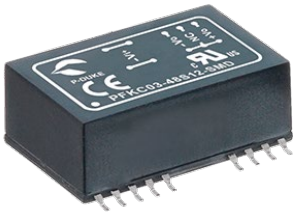
DC – DC

Features

- 2:1 Wide input 4.5~75V 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 80%
- EMC Class A & B Certified



Ideal Power's 43PFKC03-xyz 3W 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

PFKC03	-	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:** ±5 **12:** ±12 **15:** ±15	□:1600 **H:** 3000		□ : DIP Type **SMD:** SMD Type

DC – DC

Models

Model Number	Input Range VDC	Output Voltage VDC	Output current Min Load ([1]) mA	Output current Full Load mA	Input Current @ No Load A	Efficiency %	Maximum Capacitor Load µF
43PFKC03-05S33	4.5~6	3.3	60	600	20	66	2200
43PFKC03-05S05	4.5~6	5	60	600	20	70	1000
43PFKC03-05S12	4.5~6	12	25	250	35	76	170
43PFKC03-05S15	4.5~6	15	20	200	35	75	110
43PFKC03-05D05	4.5~6	±5	±30	±300	20	74	±500
43PFKC03-05D12	4.5~6	±12	±12	±120	25	75	±96
43PFKC03-05D15	4.5~6	±15	±10	±100	55	73	±47
43PFKC03-12S33	9~18	3.3	60	600	10	70	2200
43PFKC03-12S05	9~18	5	60	600	10	75	1000
43PFKC03-12S12	9~18	12	25	250	15	79	170
43PFKC03-12S15	9~18	15	20	200	15	77	110
43PFKC03-12D05	9~18	±5	±30	±300	15	76	±500
43PFKC03-12D12	9~18	±12	±12	±120	20	78	±96
43PFKC03-12D15	9~18	±15	±10	±100	25	79	±47
43PFKC03-24S33	18~36	3.3	60	600	10	71	2200
43PFKC03-24S05	18~36	5	60	600	10	76	1000
43PFKC03-24S12	18~36	12	25	250	10	80	170
43PFKC03-24S15	18~36	15	20	200	10	80	110
43PFKC03-24D05	18~36	±5	±30	±300	10	77	±500
43PFKC03-24D12	18~36	±12	±12	±120	10	79	±96
43PFKC03-24D15	18~36	±15	±10	±100	10	79	±47
43PFKC03-48S33	36~75	3.3	60	600	5	72	2200
43PFKC03-48S05	36~75	5	60	600	5	75	1000
43PFKC03-48S12	36~75	12	25	250	5	79	170
43PFKC03-48S15	36~75	15	20	200	5	79	110
43PFKC03-48D05	36~75	±5	±30	±300	5	77	±500
43PFKC03-48D12	36~75	±12	±12	±120	5	79	±96
43PFKC03-48D15	36~75	±15	±10	±100	5	79	±47

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	
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		

DC – DC

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	3.3Vout	-0.3	--	+0.3	
			Others	-0.2	--	+0.2	
		Dual	All	-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	%/℃
Transient response recovery time	25% Load step change			--	500	--	µs
Short circuit protection				Continuous, automatics recovery			

General Specifications

Parameter		Conditions		Min	Typ	Max	Unit
Isolation voltage	1 minute	Input to Output	Standard	1600	--	--	V DC
			Suffix "H"	3000	--	--	
Isolation resistance	500VDC			1	--	--	GΩ
Isolation capacitance				--	--	300	pF
Switching frequency				100	--	--	kHz
Safety approvals	IEC /EN /UL 62368-1						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						8.066 x 10^6 hrs

Environmental Specifications

Parameter	Conditions		Min	Typ	Max	Unit
Operating ambient temperature		Without derating	-25	--	+71	℃
Maximum case temperature			--	--	100	
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 ±8kV and Contact ± 6kV	Perf. Criteria A
Radiated immunity	EN61000-4-3	10 V/m	Perf. Criteria A
Fast transient	EN61000-4-4	± 2kV With an external input filter capacitor (Nippon chemi-con KY series, 220µF/100V)	Perf. Criteria B
Surge	EN61000-4-5	± 1kV With an external input filter capacitor (Nippon chemi-con KY series, 220µF/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:

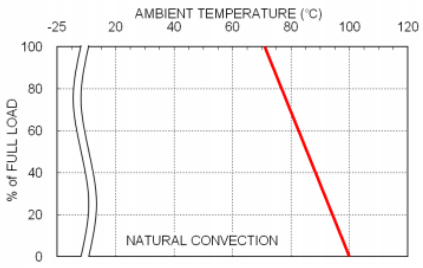
1. The output requires a minimum loading on the output to maintain specified regulation.
Operation under no-load condition will not damage these devices, however they may not meet all listed specification.

2. Test by minimum input and constant resistive load.

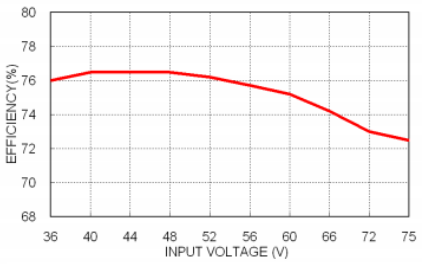
3. An external input filter capacitor is required if the module must meet EN61000-4-4, EN61000-4-5.
The filter capacitor Power Mate suggest: Nippon chemi-con KY series, 220µF/100V.

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

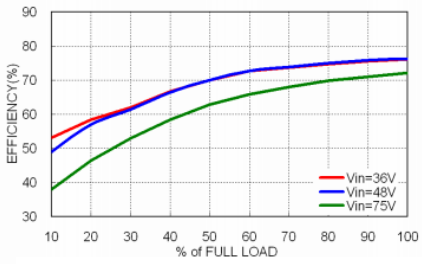
Characteristic Curve



43PFKC03-48S05 Derating Curve



43PFKC03-48S05 Efficiency vs. Input Voltage



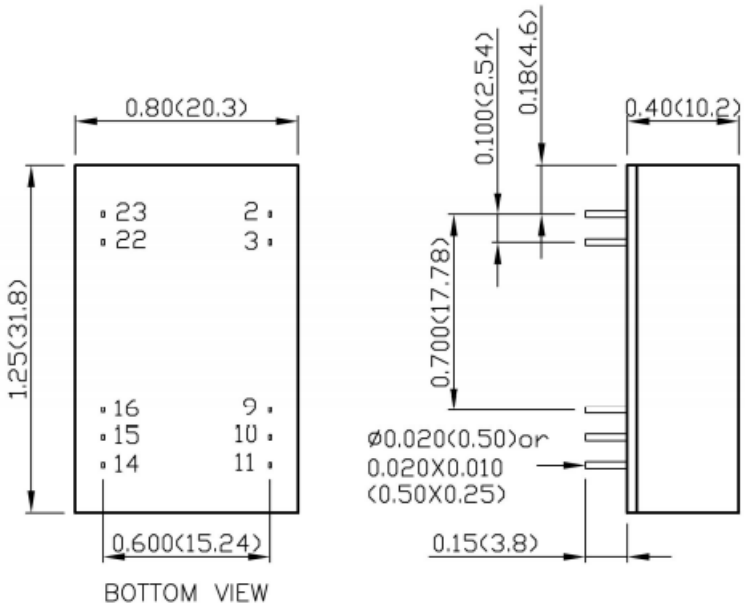
43PFKC03-48S05 Efficiency vs. Output Load

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



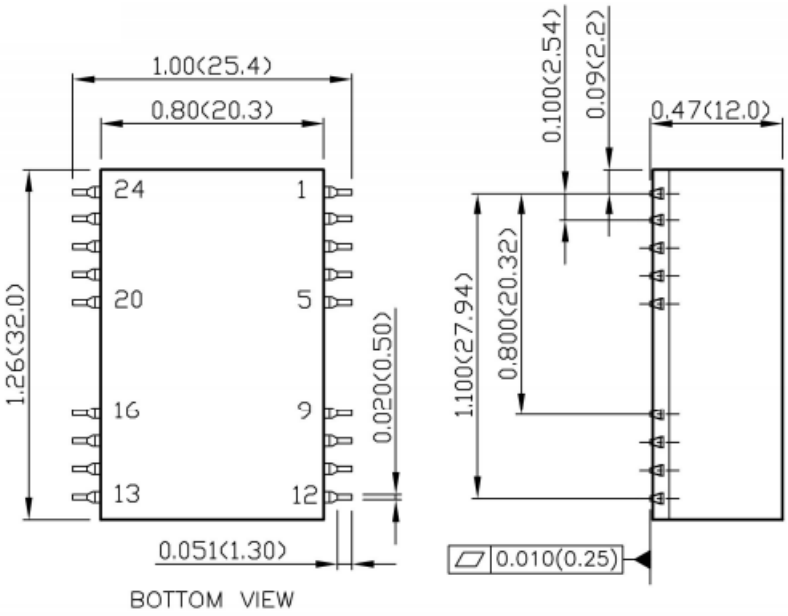
1. All dimensions in inch (mm)
2. Tolerance :x.xx±0.02 (x.x±0.5)
   x.xxx±0.01 (x.xx±0.25)
3. Pin pitch tolerance ±0.01 (0.25)
4. Pin dimension tolerance ±0.004(0.1)

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



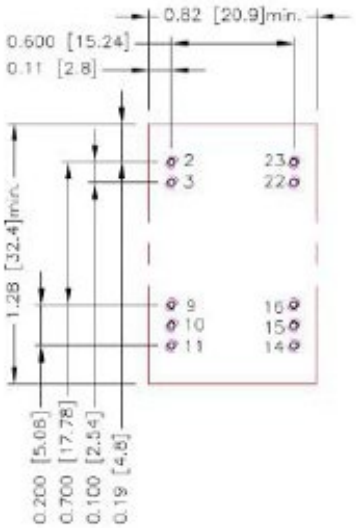
1. All dimensions in inch (mm)
2. Tolerance :x.xx±0.02 (x.x±0.5)
   x.xxx±0.01 (x.xx±0.25)
3. Pin pitch tolerance ±0.01 (0.25)
4. Pin dimension tolerance ±0.004(0.1)

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			

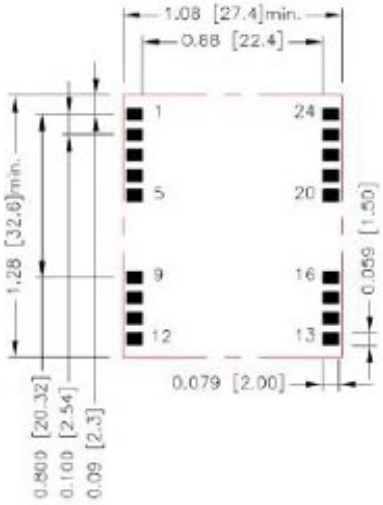
Recommended Pad Layout

DIP TYPE



All dimensions in inch[mm]
Pad size(lead free recommended)
Through hole 2.3.9.10.11.14.15.16.22.23: Φ0.031[0.80]
Top view pad 2.3.9.10.11.14.15.16.22.23: Φ0.039[1.00]
Bottom view pad 2.3.9.10.11.14.15.16.22.23: Φ0.063[1.60

SMD TYPE

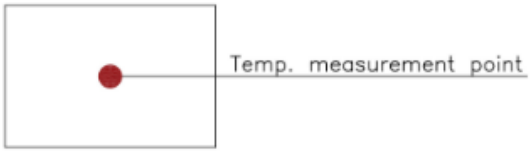


All dimensions in inch[mm]
Pad size(lead free recommended)
Top view pad:0.079x0.059[2.00x1.50]

Thermal Considerations

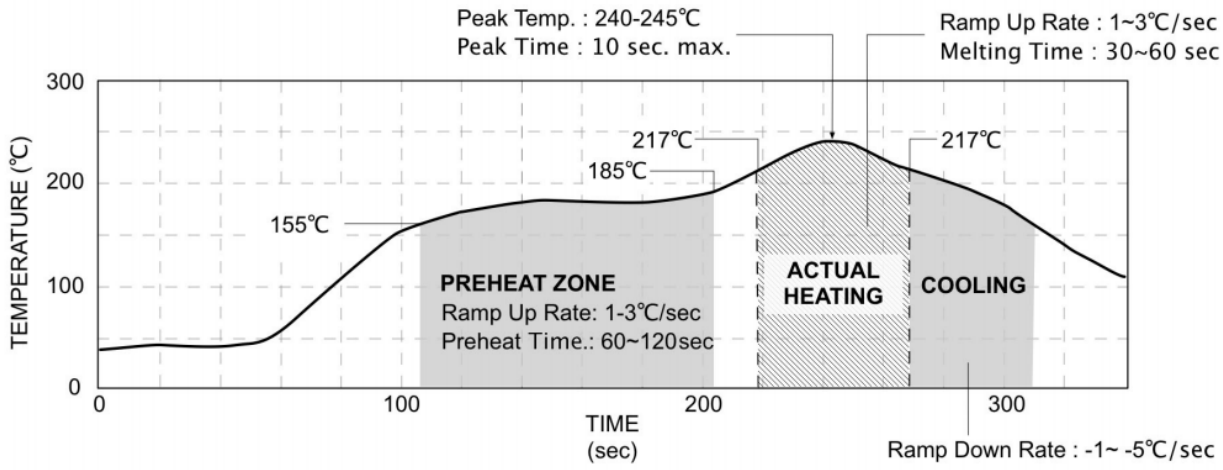
The power module operates in a variety of thermal environments.
However, sufficient cooling should be provided to help ensure reliable operation of the unit.
Heat is removed by conduction, convection, and radiation to the surrounding Environment.
Proper cooling can be verified by measuring the point 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.

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



TOP VIEW

Lead Free Reflow Profile (For SMD Type)



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