



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	±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)	3.3VDC output	3.9VDC	
	5.1VDC output	6.2VDC	
	12VDC output	15VDC	
	15VDC output	18VDC	
Over load protection	% of FL at nominal input	150%	
Short circuit protection	Continuous, automatics recovery		
GENERAL SPECIFICATIONS			
Efficiency	See table		
Isolation voltage	Input to Output	1600VDC, min.	1minute
	Input(Output) to Case DIP	1600VDC, min.	1minute
	SMD	1600VDC, min.	1minute
Isolation resistance	10 ⁹ ohms, min.		
Isolation capacitance	1500pF, max.		
Switching frequency	400KHz±10%		
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	24VDC nominal input	9 ~ 36VDC	
	48VDC nominal input	18 ~ 75VDC	
Input filter	Pi type		
Input surge voltage	24VDC input	50VDC	100mS, max
	48VDC input	100VDC	100mS, max
Input reflected ripple current	20mA _{p-p}		
Start up time	Nominal input and constant resistive load	Power up	450mS
Start-up voltage	24VDC input	9VDC	
	48VDC input	18VDC	
Shutdown voltage	24VDC input	8VDC	
	48VDC input	16VDC	
Remote ON/OFF (Note 5) (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 input	-0.5mA ~ 0.5mA	
Remote off state input current	Nominal input	2.5mA	
ENVIRONMENTAL SPECIFICATIONS			
Operating ambient temperature	Vo:5.1V,12V,15V, ±12V,±15V	-40°C ~ +69°C (without derating)	
		+69°C ~ +105°C (with derating)	
	Vo:3.3V,±5V	-40°C ~ +61°C (without derating)	
		+61°C ~ +105°C (with derating)	
Maximum case temperature	105°C		
Storage temperature range	-55°C ~ +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 6)	EN55022	Class A	
ESD	EN61000-4-2	Air Contact ± 8KV ± 6KV	Perf. Criteria A
Radiated immunity	EN61000-4-3	10 V/m	Perf. Criteria A
Fast transient (Note 7)	EN61000-4-4	± 2KV	Perf. Criteria A
Surge (Note 7)	EN61000-4-5	± 1KV	Perf. Criteria A
Conducted immunity	EN61000-4-6	10 Vr.m.s	Perf. Criteria A

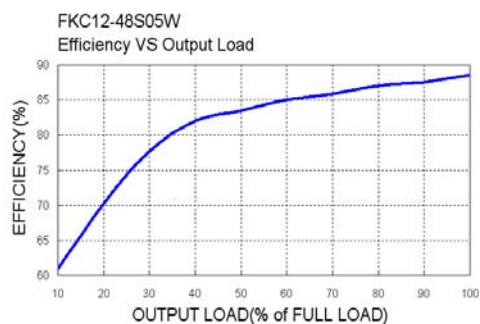
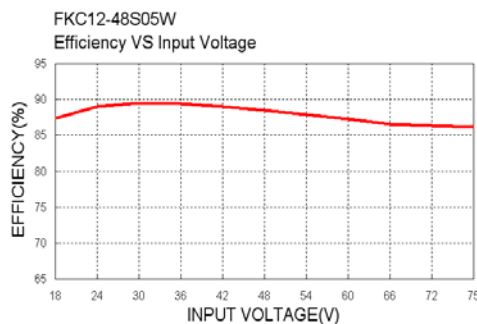
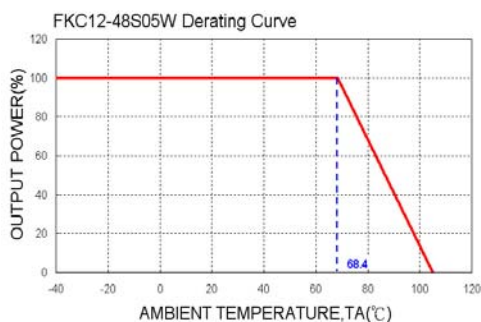


Model Number	Input Range	Output Voltage	Output Current		Output Ripple & Noise	No load ⁽²⁾ Input Current	Eff ⁽³⁾ (%)	Capacitor ⁽⁴⁾ Load max
			Min. Load	Max. Load				
FKC12-24S3P3W	9 ~ 36 VDC	3.3 VDC	0mA	3500mA	85mVp-p	55mA	84	2000μF
FKC12-24S05W	9 ~ 36 VDC	5.1 VDC	0mA	2400mA	85mVp-p	55mA	87	2000μF
FKC12-24S12W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

Note

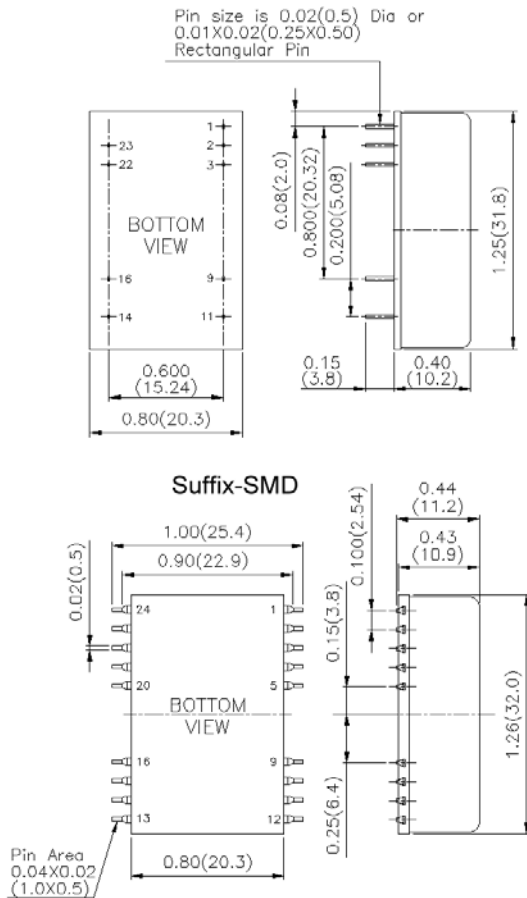
- BELLCORE TR-NWT-000332. Case 1: 50% Stress, Temperature at 40°C.
MIL-HDBK-217F Notice2 @Ta=25 °C, Full load (Ground, Benign, controlled environment)
- Typical value at nominal input voltage and no load.
- Typical value at nominal input voltage and full load.
- Test by minimum input and constant resistive load.
- The ON/OFF control pin voltage is referenced to -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 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.

CAUTION: This power module is not internally fused. An input line fuse must always be used.





Mechanical Drawing:



1. All dimensions in Inch (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)

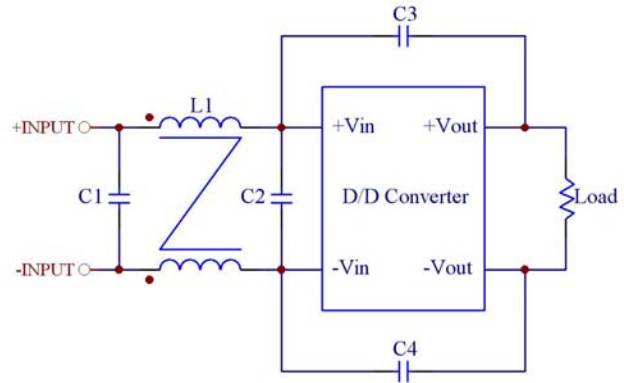
DIP PIN CONNECTION

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

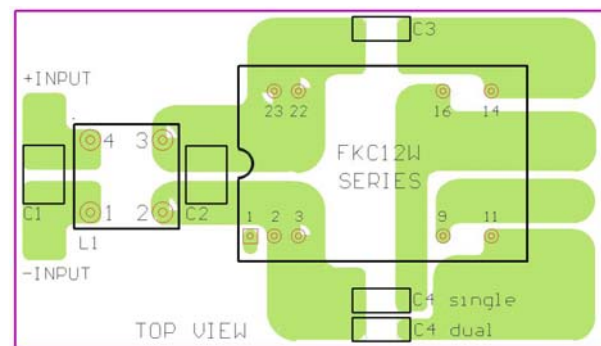
Recommended EMI Filter:



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



Recommended EN55022 Class B Filter Circuit Layout

