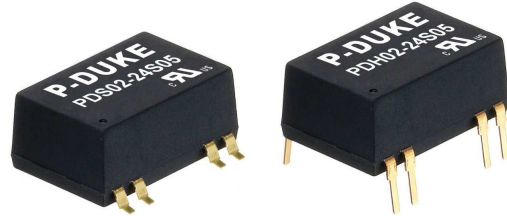


# PDS02 PDH02 SERIES

DC-DC CONVERTER

2:1 WIDE INPUT RANGE  
UP TO 2Watts



## 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
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## TECHNICAL SPECIFICATION

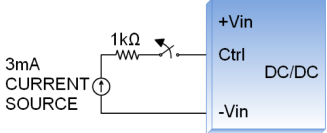
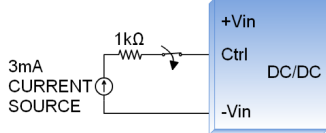
All specifications are typical at nominal input, full load and 25°C otherwise noted

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)02-05S3P3	4.5 ~ 9	3.3	500	35	74	3300
PDS(H)02-05S05	4.5 ~ 9	5	400	35	80	1680
PDS(H)02-05S09	4.5 ~ 9	9	222	40	79	1000
PDS(H)02-05S12	4.5 ~ 9	12	167	35	81	820
PDS(H)02-05S15	4.5 ~ 9	15	134	40	83	680
PDS(H)02-05D05	4.5 ~ 9	±5	±200	40	78	±1000
PDS(H)02-05D12	4.5 ~ 9	±12	±83	40	81	±470
PDS(H)02-05D15	4.5 ~ 9	±15	±67	40	82	±330
PDS(H)02-12S3P3	9 ~ 18	3.3	500	20	75	3300
PDS(H)02-12S05	9 ~ 18	5	400	20	81	1680
PDS(H)02-12S09	9 ~ 18	9	222	20	79	1000
PDS(H)02-12S12	9 ~ 18	12	167	20	81	820
PDS(H)02-12S15	9 ~ 18	15	134	20	84	680
PDS(H)02-12D05	9 ~ 18	±5	±200	25	78	±1000
PDS(H)02-12D12	9 ~ 18	±12	±83	25	83	±470
PDS(H)02-12D15	9 ~ 18	±15	±67	25	82	±330
PDS(H)02-24S3P3	18 ~ 36	3.3	500	10	75	3300
PDS(H)02-24S05	18 ~ 36	5	400	10	81	1680
PDS(H)02-24S09	18 ~ 36	9	222	10	79	1000
PDS(H)02-24S12	18 ~ 36	12	167	10	84	820
PDS(H)02-24S15	18 ~ 36	15	134	10	84	680
PDS(H)02-24D05	18 ~ 36	±5	±200	10	79	±1000
PDS(H)02-24D12	18 ~ 36	±12	±83	10	84	±470
PDS(H)02-24D15	18 ~ 36	±15	±67	10	84	±330
PDS(H)02-48S3P3	36 ~ 75	3.3	500	7	75	3300
PDS(H)02-48S05	36 ~ 75	5	400	7	81	1680
PDS(H)02-48S09	36 ~ 75	9	222	7	79	1000
PDS(H)02-48S12	36 ~ 75	12	167	7	82	820
PDS(H)02-48S15	36 ~ 75	15	134	7	82	680
PDS(H)02-48D05	36 ~ 75	±5	±200	7	78	±1000
PDS(H)02-48D12	36 ~ 75	±12	±83	7	83	±470
PDS(H)02-48D15	36 ~ 75	±15	±67	7	83	±330

**PART NUMBER STRUCTURE**
**PDS02 - 48 S 05 H**

Series Name	Input Voltage (VDC)	Output Quantity	Output Voltage (VDC)	Isolation Option
<b>PDS</b> : SMD type <b>PDH</b> : DIP type	<b>05</b> : 4.5~9 <b>12</b> : 9~18 <b>24</b> : 18~36 <b>48</b> : 36~75	<b>S</b> : Single	<b>3P3</b> : 3.3 <b>05</b> : 5 <b>09</b> : 9 <b>12</b> : 12 <b>15</b> : 15	<b>□</b> : Standard type 1600VDC isolation <b>H</b> : 3000VDC isolation
		<b>D</b> : 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	05Vin(nom) 12Vin(nom) 24Vin(nom) 48Vin(nom)	4.5 9 18 36	5 12 24 48	9 18 36 75	VDC
Start up time	Constant resistive load Power up Remote ON/OFF		5 5		ms
Input surge voltage	1 second, max. 05Vin(nom) 12Vin(nom) 24Vin(nom) 48Vin(nom)			15 25 50 100	VDC
Input reflected ripple current	05Vin(nom) 12Vin(nom) 24Vin(nom) 48Vin(nom)		80 40 30 20		mAp-p
Input filter					Capacitor type
Remote ON/OFF	Ctrl pin applied current via 1kΩ DC-DC ON 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	%
	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						7.137 x 10 <sup>6</sup> hrs

### ENVIRONMENTAL SPECIFICATIONS

Parameter	Conditions			Min.	Typ.	Max.	Unit
Operating ambient temperature		Without derating With derating		-40 +85		+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

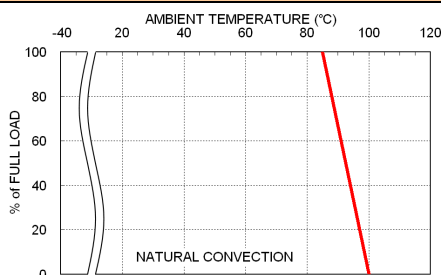
Parameter	Conditions		Level
EMI <sup>(1)</sup>	EN55022		Class A · Class B
ESD	EN61000-4-2	Air ± 8kV and Contact ± 6kV	Perf. Criteria A
Radiated immunity	EN61000-4-3	10 V/m	Perf. Criteria A
Fast transient <sup>(2)</sup>	EN61000-4-4	± 2kV	Perf. Criteria A
Surge <sup>(2)</sup>	EN61000-4-5	±1kV	Perf. Criteria A
Conducted immunity	EN61000-4-6	10 Vr.m.s	Perf. Criteria A
Power frequency magnetic field	EN61000-4-8	100A/m continuous; 1000A/m 1 second	Perf. Criteria A

**Note:**

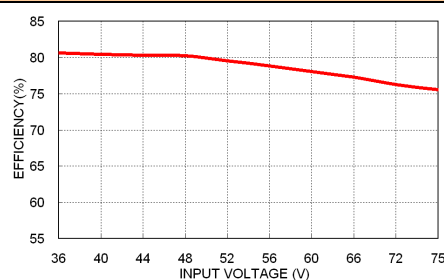
- The standard module meet EMI Class A or Class B with external components. For further information, please contact with P-DUKE.
- An external input filter capacitor is required if the module has to meet EN61000-4-4, EN61000-4-5.  
The filter capacitor Power Mate suggest: Nippon chemi-con KY series, 220µF/100V.

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

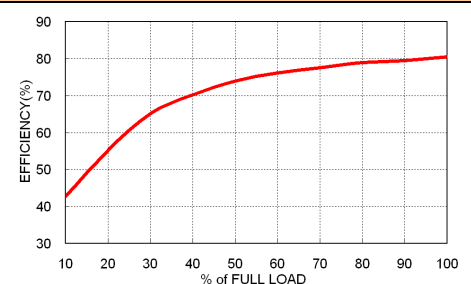
### CHARACTERISTIC CURVE



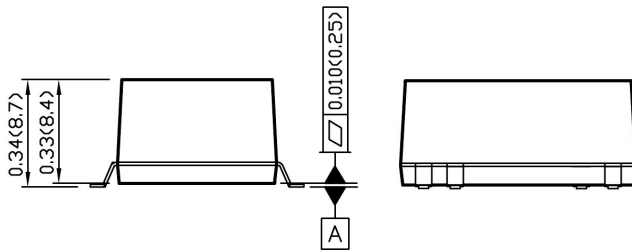
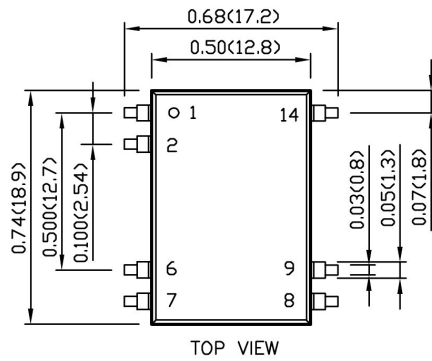
PDS02-48S05 Derating Curve



PDS02-48S05 Efficiency vs. Input Voltage



PDS02-48S05 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.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)

**PDH02**
