	± 1200mA	85mVp-p	7mA	309mA	85	± 1250uF
FKC12-48D12W	18 – 75 VDC	± 12 VDC	0mA	± 500mA	85mVp-p	7mA	301mA	87	± 200uF
FKC12-48D15W	18 – 75 VDC	± 15 VDC	0mA	± 400mA	85mVp-p	7mA	301mA	87	± 120uF

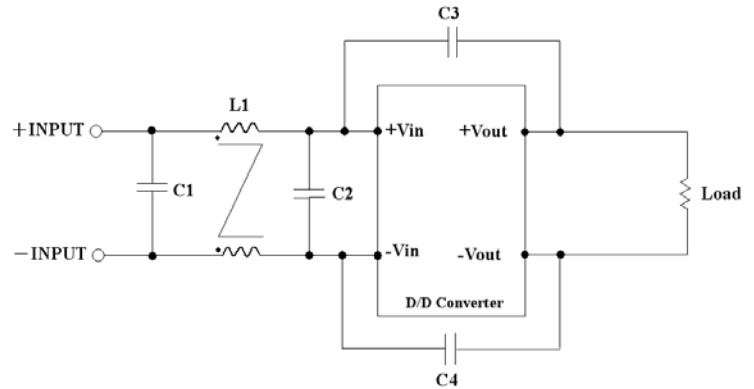
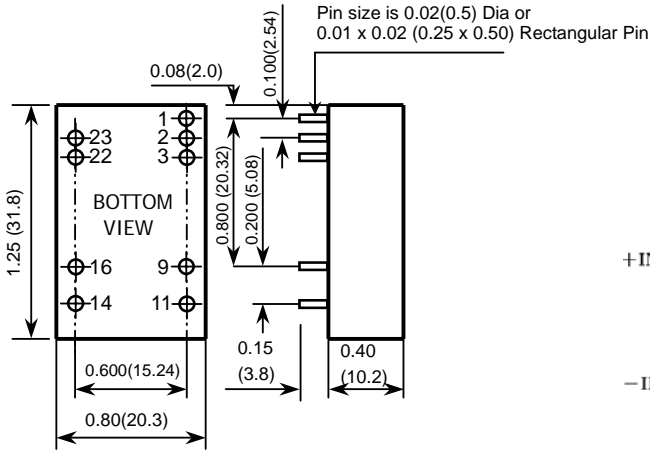
Note

- 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.
- 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 negative input.
- The FKC12W series can meet EN55022 Class A with parallel an external capacitor to the input pins.
Recommend : 24Vin : 3.3µF/50V 1812 MLCC.
48Vin : 1.5µF/100V 1812 MLCC.
- An external filter capacitor is required if the module has to meet EN61000-4-5.
The filter capacitor Power Mate suggest: Nippon chemi-con KY series, 220 µF/100V, ESR 48mΩ.





12WATTS OUTPUT DC-DC CONVERTER



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
FKC12-24xxxW	3.3uF/50V 1812 MLCC	N/A	1000pF/2KV MLCC	1000pF/2KV MLCC	325uH Common Choke PMT-050
FKC12-48xxxW	2.2uF/100V 1812 MLCC	2.2uF/100V 1812 MLCC	1000pF/2KV MLCC	1000pF/2KV MLCC	145uH Common Choke PMT-051

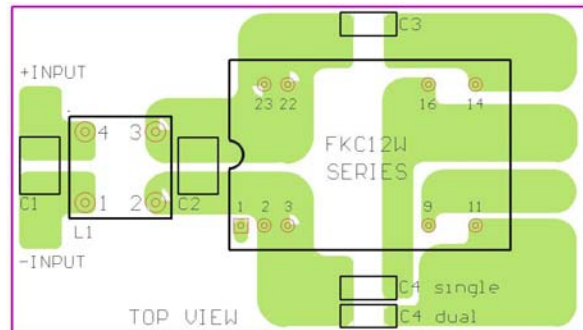
- All dimensions in Inches (mm)
Tolerance: X.XX±0.02 (X.X±0.5)
X.XXX±0.01 (X.XX±0.25)
- Pin pitch tolerance ±0.01(0.25)
- Pin dimension tolerance ±0.004 (0.1)

DIP PIN CONNECTION

PIN	SINGLE	DUAL	PIN	SINGLE	DUAL
1	CTRL	CTRL			
2	- INPUT	- INPUT	23	+ INPUT	+ INPUT
3	- INPUT	- INPUT	22	+ INPUT	+ INPUT
9	NC	COMMON	16	- OUTPUT	COMMON
11	NC	- OUTPUT	14	+ OUTPUT	+ OUTPUT

SMD PIN CONNECTION

PIN	SINGLE	DUAL	PIN	SINGLE	DUAL
1	CTRL	CTRL			
2	- INPUT	- INPUT	23	+ INPUT	+ INPUT
3	- INPUT	- INPUT	22	+ INPUT	+ INPUT
9	NC	COMMON	16	- OUTPUT	COMMON
11	NC	- OUTPUT	14	+ OUTPUT	+ OUTPUT
Others	NC	NC	Others	NC	NC



Recommended EN55022 Class B Filter Circuit Layout