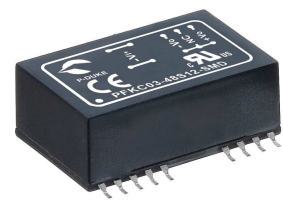
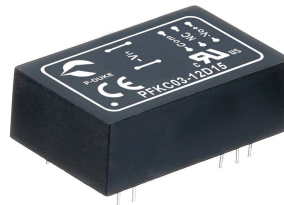


# PFKC03 SERIES

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	OCP	SCP
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## 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	3.3Vout	+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	Standard Suffix " H "	1600 3000	VDC
Isolation resistance	500VDC				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

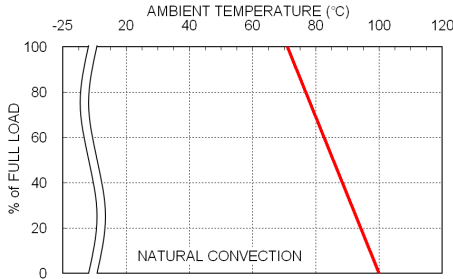
**EMC SPECIFICATIONS**

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

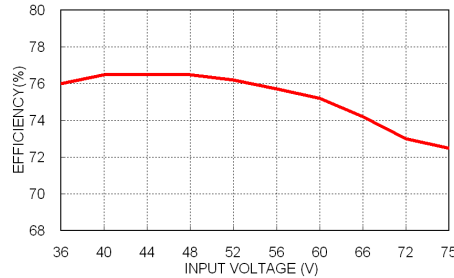
- Note:**
- The output requires a minimum loading on the output to maintain specified regulation. Operation under no-load condition will not damage these devices, however they may not meet all listed specification.
  - Test by minimum input and constant resistive load.
  - An external input filter capacitor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

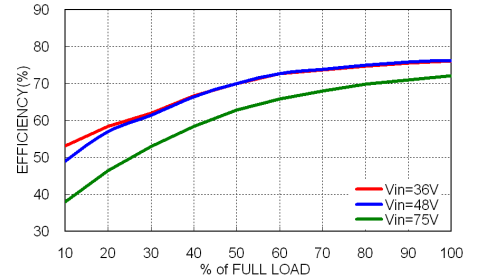
## CHARACTERISTIC CURVE



PFKC03-48S05 Derating Curve



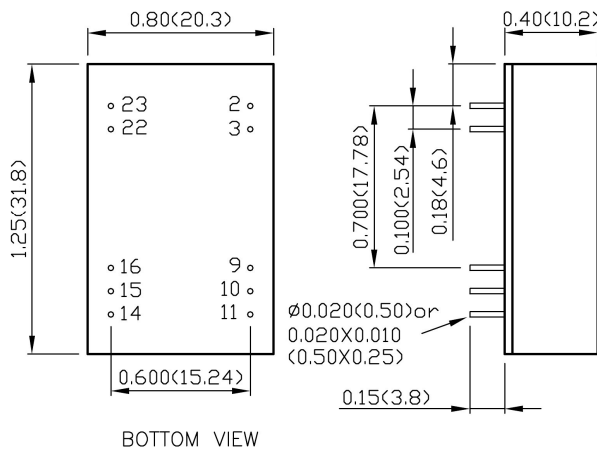
PFKC03-48S05 Efficiency vs. Input Voltage



PFKC03-48S05 Efficiency vs. Output Load

## MECHANICAL DRAWING

### DIP TYPE

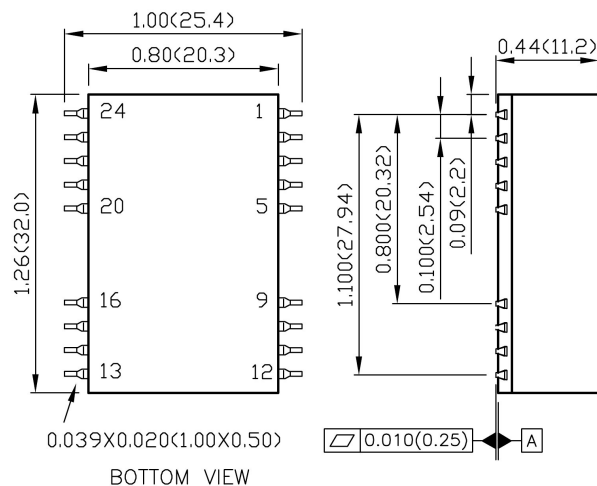


### DIP PIN CONNECTION

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

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