PFKC05 SERIES

5 WATTS DC-DC CONVERTER

FEATURES

- **5 WATTS REGULATED OUTPUT POWER**
- **OUTPUT CURRENT UP TO 1000mA**
- **STANDARD 1.25 X 0.80 X 0.40 INCH**
- **HIGH EFFICIENCY UP TO 81%**
- **2:1 WIDE INPUT VOLTAGE RANGE**
- **SWITCHING FREQUENCY (100kHz, MIN)**
- **OVER CURRENT PROTECTION**
- **STANDARD 24 PIN DIP PACKAGE & SMD TYPE PACKAGE**
- **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**

APPLICATIONS

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

OPTIONS

SMD TYPE

DESCRIPTION

The PFKC05 series offer 5 watts of output power from a package in an IC compatible 24pin DIP configuration without derating to 71ºC ambient temperature and pin to pin compatible with PFKC03, FKC03, FKC05 series. PFKC05 series have 2:1 wide input voltage of 9 ~18, 18 ~36 and 36 ~75VDC.

TECHNICAL SPECIFICATION

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

OUTPUT SPECIFICATIONS			
Output power			5 Watts, max.
Voltage accuracy			± 1%
Minimum load (Note 7)			See table
Line regulation	LL to HL at Full Load		± 0.2%
Load regulation	Min. Load to Full Load	Single Dual	± 0.5% ± 2%
Cross regulation (Dual)	Asymmetrical load 25% / 100% FL		± 5%
Ripple and noise	20MHz bandwidth		See table
Temperature coefficient			±0.02% / ºC, max.
Transient response recovery time	25% load step change		500µs
Over load protection	% of FL at nominal input		180%
Short circuit protection			Continuous, automatics recovery

GENERAL SPECIFICATIONS			
Efficiency			See table
Isolation voltage	Input to Output	Standard Suffix " H "	1600VDC, min. 1minute 3000VDC, min. 1minute
Isolation resistance	500VDC		10^9 ohms, min.
Isolation capacitance			300pF, max.
Switching frequency			100kHz, min.
Design meet safety standard			IEC60950-1, UL60950-1, EN60950-1
Case material			Non-conductive black plastic
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	DIP SMD		14g (0.48oz) 15g (0.52oz)
MTBF (Note 1)	BELLCORE TR-NWT-000332 MIL-HDBK-217F		3.731×10^6 hrs 2.591×10^6 hrs

INPUT SPECIFICATIONS			
Input voltage range	12VDC nominal input 24VDC nominal input 48VDC nominal input		9 ~ 18VDC 18 ~ 36VDC 36 ~75VDC
Input filter			Pi type
Input surge voltage	12VDC input 24VDC input 48VDC input		36VDC 100ms, max. 50VDC 100ms, max. 100VDC 100ms, max.
Input reflected ripple current			150mAp-p
Start up time	Nominal input and constant resistive load	Power up	30ms

ENVIRONMENTAL SPECIFICATIONS	
Operating ambient temperature	-25ºC ~ +71ºC(non derating)
Storage temperature range	-55ºC ~ +125ºC
Thermal shock	MIL-STD-810F
Vibration	MIL-STD-810F
Relative humidity	5% to 95% RH

EMC CHARACTERISTICS				
EMI	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 6)	EN61000-4-4		± 2kV	Perf. Criteria B
Surge (Note 6)	EN61000-4-5		± 1kV	Perf. Criteria B
Conducted immunity	EN61000-4-6		10 Vr.m.s	Perf. Criteria A

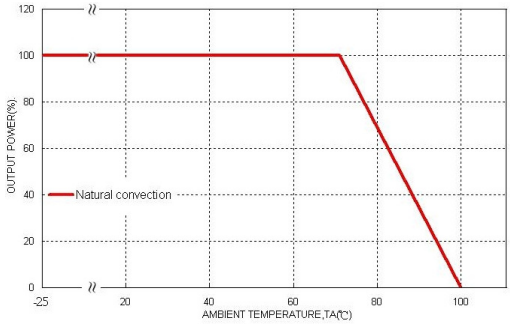
Model Number	Input Range	Output Voltage	Output Current		Output[2] Ripple & Noise	No load[3] Input Current	Eff [4] (%)	Capacitor[5] Load max
			Min. load	Full load				
PFKC05-12S33	9 ~18 VDC	3.3 VDC	100mA	1000mA	75mVp-p	25mA	72	2200μF
PFKC05-12S05	9 ~18 VDC	5 VDC	100mA	1000mA	75mVp-p	10mA	76	1000μF
PFKC05-12S12	9 ~18 VDC	12 VDC	47mA	470mA	120mVp-p	30mA	80	220μF
PFKC05-12S15	9 ~18 VDC	15 VDC	40mA	400mA	150mVp-p	20mA	80	150μF
PFKC05-12D05	9 ~18 VDC	± 5 VDC	±50mA	± 500mA	75mVp-p	20mA	77	± 680μF
PFKC05-12D12	9 ~18 VDC	± 12 VDC	±20mA	± 230mA	120mVp-p	50mA	80	± 100μF
PFKC05-12D15	9 ~18 VDC	± 15 VDC	±19mA	± 190mA	150mVp-p	30mA	80	± 68μF
PFKC05-24S33	18 ~ 36 VDC	3.3 VDC	100mA	1000mA	75mVp-p	15mA	72	2200μF
PFKC05-24S05	18 ~ 36 VDC	5 VDC	100mA	1000mA	75mVp-p	10mA	79	1000μF
PFKC05-24S12	18 ~36 VDC	12 VDC	47mA	470mA	120mVp-p	10mA	81	220μF
PFKC05-24S15	18 ~ 36 VDC	15 VDC	40mA	400mA	150mVp-p	10mA	81	150μF
PFKC05-24D05	18 ~ 36 VDC	± 5 VDC	±50mA	± 500mA	75mVp-p	10mA	78	± 680μF
PFKC05-24D12	18 ~ 36 VDC	± 12 VDC	±23mA	± 230mA	120mVp-p	40mA	81	± 100μF
PFKC05-24D15	18 ~ 36 VDC	± 15 VDC	±19mA	± 190mA	150mVp-p	10mA	81	± 68μF
PFKC05-48S33	36 ~ 75 VDC	3.3 VDC	100mA	1000mA	75mVp-p	5mA	73	2200μF
PFKC05-48S05	36 ~ 75 VDC	5 VDC	100mA	1000mA	75mVp-p	5mA	78	1000μF
PFKC05-48S12	36 ~ 75 VDC	12 VDC	47mA	470mA	120mVp-p	5mA	81	220μF
PFKC05-48S15	36 ~ 75 VDC	15 VDC	40mA	400mA	150mVp-p	5mA	81	150μF
PFKC05-48D05	36 ~ 75 VDC	± 5 VDC	±50mA	± 500mA	75mVp-p	10mA	77	± 680μF
PFKC05-48D12	36 ~ 75 VDC	± 12 VDC	±23mA	± 230mA	120mVp-p	10mA	81	± 100μF
PFKC05-48D15	36 ~75 VDC	± 15 VDC	±19mA	± 190mA	150mVp-p	10mA	81	± 68μF

Note

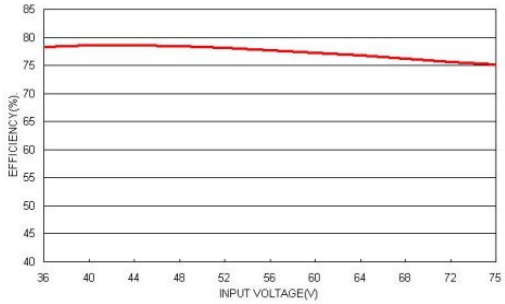
1. BELLCORE TR-NWT-000332. Case 1: 50% Stress, Temperature at 40ºC.
   MIL-HDBK-217F Notice2 @Ta=25 ºC, Full load(Ground, Benign, controlled environment).
2. Typical value at nominal input and full load. (20MHz BW.)
3. Typical value at nominal input and no load.
4. Typical value at nominal input and full load.
5. Test by minimum input and constant resistive load.
6. 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.
7. The output requires a minimum 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.

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

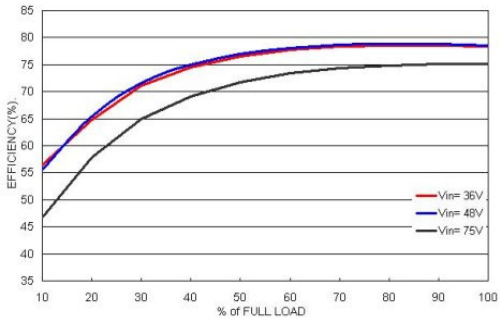
PFKC05-48S05 Derating Curve



PFKC05-48S05 Efficiency VS Input Voltage

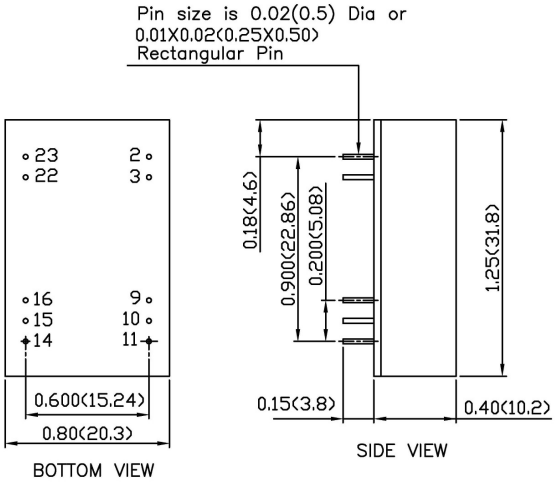


PFKC05-48S05 Efficiency VS Output Current

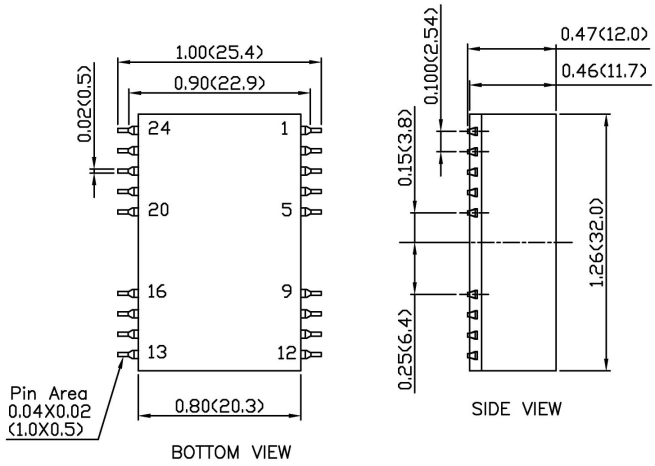


MECHANICAL DRAWING :

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
2	-INPUT	-INPUT	23	+INPUT	+INPUT
3	-INPUT	-INPUT	22	+INPUT	+INPUT
9	NC	COMMON	16	-OUTPUT	COMMON
10	NC	NC	15	NC	NC
11	NC	-OUTPUT	14	+OUTPUT	+OUTPUT

SMD PIN CONNECTION					
PIN	SINGLE	DUAL	PIN	SINGLE	DUAL
2	-INPUT	-INPUT	23	+INPUT	+INPUT
3	-INPUT	-INPUT	22	+INPUT	+INPUT
9	NC	COMMON	16	-OUTPUT	COMMON
10	NC	NC	15	NC	NCZ
11	NC	-OUTPUT	14	+OUTPUT	+OUTPUT
Others	NC	NC			