

**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 0.36x 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 UP TO 1.6KVDC
- 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**

3KV ISOLATION

**DESCRIPTION**

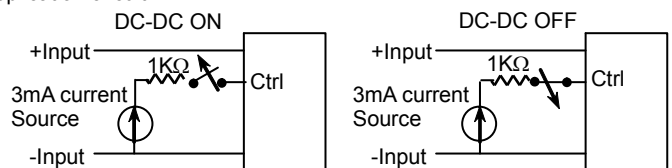
The PDL03 series offer 3 watts of output power from a 0.86 x 0.36 x 0.44 inch package without derating to 71°C. The PDL03 series have 2:1 wide input voltage of 4.5-9, 9-18, 18-36 and 36-75VDC and features 1600VDC of isolation, short-circuit protection.

**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	Full load and nominal Vin	± 1%
Minimum load		0%
Line regulation	LL to HL at Full Load	± 0.2%
Load regulation	Single	No load to Full load ± 1%
	Dual	5% load to 100% load ± 0.5%
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, typ.
Short circuit protection	Continuous, automatics recovery	
GENERAL SPECIFICATIONS		
Efficiency	See table	
Isolation voltage	Standard	1600VDC, min.
	Suffix "H"	3000VDC, min.
Isolation resistance	10 <sup>9</sup> ohms, min.	
Isolation capacitance	Standard	200pF, max.
	Suffix "H"	30pF, 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 <sup>6</sup> hrs
	MIL-HDBK-217F	2.401 x 10 <sup>6</sup> hrs

INPUT SPECIFICATIONS		
Input voltage range	5V nominal input	4.5 – 9VDC
	12V nominal input	9 – 18VDC
	24V nominal input	18 – 36VDC
	48V nominal input	36 – 75VDC
Input filter		Capacitor type
Input surge voltage 100mS max	5V input	15VDC
	12V input	36VDC
	24V input	50VDC
	48V input	100VDC
Input reflected ripple current	5V input	400mA <sub>p-p</sub> , max.
	12V input	150mA <sub>p-p</sub> , max.
	24V input	380mA <sub>p-p</sub> , max.
	48V input	170mA <sub>p-p</sub> , max.
Start up time	Nominal Vin and constant resistive load	Power up 30mS, typ. Remote ON/OFF 30mS, typ.
	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 Vin	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 to +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	± 8KV
		Contact	± 6KV
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

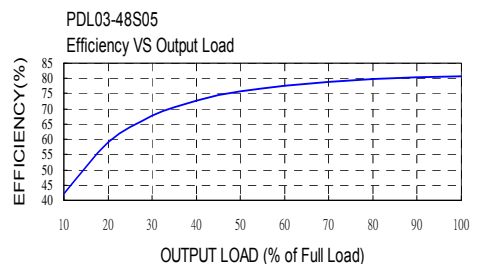
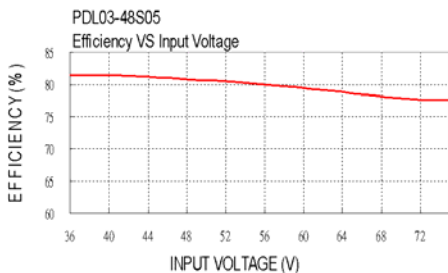
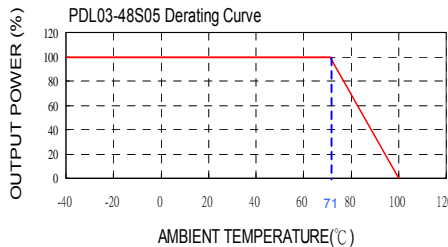


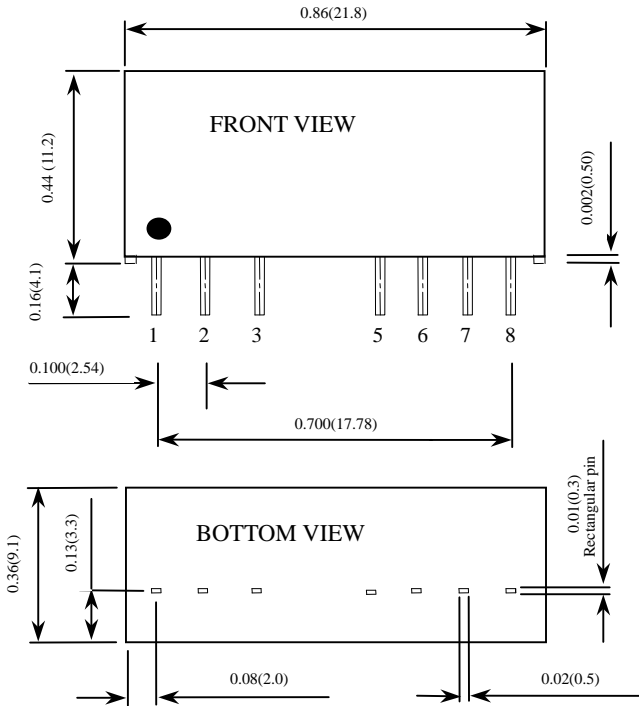


Model Number	Input Range	Output Voltage	Output Current		Output <sup>(4)</sup> Ripple & Noise	Input Current		Eff <sup>(4)</sup> (%)	Capacitor <sup>(5)</sup> Load max
			Min. load	Full load		No load <sup>(3)</sup>	Full load <sup>(2)</sup>		
PDL03-05S3P3	4.5 – 9 VDC	3.3 VDC	0mA	700mA	50 mVp-p	70mA	670mA	73	1760µF
PDL03-05S05	4.5 – 9 VDC	5 VDC	0mA	600mA	50 mVp-p	70mA	800mA	79	1000µF
PDL03-05S09	4.5 – 9 VDC	9 VDC	0mA	333mA	50 mVp-p	70mA	789mA	80	470µF
PDL03-05S12	4.5 – 9 VDC	12 VDC	0mA	250mA	50 mVp-p	75mA	779mA	81	170µF
PDL03-05S15	4.5 – 9 VDC	15 VDC	0mA	200mA	50 mVp-p	75mA	779mA	81	110µF
PDL03-05D05	4.5 – 9 VDC	±5 VDC	0mA	±300mA	50 mVp-p	70mA	810mA	78	±470µF
PDL03-05D12	4.5 – 9 VDC	±12 VDC	0mA	±125mA	50 mVp-p	85mA	789mA	80	±100µF
PDL03-05D15	4.5 – 9 VDC	±15 VDC	0mA	±100mA	50 mVp-p	80mA	779mA	81	±47µF
PDL03-12S3P3	9 – 18 VDC	3.3 VDC	0mA	700mA	50 mVp-p	35mA	275mA	74	1760µF
PDL03-12S05	9 – 18 VDC	5 VDC	0mA	600mA	50 mVp-p	35mA	333mA	79	1000µF
PDL03-12S09	9 – 18 VDC	9 VDC	0mA	333mA	50 mVp-p	40mA	329mA	80	470µF
PDL03-12S12	9 – 18 VDC	12 VDC	0mA	250mA	50 mVp-p	45mA	325mA	81	170µF
PDL03-12S15	9 – 18 VDC	15 VDC	0mA	200mA	50 mVp-p	45mA	325mA	82	110µF
PDL03-12D05	9 – 18 VDC	±5 VDC	0mA	±300mA	50 mVp-p	45mA	329mA	82	±470µF
PDL03-12D12	9 – 18 VDC	±12 VDC	0mA	±125mA	50 mVp-p	45mA	320mA	83	±100µF
PDL03-12D15	9 – 18 VDC	±15 VDC	0mA	±100mA	50 mVp-p	45mA	316mA	83	±47µF
PDL03-24S3P3	18 – 36 VDC	3.3 VDC	0mA	700mA	50 mVp-p	16mA	138mA	74	1760µF
PDL03-24S05	18 – 36 VDC	5 VDC	0mA	600mA	50 mVp-p	16mA	162mA	81	1000µF
PDL03-24S09	18 – 36 VDC	9 VDC	0mA	333mA	50 mVp-p	17mA	160mA	82	470µF
PDL03-24S12	18 – 36 VDC	12 VDC	0mA	250mA	50 mVp-p	18mA	160mA	81	170µF
PDL03-24S15	18 – 36 VDC	15 VDC	0mA	200mA	50 mVp-p	18mA	158mA	82	110µF
PDL03-24D05	18 – 36 VDC	±5 VDC	0mA	±300mA	50 mVp-p	17mA	164mA	80	±470µF
PDL03-24D12	18 – 36 VDC	±12 VDC	0mA	±125mA	50 mVp-p	18mA	158mA	83	±100µF
PDL03-24D15	18 – 36 VDC	±15 VDC	0mA	±100mA	50 mVp-p	18mA	154mA	85	±47µF
PDL03-48S3P3	36 – 75 VDC	3.3 VDC	0mA	700mA	50 mVp-p	10mA	69mA	74	1760µF
PDL03-48S05	36 – 75 VDC	5 VDC	0mA	600mA	50 mVp-p	10mA	83mA	79	1000µF
PDL03-48S09	36 – 75 VDC	9 VDC	0mA	333mA	50 mVp-p	11mA	82mA	80	470µF
PDL03-48S12	36 – 75 VDC	12 VDC	0mA	250mA	50 mVp-p	12mA	82mA	80	170µF
PDL03-48S15	36 – 75 VDC	15 VDC	0mA	200mA	50 mVp-p	12mA	81mA	81	110µF
PDL03-48D05	36 – 75 VDC	±5 VDC	0mA	±300mA	50 mVp-p	12mA	83mA	79	±470µF
PDL03-48D12	36 – 75 VDC	±12 VDC	0mA	±125mA	50 mVp-p	12mA	80mA	82	±100µF
PDL03-48D15	36 – 75 VDC	±15 VDC	0mA	±100mA	50 mVp-p	12mA	79mA	83	±47µF

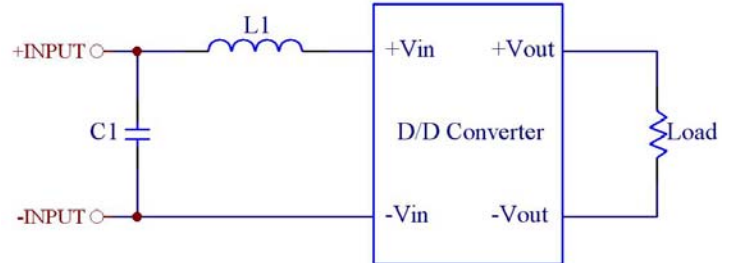
**Note**

- 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 voltage and full load.
- Typical value at nominal input voltage and no load.
- Typical value at nominal input voltage and full load.
- Test by minimum Vin 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: 05 Vin : C1=2.2µF/10V 1206 MLCC. L1=3.3µH 0504 SMD Inductor P/N:PMT-044.  
12 Vin : C1=0.68µF/25V 1206 MLCC. L1=10µH 0504 SMD Inductor P/N:PMT-047.  
24 Vin : C1=4.7µF/50V 1210 MLCC. L1=10µH 0504 SMD Inductor P/N:PMT-047.  
48 Vin : 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.





1. All dimensions in Inches (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)



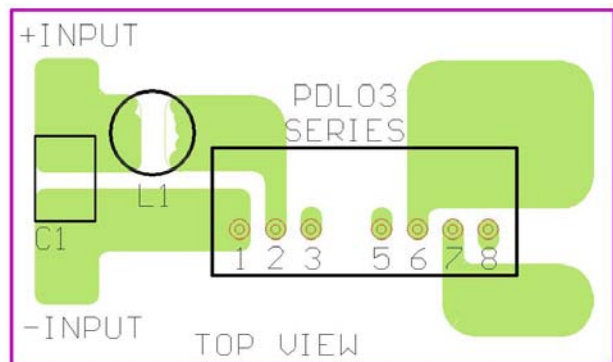
**Recommended Filter for EN55022 Class B Compliance**

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

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	COM
8	NC	- OUTPUT

\*No pin for 3KV isolation. (P/N suffix "H")  
 \*NC pin for standard.



**Recommended EN55022 Class B Filter Circuit Layout**