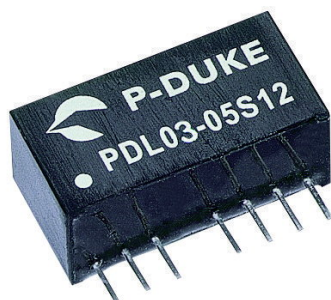




APPLICATIONS

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

FEATURES

- 3 WATTS MAXIMUM OUTPUT POWER
- OUTPUT CURRENT UP TO 700mA
- SIP PACKAGE, 0.86 x 0.36 x 0.44 INCH
- HIGH EFFICIENCY UP TO 85%
- 2:1 WIDE INPUT VOLTAGE RANGE
- SWITCHING FREQUENCY (100KHz, MIN)
- NO EXTERNAL INPUT AND OUTPUT CAPACITOR NEEDED
- 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, 93/68/EEC AND 2004/108/EC
- UL60950-1, EN60950-1 AND IEC60950-1 LICENSED
- ISO9001 CERTIFIED MANUFACTURING FACILITIES
- COMPLIANT TO RoHS EU DIRECTIVE 2002/95/EC

OPTIONS

3000VDC ISOLATION

DESCRIPTION

The PDL03 series offer 3 watts of output power from a 0.86 x 0.36 x 0.44 inch package without derating to 71°C. The PDL03 series have 2:1 wide input voltage of 4.5~9, 9~18, 18~36 and 36~75VDC and features 1600VDC 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			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% / °C, max.
Transient response recovery time	25% load step change		500µS
Short circuit protection		Continuous, automatics recovery	
GENERAL SPECIFICATIONS			
Efficiency			See table
Isolation voltage	Standard	1600VDC, min. 1minute	
	Suffix "H"	3000VDC, min. 1minute	
Isolation resistance			10 ⁹ ohms, min.
Isolation capacitance	Standard	200pF, max.	
	Suffix "H"	40pF, max.	
Switching frequency	Full load to minimum load		100KHz, min.
Approvals and 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 9.1 X 11.2 mm)
Weight			4.8g (0.17oz)
MTBF(Note 1)	BELLCORE TR-NWT-000332		4.386 x 10 ⁶ hrs
	MIL-HDBK-217F		2.401 x 10 ⁶ hrs

INPUT SPECIFICATIONS			
Input voltage range	5VDC nominal input		4.5 ~ 9VDC
	12VDC nominal input		9 ~ 18VDC
	24VDC nominal input		18 ~ 36VDC
	48VDC nominal input		36 ~ 75VDC
Input filter			Capacitor type
Input surge voltage	5VDC input		15VDC 100mS, max.
	12VDC input		36VDC 100mS, max.
	24VDC input		50VDC 100mS, max.
	48VDC input		100VDC 100mS, max.
Input reflected ripple current	5VDC input		400mA-p-p, max.
	12VDC input		150mA-p-p, max.
	24VDC input		380mA-p-p, max.
	48VDC input		170mA-p-p, max.
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	-40°C ~ +71°C (without derating) +71°C ~ +100°C (with derating)
Storage temperature range	-55°C ~ +105°C
Thermal shock	MIL-STD-810F
Vibration	MIL-STD-810F
Relative humidity	5% to 95% RH

EMC CHARACTERISTICS

EMI (Note 6)	EN55022		Class A
ESD	EN61000-4-2	Air Contact	± 8KV ± 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

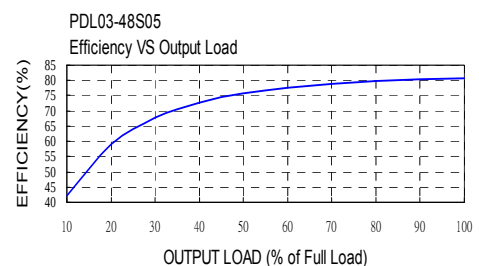
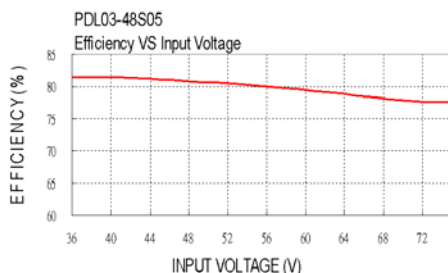
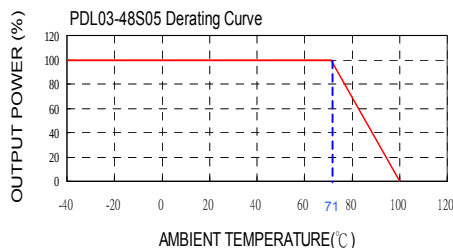




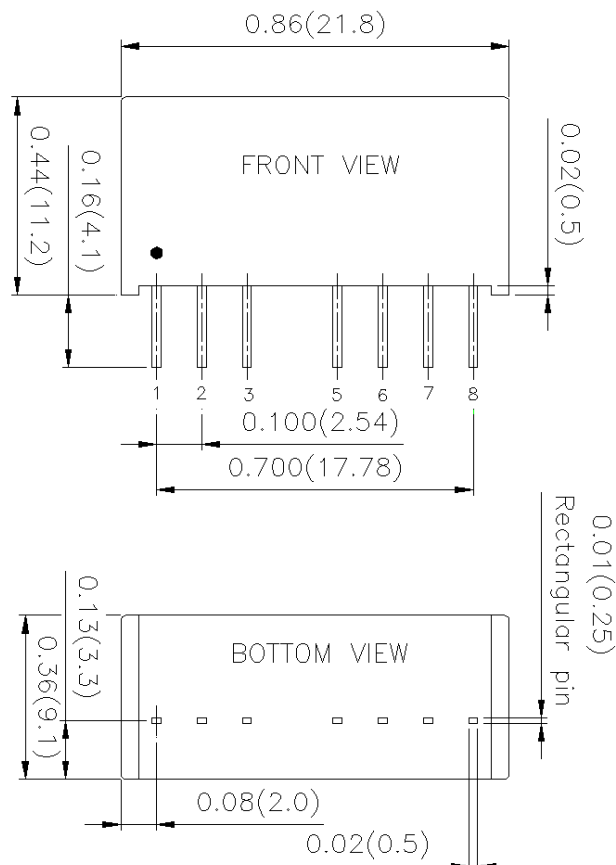
Model Number	Input Range	Output Voltage	Output Current		Output ⁽⁴⁾ Ripple & Noise	Input Current		Eff ⁽⁴⁾ (%)	Capacitor ⁽⁵⁾ Load max
			Min. load	Full load		No load ⁽³⁾	Full load ⁽²⁾		
PDL03-05S3P3	4.5 ~ 9 VDC	3.3 VDC	0mA	700mA	50 mVp-p	45mA	650mA	75	3300μF
PDL03-05S05	4.5 ~ 9 VDC	5 VDC	0mA	600mA	50 mVp-p	45mA	800mA	79	1680μF
PDL03-05S09	4.5 ~ 9 VDC	9 VDC	0mA	333mA	50 mVp-p	55mA	789mA	80	1000μF
PDL03-05S12	4.5 ~ 9 VDC	12 VDC	0mA	250mA	50 mVp-p	55mA	779mA	81	820μF
PDL03-05S15	4.5 ~ 9 VDC	15 VDC	0mA	200mA	50 mVp-p	55mA	769mA	82	680μF
PDL03-05D05	4.5 ~ 9 VDC	±5 VDC	0mA	±300mA	50 mVp-p	55mA	810mA	78	±1000μF
PDL03-05D12	4.5 ~ 9 VDC	±12 VDC	0mA	±125mA	50 mVp-p	60mA	779mA	81	±470μF
PDL03-05D15	4.5 ~ 9 VDC	±15 VDC	0mA	±100mA	50 mVp-p	60mA	779mA	81	±330μF
PDL03-12S3P3	9 ~ 18 VDC	3.3 VDC	0mA	700mA	50 mVp-p	25mA	263mA	77	3300μF
PDL03-12S05	9 ~ 18 VDC	5 VDC	0mA	600mA	50 mVp-p	25mA	325mA	81	1680μF
PDL03-12S09	9 ~ 18 VDC	9 VDC	0mA	333mA	50 mVp-p	30mA	329mA	80	1000μF
PDL03-12S12	9 ~ 18 VDC	12 VDC	0mA	250mA	50 mVp-p	30mA	316mA	83	820μF
PDL03-12S15	9 ~ 18 VDC	15 VDC	0mA	200mA	50 mVp-p	30mA	316mA	83	680μF
PDL03-12D05	9 ~ 18 VDC	±5 VDC	0mA	±300mA	50 mVp-p	30mA	320mA	82	±1000μF
PDL03-12D12	9 ~ 18 VDC	±12 VDC	0mA	±125mA	50 mVp-p	30mA	316mA	83	±470μF
PDL03-12D15	9 ~ 18 VDC	±15 VDC	0mA	±100mA	50 mVp-p	30mA	316mA	83	±330μF
PDL03-24S3P3	18 ~ 36 VDC	3.3 VDC	0mA	700mA	50 mVp-p	16mA	134mA	76	3300μF
PDL03-24S05	18 ~ 36 VDC	5 VDC	0mA	600mA	50 mVp-p	16mA	160mA	82	1680μF
PDL03-24S09	18 ~ 36 VDC	9 VDC	0mA	333mA	50 mVp-p	17mA	160mA	82	1000μF
PDL03-24S12	18 ~ 36 VDC	12 VDC	0mA	250mA	50 mVp-p	18mA	158mA	83	820μF
PDL03-24S15	18 ~ 36 VDC	15 VDC	0mA	200mA	50 mVp-p	18mA	156mA	84	680μF
PDL03-24D05	18 ~ 36 VDC	±5 VDC	0mA	±300mA	50 mVp-p	17mA	164mA	80	±1000μF
PDL03-24D12	18 ~ 36 VDC	±12 VDC	0mA	±125mA	50 mVp-p	18mA	158mA	83	±470μF
PDL03-24D15	18 ~ 36 VDC	±15 VDC	0mA	±100mA	50 mVp-p	18mA	154mA	85	±330μF
PDL03-48S3P3	36 ~ 75 VDC	3.3 VDC	0mA	700mA	50 mVp-p	10mA	69mA	74	3300μF
PDL03-48S05	36 ~ 75 VDC	5 VDC	0mA	600mA	50 mVp-p	10mA	83mA	79	1680μF
PDL03-48S09	36 ~ 75 VDC	9 VDC	0mA	333mA	50 mVp-p	11mA	82mA	80	1000μF
PDL03-48S12	36 ~ 75 VDC	12 VDC	0mA	250mA	50 mVp-p	12mA	81mA	81	820μF
PDL03-48S15	36 ~ 75 VDC	15 VDC	0mA	200mA	50 mVp-p	12mA	80mA	82	680μF
PDL03-48D05	36 ~ 75 VDC	±5 VDC	0mA	±300mA	50 mVp-p	12mA	83mA	79	±1000μF
PDL03-48D12	36 ~ 75 VDC	±12 VDC	0mA	±125mA	50 mVp-p	12mA	80mA	82	±470μF
PDL03-48D15	36 ~ 75 VDC	±15 VDC	0mA	±100mA	50 mVp-p	12mA	79mA	83	±330μF

Note

- BELLCORE TR-NWT-000332. Case 1: 50% Stress, Temperature at 40°C.
MIL-HDBK-217F Notice2 @Ta=25 °C, Full load(Ground, Benign, controlled environment)
 - Maximum value at nominal input and full load.
 - Typical value at nominal input and no load.
 - Typical value at nominal input and full load.
 - Test by minimum input and constant resistive load.
 - The PDL03 series meet EN55022 Class A with external L-C filter before the input pins to the converter. (Connect networks following Class B figure.)
Recommend: 05VDC input: C1=2.2μF/10V 1206 MLCC. L1=3.3μH 0504 SMD Inductor P/N:PMT-044.
12VDC input: C1=0.68μF/25V 1206 MLCC. L1=10μH 0504 SMD Inductor P/N:PMT-047.
24VDC input: C1=4.7μF/50V 1210 MLCC. L1=10μH 0504 SMD Inductor P/N:PMT-047.
48VDC input: C1=0.47μF/100V 1812 MLCC. L1=56μH 0504 SMD Inductor P/N:PMT-045.
 - 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, ESR 48mΩ.
- CAUTION:** This power module is not internally fused. An input line fuse must always be used.



Mechanical Drawing:



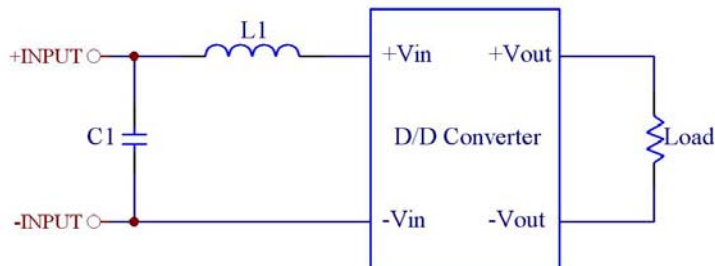
1. All dimensions in Inch (mm)
Tolerance: X.XX±0.02 (X.X±0.5)
X.XXX±0.01 (X.XX±0.25)
2. Pin pitch tolerance ±0.01(0.25)
3. Pin dimension tolerance ±0.004 (0.1)

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")

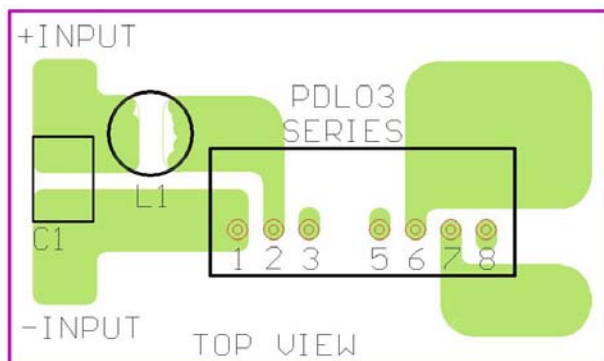
Recommended EMI Filter:



Recommended Filter for EN55022 Class B Compliance

The components used in the above figure, together with the manufacturers' part numbers for these components, are as follows:

	C1	L1
PDL03-05xxx	10μF/10V 1206 MLCC	3.3μH 0504 SMD Inductor PMT-044
PDL03-12xxx	2.2μF/25V 1206 MLCC	18μH 0504 SMD Inductor PMT-046
PDL03-24xxx	6.8μF/50V 1812 MLCC	18μH 0504 SMD Inductor PMT-046
PDL03-48xxx	2.2μF/100V 1812 MLCC	56μH 0504 SMD Inductor PMT-045



Recommended EN55022 Class B Filter Circuit Layout