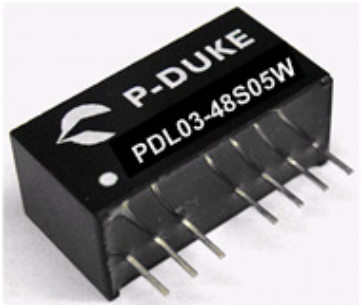
POWER MATE TECHNOLOGY CO., LTD.

PDL03W SERIES

3 WATTS DC-DC CONVERTER



FEATURES

- **3 WATTS MAXIMUM OUTPUT POWER**
- **OUTPUT CURRENT UP TO 700mA**
- **SIP PACKAGE, 0.86 x 0.36x 0.44 INCH**
- **HIGH EFFICIENCY UP TO 82%**
- **4:1 ULTRA WIDE INPUT VOLTAGE RANGE**
- **SWITCHING FREQENCY (100kHz, min)**
- **LOW RIPPLE & NOISE**
- **UL94-V0 CASE POTTING MATERIALS**
- **INPUT TO OUTPUT ISOLATION: 1600VDC**
- **CONTINUOUS SHORT CIRCUIT PROTECTION**
- **EXTERNAL ON/OFF CONTROL**
- **CE MARK MEETS 2006/95/EC, 2011/95/EC AND 2004/108/EC**
- **SAFETY MEETS UL60950-1, EN60950-1 AND IEC60950-1**
- **ISO9001 CERTIFIED MANUFACTURING FACILITIES**
- **COMPLIANT TO RoHS EU DIRECTIVE 2011/65/EU**

OPTIONS

3000VDC ISOLATION

APPLICATIONS

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

DESCRIPTION

The PDL03W series offer 3 watts of output power from a 0.86 x 0.36 x 0.44 inch package without derating to 71ºC. The PDL03W series have 4:1 ultra wide input voltage of 4.5~18 9~36 and 18~75VDC and features 1600VDC of isolation, short-circuit protection.

TECHNICAL SPECIFICATION

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

OUTPUT SPECIFICATIONS

Output power			3 Watts, max.
Voltage accuracy			± 1%
Minimum load			0%
Line regulation	LL to HL at Full Load		± 0.2%
Load regulation	Single	No Load to Full load	± 1%
		5% load to 100% load	± 0.5%
	Dual	No Load to Full Load	± 1%
Cross regulation (Dual)	Asymmetrical load 25%/100% FL		±5%
Ripple and noise	20MHz bandwidth		See table
Temperature coefficient			±0.02% / ºC, max.
Transient response recovery time	25% load step change		250us
Short circuit protection			Continuous, automatics recovery

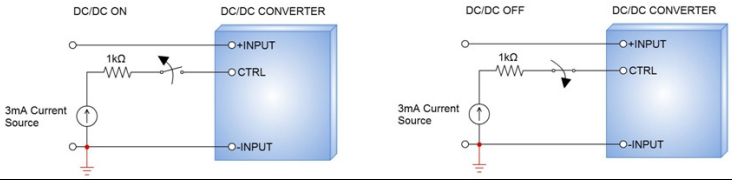
GENERAL SPECIFICATIONS

Efficiency			See table
Isolation voltage		Standard	1600VDC, min. 1minute
		Suffix "H"	3000VDC, min. 1minute
Isolation resistance	500VDC		10^9 ohms, min.
Isolation capacitance		Standard	200pF, max.
		Suffix "H"	40pF, max.
Switching frequency	Full load to minimum load		100kHz, min.
Design meet safety standard			IEC60950-1, UL60950-1, EN60950-1
Case material			Non-conductive black plastic
Base material			None
Potting material			Silicon (UL94-V0)
Dimensions			0.86 X 0.36 X 0.44 Inch (21.8 X 9.2 X 11.1 mm)
Weight			4.8g (0.17oz)
MTBF(Note 1)	Bellcore TR-NWT-000332		3.963 x 10^6 hrs
	MIL-HDBK-217F		1.707 x 10^6 hrs

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		36VDC 100ms, max.
	24VDC input		50VDC 100ms, max.
	48VDC input		100VDC 100ms, max.
Input reflected ripple current(Note 6)	12VDC input		25mAp-p
	24VDC input		10mAp-p
	48VDC input		8mAp-p
Start up time	Nominal input and constant resistive load	Power up	30ms
		Remote ON/OFF	30ms
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	-40ºC ~ +71ºC (without derating) +71ºC ~ +100ºC (with derating)
Storage temperature range	-55ºC ~ +125ºC
Thermal shock	MIL-STD-810F
Vibration	MIL-STD-810F
Relative humidity	5% to 95% RH

EMC CHARACTERISTICS

EMI(Note6)	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

PDL03W SERIES

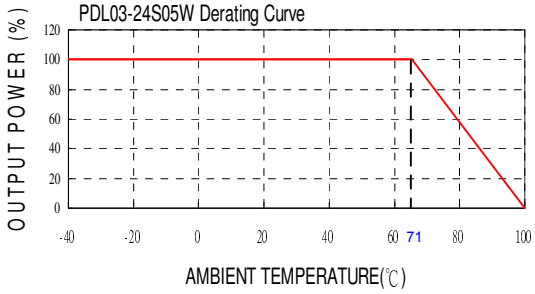
3 WATTS DC-DC CONVERTER

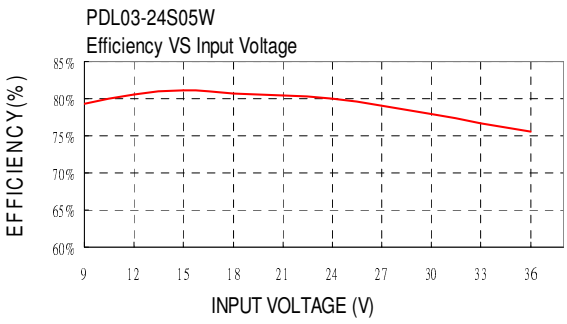
Model Number	Input Range	Output Voltage	Output Current		Output [2] Ripple & Noise	No load[3] Input Current	Eff [4] (%)	Capacitor [5] Load max
			Min. load	Full load				
PDL03-12S3P3W	4.5 ~ 18 VDC	3.3 VDC	0mA	700mA	30 mVp-p	35 mA	74	3300uF
PDL03-12S05W	4.5 ~ 18 VDC	5 VDC	0mA	600mA	30 mVp-p	40 mA	78	1680uF
PDL03-12S09W	4.5 ~ 18 VDC	9 VDC	0mA	333mA	30 mVp-p	40 mA	79	1000uF
PDL03-12S12W	4.5 ~ 18 VDC	12 VDC	0mA	250mA	30 mVp-p	40 mA	80	820uF
PDL03-12S15W	4.5 ~ 18 VDC	15 VDC	0mA	200mA	30 mVp-p	40 mA	80	680uF
PDL03-12D05W	4.5 ~ 18 VDC	±5 VDC	0mA	±300mA	30 mVp-p	40 mA	80	±1000uF
PDL03-12D12W	4.5 ~ 18 VDC	±12 VDC	0mA	±125mA	30 mVp-p	40 mA	80	±470uF
PDL03-12D15W	4.5 ~ 18 VDC	±15 VDC	0mA	±100mA	30 mVp-p	40 mA	80	±330uF
PDL03-24S3P3W	9 ~ 36 VDC	3.3 VDC	0mA	700mA	30 mVp-p	20mA	75	3300uF
PDL03-24S05W	9 ~ 36 VDC	5 VDC	0mA	600mA	30 mVp-p	20mA	80	1680uF
PDL03-24S09W	9 ~ 36 VDC	9 VDC	0mA	333mA	30 mVp-p	19mA	80	1000uF
PDL03-24S12W	9 ~ 36 VDC	12 VDC	0mA	250mA	30 mVp-p	20mA	82	820uF
PDL03-24S15W	9 ~ 36 VDC	15 VDC	0mA	200mA	30 mVp-p	19mA	82	680uF
PDL03-24D05W	9 ~ 36 VDC	±5 VDC	0mA	±300mA	30 mVp-p	25mA	79	±1000uF
PDL03-24D12W	9 ~ 36 VDC	±12 VDC	0mA	±125mA	30 mVp-p	25mA	81	±470uF
PDL03-24D15W	9 ~ 36 VDC	±15 VDC	0mA	±100mA	30 mVp-p	25mA	81	±330uF
PDL03-48S3P3W	18 ~ 75 VDC	3.3 VDC	0mA	700mA	30 mVp-p	12mA	74	3300uF
PDL03-48S05W	18 ~ 75 VDC	5 VDC	0mA	600mA	30 mVp-p	12mA	80	1680uF
PDL03-48S09W	18 ~ 75 VDC	9 VDC	0mA	333mA	30 mVp-p	13mA	80	1000uF
PDL03-48S12W	18 ~ 75 VDC	12 VDC	0mA	250mA	30 mVp-p	14mA	81	820uF
PDL03-48S15W	18 ~ 75 VDC	15 VDC	0mA	200mA	30 mVp-p	14mA	81	680uF
PDL03-48D05W	18 ~ 75 VDC	±5 VDC	0mA	±300mA	30 mVp-p	14mA	79	±1000uF
PDL03-48D12W	18 ~ 75 VDC	±12 VDC	0mA	±125mA	30 mVp-p	14mA	81	±470uF
PDL03-48D15W	18 ~ 75 VDC	±15 VDC	0mA	±100mA	30 mVp-p	14mA	81	±330uF

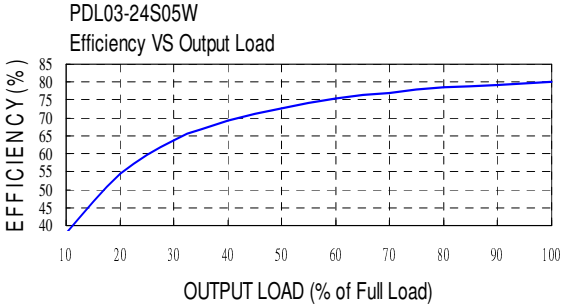
Note

1. BELLCORE TR-NWT-000332. Case 1: 50% Stress, Temperature at 40ºC.
   MIL-HDBK-217F Notice2 @Ta=25 ºC, Full load(Ground, Benign, controlled environment)
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 PDL03W 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, 100μF/100V.

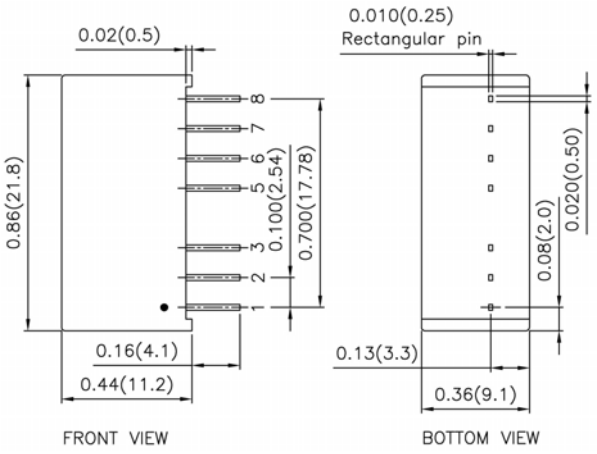
CAUTION: This power module is not internally fused. An input line fuse must always be used.







MECHANICAL DRAWING :



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	+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”)