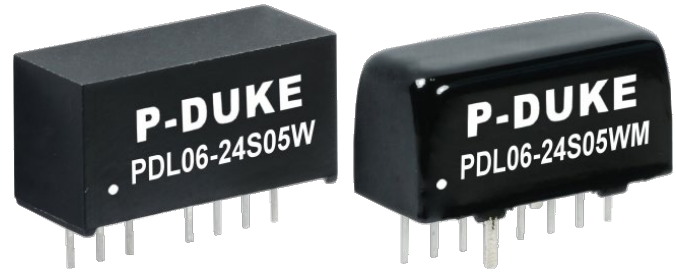


Features

- 4:1 Wide input 9~75V 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/UL 62368-1
- Efficiency up to 88%
- EMC Class A & B Certified



Ideal Power's 43PDL06-xyzW 6W Series Pin Connection DC/DC Converters are certified to cURus, UKCA, CE, RoHS, REACH & IEC/UL/EN 62368-1 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

PDL06	-	48	S	05	W	H	M3
Series Name		Input Voltage (VDC)	Output Quantity	Output Voltage (VDC)	Input Range	Case & Isolation Options	Operating Temp Options
		24: 9~36 48: 18~75	S: Single D: Dual	3P3: 3.3 05: 5 09: 9 12: 12 15: 15 24: 24 05: ± 5 12: ± 12 15: ± 15	4 : 1	<input type="checkbox"/> : Standard type Plastic case 1600V DC Isolation H: Plastic case 3000V DC Isolation M: Metal case 1600V DC Isolation	<input type="checkbox"/> : Standard -40~+100°C With derating M3: M3 Version Plastic case -55~+100°C With derating Metal case -55~+100°C With derating

Models

Model Number	Input Range	Output Voltage	Output current @Full Load	Input Current @ No Load	Efficiency	Maximum Capacitor Load
	V DC	V DC	mA	A	%	μF
43PDL06-24S3P3WM	9~36	3.3	1500	4	81	2200
43PDL06-24S05WM	9~36	5	1200	4	84	1100
43PDL06-24S09WM	9~36	9	666	4	86	680
43PDL06-24S12WM	9~36	12	500	4	87	470
43PDL06-24S15WM	9~36	15	400	4	88	470
43PDL06-24S24WM	9~36	24	250	4	87	180
43PDL06-24D05WM	9~36	±5	±600	6	84	±680
43PDL06-24D12WM	9~36	±12	±250	6	87	±330
43PDL06-24D15WM	9~36	±15	±200	8	87	±180
43PDL06-48S3P3WM	18~75	3.3	1500	4	81	2200
43PDL06-48S05WM	18~75	5	1200	4	84	1100
43PDL06-48S09WM	18~75	9	666	4	85	680
43PDL06-48S12WM	18~75	12	500	4	87	470
43PDL06-48S15WM	18~75	15	400	4	87	470
43PDL06-48S24WM	18~75	24	250	4	87	180
43PDL06-48D05WM	18~75	±5	±600	6	84	±680
43PDL06-48D12WM	18~75	±12	±250	6	87	±330
43PDL06-48D15WM	18~75	±15	±200	8	87	±180

Input Specifications

Parameter	Conditions	Min	Typ	Max	Unit	
Operating input voltage range	24Vin(nom)	9	24	36	V DC	
	48Vin(nom)	18	48	75		
Start-up time	Constant resistive load	Power up	--	30	ms	
		Remote ON/OFF	--	30		
Input surge voltage	100 Second, max.	24Vin(nom)	--	50	V DC	
		48Vin(nom)	--	100		
Input filter				Capacitor Type		
Remote ON/OFF	Ctrl pin applied current via 1kΩ	DC_DC ON		Open or 0~0.5V DC		
		DC_DC OFF		3~12V DC		
		Input current of Ctrl pin	2	--	4	mA
		Remote off input current	--	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	-0.5	--	+0.5	%
		Dual	-1.0	--	+1.0	
Cross regulation	Asymmetrical load 25%/100% FL	Dual	-5.0	--	+5.0	
Ripple and Noise	20MHz bandwidth	3.3Vout, 5Vout, 9Vout	--	50	--	mVp-p
		12Vout, 15Vout, 24Vout	--	75	--	
Temperature coefficient			-0.02	--	+0.02	%/°C
Transient response recovery time	25% Load step change		--	250	--	µs
Overload protection	% of Iout rated; Hiccup mode		--	180	--	%
Short circuit protection			Continuous, automatic recovery			

General Specifications

Parameter	Conditions		Min	Typ	Max	Unit	
Isolation voltage	1 minute	Input to Output	Standard Type	1600	--	--	V DC
			Suffix "H"	3000	--	--	
	Input (Output) to case	Suffix "M"	1600	--	--		
		Suffix "M"	1000	--	--		
Isolation resistance	500VDC		1	--	--	GΩ	
Isolation capacitance			Standard Type	--	--	50	
			Suffix "H"	--	--	50	
			Suffix "M"	--	--	50	
Switching frequency			522	580	638	kHz	
Safety approvals	IEC/ EN/ UL62368-1					UL:E193009 CB:UL(Demko)	
Case material			Standard Type	Non-conductive black plastic			
			Suffix "H"	Non-conductive black plastic			
			Suffix "M"	Copper			
Base material						None	
Potting material						Silicone (UL94 V-0)	
Weight			Standard Type	4.8g (0.17oz)			
			Suffix "H"	4.8g (0.17oz)			
			Suffix "M"	5.9g (0.21oz)			
MTBF	MIL-HDBK-217F, Full load	Standard Type	2.928 x 10 ⁶ hrs				
		Suffix "H"	2.928 x 10 ⁶ hrs				
		Suffix "M"	2.161 x 10 ⁶ hrs				

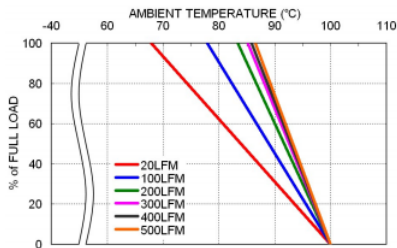
Environmental Specifications

Parameter	Conditions		Min	Typ	Max	Unit
Operating ambient temperature	Standard Type	With derating	-40	--	+100	°C
	Suffix "H"	With derating	-40	--	+100	
	Suffix "M"	With derating	-40	--	+100	
	M3 Version					
	Suffix "H"	With derating	-55	--	+100	
	Suffix "M"	With derating	-55	--	+100	
Maximin case temperature			--	--	100	°C
Storage temperature range			-55	--	+125	°C
Thermal Shock					MIL-STD-810F	
Vibration					MIL-STD-810F	
Relative humidity					5% to 95% RH	

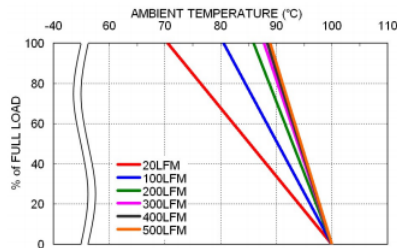
EMC Specifications

Parameter	Conditions		Level
EMI	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	20 V/m	Perf. Criteria A
Fast transient	EN61000-4-4	± 2kV	Perf. Criteria A
	43PDL06-24□□□W	With an aluminum electrolytic capacitor (Nippon chemi-con KY series, 220µF/100V) and a TVS (SMDJ70A, 70V, 3000Watt peak pulse power) in parallel.	
	43PDL06-48□□□W	With an aluminum electrolytic capacitor (Nippon chemi-con KY series, 220µF/100V) and a TVS (SMDJ120A, 120V, 3000Watt peak pulse power) in parallel.	
Surge	EN61000-4-5	± 2kV	Perf. Criteria A
	43PDL06-24□□□W	With an aluminum electrolytic capacitor (Nippon chemi-con KY series, 220µF/100V) and a TVS (SMDJ70A, 70V, 3000Watt peak pulse power) in parallel.	
	43PDL06-48□□□W	With an aluminum electrolytic capacitor (Nippon chemi-con KY series, 220µF/100V) and a TVS (SMDJ120A, 120V, 3000Watt peak pulse power) in parallel.	
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

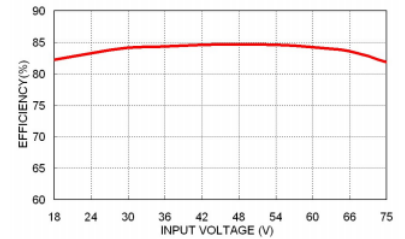
CAUTION: This power module is not internally fused. An input line fuse must always be used.

Characteristic Curve


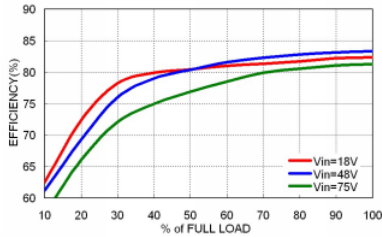
43PDL06-48S05W Derating Curve



43PDL06-48S05WM Derating Curve



43PDL06-48S05W Efficiency vs. Input Voltage



43PDL06-48S05W Efficiency vs. Output Load

Fuse Considerations

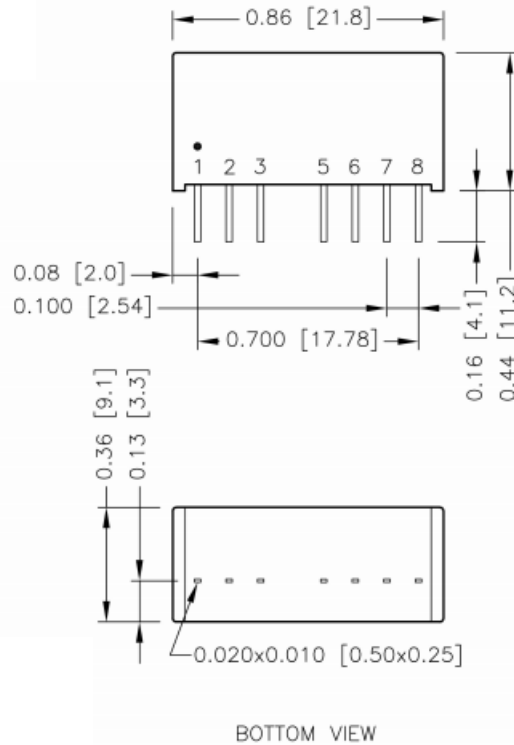
This power module is not internally fused. An input line fuse must always be used. This encapsulated power module can be used in a wide variety of applications, ranging from simple stand-alone operation to an integrated part of sophisticated power architecture. To maximum flexibility, internal fusing 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
43PDL06-24□□□W	1.6	Slow-Blow
43PDL06-48□□□W	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

Standard type, Suffix H



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]

DIP Pin Connection

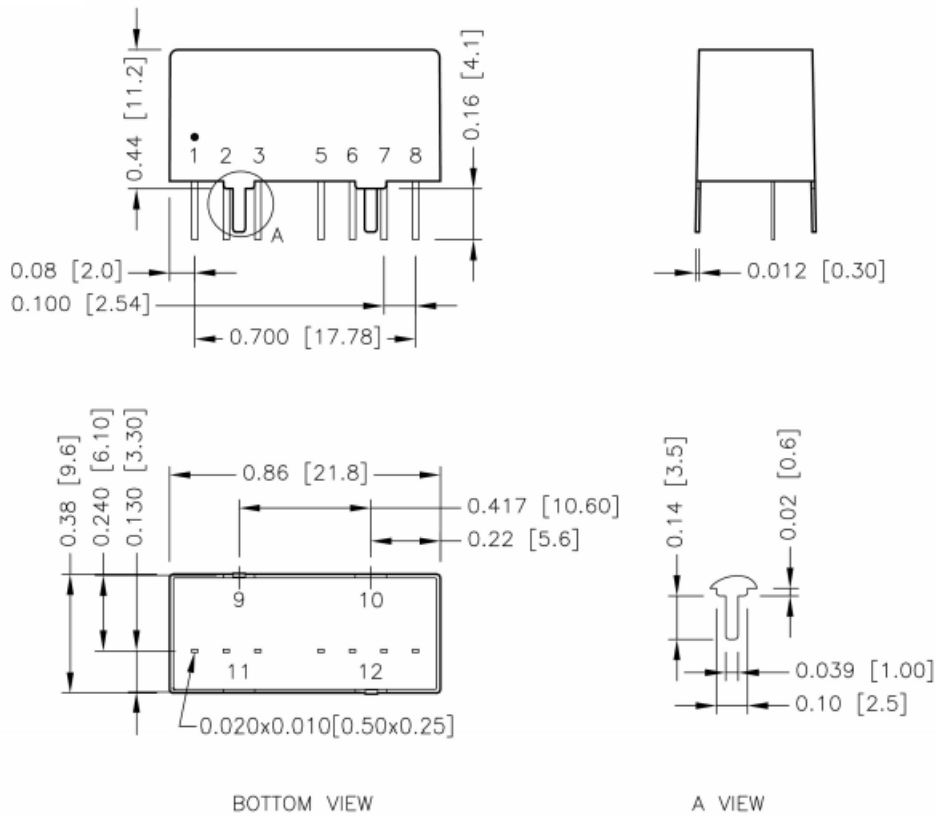
Pin	Single	Dual
1	-Vin	-Vin
2	+Vin	+Vin
3	Ctrl	Ctrl
5	NC*/No pin**	NC*/No pin**
6	+Vout	+Vout
7	-Vout	Common
8	NC	-Vout

*NC pin for standard type model.

**No pin for 3kVDC isolation model (suffix "H").

Mechanical Drawing (Continued)

Suffix M



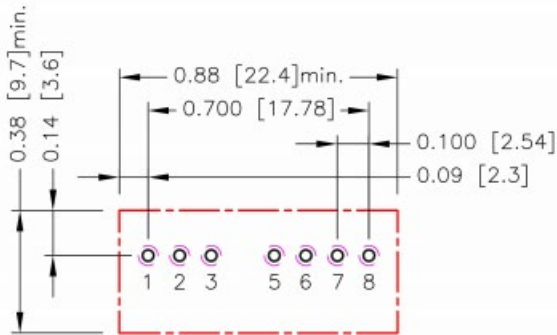
1. All dimensions in inch (mm)
2. Tolerance :x.xx±0.02 (x.x±0.5)
x.xxx±0.01 (x.xx±0.25)
3. Pin dimension tolerance ±0.004(0.1)

DIP Pin Connection

Pin	Single	Dual
1	-Vin	-Vin
2	+Vin	+Vin
3	Ctrl	Ctrl
5	NC	NC
6	+Vout	+Vout
7	-Vout	Common
8	NC	-Vout
9	Case	Case
10	Stand off	Stand off
11	Stand off	Stand off
12	Case	Case

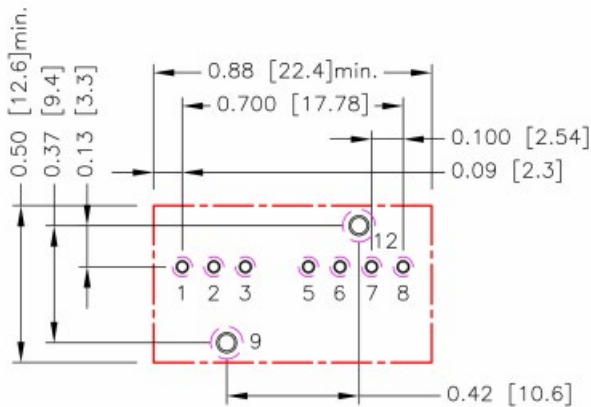
Recommended Pad Layout

Standard Type
Suffix "H"



All dimensions in inch[mm]
Pad size(lead free recommended)
Through hole 1.2.3.6.7.8: $\Phi 0.031[0.80]$
Top view pad 1.2.3.6.7.8: $\Phi 0.039[1.00]$
Bottom view pad 1.2.3.6.7.8: $\Phi 0.063[1.60]$

Suffix "M"

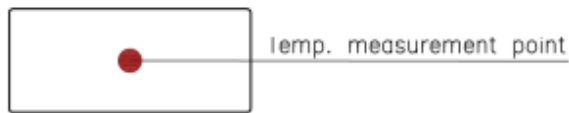


All dimensions in inch[mm]
Pad size(lead free recommended)
Through hole 1.2.3.6.7.8: $\Phi 0.031[0.80]$
Through hole 9.12: $\Phi 0.051[1.30]$
Top view pad 1.2.3.6.7.8: $\Phi 0.039[1.00]$
Top view pad 9.12: $\Phi 0.064[1.63]$
Bottom view pad 1.2.3.6.7.8: $\Phi 0.063[1.60]$
Bottom view pad 9.12: $\Phi 0.102[2.60]$

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