POWER MATE TECHNOLOGY CO., LTD.

PDL06W SERIES

DC-DC CONVERTER

4:1 ULTRA WIDE INPUT RANGE
UP TO 6Watts



RoHS Compliant

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

TECHNICAL SPECIFICATION

All specifications are typical at nominal input, full load and 25 ºC 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

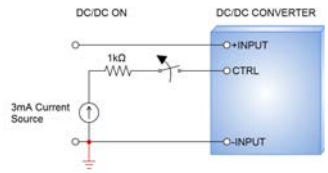
PART NUMBER STRUCTURE

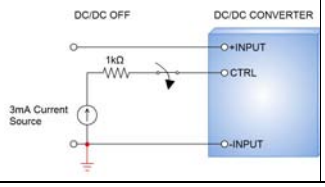
PDL06 - 48 S 05 W M

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

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		Open or high impedance 3.0 2.5	 4.0	 mA mA





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	%/ ºC
Transient response recovery time	25% load step change			250		µs
Over load protection	% of Iout rated; Hiccup mode			180		%
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” Suffix ”M”	1600 3000 1600			VDC
		Input (Output) to Case	Suffix ”M”	1000			
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							Silicon (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	BELLCORE TR-NWT-000332 Case 1: 50% Stress, Ta= 40℃. MIL-HDBK-217F Ta=25℃, Full load (G/B, controlled environment)		Standard Type Suffix ”H” Suffix ”M”				3.381×10^6 hrs 8.408×10^5 hrs 8.408×10^5 hrs 9.404×10^5 hrs

ENVIRONMENTAL SPECIFICATIONS

Parameter	Conditions		Min.	Typ.	Max.	Unit
Operating ambient temperature	Without derating	Standard Type	-40		+71	℃
		Suffix "H"	-40		+71	
		Suffix "M"	-40		+75	
Storage temperature range			-55		+125	℃
Thermal shock					MIL-STD-810F	
Vibration					MIL-STD-810F	
Relative humidity					5% to 95% RH	

EMC SPECIFICATIONS

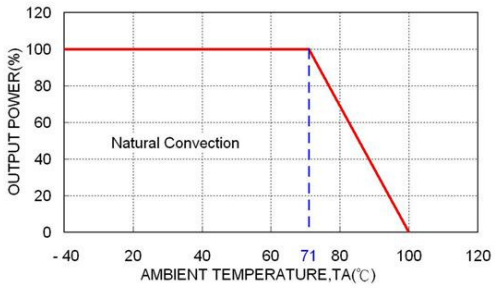
Parameter	Conditions		Level
EMI (1)	EN55022		Class A, Class B
ESD	EN61000-4-2	Air ± 8kV Contact ± 6kV	Perf. Criteria A
Radiated immunity	EN61000-4-3	20 V/m	Perf. Criteria A
Fast transient (2)	EN61000-4-4	± 2kV	Perf. Criteria A
Surge (2)	EN61000-4-5	± 2kV	Perf. Criteria A
Conducted immunity	EN61000-4-6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

Note:

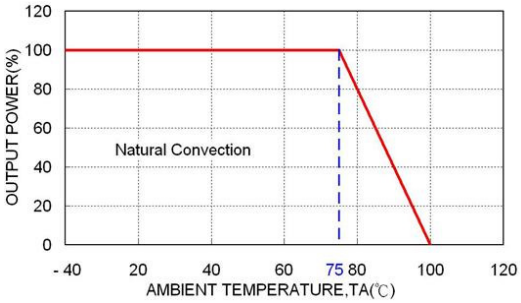
1. The PDL06W series standard module meets EN55022 Class A and Class B with external components. For more detail information, please contact with P-DUKE.
2. An external input filter capacitor is required if the module has to meet EN61000-4-4, EN61000-4-5. The filter Power Mate suggested:
   The PDL06-24□□□W 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.

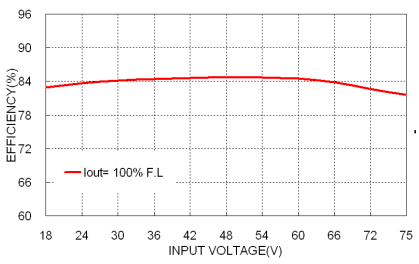
CHARACTERISTIC CURVE



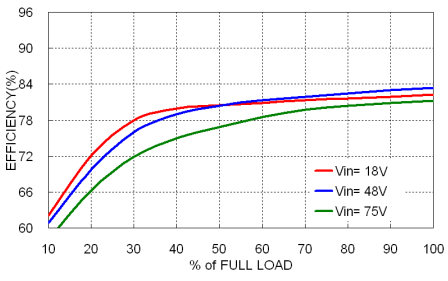
PDL06-48S05W Derating Curve



PDL06-48S05WM Derating Curve



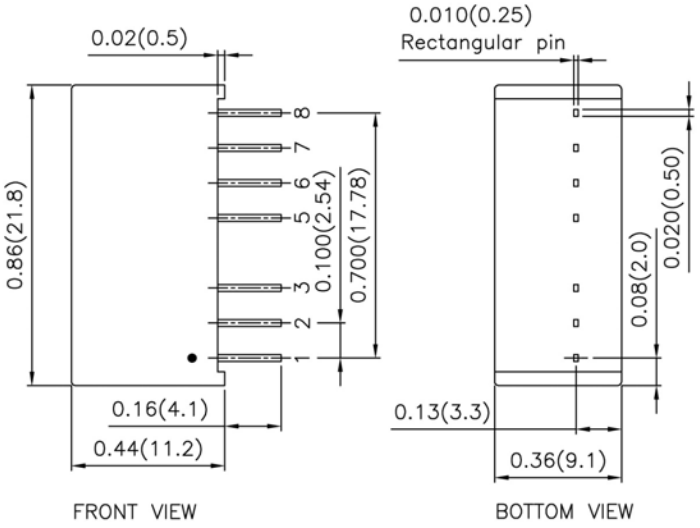
PDL06-48S05W Efficiency VS Input Voltage



PDL06-48S05W Efficiency VS Output Load

MECHANICAL DRAWING

Standard plastic case

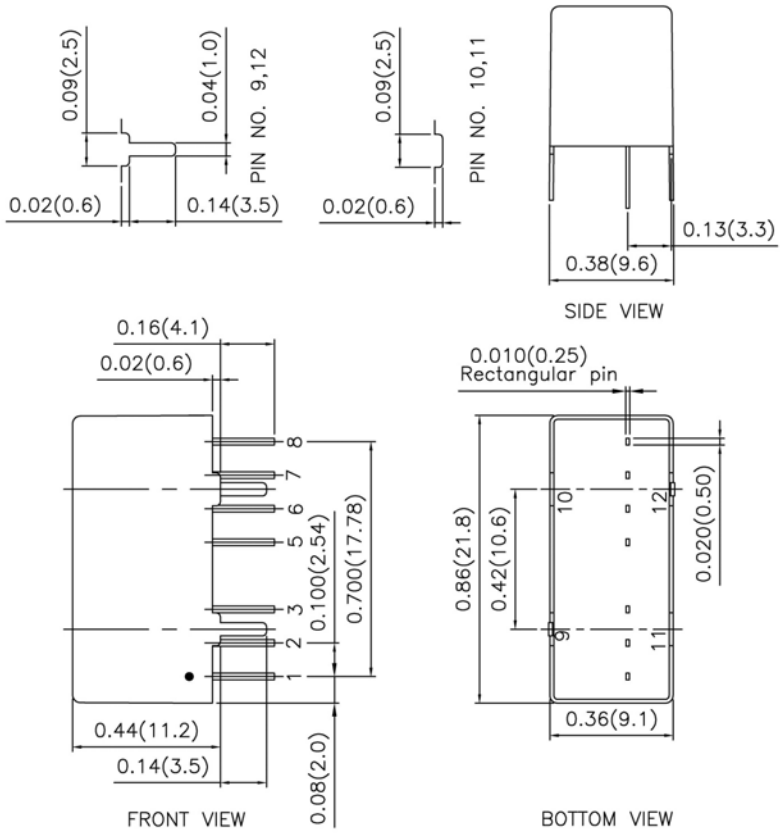


PIN CONNECTION		
PIN	SINGLE	DUAL
1	-INPUT	-INPUT
2	+INPUT	+INPUT
3	CTRL	CTRL
5	NC*/NO PIN**	NC*/NO PIN**
6	+OUTPUT	+OUTPUT
7	-OUTPUT	COMMON
8	NC	-OUTPUT

*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)