

### FEATURES

- 2 WATTS MAXIMUM OUTPUT POWER
- SMD AND DIP PACKAGE, 0.74 x 0.50 x 0.33 INCH
- SMD PACKAGE QUALIFIED FOR LEADFREE REFLOW SOLDER PROCESS ACCORDING IPC J-STD-020D
- 4:1 ULTRA WIDE INPUT VOLTAGE RANGE
- HIGH EFFICIENCY UP TO 82%
- 1600VDC INPUT TO OUTPUT ISOLATION AND 3000VDC FOR OPTION
- LOW RIPPLE & NOISE
- EXTERNAL ON/OFF CONTROL
- SWITCHING FREQUENCY (100kHz, MIN)
- CONTINUOUS SHORT CIRCUIT PROTECTION
- UL94-V0 PACKAGE MATERIALS
- CE MARK MEETS 2006/95/EC, 2011/95/EC AND 2004/108/EC
- SAFETY MEETS UL60950-1, EN60950-1 AND IEC60950-1
- COMPLIANT TO RoHS EU DIRECTIVE 2011/65/EU

### APPLICATIONS

Wireless Network  
Telecom/Datacom  
Industry Control System  
Measurement Equipment  
Semiconductor Equipment

### OPTIONS

3000VDC ISOLATION

### DESCRIPTION

The PDS02W(SMD type), PDH02W(DIP type) offer 2 watts of output power from a 0.74 x 0.50 x 0.33 inch package without derating to 85°C. The PDS(H)02W series have 4:1 ultra wide input voltage of 4.5~18, 9~36, and 18~75VDC and features 3000VDC of isolation, short-circuit protection.

## TECHNICAL SPECIFICATION

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

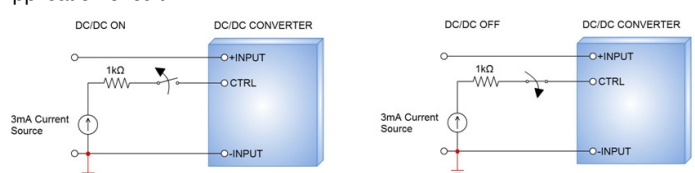
OUTPUT SPECIFICATIONS		
Output power	2 Watts, max.	
Voltage accuracy	± 1%	
Minimum load	0%	
Line regulation	LL to HL at Full Load ± 0.2%	
Load regulation	No load to Full load	Single ±1.0%
		Dual ±1.0%
	10% load to 90% load	Single ±0.5%
	Dual ±0.8%	
Cross regulation (Dual)	Asymmetrical load 25%/100% FL ±5%	
Ripple and noise	20MHz bandwidth See table	
Temperature coefficient	±0.02% / °C, max.	
Transient response recovery time	25% load step change 250µs	
Short circuit protection	Continuous, automatics recovery	

GENERAL SPECIFICATIONS	
Efficiency	See table
Isolation voltage	Standard 1600VDC, min. 1minute Suffix "H" 3000VDC, min. 1minute
Isolation resistance	500VDC 10 <sup>9</sup> ohms, min.
Isolation capacitance	Standard 50pF, max. Suffix "H" 50pF, max.
Switching frequency	100kHz, min.
Design meets safety standard	IEC60950-1, UL60950-1, EN60950-1
Dimensions	0.74 x 0.50 x 0.33 Inch (18.9 X 12.8 X 8.4 mm)
Weight	4.5g(0.16oz)
MTBF(Note 1)	MIL-HDBK-217F 6.594 x 10 <sup>6</sup> hrs

EMC CHARACTERISTICS	
EMI (Note 6)	EN55022 Class A, Class B
ESD	EN61000-4-2 Air ± 8kV Contact ± 6kV Perf. Criteria A
Radiated immunity	EN61000-4-3 10 V/m Perf. Criteria A
Fast transient (Note 7)	EN61000-4-4 ± 2kV Perf. Criteria A
Surge (Note 7)	EN61000-4-5 ± 1kV Perf. Criteria A
Conducted immunity	EN61000-4-6 10 Vr.m.s Perf. Criteria A

INPUT SPECIFICATIONS	
Input voltage range	12VDC nominal input 4.5 ~ 18VDC
	24VDC nominal input 9 ~ 36VDC
	48VDC nominal input 18 ~ 75VDC
Input filter	Capacitor type
Input surge voltage	12VDC input 25VDC 1sec, max.
	24VDC input 50VDC 1sec, max.
	48VDC input 100VDC 1sec, max.
Input reflected ripple current(Note 6)	12VDC input 80mA <sub>p-p</sub>
	24VDC input 40mA <sub>p-p</sub>
	48VDC input 30mA <sub>p-p</sub>
Start up time	Nominal input and constant resistive load Power up 5ms
	Remote ON/OFF Remote ON/OFF 5ms
Remote ON/OFF	DC-DC ON Open or high impedance
	DC-DC OFF Control pin applied current 2 ~ 4mA max(via 1kΩ)
Remote off state input current	Nominal input 2.5mA, max.

Application circuit:



ENVIRONMENTAL SPECIFICATIONS	
Operating ambient temperature	-40°C ~ +85°C (non-derating)
Storage temperature range	-55°C ~ +125°C
Thermal shock	MIL-STD-810F
Vibration	MIL-STD-810F
Relative humidity(non-condensing)	5% to 90% RH
Lead-free reflow solder process	IPC J-STD-020D
Moisture sensitivity level(MSL)	IPC J-STD-033B Level 2a

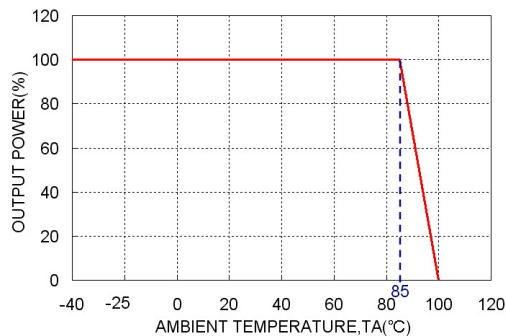
Model Number	Input Range	Output Voltage	Output Current		Output <sup>(2)</sup> Ripple & Noise	No load <sup>(3)</sup> Input Current	Eff <sup>(4)</sup> (%)	Capacitor <sup>(5)</sup> Load max.
			Min. load	Full load				
PDS(H)02-12S3P3W	4.5 ~ 18 VDC	3.3 VDC	0mA	500mA	30mVp-p	30mA	74	3300μF
PDS(H)02-12S05W	4.5 ~ 18 VDC	5 VDC	0mA	400mA	30mVp-p	30mA	79	1680μF
PDS(H)02-12S09W	4.5 ~ 18 VDC	9 VDC	0mA	222mA	30mVp-p	30mA	79	1000μF
PDS(H)02-12S12W	4.5 ~ 18 VDC	12 VDC	0mA	167mA	30mVp-p	30mA	80	820μF
PDS(H)02-12S15W	4.5 ~ 18 VDC	15 VDC	0mA	134mA	30mVp-p	35mA	81	680μF
PDS(H)02-12D05W	4.5 ~ 18 VDC	±5 VDC	0mA	±200mA	30mVp-p	35mA	76	±1000μF
PDS(H)02-12D12W	4.5 ~ 18 VDC	±12 VDC	0mA	±83mA	30mVp-p	35mA	81	±470μF
PDS(H)02-12D15W	4.5 ~ 18 VDC	±15 VDC	0mA	±67mA	30mVp-p	35mA	81	±330μF
PDS(H)02-24S3P3W	9 ~ 36 VDC	3.3 VDC	0mA	500mA	30mVp-p	20mA	74	3300μF
PDS(H)02-24S05W	9 ~ 36 VDC	5 VDC	0mA	400mA	30mVp-p	20mA	79	1680μF
PDS(H)02-24S09W	9 ~ 36 VDC	9 VDC	0mA	222mA	30mVp-p	20mA	79	1000μF
PDS(H)02-24S12W	9 ~ 36 VDC	12 VDC	0mA	167mA	30mVp-p	20mA	80	820μF
PDS(H)02-24S15W	9 ~ 36 VDC	15 VDC	0mA	134mA	30mVp-p	20mA	82	680μF
PDS(H)02-24D05W	9 ~ 36 VDC	±5 VDC	0mA	±200mA	30mVp-p	20mA	76	±1000μF
PDS(H)02-24D12W	9 ~ 36 VDC	±12 VDC	0mA	±83mA	30mVp-p	20mA	81	±470μF
PDS(H)02-24D15W	9 ~ 36 VDC	±15 VDC	0mA	±67mA	30mVp-p	20mA	81	±330μF
PDS(H)02-48S3P3W	18 ~ 75 VDC	3.3 VDC	0mA	500mA	30mVp-p	10mA	74	3300μF
PDS(H)02-48S05W	18 ~ 75 VDC	5 VDC	0mA	400mA	30mVp-p	10mA	78	1680μF
PDS(H)02-48S09W	18 ~ 75 VDC	9 VDC	0mA	222mA	30mVp-p	10mA	79	1000μF
PDS(H)02-48S12W	18 ~ 75 VDC	12 VDC	0mA	167mA	30mVp-p	10mA	81	820μF
PDS(H)02-48S15W	18 ~ 75 VDC	15 VDC	0mA	134mA	30mVp-p	10mA	82	680μF
PDS(H)02-48D05W	18 ~ 75 VDC	±5 VDC	0mA	±200mA	30mVp-p	10mA	76	±1000μF
PDS(H)02-48D12W	18 ~ 75 VDC	±12 VDC	0mA	±83mA	30mVp-p	10mA	81	±470μF
PDS(H)02-48D15W	18 ~ 75 VDC	±15 VDC	0mA	±67mA	30mVp-p	10mA	81	±330μF

**Note**

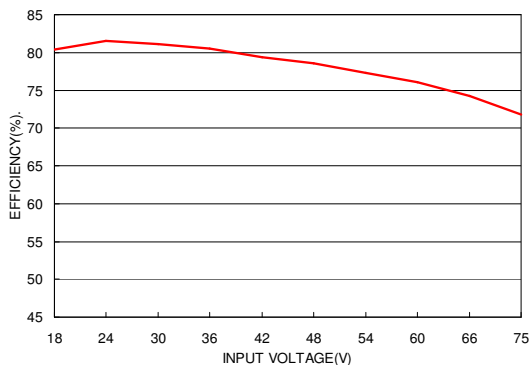
1. MIL-HDBK-217F @Ta=25 °C, Full load.
2. Typical value at nominal input and full load. (20MHz BW.)
3. Typical value at nominal input and no load.
4. Typical value at nominal input and full load.
5. Test by minimum input and constant resistive load.
6. The PDS(H)02W series standard module meets EN55022 Class A and Class B with external components.  
For more detail information, please contact with P-DUKE.
7. 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, 220 μ F/100V.

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

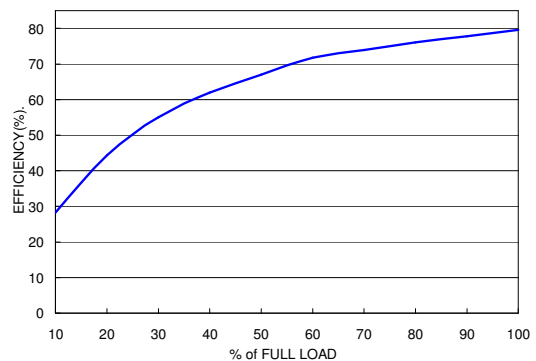
PDS02-48S05W Derating Curve



PDS02-48S05W Efficiency VS Input Voltage



PDS02-48S05W Efficiency VS Output Load

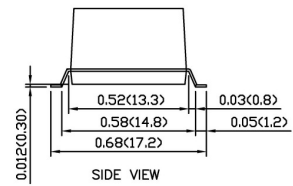
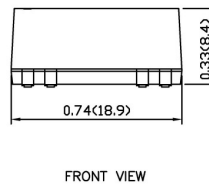
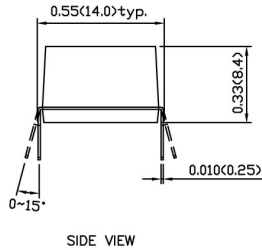
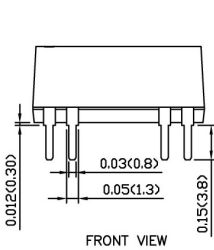
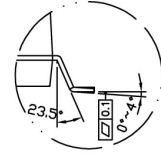
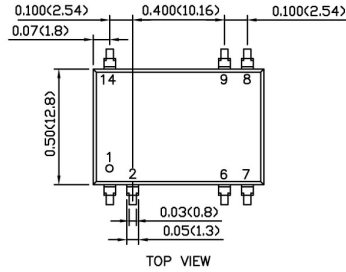
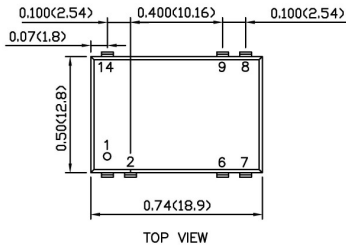




**MECHANICAL DRAWING :**

**DIP TYPE**

**SMD TYPE**



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)

PIN CONNECTION		
PIN	SINGLE	DUAL
1	-INPUT	-INPUT
2	CTRL	CTRL
6	NC	COMMON
7	NC	-OUTPUT
8	+OUTPUT	+OUTPUT
9	-OUTPUT	COMMON
14	+INPUT	+INPUT