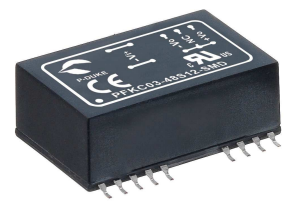
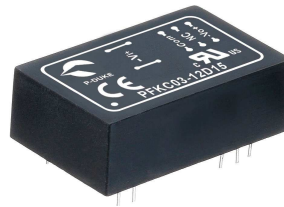


# PFKC03 SERIES

DC-DC CONVERTER

2:1 WIDE INPUT RANGE  
UP TO 3Watts



## FEATURES

- 1600VDC INPUT TO OUTPUT ISOLATION AND 3000VDC FOR OPTION
- STANDARD 1.25 X 0.80 X 0.40 INCH
- STANDARD 24 PIN DIP PACKAGE & SMD TYPE PACKAGE
- UL60950-1, EN60950-1, & IEC60950-1 SAFETY APPROVALS
- CE MARKED
- COMPLIANT TO RoHS II & REACH

## APPLICATIONS

- WIRELESS NETWORK
- TELECOM/DATACOM
- INDUSTRY CONTROL SYSTEM
- DISTRIBUTED POWER ARCHITECTURES
- SEMICONDUCTOR EQUIPMENT

**3000VDC ISOLATION**    **1600VDC ISOLATION**    **SCP**

## TECHNICAL SPECIFICATION

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

Model Number	Input Range VDC	Output Voltage VDC	Output Current @ Full Load		Input Current @ No Load mA	Efficiency %	Maximum Capacitor Load (2) µF
			Min. Load (1) mA	Full Load mA			
PFKC03-05S33	4.5 ~ 6	3.3	60	600	20	66	2200
PFKC03-05S05	4.5 ~ 6	5	60	600	20	70	1000
PFKC03-05S12	4.5 ~ 6	12	25	250	35	76	170
PFKC03-05S15	4.5 ~ 6	15	20	200	35	75	110
PFKC03-05D05	4.5 ~ 6	±5	±30	± 300	20	74	± 500
PFKC03-05D12	4.5 ~ 6	±12	±12	± 125	25	75	± 96
PFKC03-05D15	4.5 ~ 6	±15	±10	± 100	55	73	± 47
PFKC03-12S33	9 ~ 18	3.3	60	600	10	70	2200
PFKC03-12S05	9 ~ 18	5	60	600	10	75	1000
PFKC03-12S12	9 ~ 18	12	25	250	15	79	170
PFKC03-12S15	9 ~ 18	15	20	200	15	77	110
PFKC03-12D05	9 ~ 18	±5	±30	± 300	15	76	± 500
PFKC03-12D12	9 ~ 18	±12	±12	± 125	20	78	± 96
PFKC03-12D15	9 ~ 18	±15	±10	± 100	25	79	± 47
PFKC03-24S33	18 ~ 36	3.3	60	600	10	71	2200
PFKC03-24S05	18 ~ 36	5	60	600	10	76	1000
PFKC03-24S12	18 ~ 36	12	25	250	10	80	170
PFKC03-24S15	18 ~ 36	15	20	200	10	80	110
PFKC03-24D05	18 ~ 36	±5	±30	± 300	10	77	± 500
PFKC03-24D12	18 ~ 36	±12	±12	± 125	10	79	± 96
PFKC03-24D15	18 ~ 36	±15	±10	± 100	10	79	± 47
PFKC03-48S33	36 ~ 75	3.3	60	600	5	72	2200
PFKC03-48S05	36 ~ 75	5	60	600	5	75	1000
PFKC03-48S12	36 ~ 75	12	25	250	5	79	170
PFKC03-48S15	36 ~ 75	15	20	200	5	79	110
PFKC03-48D05	36 ~ 75	±5	±30	± 300	5	77	± 500
PFKC03-48D12	36 ~ 75	±12	±12	± 125	5	79	± 96
PFKC03-48D15	36 ~ 75	±15	±10	± 100	5	79	± 47

## PART NUMBER STRUCTURE

PFKC03 - 48 S 05 H - SMD

Series Name	Input Voltage (VDC)	Output Quantity	Output Voltage (VDC)	Isolation Voltage (VDC)	Package
	05: 4.5~6 12: 9~18 24: 18~36 48: 36~75	S: Single  D: Dual	33: 3.3 05: 5 12: 12 15: 15 05: ±5 12: ±12 15: ±15	□: 1600 H: 3000	□: DIP Type SMD: SMD Type

## INPUT SPECIFICATIONS

Parameter	Conditions		Min.	Typ.	Max.	Unit
Operating input voltage range	5Vin(nom)		4.5	5	6	VDC
	12Vin(nom)		9	12	18	
	24Vin(nom)		18	24	36	
	48Vin(nom)		36	48	75	
Input reflected ripple current	Nominal input and Full load		120			mAp-p
Start up time	Constant resistive load		Power up			30 ms
Input surge voltage	100 ms, max.		5Vin(nom)		18	VDC
			12Vin(nom)		36	
			24Vin(nom)		50	
			48Vin(nom)		100	
Input filter			Pi type			

## OUTPUT SPECIFICATIONS

Parameter	Conditions		Min.	Typ.	Max.	Unit
Voltage accuracy			-1.0		+1.0	%
Line regulation	Low Line to High Line at Full Load		-0.2		+0.2	%
Load regulation	Min. Load to Full Load	Single	-0.3		+0.3	%
		Others	-0.2		+0.2	
		Dual	-2.0		+2.0	
Cross regulation	Asymmetrical load 25%/100% FL	Dual	-5.0		+5.0	%
Ripple and noise	Measured by 20MHz bandwidth		3.3Vout, 5Vout		75	mVp-p
			12Vout		120	
			15Vout		150	
Temperature coefficient			-0.02		+0.02	%/°C
Transient response recovery time	25% load step change		500			µs
Short circuit protection			Continuous, automatic recovery			

## GENERAL SPECIFICATIONS

Parameter	Conditions		Min.	Typ.	Max.	Unit
Isolation voltage	1 minute	Input to Output	1600			VDC
		Standard Suffix "H"	3000			
Isolation resistance	500VDC		1			GΩ
Isolation capacitance			300			pF
Switching frequency			100			kHz
Safety approvals			UL60950-1 EN60950-1 IEC60950-1			
Case material			Non-conductive black plastic			
Base material			Non-conductive black plastic			
Potting material			Epoxy (UL94 V-0)			
Weight	DIP Type		14g (0.48oz)			
	SMD Type		15g (0.52oz)			
MTBF	MIL-HDBK-217F, Full load		8.066 x 10 <sup>6</sup>			hrs

## ENVIRONMENTAL SPECIFICATIONS

Parameter	Conditions		Min.	Typ.	Max.	Unit
Operating ambient temperature	Without derating		-25		+71	°C
Storage temperature range			-55		+125	°C
Thermal shock			MIL-STD-810F			
Vibration			MIL-STD-810F			
Relative humidity			5% to 95% RH			

## EMC SPECIFICATIONS

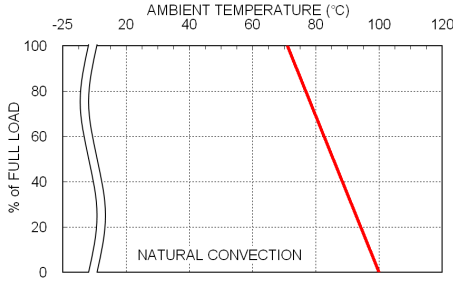
Parameter	Conditions		Level		
EMI	EN55022		Class A		
ESD	EN61000-4-2	Air ± 8kV and Contact ± 6kV	Perf. Criteria A		
Radiated immunity	EN61000-4-3	10 V/m	Perf. Criteria A		
Fast transient <sup>(3)</sup>	EN61000-4-4	± 2kV	Perf. Criteria B		
Surge <sup>(3)</sup>	EN61000-4-5	± 1kV	Perf. Criteria B		
Conducted immunity	EN61000-4-6	10 Vr.m.s	Perf. Criteria A		
Power frequency magnetic field	EN61000-4-8	100A/m continuous; 1000A/m 1 second	Perf. Criteria A		

**Note:**

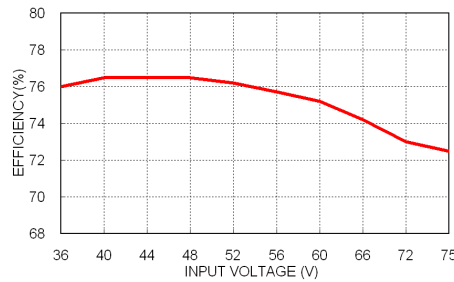
1. The output requires a minimum loading on the output to maintain specified regulation. Operation under no-load condition will not damage these devices, however they may not meet all listed specification.
2. Test by minimum input and constant resistive load.
3. An external input filter capacitor is 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.

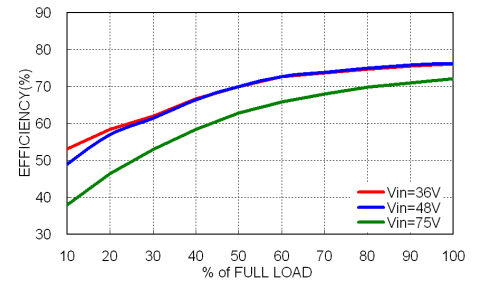
## CHARACTERISTIC CURVE



PFKC03-48S05 Derating Curve



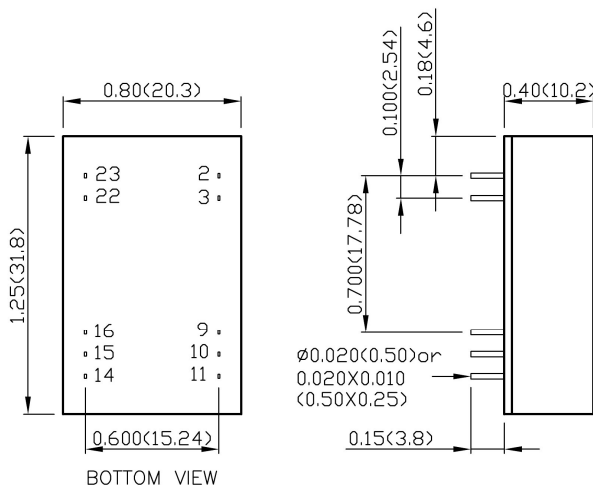
PFKC03-48S05 Efficiency vs. Input Voltage



PFKC03-48S05 Efficiency vs. Output Load

## MECHANICAL DRAWING

### DIP TYPE

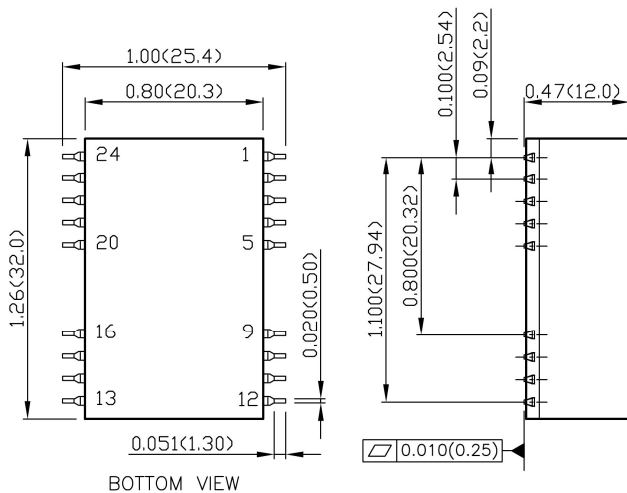


### DIP PIN CONNECTION

PIN	SINGLE	DUAL	PIN	SINGLE	DUAL
2	-Vin	-Vin	23	+Vin	+Vin
3	-Vin	-Vin	22	+Vin	+Vin
9	NC	Common	16	-Vout	Common
10	NC	NC	15	NC	NC
11	NC	-Vout	14	+Vout	+Vout

\* NC : No Connection

### SMD TYPE



### SMD PIN CONNECTION

PIN	SINGLE	DUAL	PIN	SINGLE	DUAL
2	-Vin	-Vin	23	+Vin	+Vin
3	-Vin	-Vin	22	+Vin	+Vin
9	NC	Common	16	-Vout	Common
10	NC	NC	15	NC	NC
11	NC	-Vout	14	+Vout	+Vout
Others	NC	NC			

\* NC : No Connection

1. All dimensions in inch (mm)
2. Tolerance :  $x.xx \pm 0.02$  ( $x.x \pm 0.5$ )  
 $x.xxx \pm 0.01$  ( $x.xx \pm 0.25$ )
3. Pin pitch tolerance  $\pm 0.01$  (0.25)
4. Pin dimension tolerance  $\pm 0.004$  (0.1)