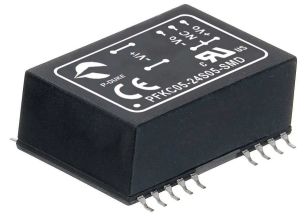
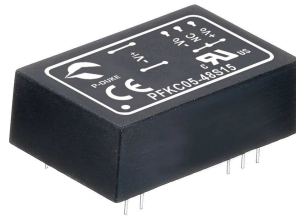


# PFKC05 SERIES

DC-DC CONVERTER

2:1 WIDE INPUT RANGE  
UP TO 5Watts



## 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			
PFKC05-12S33	9 ~ 18	3.3	100	1000	25	72	2200
PFKC05-12S05	9 ~ 18	5	100	1000	10	76	1000
PFKC05-12S12	9 ~ 18	12	47	470	30	80	220
PFKC05-12S15	9 ~ 18	15	40	400	20	80	150
PFKC05-12D05	9 ~ 18	±5	±50	± 500	20	77	± 680
PFKC05-12D12	9 ~ 18	±12	±20	± 230	50	80	± 100
PFKC05-12D15	9 ~ 18	±15	±19	± 190	30	80	± 68
PFKC05-24S33	18 ~ 36	3.3	100	1000	15	72	2200
PFKC05-24S05	18 ~ 36	5	100	1000	10	79	1000
PFKC05-24S12	18 ~ 36	12	47	470	10	81	220
PFKC05-24S15	18 ~ 36	15	40	400	10	81	150
PFKC05-24D05	18 ~ 36	±5	±50	± 500	10	78	± 680
PFKC05-24D12	18 ~ 36	±12	±23	± 230	40	81	± 100
PFKC05-24D15	18 ~ 36	±15	±19	± 190	10	81	± 68
PFKC05-48S33	36 ~ 75	3.3	100	1000	5	73	2200
PFKC05-48S05	36 ~ 75	5	100	1000	5	78	1000
PFKC05-48S12	36 ~ 75	12	47	470	5	81	220
PFKC05-48S15	36 ~ 75	15	40	400	5	81	150
PFKC05-48D05	36 ~ 75	±5	±50	± 500	10	77	± 680
PFKC05-48D12	36 ~ 75	±12	±23	± 230	10	81	± 100
PFKC05-48D15	36 ~ 75	±15	±19	± 190	10	81	± 68

## PART NUMBER STRUCTURE

PFKC05 - 48 S 05 H - SMD

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

**INPUT SPECIFICATIONS**

Parameter	Conditions	Min.	Typ.	Max.	Unit
Operating input voltage range	12Vin(nom)	9	12	18	VDC
	24Vin(nom)	18	24	36	
	48Vin(nom)	36	48	75	
Input reflected ripple current	Nominal input and Full load	150			mAp-p
Start up time	Constant resistive load	Power up			30
Input surge voltage	100 ms, max.	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		+0.5	%
		Dual		+2.0	
Cross regulation	Asymmetrical load 25%/100% FL	-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	1600			VDC
	Input to Output	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				5.953 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**

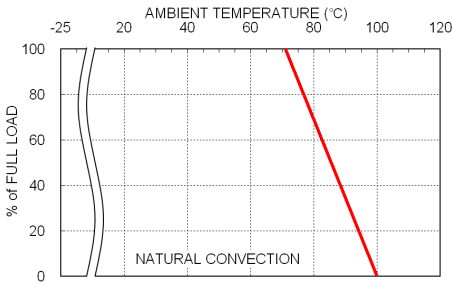
Parameter	Conditions	Level
EMI	EN55022	Class A
ESD	EN61000-4-2	Air ± 8kV and Contact ± 6kV
Radiated immunity	EN61000-4-3	10 V/m
Fast transient <sup>(3)</sup>	EN61000-4-4	± 2kV
Surge <sup>(3)</sup>	EN61000-4-5	± 1kV
Conducted immunity	EN61000-4-6	10 Vr.m.s
Power frequency magnetic field	EN61000-4-8	100A/m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

**Note:**

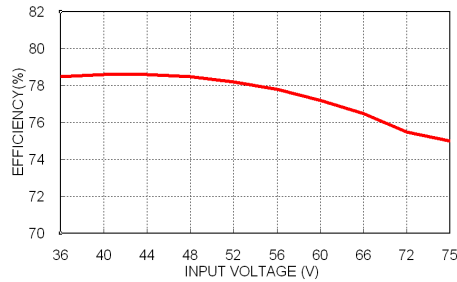
- The output requires a minimum loading on the output to maintain specified regulation. Operation under no-load condition will not damage these devices, however they may not meet all listed specification.
- Test by minimum input and constant resistive load.
- An external input filter capacitor is required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

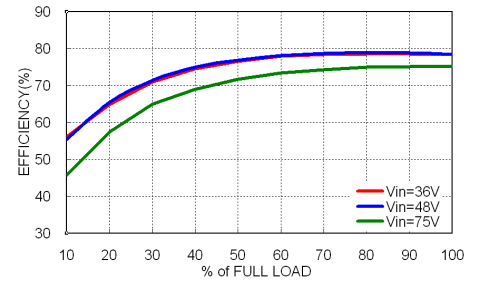
## CHARACTERISTIC CURVE



PFKC05-48S05 Derating Curve



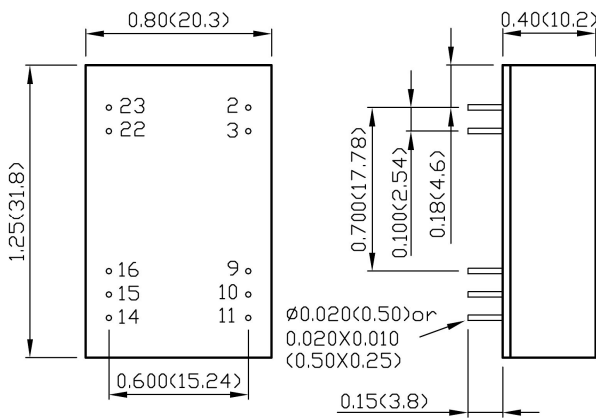
PFKC05-48S05 Efficiency vs. Input Voltage



PFKC05-48S05 Efficiency vs. Output Load

## MECHANICAL DRAWING

### DIP TYPE



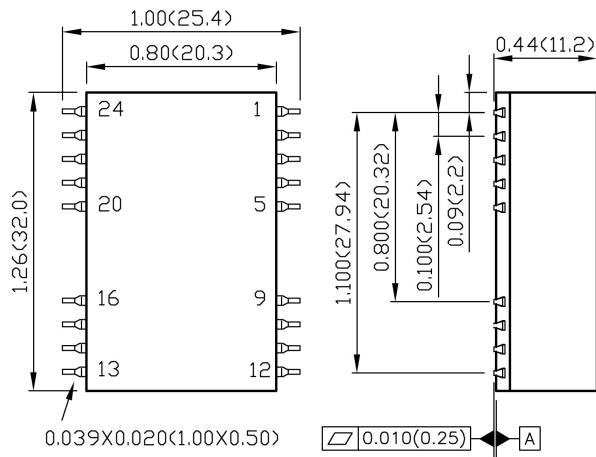
BOTTOM VIEW

### 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



BOTTOM VIEW

### 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)