



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 Equipment
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

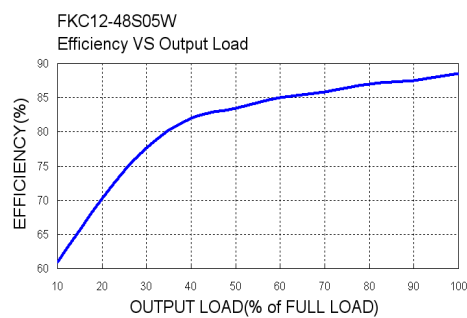
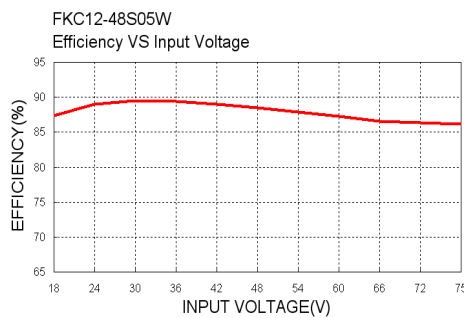
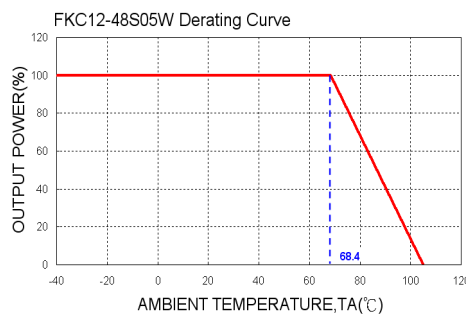
All specifications are typical at nominal input, full load and 25°C otherwise noted

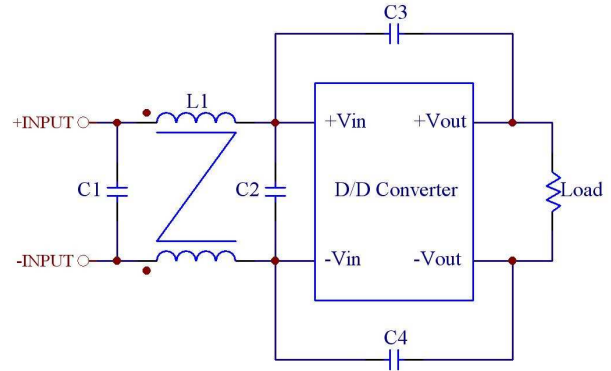
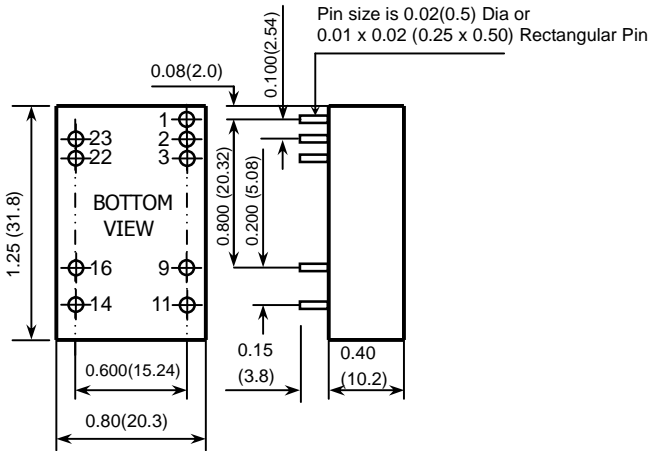
OUTPUT SPECIFICATIONS			
Output power	12 Watts, max.		
Voltage accuracy	Full load and nominal Vin	±1.2%	
Minimum load	0%		
Line regulation	LL to HL at Full Load	± 0.2%	
Load regulation	No load to Full load	Single (DIP)	± 0.5%
		Single (SMD)	± 1%
		Dual (SMD,DIP)	± 1%
Cross regulation (Dual)	Asymmetrical load 25% / 100% FL	± 5%	
Ripple and noise	20MHz bandwidth	See table	
Temperature coefficient	±0.02% / °C, max.		
Transient response recovery time	25% load step change	250µS	
Over voltage protection (only single)	3.3V output	3.9VDC	
	5.1V output	6.2VDC	
	12V output	15VDC	
	15V output	18VDC	
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 (0.62oz)		
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 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	MIL-STD-810F		
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 (Note 8)	EN61000-4-4	± 2KV	Perf. Criteria A
Surge (Note 8)	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	Max. Load		No load ⁽³⁾	Full Load ⁽²⁾		
FKC12-24S3P3W	9 – 36 VDC	3.3 VDC	0mA	3500mA	85mVp-p	55mA	602mA	84	2000µF
FKC12-24S05W	9 – 36 VDC	5.1 VDC	0mA	2400mA	85mVp-p	55mA	614mA	87	2000µF
FKC12-24S12W	9 – 36 VDC	12 VDC	0mA	1000mA	85mVp-p	13mA	602mA	87	430µF
FKC12-24S15W	9 – 36 VDC	15 VDC	0mA	800mA	85mVp-p	11mA	602mA	87	300µF
FKC12-24D05W	9 – 36 VDC	± 5 VDC	0mA	± 1200mA	85mVp-p	15mA	625mA	84	± 1250µF
FKC12-24D12W	9 – 36 VDC	± 12 VDC	0mA	± 500mA	85mVp-p	12mA	602mA	87	± 200µF
FKC12-24D15W	9 – 36 VDC	± 15 VDC	0mA	± 400mA	85mVp-p	20mA	602mA	87	± 120µF
FKC12-48S3P3W	18 – 75 VDC	3.3 VDC	0mA	3500mA	85mVp-p	17mA	301mA	84	2000µF
FKC12-48S05W	18 – 75 VDC	5.1 VDC	0mA	2400mA	85mVp-p	20mA	307mA	87	2000µF
FKC12-48S12W	18 – 75 VDC	12 VDC	0mA	1000mA	85mVp-p	6mA	302mA	87	430µF
FKC12-48S15W	18 – 75 VDC	15 VDC	0mA	800mA	85mVp-p	6mA	298mA	88	300µF
FKC12-48D05W	18 – 75 VDC	± 5 VDC	0mA	± 1200mA	85mVp-p	7mA	309mA	85	± 1250µF
FKC12-48D12W	18 – 75 VDC	± 12 VDC	0mA	± 500mA	85mVp-p	7mA	301mA	87	± 200µF
FKC12-48D15W	18 – 75 VDC	± 15 VDC	0mA	± 400mA	85mVp-p	7mA	301mA	87	± 120µF

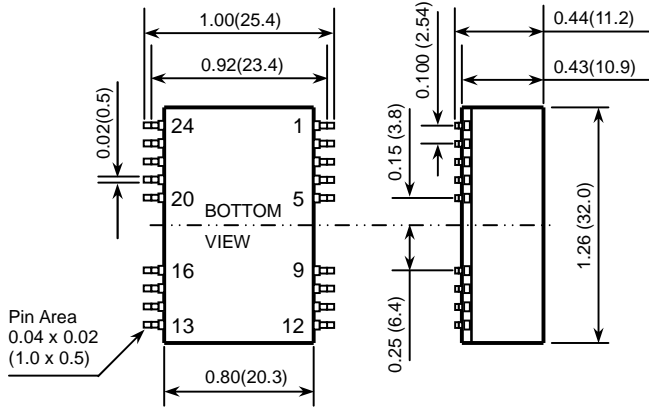
Note

- 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 externa 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, 220µF/100V, ESR 48mΩ.





Suffix-SMD



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)

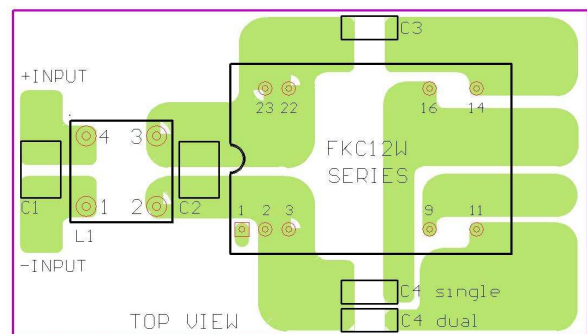
Recommended Filter for EN55022 Class B Compliance

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

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