



PDL06W SERIES

DC-DC CONVERTER

4:1 ULTRA WIDE INPUT RANGE
UP TO 6Watts

FEATURES

- OUTPUT CURRENT UP TO 1500mA
- SIP PACKAGE, 0.86 x 0.36x 0.44 INCH
- FIXED SWITCHING FREQUENCY
- INPUT TO OUTPUT ISOLATION UP TO 3000VDC
- CONTINUOUS SHORT CIRCUIT PROTECTION
- EXTERNAL ON/OFF CONTROL
- SAFETY MEETS UL60950-1, EN60950-1 AND IEC60950-1
- CE MARK MEETS 2006/95/EC, 2011/95/EC AND 2004/108/EC
- COMPLIANT TO RoHS EU DIRECTIVE 2011/65/EU

APPLICATIONS

- WIRELESS NETWORK
- TELECOM/DATACOM
- INDUSTRY CONTROL SYSTEM
- MEASUREMENT EQUIPMENT
- SEMICONDUCTOR EQUIPMENT

3000VDC ISOLATION	REMOTE CONTROL	OCP	LOW STANDBY POWER	SHORT CIRCUIT PROTECTION
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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 mA	Input Current @ No Load mA	Efficiency %	Maximum Capacitor Load µF
PDL06-24S3P3W	9 ~ 36	3.3	1500	4	81	2200
PDL06-24S05W	9 ~ 36	5	1200	4	84	1100
PDL06-24S09W	9 ~ 36	9	666	4	86	680
PDL06-24S12W	9 ~ 36	12	500	4	87	470
PDL06-24S15W	9 ~ 36	15	400	4	88	470
PDL06-24S24W	9 ~ 36	24	250	4	87	180
PDL06-24D05W	9 ~ 36	±5	±600	6	84	±680
PDL06-24D12W	9 ~ 36	±12	±250	6	87	±330
PDL06-24D15W	9 ~ 36	±15	±200	8	87	±180
PDL06-48S3P3W	18 ~ 75	3.3	1500	4	81	2200
PDL06-48S05W	18 ~ 75	5	1200	4	84	1100
PDL06-48S09W	18 ~ 75	9	666	4	85	680
PDL06-48S12W	18 ~ 75	12	500	4	87	470
PDL06-48S15W	18 ~ 75	15	400	4	87	470
PDL06-48S24W	18 ~ 75	24	250	4	87	180
PDL06-48D05W	18 ~ 75	±5	±600	6	84	±680
PDL06-48D12W	18 ~ 75	±12	±250	6	87	±330
PDL06-48D15W	18 ~ 75	±15	±200	8	87	±180

PART NUMBER STRUCTURE

PDL06	-	48	S	05	W	M
Series Name		Input Voltage (VDC) 24: 9~36 48: 18~75	Output Quantity S: Single D: Dual	Output Voltage (VDC) 3P3: 3.3 05: 5 09: 9 12: 12 15: 15 24: 24	Input Range 4:1	Assembly Option □: Standard type H: Plastic case with 3000VDC isolation M: Metal case with 1600VDC isolation

INPUT SPECIFICATIONS

Parameter	Conditions		Min.	Typ.	Max.	Unit
Operating input voltage range		24Vin(nom) 48Vin(nom)	9 18	24 48	36 75	VDC
Start up time	Constant resistive load	Power up Remote ON/OFF		30 30		ms
Input surge voltage	1 second, max.	24Vin(nom) 48Vin(nom)			50 100	VDC
Input reflected ripple current		24Vin(nom) 48Vin(nom)		20 40		mAp-p
Input filter					Capacitor type	
Remote ON/OFF	Referenced to -INPUT pin and CTRL pin applied current	DC-DC ON DC-DC OFF Remote off input current	2.0	3.0 2.5	4.0	mA mA

DC/DC ON

DC/DC OFF

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 Dual	-0.5 -1.0		+0.5 +1.0	%
Cross regulation	Asymmetrical load 25%/100% FL	Dual	-5.0		+5.0	%
Ripple and noise	Measured by 20MHz bandwidth	3.3Vout 5Vout, 9Vout 12Vout, 15Vout 24Vout		50 75 100 100		mVp-p
Temperature coefficient			-0.02		+0.02	%/ °C
Transient response recovery time	25% load step change			250		μs
Over load protection	% of lout 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 Suffix "H" Suffix "M" Input (Output) to Case Suffix "M"	1600 3000 1600 1000			VDC
Isolation resistance	500VDC		1			GΩ
Isolation capacitance		Standard Type Suffix "H" Suffix "M"			50 50 50	pF
Switching frequency			522	580	638	kHz
Design meet safety standard			IEC60950-1, UL60950-1, EN60950-1			
Case material		Standard Type Suffix "H" Suffix "M"			Non-conductive black plastic Non-conductive black plastic Copper	
Base material					None	
Potting material					Silicone (UL94-V0)	
Dimensions					0.86 X 0.36 X 0.44 Inch (21.8 X 9.1 X 11.2 mm)	
Weight		Standard Type Suffix "H" Suffix "M"			4.8g (0.17oz) 4.8g (0.17oz) 5.9g (0.21oz)	
MTBF	MIL-HDBK-217F	Standard Type Suffix "H" Suffix "M"			2.928 x 10 ⁶ hrs 2.928 x 10 ⁶ hrs 3.161 x 10 ⁶ hrs	

ENVIRONMENTAL SPECIFICATIONS

Parameter	Conditions	Min.	Typ.	Max.	Unit
Operating ambient temperature	Without derating	Standard Type		+71	°C
		Suffix "H"		+71	
		Suffix "M"		+75	
Storage temperature range		-55		+125	°C
Thermal shock					MIL-STD-810F
Vibration					MIL-STD-810F
Relative humidity					5% to 95% RH

EMC SPECIFICATIONS

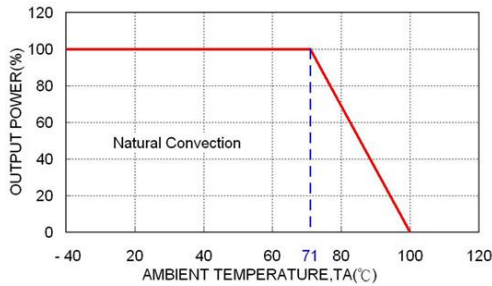
Parameter	Conditions	Level
EMI (1)	EN55022	Class A, Class B
ESD	EN61000-4-2 Air ± 8kV Contact ± 6kV	Perf. Criteria A
Radiated immunity	EN61000-4-3 20 V/m	Perf. Criteria A
Fast transient (2)	EN61000-4-4 ± 2kV	Perf. Criteria A
Surge (2)	EN61000-4-5 ± 2kV	Perf. Criteria A
Conducted immunity	EN61000-4-6 10 Vr.m.s	Perf. Criteria A

Note:

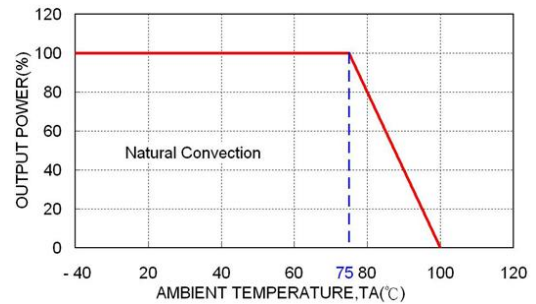
- The PDL06W series standard module meets EN55022 Class A and Class B with external components. For more detail information, please contact with P-DUKE.
- An external input filter capacitor is required if the module has to meet EN61000-4-4, EN61000-4-5. The filter Power Mate suggested:
The PDL06-24□□□W recommended an aluminum electrolytic capacitor (Nippon chemi-con KY series, 220µF/100V) and a TVS (SMDJ70A, 70V, 3000Watt peak pulse power) to connect in parallel.
The PDL06-48□□□W recommended an aluminum electrolytic capacitor (Nippon chemi-con KY series, 220µF/100V) and a TVS (SMDJ120A, 120V, 3000Watt peak pulse power) to connect in parallel.

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

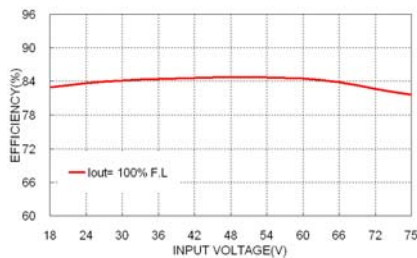
CHARACTERISTIC CURVE



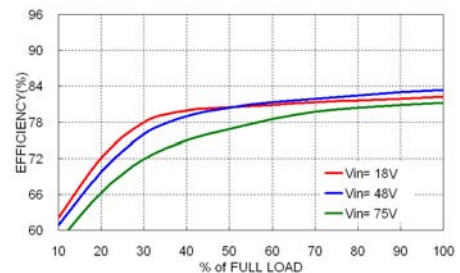
PDL06-48S05W Derating Curve



PDL06-48S05WM Derating Curve



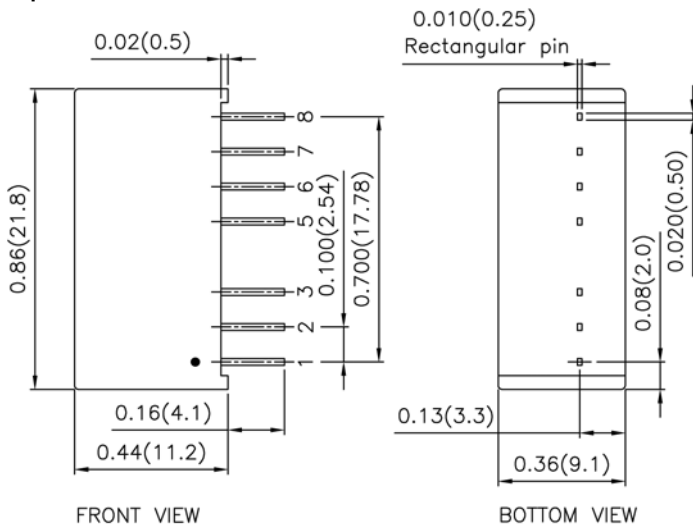
PDL06-48S05W Efficiency VS Input Voltage



PDL06-48S05W Efficiency VS Output Load

MECHANICAL DRAWING

Standard plastic case



PIN CONNECTION		
PIN	SINGLE	DUAL
1	-INPUT	-INPUT
2	+INPUT	+INPUT
3	CTRL	CTRL
5	NC*/NO PIN**	NC*/NO PIN**
6	+OUTPUT	+OUTPUT
7	-OUTPUT	COMMON
8	NC	-OUTPUT

*NC pin for standard.

**NO pin for 3kV isolation. (P/N suffix "H")

1. All dimensions in Inch (mm)

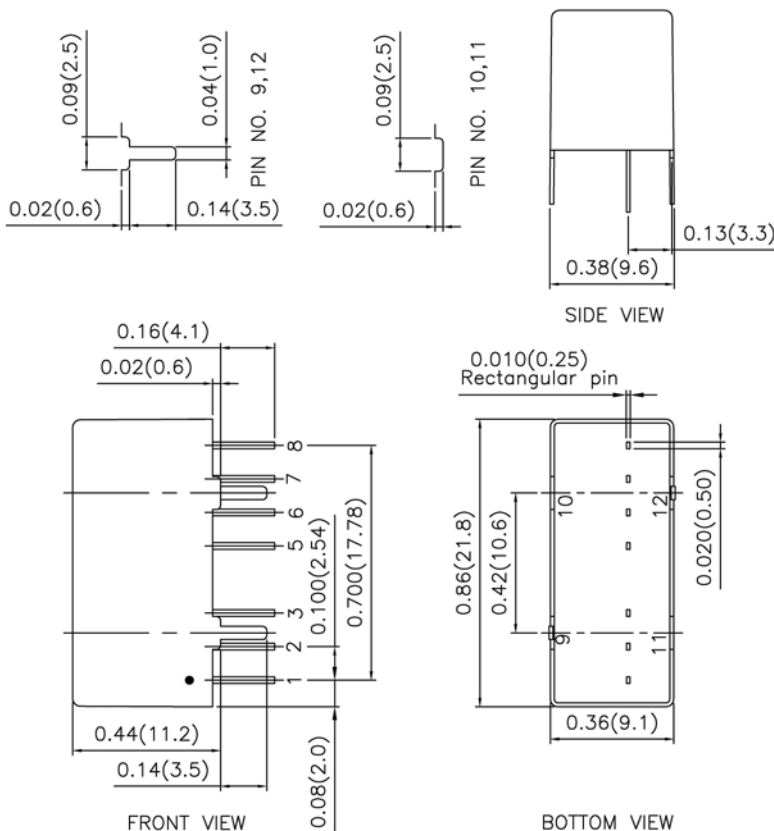
Tolerance: X.XX±0.02 (X.X±0.5)

X.XXX±0.01 (X.XX±0.25)

2. Pin pitch tolerance ±0.01(0.25)

3. Pin dimension tolerance ±0.004 (0.1)

Option suffix "M" metal case



PIN CONNECTION		
PIN	SINGLE	DUAL
1	-INPUT	-INPUT
2	+INPUT	+INPUT
3	CTRL	CTRL
5	NC	NC
6	+OUTPUT	+OUTPUT
7	-OUTPUT	COMMON
8	NC	-OUTPUT
9	CASE	CASE
10	STAND OFF	STAND OFF
11	STAND OFF	STAND OFF
12	CASE	CASE

1. All dimensions in Inch (mm)

Tolerance: X.XX±0.02 (X.X±0.5)

X.XXX±0.01 (X.XX±0.25)

2. Pin pitch tolerance ±0.01(0.25)

3. Pin dimension tolerance ±0.004 (0.1)