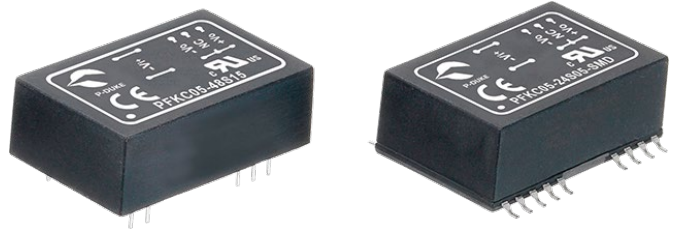


## Features

- 2:1 Wide input 9~75V DC
- Isolation Voltage: 1600V DC & 3000V -DC Depending on model
- Operating Temperature Range: -25~71°C
- Approved to cURus, UKCA, CE, RoHS, REACH
- Safety standards to IEC/EN/UL 60950-1
- Efficiency up to 81%
- EMC Class A & B Certified



Ideal Power's 43PFKC05-xyz 5W Series Dip DC/DC Converters are certified to CE, RoHS, REACH & IEC/UL/EN 60950-1 Standards and comply with Efficiency Regulations. These are primarily used in ITE, Video & Audio Industries and customised solutions are available upon request.

### Part Number Structure

PFKC05	-	48	S	05	H	-	SMD
Series Name		Output Power (VDC)	Output Quantity	Output Voltage (VDC)	Isolation Voltage (VDC)		Package
		12: 9~18 24: 18~36 48: 36~75	S: Single  D: Dual	33: 3.3 05: 5 12: 12 15: 15 05: $\pm$ 5 12: $\pm$ 12 15: $\pm$ 15	□ :1600 H: 3000		□ : DIP Type SMD: SMD Type

**Models**

Model Number	Input Range VDC	Output Voltage VDC	Output current		Input Current @ No Load A	Efficiency %	Maximum Capacitor Load $\mu$ F
			Min Load ( <sup>1</sup> ) mA	Full Load mA			
43PFKC05-12S33	9~18	3.3	100	1000	25	72	2200
43PFKC05-12S05	9~18	5	100	1000	10	76	1000
43PFKC05-12S12	9~18	12	47	470	30	80	220
43PFKC05-12S15	9~18	15	40	400	20	80	150
43PFKC05-12D05	9~18	$\pm$ 5	$\pm$ 50	$\pm$ 500	20	77	$\pm$ 680
43PFKC05-12D12	9~18	$\pm$ 12	$\pm$ 20	$\pm$ 200	50	80	$\pm$ 100
43PFKC05-12D15	9~18	$\pm$ 15	$\pm$ 19	$\pm$ 190	30	80	$\pm$ 68
43PFKC05-24S33	18~36	3.3	100	1000	15	72	2200
43PFKC05-24S05	18~36	5	100	1000	10	79	1000
43PFKC05-24S12	18~36	12	47	470	10	81	220
43PFKC05-24S15	18~36	15	40	400	10	81	150
43PFKC05-24D05	18~36	$\pm$ 5	$\pm$ 50	$\pm$ 500	10	78	$\pm$ 680
43PFKC05-24D12	18~36	$\pm$ 12	$\pm$ 23	$\pm$ 230	40	81	$\pm$ 100
43PFKC05-24D15	18~36	$\pm$ 15	$\pm$ 19	$\pm$ 190	10	81	$\pm$ 68
43PFKC05-48S33	36~75	3.3	100	1000	5	73	2200
43PFKC05-48S05	36~75	5	100	1000	5	78	1000
43PFKC05-48S12	36~75	12	47	470	5	81	220
43PFKC05-48S15	36~75	15	40	400	5	81	150
43PFKC05-48D05	36~75	$\pm$ 5	$\pm$ 50	$\pm$ 500	10	77	$\pm$ 680
43PFKC05-48D12	36~75	$\pm$ 12	$\pm$ 23	$\pm$ 230	10	81	$\pm$ 100
43PFKC05-48D15	36~75	$\pm$ 15	$\pm$ 19	$\pm$ 190	10	81	$\pm$ 68

**Input Specifications**

Parameter	Conditions	Min	Typ	Max	Unit
Start-up time	Constant resistive load			30	ms
Input surge voltage	100 ms, max.	12Vin(nom)	--	36	VDC
		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	No Load to Full Load	Single	-0.5	--	+0.5	%
		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	--	--	V DC
		Standard Suffix "H"	3000	--	--	
Isolation resistance	500VDC		1	--	--	GΩ
Isolation capacitance			--	--	300	pF
Switching frequency			100	--	--	kHz
Safety approvals			UL:E193009 CB:UL(Demko)			
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	
Maximum case temperature			--	--	100	°C
Storage temperature range			-55		+125	
Thermal Shock			MIL-STD-810F			
Vibration			MIL-STD-810F			
Relative humidity			5% to 95% RH			

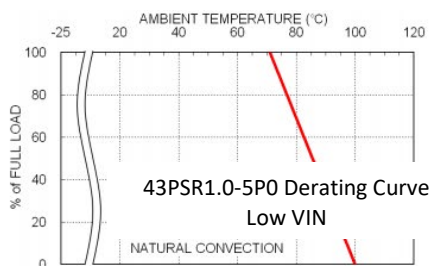
**EMC Specifications**

Parameter	Conditions		Level
EMI	EN55022		Class A
ESD	EN61000-4-2	Air $\pm$ 8kV and Contact $\pm$ 6kV	Perf. Criteria A
Radiated immunity	EN61000-4-3	10 V/m	Perf. Criteria A
Fast transient	EN61000-4-4	$\pm$ 2kV With an external input filter capacitor (Nippon chemi-con KY series, 220 $\mu$ F/100V)	Perf. Criteria B
Surge	EN61000-4-5	$\pm$ 1kV With an external input filter capacitor (Nippon chemi-con KY series, 220 $\mu$ F/100V)	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

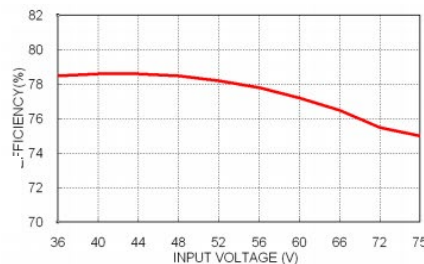
**Note:**

- 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, 220 $\mu$ F/100V.

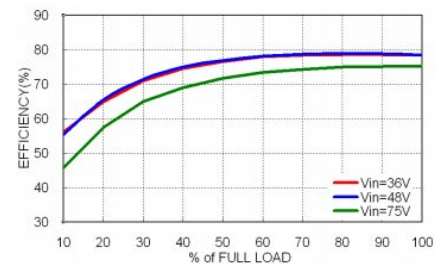
**CAUTION:** This power module is not internally fused. An input line fuse must always be used.

**Characteristic Curve**


43PFK05-48S05 Derating Curve



43PFK05-48S05 Efficiency vs. Input Voltage



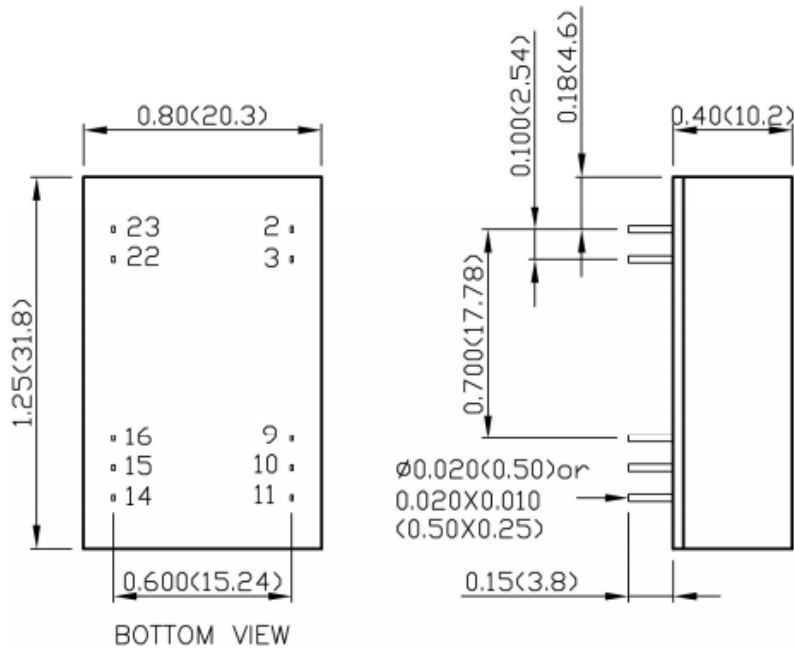
43PFK05-48S05 Efficiency vs. Output Load

**Fuse Consideration**

Model	Fuse Rating (A)	Fuse Type
43PFK03-05□□□	1.6	Slow-Blow
43PFK03-12□□□	0.8	Slow-Blow
43PFK03-24□□□	0.5	Slow-Blow
43PFK03-48□□□	0.315	Slow-Blow

**Mechanical Drawing**

DIP TYPE



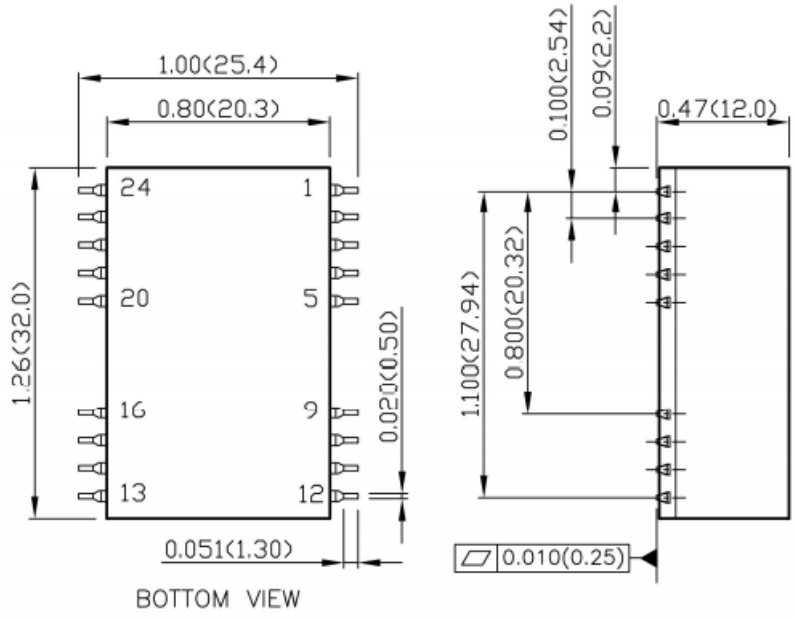
1. All dimensions in inch (mm)
2. Tolerance :x.xx±0.02 (x.x±0.5)  
x.xxx±0.01 (x.xx±0.25)
3. Pin pitch tolerance ±0.01 (0.25)
4. Pin dimension tolerance ±0.004(0.1)

**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

Mechanical Drawing (Continued)

SMD TYPE



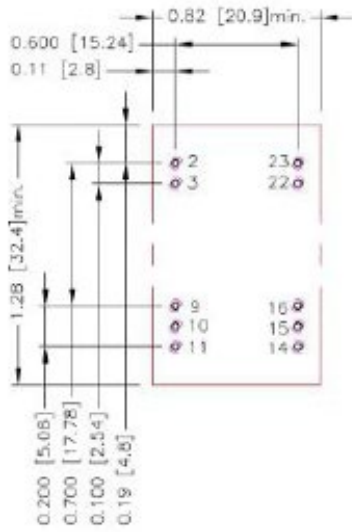
1. All dimensions in inch (mm)
2. Tolerance :x.xx±0.02 (x.x±0.5)  
x.xxx±0.01 (x.xx±0.25)
3. Pin pitch tolerance ±0.01 (0.25)
4. Pin dimension tolerance ±0.004(0.1)

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
Others	NC	NC			

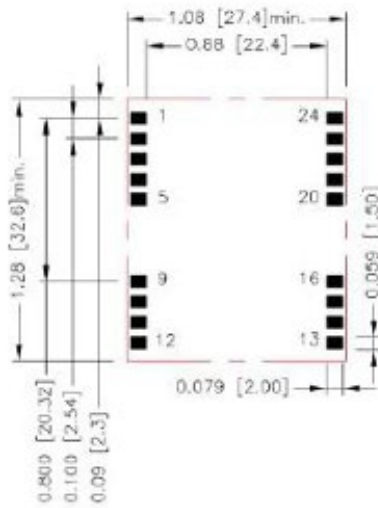
Recommended Pad Layout

DIP TYPE



All dimensions in inch[mm]  
 Pad size(lead free recommended)  
 Through hole 2.3.9.10.11.14.15.16.22.23:  $\Phi 0.031[0.80]$   
 Top view pad 2.3.9.10.11.14.15.16.22.23:  $\Phi 0.039[1.00]$   
 Bottom view pad 2.3.9.10.11.14.15.16.22.23:  $\Phi 0.063[1.60]$

SMD TYPE

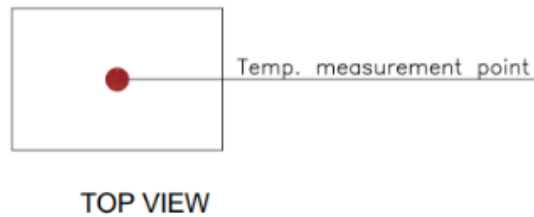


All dimensions in inch[mm]  
 Pad size(lead free recommended)  
 Top view pad:  $0.079 \times 0.059[2.00 \times 1.50]$

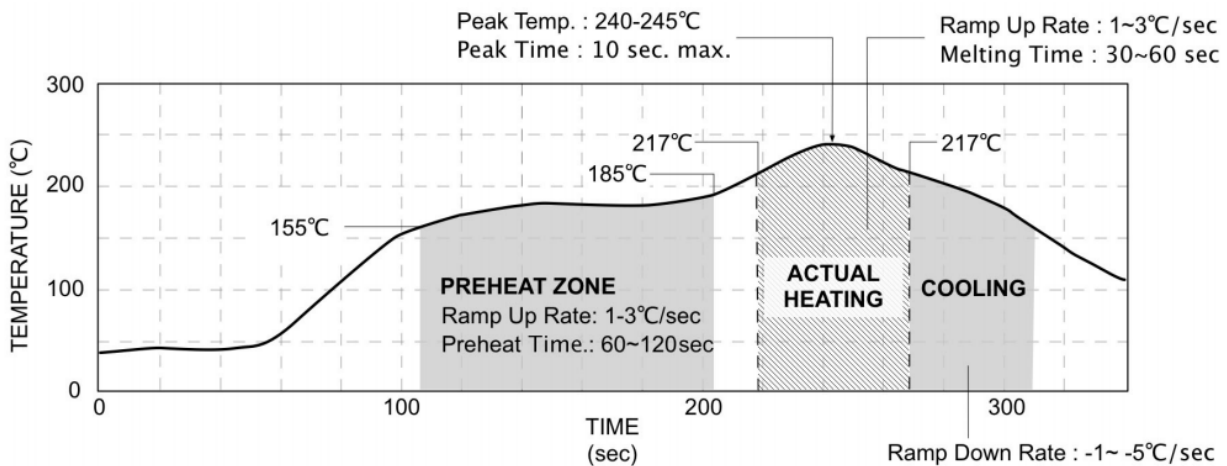
### Thermal Considerations

The power module operates in a variety of thermal environments. However, sufficient cooling should be provided to help ensure reliable operation of the unit. Heat is removed by conduction, convection, and radiation to the surrounding Environment. Proper cooling can be verified by measuring the point as the figure below. The temperature at this location should not exceed "Maximum case temperature". When operating, adequate cooling must be provided to maintain the test point temperature at or below "Maximum case temperature". You can limit this Temperature to a lower value for extremely high reliability.

v Thermal test condition with vertical direction by natural convection (20LFM).



### Lead Free Reflow Profile (For SMD Type)



\*The curves define the maximum peak reflow temperature permissible measured on pin1 or Vin pin.