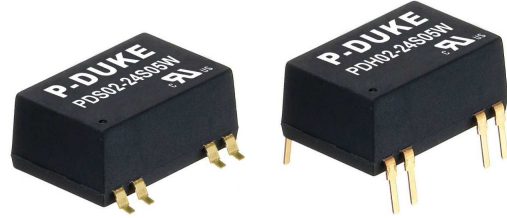


# PDS02W PDH02W SERIES

DC-DC CONVERTER

4:1 ULTRA WIDE INPUT RANGE  
UP TO 2 Watts



## FEATURES

- NO MINIMUM LOAD REQUIRED
- UP TO 3000VDC INPUT TO OUTPUT ISOLATION
- SMALL SIZE AND LOW PROFILE : 0.74 X 0.50 X 0.33 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

3000VDC  
ISOLATION

1600VDC  
ISOLATION

REMOTE  
CONTROL

SCP

## TECHNICAL SPECIFICATION

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

Model Number	Input Range	Output Voltage	Output Current @Full Load	Input Current @ No Load	Efficiency	Maximum Capacitor Load
	VDC	VDC	mA	mA	%	µF
PDS(H)02-12S3P3W	4.5 ~ 18	3.3	500	30	74	3300
PDS(H)02-12S05W	4.5 ~ 18	5	400	30	79	1680
PDS(H)02-12S09W	4.5 ~ 18	9	222	35	79	1000
PDS(H)02-12S12W	4.5 ~ 18	12	167	30	80	820
PDS(H)02-12S15W	4.5 ~ 18	15	134	35	81	680
PDS(H)02-12D05W	4.5 ~ 18	±5	±200	35	76	±1000
PDS(H)02-12D12W	4.5 ~ 18	±12	±83	35	81	±470
PDS(H)02-12D15W	4.5 ~ 18	±15	±67	35	81	±330
PDS(H)02-24S3P3W	9 ~ 36	3.3	500	20	74	3300
PDS(H)02-24S05W	9 ~ 36	5	400	20	79	1680
PDS(H)02-24S09W	9 ~ 36	9	222	20	79	1000
PDS(H)02-24S12W	9 ~ 36	12	167	20	80	820
PDS(H)02-24S15W	9 ~ 36	15	134	20	82	680
PDS(H)02-24D05W	9 ~ 36	±5	±200	20	76	±1000
PDS(H)02-24D12W	9 ~ 36	±12	±83	20	81	±470
PDS(H)02-24D15W	9 ~ 36	±15	±67	20	81	±330
PDS(H)02-48S3P3W	18 ~ 75	3.3	500	10	74	3300
PDS(H)02-48S05W	18 ~ 75	5	400	10	78	1680
PDS(H)02-48S09W	18 ~ 75	9	222	10	79	1000
PDS(H)02-48S12W	18 ~ 75	12	167	10	81	820
PDS(H)02-48S15W	18 ~ 75	15	134	10	82	680
PDS(H)02-48D05W	18 ~ 75	±5	±200	10	76	±1000
PDS(H)02-48D12W	18 ~ 75	±12	±83	10	81	±470
PDS(H)02-48D15W	18 ~ 75	±15	±67	10	81	±330

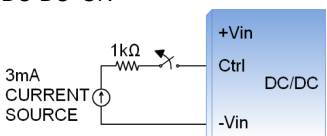
**PART NUMBER STRUCTURE**

<b>PDS02</b> - <b>48</b> <b>S</b> <b>05</b> <b>W</b> <b>H</b>					
<b>Series Name</b>	<b>Input Voltage (VDC)</b>	<b>Output Quantity</b>	<b>Output Voltage (VDC)</b>	<b>Input Range</b>	<b>Isolation Option</b>
<b>PDS</b> : SMD type <b>PDH</b> : DIP type	12: 4.5~18 24: 9~36 48: 18~75	S: Single	<b>3P3</b> : 3.3 <b>05</b> : 5 <b>09</b> : 9 <b>12</b> : 12 <b>15</b> : 15	4 : 1	<input type="checkbox"/> : Standard type 1600VDC isolation <b>H</b> : 3000VDC isolation
		D: Dual	<b>05</b> : ± 5 <b>12</b> : ± 12 <b>15</b> : ± 15		

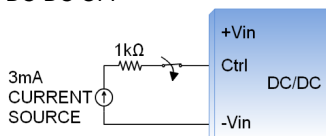
**INPUT SPECIFICATIONS**

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		5 5		ms
Input surge voltage	1 second, max. 12Vin(nom) 24Vin(nom) 48Vin(nom)			25 50 100	VDC
Input reflected ripple current	12Vin(nom) 24Vin(nom) 48Vin(nom)		80 40 30		mAp-p
Input filter <sup>(1)</sup>					Capacitor type
Remote ON/OFF	DC-DC ON DC-DC OFF Remote off input current  Ctrl pin applied current via 1kΩ  Application circuit DC-DC ON  DC-DC OFF	2	3	4 2.5	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	-1.0		+1.0	%
	10% Load to 100% Full Load	-0.5 -0.8		+0.5 +0.8	%
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"			50 50	pF
Switching frequency	Full load to minimum load			100			kHz
Safety approvals							UL60950-1 EN60950-1 IEC60950-1
Weight							4.5g (0.16oz)
MTBF	MIL-HDBK-217F						6.594 x 10 <sup>6</sup> hrs

### ENVIRONMENTAL SPECIFICATIONS

Parameter	Conditions			Min.	Typ.	Max.	Unit
Operating ambient temperature		Without derating		-40		+85	°C
		With derating		+85		+100	°C
Storage temperature range				-55		+125	°C
Thermal shock							MIL-STD-810F
Vibration							MIL-STD-810F
Relative humidity							5% to 95% RH
Lead-free reflow solder process							IPC J-STD-020D
Moisture sensitivity level	MSL						IPC J-STD-033B Level 2a

### EMC SPECIFICATIONS

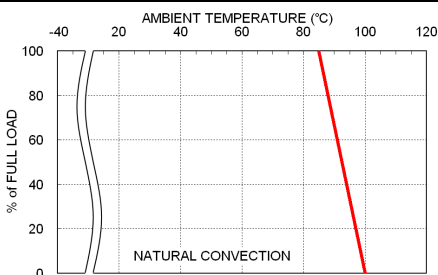
Parameter	Conditions		Level
EMI <sup>(2)</sup>	EN55022		Class A , Class B
ESD	EN61000-4-2	Air ± 8kV and Contact ± 6kV	Perf. Criteria A
Radiated immunity	EN61000-4-3	10 V/m	Perf. Criteria A
Fast transient <sup>(3)</sup>	EN61000-4-4	± 2kV	Perf. Criteria A
Surge <sup>(3)</sup>	EN61000-4-5	±1kV	Perf. Criteria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

#### Note:

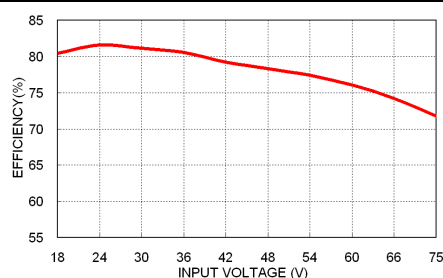
- It will not damage the device without installing external input capacitors. It's helpful to reduce input reflected ripple current if external input capacitors are installed.
- The standard module meets EMI Class A or Class B with external components. For further information, please contact with P-DUKE.
- 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, 220μF/100V.

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

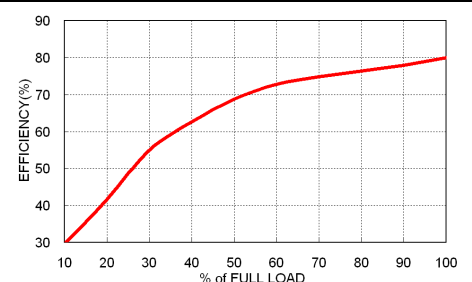
### CHARACTERISTIC CURVE



PDS02-48S05W Derating Curve



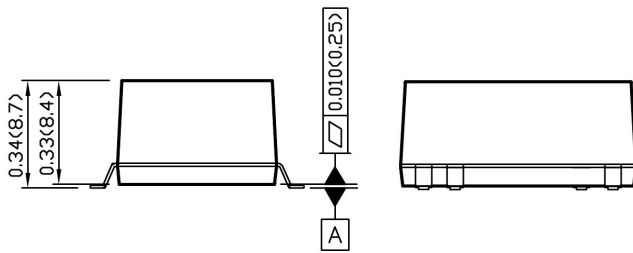
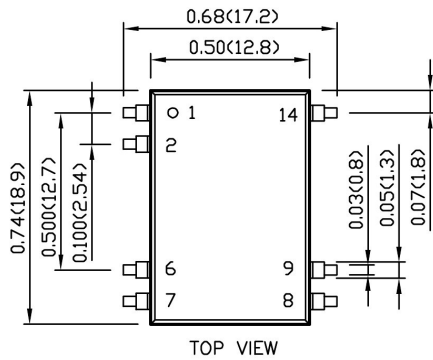
PDS02-48S05W Efficiency vs. Input Voltage



PDS02-48S05W Efficiency vs. Output Load

**MECHANICAL DRAWING**

**PDS02**



**PIN CONNECTION**

PIN	SINGLE	DUAL
1	-Vin	-Vin
2	Ctrl	Ctrl
6	NC	Common
7	NC	-Vout
8	+Vout	+Vout
9	-Vout	Common
14	+Vin	+Vin

1. All dimensions in inch (mm)
2. Tolerance :x.xx±0.02 (x.xx±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)

**PDH02**

