DC – DC

Features

- 2:1 Wide input 4.5~75V DC
- Isolation Voltage: 1600V DC & 3000V DC Depending on model
- Operating Temperature Range: -40~100°c
- Approved to cURus, UKCA, CE, RoHS, REACH
- Safety standards to IEC/EN 62368-1
- Efficiency up to 85%
- EMC Class A & B Certified

Ideal Power's 43PDL03-xyz 3W DC/DC PCB Mount Power Supply Series are certified to UKCA, CE, CB, cURus, RoHS, REACH & EN 62368-1/IEC 62368-1 Standards and comply with the relevant Efficiency Regulations. These are primarily used in ITE, Audio & Video Industries and customised solutions are available upon request.

Part Number Structure

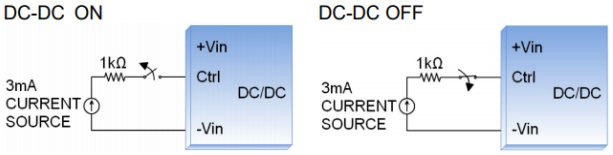
43PDL03	-	48	S	05	H
Series Name		Input Voltage (VDC)	Output Quantity	Output Voltage (VDC)	Isolation Options
		05: 4.5~9 **12:** 9~18 **24:** 18~36 **48:** 36~75	**S:** Single	**3P3:** 3.3 **05:** 5 **09:** 9 **12:** 12 **15:** 15	▫ **:** Standard type 1600V DC Isolation **H:** 3000V DC Isolation
			D: Dual	**05:** ±5 **12:** ±12 **15:** ±15	

Models

Model Number	Input Range V DC	Output Voltage V DC	Output current @Full Load mA	Input Current @ No Load A	Efficiency %	Maximum Capacitor Load µF
43PDL03-05S3P3	4.5 ~ 9	3.3	700	45	75	3300
43PDL03-05S05	4.5 ~ 9	5	600	45	79	1680
43PDL03-05S09	4.5 ~ 9	9	333	55	80	1000
43PDL03-05S12	4.5 ~ 9	12	250	55	81	820
43PDL03-05S15	4.5 ~ 9	15	200	55	82	680
43PDL03-05D05	4.5 ~ 9	±5	±300	55	78	±1000
43PDL03-05D12	4.5 ~ 9	±12	±125	60	81	±470
43PDL03-05D15	4.5 ~ 9	±15	±100	60	81	±330
43PDL03-12S3P3	9 ~ 18	3.3	700	25	77	3300
43PDL03-12S05	9 ~ 18	5	600	25	81	1680
43PDL03-12S09	9 ~ 18	9	333	30	80	1000
43PDL03-12S12	9 ~ 18	12	250	30	83	820
43PDL03-12S15	9 ~ 18	15	200	30	83	680
43PDL03-12D05	9 ~ 18	±5	±300	30	82	±1000
43PDL03-12D12	9 ~ 18	±12	±125	30	83	±470
43PDL03-12D15	9 ~ 18	±15	±100	30	83	±330
43PDL03-24S3P3	18 ~ 36	3.3	700	16	76	3300
43PDL03-24S05	18 ~ 36	5	600	16	82	1680
43PDL03-24S09	18 ~ 36	9	333	17	82	1000
43PDL03-24S12	18 ~ 36	12	250	18	83	820
43PDL03-24S15	18 ~ 36	15	200	18	84	680
43PDL03-24D05	18 ~ 36	±5	±300	17	80	±1000
43PDL03-24D12	18 ~ 36	±12	±125	18	83	±470
43PDL03-24D15	18 ~ 36	±15	±100	18	85	±330
43PDL03-48S3P3	36 ~ 75	3.3	700	10	74	3300
43PDL03-48S05	36 ~ 75	5	600	10	79	1680
43PDL03-48S09	36 ~ 75	9	333	11	80	1000
43PDL03-48S12	36 ~ 75	12	250	12	81	820
43PDL03-48S15	36 ~ 75	15	200	12	82	680
43PDL03-48D05	36 ~ 75	±5	±300	12	79	±1000
43PDL03-48D12	36 ~ 75	±12	±125	12	82	±470
43PDL03-48D15	36 ~ 75	±15	±100	12	83	±330

Input Specifications

Parameter	Conditions		Min	Typ	Max	Unit
Operating input voltage range		05Vin(nom)	4.5	5	9	V DC
		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
		Remote ON/OFF	--	30	--	
Input surge voltage	100 Second, max.	05Vin(nom)	--	--	15	V DC
		12Vin(nom)	--	--	36	
		24Vin(nom)	--	--	50	
		48Vin(nom)	--	--	100	
Input filter				Capacitor Type		
Remote ON/OFF		DC_DC ON		Open or high impedance		
	Ctrl pin applied current via 1kΩ	DC_DC OFF				
		Remote off input current	2	3	4	mA
	Application circuit		--	--	2.5	



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	-1.0	--	+1.0	
		Dual	-1.0	--	+1.0	
	5% Load to 100% Full Load	Single	-0.5	--	+0.5	
Cross regulation	Asymmetrical load 25%/100% FL	Dual	-5.0	--	+5.0	
Ripple and Noise	20MHz bandwidth		--	50	--	mVp-p
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 Type Suffix “H”	1600 3000	-- --	-- --	V DC
Isolation resistance	500V DC			1	--	--	GΩ
Isolation capacitance			Standard Type Suffix “H”	-- --	-- --	200 40	pF
Switching frequency	Full load to minimum load			100	--		kHz
Safety approvals	IEC/ EN/ UL62368-1						UL:E193009 CB:UL(Demko)
Case material							Non-conductive black plastic
Base material							None
Potting material							Silicone (UL94 V-0)
Weight							4.8g (0.17oz)
MTBF	MIL-HDBK-217F, Full load						4.871 x 10^6 hrs

Environmental Specifications

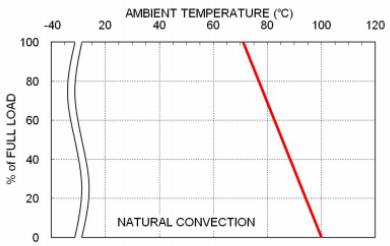
Parameter	Conditions	Min	Typ	Max	Unit
Operating ambient temperature	With derating	-40	--	+100	℃
Maximin case temperature		--	--	105	
Storage temperature range		-55	--	+125	
Thermal Shock				MIL-STD-810F	
Vibration				MIL-STD-810F	
Relative humidity				5% to 95% RH	

EMC Specifications

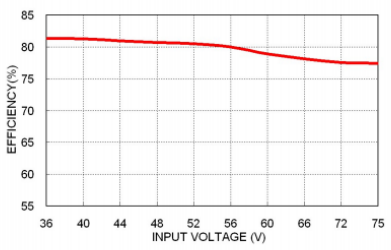
Parameter		Conditions	Level
EMI	EN55032	With external components	Class A, Class B
EMS	EN55024		
ESD	EN61000-4-2	Air ± 8kV and Contact ± 6kV	Perf. Criteria A
Radiated immunity	EN61000-4-3	10 V/m	Perf. Criteria A
Fast transient	EN61000-4-4	± 2kV With an external input filter capacitor (Nippon chemi-con KY series, 330μF/50V)	Perf. Criteria A
Surge	EN61000-4-5	± 1kV With an external input filter capacitor (Nippon chemi-con KY series, 330μF/50V)	Perf. Criteria A
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

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

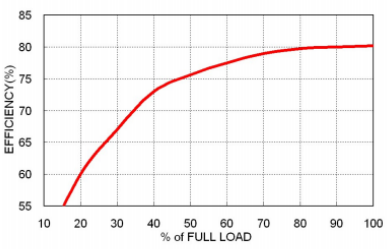
Characteristic Curve



43PDL03-48S05 Derating Curve



43PDL03-48S05 Efficiency vs. Input Voltage



43PDL03-48S05 Efficiency vs. Output Load

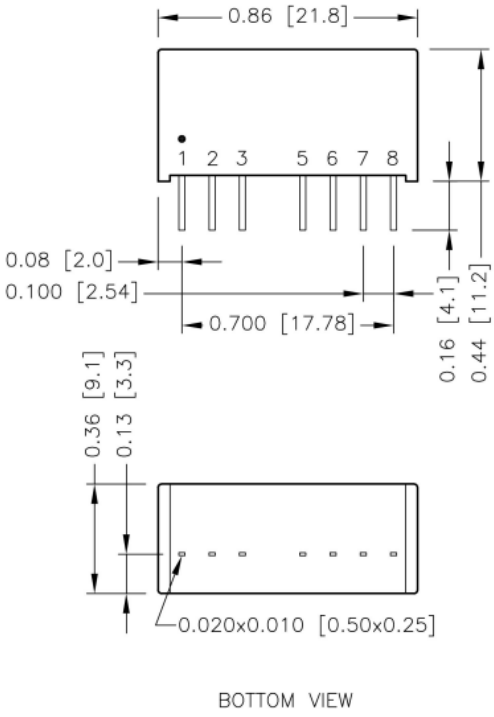
Fuse Considerations

This power module is not internally fused. An input line fuse must always be used. This encapsulated power module can be used in a wide variety of applications, ranging from simple stand-alone operation to an integrated part of sophisticated power architecture. To maximum flexibility, internal fusing is not included; however, to achieve maximum safety and system protection, always use an input line fuse. The input line fuse suggest as below :

Model	Fuse Rating (A)	Fuse Type
43PDL03-05S□□, 43PDL03-05D□□	2	Slow-Blow
43PDL03-12S□□, 43PDL03-12D□□	1.6	Slow-Blow
43PDL03-24S□□, 43PDL03-24D□□	1	Slow-Blow
43PDL03-48S□□, 43PDL03-48D□□	1	Slow-Blow

The table based on the information provided in this data sheet on inrush energy and maximum DC input current at low Vin.

Mechanical Drawing



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 dimension tolerance ±0.004 [0.10]

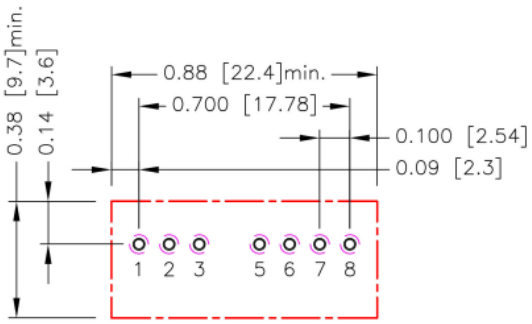
DC – DC

Pin Connection

Pin	Single	Dual
1	-Vin	-Vin
2	+Vin	+Vin
3	Ctrl	Ctrl
5	NC*/No pin**	NC*/No pin**
6	+Vout	+Vout
7	-Vout	Common
8	NC	-Vout

*NC pin for standard type model. *
*No pin for 3kVDC isolation model (suffix “H”).

Recommended Pad Layout

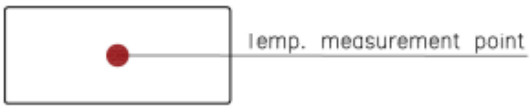


All dimensions in inch[mm]
Pad size (lead free recommended)
Through hole 1.2.3.6.7.8: Φ0.031[0.80]
Top view pad 1.2.3.6.7.8: Φ0.039[1.00]
Bottom view pad 1.2.3.6.7.8: Φ0.063[1.60]

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.

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



TOP VIEW