



APPLICATIONS

Wireless Network
Telecom/Datacom
Industry Control System
Measurement Equipment
Semiconductor Equipment

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%
- 2:1 WIDE INPUT VOLTAGE RANGE
- FIVE-SIDED CONTINUOUS SHIELD
- FIXED SWITCHING FREQUENCY (400kHz)
- STANDARD 24 PIN DIP PACKAGE
- I/O ISOLATION 1600 VDC
- CE MARK MEETS 2006/95/EC, 2011/95/EC AND 2004/108/EC
- SAFETY MEETS UL60950-1, EN60950-1 AND IEC60950-1
- ISO9001 CERTIFIED MANUFACTURING FACILITIES
- COMPLIANT TO RoHS EU DIRECTIVE 2011/65/EU

OPTIONS

SMD TYPE

DESCRIPTION

The FKC12 series offer 12 watts of output power from a package in an IC compatible 24pin DIP configuration. FKC12 series have 2:1 wide input voltage of 9-18, 18-36 and 36-75VDC. The FKC12 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	Single Dual	± 0.2% ± 0.5%
Load regulation	No Load to Full Load	Single (DIP)	± 0.5%
		Single (SMD)	± 1%
		Dual (SMD,DIP)	± 1%
		(2.5Vo only)	± 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 Zener diode clamp (only single)	2.5VDC output		3.9VDC
	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 Input(Output) to Case	DIP SMD	1600VDC, min. 1minute 1600VDC, min. 1minute 1000VDC, min. 1minute
Isolation resistance	500VDC	10 ⁹ ohms, min.	
Isolation capacitance	1200pF, max.		
Switching frequency		400kHz±10%	
Design meet safety 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		2.750 x 10 ⁶ hrs
	TR-NWT-000332		7.575 x 10 ⁵ hrs
	MIL-HDBK-217F		

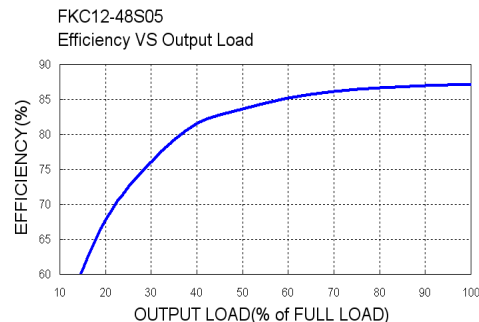
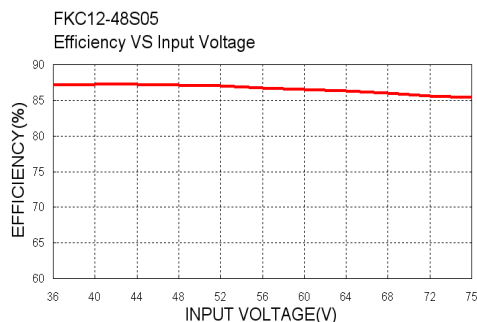
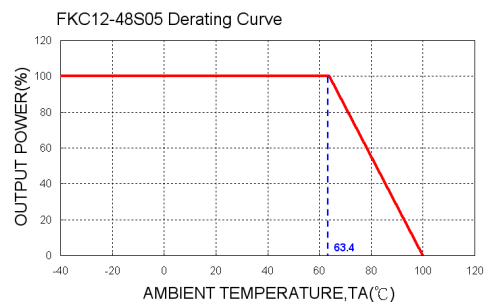
INPUT SPECIFICATIONS			
Input voltage range	12VDC nominal input	9 ~ 18VDC	
	24VDC nominal input	18 ~ 36VDC	
	48VDC nominal input	36 ~ 75VDC	
Input filter		Pi type	
Input surge voltage	12VDC input	36VDC	100ms, max.
	24VDC input	50VDC	100ms, max.
	48VDC input	100VDC	100ms, max.
Input reflected ripple current			20mA _{p-p}
Start up time	Nominal input and constant resistive load	Power up	450ms
Start-up voltage	12VDC input	9VDC	
	24VDC input	18VDC	
	48VDC input	36VDC	
Shutdown voltage	12VDC input	8VDC	
	24VDC input	16VDC	
	48VDC input	33VDC	
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		-40°C ~ +85°C (with derating)	
Maximum case temperature		100°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, Class B
ESD	EN61000-4-2	Air	± 8kV
		Contact	± 6kV
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	Full load				
FKC12-12S2P5	9 ~ 18 VDC	2.5 VDC	0mA	3500mA	85mVp-p	50mA	82	2000μF
FKC12-12S3P3	9 ~ 18 VDC	3.3 VDC	0mA	3500mA	85mVp-p	60mA	84	2000μF
FKC12-12S05	9 ~ 18 VDC	5.1 VDC	0mA	2400mA	85mVp-p	53mA	86	2000μF
FKC12-12S12	9 ~ 18 VDC	12 VDC	0mA	1000mA	85mVp-p	15mA	86	430μF
FKC12-12S15	9 ~ 18 VDC	15 VDC	0mA	800mA	85mVp-p	17mA	86	300μF
FKC12-12D05	9 ~ 18 VDC	± 5 VDC	0mA	± 1200mA	85mVp-p	24mA	82	± 1250μF
FKC12-12D12	9 ~ 18 VDC	± 12 VDC	0mA	± 500mA	85mVp-p	19mA	87	± 200μF
FKC12-12D15	9 ~ 18 VDC	± 15 VDC	0mA	± 400mA	85mVp-p	24mA	87	± 120μF
FKC12-24S2P5	18 ~ 36 VDC	2.5 VDC	0mA	3500mA	85mVp-p	36mA	83	2000μF
FKC12-24S3P3	18 ~ 36 VDC	3.3 VDC	0mA	3500mA	85mVp-p	36mA	85	2000μF
FKC12-24S05	18 ~ 36 VDC	5.1 VDC	0mA	2400mA	85mVp-p	35mA	87	2000μF
FKC12-24S12	18 ~ 36 VDC	12 VDC	0mA	1000mA	85mVp-p	16mA	87	430μF
FKC12-24S15	18 ~ 36 VDC	15 VDC	0mA	800mA	85mVp-p	17mA	87	300μF
FKC12-24D05	18 ~ 36 VDC	± 5 VDC	0mA	± 1200mA	85mVp-p	15mA	83	± 1250μF
FKC12-24D12	18 ~ 36 VDC	± 12 VDC	0mA	± 500mA	85mVp-p	15mA	88	± 200μF
FKC12-24D15	18 ~ 36 VDC	± 15 VDC	0mA	± 400mA	85mVp-p	18mA	88	± 120μF
FKC12-48S2P5	36 ~ 75 VDC	2.5 VDC	0mA	3500mA	85mVp-p	10mA	83	2000μF
FKC12-48S3P3	36 ~ 75 VDC	3.3 VDC	0mA	3500mA	85mVp-p	14mA	85	2000μF
FKC12-48S05	36 ~ 75 VDC	5.1 VDC	0mA	2400mA	85mVp-p	23mA	87	2000μF
FKC12-48S12	36 ~ 75 VDC	12 VDC	0mA	1000mA	85mVp-p	11mA	87	430μF
FKC12-48S15	36 ~ 75 VDC	15 VDC	0mA	800mA	85mVp-p	5mA	87	300μF
FKC12-48D05	36 ~ 75 VDC	± 5 VDC	0mA	± 1200mA	85mVp-p	6mA	83	± 1250μF
FKC12-48D12	36 ~ 75 VDC	± 12 VDC	0mA	± 500mA	85mVp-p	6mA	88	± 200μF
FKC12-48D15	36 ~ 75 VDC	± 15 VDC	0mA	± 400mA	85mVp-p	6mA	88	± 120μF

NOTE:

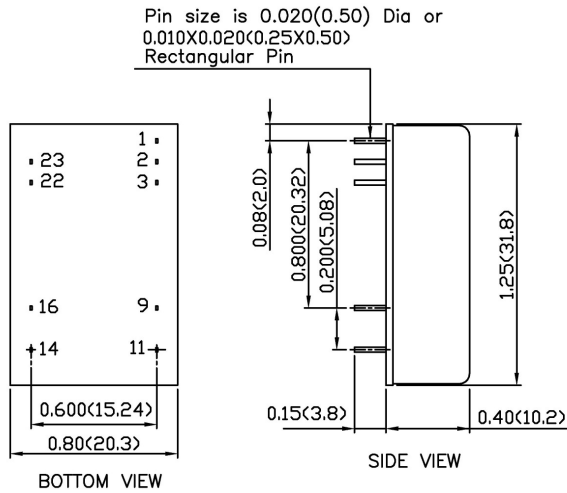
1. BELLCORE TR-NWT-000332. Case 1: 50% Stress, Temperature at 40°C.
MIL-HDBK-217F Notice2 @Ta=25 °C, Full load(Ground, Benign, controlled environment).
2. Typical value at nominal input voltage and no load.
3. Typical value at nominal input voltage and full load.
4. Test by minimum input and constant resistive load.
5. The ON/OFF control pin voltage is referenced to -INPUT.
6. The FKC12 series standard module meets EN55022 Class A and Class B with external components.
For more detail information, please contact with P-DUKE.
7. 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.

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

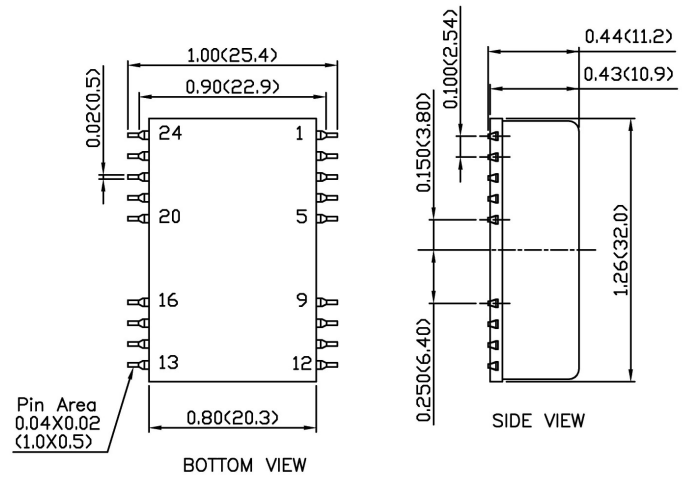


MECHANICAL DRAWING :

DIP TYPE



SMD TYPE



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			