POWER MATE TECHNOLOGY CO., LTD.

PFKC03 SERIES

3 WATTS DC-DC CONVERTER

FEATURES

- **3 WATTS REGULATED OUTPUT POWER**
- **OUTPUT CURRENT UP TO 600mA**
- **STANDARD 1.25 X 0.80 X 0.40 INCH**
- **HIGH EFFICIENCY UP TO 80%**
- **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 PFKC03 series offer 3 watts of output power from a package in an IC compatible 24 pin DIP configuration without derating to 71ºC ambient temperature and pin to pin compatible to PFKC05, FKC03, FKC05 series. PFKC03 series have 2:1 wide input voltage of 4.5~6, 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			3 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 3.3Vout	± 0.3%
		Others	± 0.2%
		Dual	± 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	1600VDC, min. 1minute
		Suffix " H "	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		14g (0.48oz)
	SMD		15g (0.52oz)
MTBF (Note 1)	BELLCORE TR-NWT-000332		3.690 x 10^6 hrs
	MIL-HDBK-217F		3.082 x 10^6 hrs

INPUT SPECIFICATIONS

Input voltage range	5VDC nominal input	4.5 ~ 6VDC
	12VDC nominal input	9 ~ 18VDC
	24VDC nominal input	18 ~ 36VDC
	48VDC nominal input	36 ~75VDC
Input filter		Pi type
Input surge voltage	5VDC input	18VDC 100ms, max.
	12VDC input	36VDC 100ms, max.
	24VDC input	50VDC 100ms, max.
	48VDC input	100VDC 100ms, max.
Input reflected ripple current		120mAp-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	± 8kV	Perf. Criteria A
		Contact	± 6kV	
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

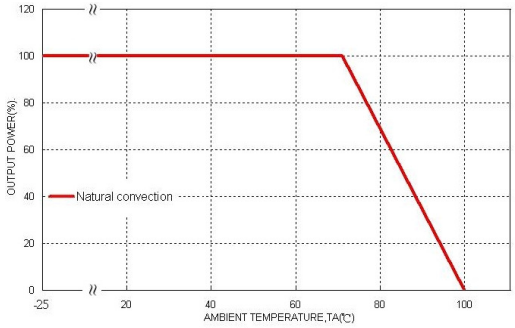
Model Number	Input Range	Output Voltage	Output Current		Output[2] Ripple & Noise	No load[3] Input Current	Eff[4] (%)	Capacitor[5] Load max
			Min. load	Full load				
PFKC03-05S33	4.5 ~ 6 VDC	3.3 VDC	60mA	600mA	75mVp-p	20mA	66	2200μF
PFKC03-05S05	4.5 ~ 6 VDC	5 VDC	60mA	600mA	75mVp-p	20mA	70	1000μF
PFKC03-05S12	4.5 ~ 6 VDC	12 VDC	25mA	250mA	120mVp-p	35mA	76	170μF
PFKC03-05S15	4.5 ~ 6 VDC	15 VDC	20mA	200mA	150mVp-p	35mA	75	110μF
PFKC03-05D05	4.5 ~ 6 VDC	± 5 VDC	±30mA	± 300mA	75mVp-p	20mA	74	± 500μF
PFKC03-05D12	4.5 ~ 6 VDC	± 12 VDC	±12mA	± 125mA	120mVp-p	25mA	75	± 96μF
PFKC03-05D15	4.5 ~ 6 VDC	± 15 VDC	±10mA	± 100mA	150mVp-p	55mA	73	± 47μF
PFKC03-12S33	9 ~ 18 VDC	3.3 VDC	60mA	600mA	75mVp-p	10mA	70	2200μF
PFKC03-12S05	9 ~ 18 VDC	5 VDC	60mA	600mA	75mVp-p	10mA	75	1000μF
PFKC03-12S12	9 ~ 18 VDC	12 VDC	25mA	250mA	120mVp-p	15mA	79	170μF
PFKC03-12S15	9 ~ 18 VDC	15 VDC	20mA	200mA	150mVp-p	15mA	77	110μF
PFKC03-12D05	9 ~ 18 VDC	± 5 VDC	±30mA	± 300mA	75mVp-p	15mA	76	± 500μF
PFKC03-12D12	9 ~ 18 VDC	± 12 VDC	±12mA	± 125mA	120mVp-p	20mA	78	± 96μF
PFKC03-12D15	9 ~ 18 VDC	± 15 VDC	±10mA	± 100mA	150mVp-p	25mA	79	± 47μF
PFKC03-24S33	18 ~ 36 VDC	3.3 VDC	60mA	600mA	75mVp-p	10mA	71	2200μF
PFKC03-24S05	18 ~ 36 VDC	5 VDC	60mA	600mA	75mVp-p	10mA	76	1000μF
PFKC03-24S12	18 ~ 36 VDC	12 VDC	25mA	250mA	120mVp-p	10mA	80	170μF
PFKC03-24S15	18 ~ 36 VDC	15 VDC	20mA	200mA	150mVp-p	10mA	80	110μF
PFKC03-24D05	18 ~ 36 VDC	± 5 VDC	±30mA	± 300mA	75mVp-p	10mA	77	± 500μF
PFKC03-24D12	18 ~ 36 VDC	± 12 VDC	±12mA	± 125mA	120mVp-p	10mA	79	± 96μF
PFKC03-24D15	18 ~ 36 VDC	± 15 VDC	±10mA	± 100mA	150mVp-p	10mA	79	± 47μF
PFKC03-48S33	36 ~ 75 VDC	3.3 VDC	60mA	600mA	75mVp-p	5mA	72	2200μF
PFKC03-48S05	36 ~ 75 VDC	5 VDC	60mA	600mA	75mVp-p	5mA	75	1000μF
PFKC03-48S12	36 ~75 VDC	12 VDC	25mA	250mA	120mVp-p	5mA	79	170μF
PFKC03-48S15	36 ~ 75 VDC	15 VDC	20mA	200mA	150mVp-p	5mA	79	110μF
PFKC03-48D05	36 ~ 75 VDC	± 5 VDC	±30mA	± 300mA	75mVp-p	5mA	77	± 500μF
PFKC03-48D12	36 ~ 75 VDC	± 12 VDC	±12mA	± 125mA	120mVp-p	5mA	79	± 96μF
PFKC03-48D15	36 ~ 75 VDC	± 15 VDC	±10mA	± 100mA	150mVp-p	5mA	79	± 47μF

Note

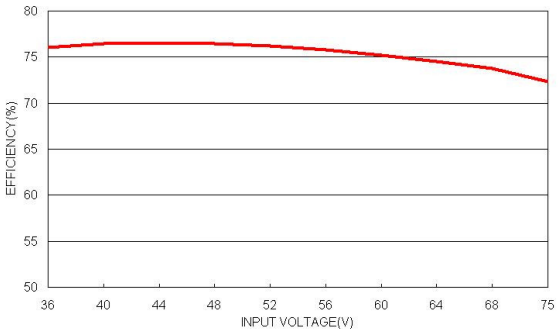
1. BELLCORE TR-NWT-000332. Case 1: 50% Stress, Temperature at 40ºC.
   MIL-HDBK-217F Notice2 @Ta=25 ºC, Full load(Ground, Benign, controlled environment).
2. Typical value at nominal input and full load. (20MHz BW.)
3. Typical value at nominal input and no load.
4. Typical value at nominal input and 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.

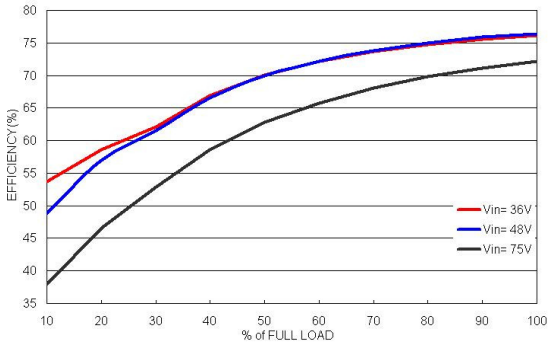
PFKC03-48S05 Derating Curve



PFKC03-48S05 Efficiency VS Input Voltag

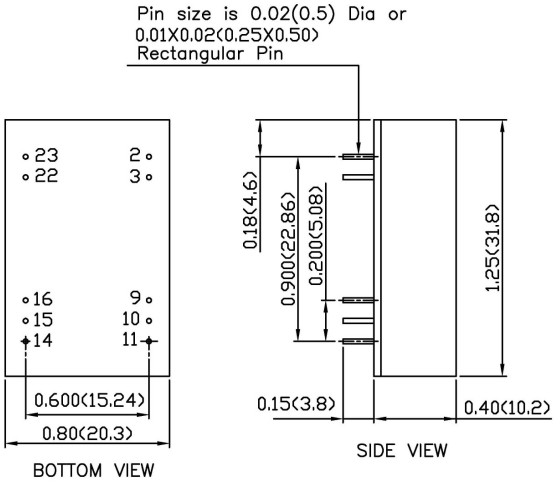


PFKC03-48S05 Efficiency VS Output Current

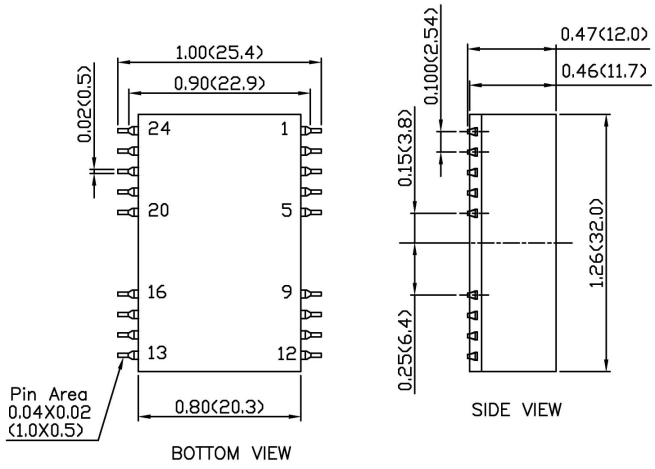


MECHANICAL DRAWING :

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			