

# PDL03W SERIES

DC-DC CONVERTER

4:1 ULTRA WIDE INPUT RANGE  
UP TO 3 Watts



## FEATURES

- NO MINIMUM LOAD REQUIRED
- UP TO 3000VDC INPUT TO OUTPUT ISOLATION
- SMALL SIZE AND LOW PROFILE : 0.86 X 0.36 X 0.44 INCH
- LOW OUTPUT RIPPLE AND NOISE
- UL60950-1, EN60950-1, & IEC60950-1 SAFETY APPROVALS
- CE MARKED
- COMPLIANT TO RoHS II & REACH

## APPLICATIONS

- WIRELESS NETWORK
- TELECOM/DATACOM
- INDUSTRY CONTROL SYSTEM
- DISTRIBUTED POWER ARCHITECTURES
- SEMICONDUCTOR EQUIPMENT

<b>3000VDC ISOLATION</b>	<b>1600VDC ISOLATION</b>	<b>REMOTE CONTROL</b>	<b>OCP</b>	<b>SCP</b>
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## TECHNICAL SPECIFICATION

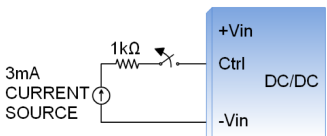
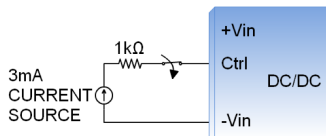
All specifications are typical at nominal input, full load and 25°C otherwise noted

Model Number	Input Range VDC	Output Voltage VDC	Output Current @Full Load mA	Input Current @ No Load mA	Efficiency %	Maximum Capacitor Load µF
PDL03-12S3P3W	4.5 ~ 18	3.3	700	35	74	3300
PDL03-12S05W	4.5 ~ 18	5	600	40	78	1680
PDL03-12S09W	4.5 ~ 18	9	333	40	79	1000
PDL03-12S12W	4.5 ~ 18	12	250	40	80	820
PDL03-12S15W	4.5 ~ 18	15	200	40	80	680
PDL03-12D05W	4.5 ~ 18	±5	±300	40	80	±1000
PDL03-12D12W	4.5 ~ 18	±12	±125	40	80	±470
PDL03-12D15W	4.5 ~ 18	±15	±100	40	80	±330
PDL03-24S3P3W	9 ~ 36	3.3	700	20	75	3300
PDL03-24S05W	9 ~ 36	5	600	20	80	1680
PDL03-24S09W	9 ~ 36	9	333	19	80	1000
PDL03-24S12W	9 ~ 36	12	250	20	82	820
PDL03-24S15W	9 ~ 36	15	200	19	82	680
PDL03-24D05W	9 ~ 36	±5	±300	25	79	±1000
PDL03-24D12W	9 ~ 36	±12	±125	25	81	±470
PDL03-24D15W	9 ~ 36	±15	±100	25	81	±330
PDL03-48S3P3W	18 ~ 75	3.3	700	12	74	3300
PDL03-48S05W	18 ~ 75	5	600	12	80	1680
PDL03-48S09W	18 ~ 75	9	333	13	80	1000
PDL03-48S12W	18 ~ 75	12	250	14	81	820
PDL03-48S15W	18 ~ 75	15	200	14	81	680
PDL03-48D05W	18 ~ 75	±5	±300	14	79	±1000
PDL03-48D12W	18 ~ 75	±12	±125	14	81	±470
PDL03-48D15W	18 ~ 75	±15	±100	14	81	±330

**PART NUMBER STRUCTURE**

<b>PDL03</b> -	<b>48</b>	<b>S</b>	<b>05</b>	<b>W</b>	<b>H</b>
Series Name	Input Voltage (VDC)	Output Quantity	Output Voltage (VDC)	Input Range	Isolation Option
	12: 4.5~18 24: 9~36 48: 18~75	S: Single	3P3: 3.3 05: 5 09: 9 12: 12 15: 15	4 : 1	□: Standard type 1600VDC isolation H: 3000VDC isolation
		D: Dual	05: ± 5 12: ±12 15: ±15		

**INPUT SPECIFICATIONS**

Parameter	Conditions	Min.	Typ.	Max.	Unit
Operating input voltage range	12Vin(nom) 24Vin(nom) 48Vin(nom)	4.5 9 18	12 24 48	18 36 75	VDC
Start up time	Constant resistive load Power up Remote ON/OFF		30 30		ms
Input surge voltage	100 ms, max. 12Vin(nom) 24Vin(nom) 48Vin(nom)			36 50 100	VDC
Input reflected ripple current	12Vin(nom) 24Vin(nom) 48Vin(nom)		25 10 8		mAp-p
Input filter					Capacitor type
Remote ON/OFF	DC-DC ON Ctrl pin applied current via 1kΩ DC-DC OFF Remote off input current	2	3	4 2.5	mA mA
<p>Application circuit</p> <p>DC-DC ON</p>  <p>DC-DC OFF</p> 					

**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	-1.0		+1.0	%
	5% Load to 100% Full Load	-0.5		+0.5	%
Cross regulation	Asymmetrical load 25%/100% FL	-5.0		+5.0	%
Ripple and noise	20MHz bandwidth		30		mVp-p
Temperature coefficient		-0.02		+0.02	%/°C
Transient response recovery time	25% load step change		250		μs
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"	1600 3000			VDC
Isolation resistance	500VDC			1			GΩ
Isolation capacitance			Standard Type Suffix "H"			200 40	pF
Switching frequency	Full load to minimum load			100			kHz
Safety approvals							UL60950-1 EN60950-1 IEC60950-1
Case material							Non-conductive black plastic
Base material							None
Potting material							Silicone (UL94 V-0)
Weight							4.8g (0.17oz)
MTBF	MIL-HDBK-217F						3.482 x 10 <sup>6</sup> hrs

**ENVIRONMENTAL SPECIFICATIONS**

Parameter	Conditions			Min.	Typ.	Max.	Unit
Operating ambient temperature			Without derating With derating	-40 +71		+71 +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**

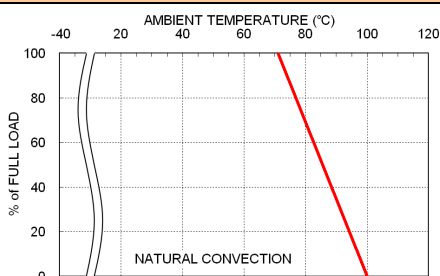
Parameter	Conditions		Level
EMI <sup>(1)</sup>	EN55022		Class A · Class B
ESD	EN61000-4-2	Air ± 8kV and Contact ± 6kV	Perf. Criteria A
Radiated immunity	EN61000-4-3	10 V/m	Perf. Criteria A
Fast transient <sup>(2)</sup>	EN61000-4-4	± 2kV	Perf. Criteria A
Surge <sup>(2)</sup>	EN61000-4-5	±1kV	Perf. Criteria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

**Note:**

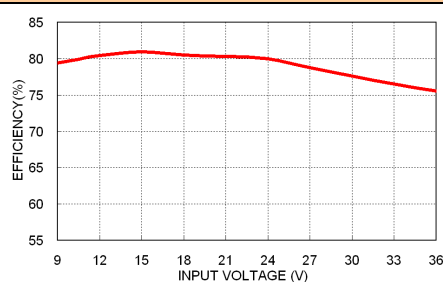
- The standard modules meet EMI Class A or Class B with external components. For further information, please contact with P-DUKE.
- An external input filter capacitor is required if the module has to meet EN61000-4-4, EN61000-4-5. The filter capacitor Power Mate suggest: Nippon chemi-con KY series, 100μF/100V.

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

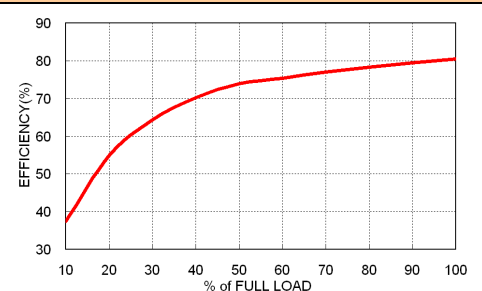
**CHARACTERISTIC CURVE**



PDL03-24S05W Derating Curve

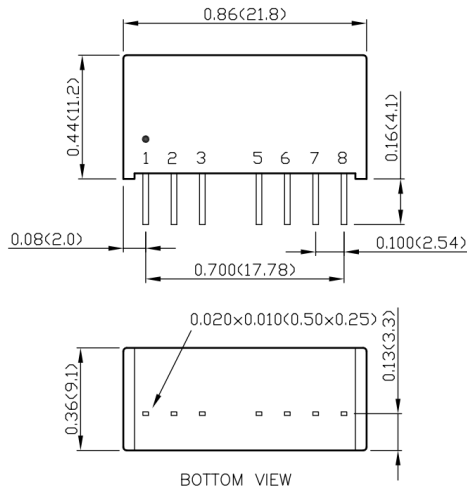


PDL03-24S05W Efficiency vs. Input Voltage



PDL03-24S05W Efficiency vs. Output Load

**MECHANICAL DRAWING**



**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").

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)