

3W DC-DC Converter P3D-Series



PHI-CON

- Wide 2:1 input range
- Up to 3500 V_{DC} isolation
- Continuous short circuit protection
- 24 Pin Standard Package

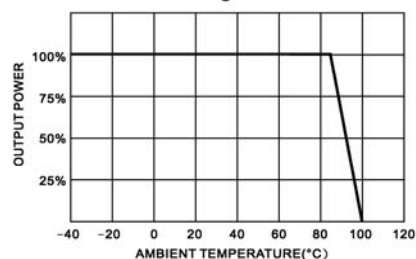


Model selection guide

Typ	Input voltage range	Output voltage	Input current no load min.	Input current full load min.	Output load current min.	Output load current max.	Efficiency typ. [%]	Capacity load max. [μF]
	[V _{DC}]	[V _{DC}]	[mA]	[mA]	[mA]	[mA]		
Single output								
P3D0505S	4.5...9	5.0	40	857	150	600	70	2200
P3D0509S	4.5...9	9.0	40	833	83	334	72	470
P3D0512S	4.5...9	12.0	40	810	63	250	74	470
P3D0515S	4.5...9	15.0	40	810	50	200	74	470
P3D0524S	4.5...9	24.0	40	857	31	125	70	220
P3D123R3S	9...18	3.3	15	324	200	800	72	2200
P3D1205S	9...18	5.0	20	328	150	600	76	2200
P3D1209S	9...18	9.0	20	324	83	334	77	470
P3D1212S	9...18	12.0	20	316	63	250	79	470
P3D1215S	9...18	15.0	20	316	50	200	79	470
P3D1224S	9...18	24.0	20	316	31	125	79	220
P3D2405S	18...36	5.0	12	156	150	600	80	2200
P3D2409S	18...36	9.0	12	156	83	334	80	470
P3D2412S	18...36	12.0	12	152	63	250	82	470
P3D2415S	18...36	15.0	12	152	50	200	82	470
P3D2424S	18...36	24.0	12	156	31	125	80	220
P3D4805S	36...72	5.0	8	81	150	600	77	2200
P3D4809S	36...72	9.0	8	80	83	334	78	470
P3D4812S	36...72	12.0	8	78	63	250	80	470
P3D4815S	36...72	15.0	8	78	50	200	80	470
P3D4824S	36...72	24.0	8	78	31	125	80	220
Dual output								
P3D0505D	4.5...9	±5.0	40	869	±75	±300	69	2 x 1000
P3D0509D	4.5...9	±9.0	40	857	±42	±167	70	2 x 220
P3D0512D	4.5...9	±12.0	40	833	±31	±125	72	2 x 220
P3D0515D	4.5...9	±15.0	40	810	±25	±100	74	2 x 220
P3D0524D	4.5...9	±24.0	40	857	±16	±63	70	2 x 100
P3D1205D	9...18	±5.0	20	324	±75	±300	77	2 x 1000
P3D1209D	9...18	±9.0	20	320	±42	±167	78	2 x 220
P3D1212D	9...18	±12.0	20	320	±31	±125	78	2 x 220
P3D1215D	9...18	±15.0	20	320	±25	±100	78	2 x 220
P3D1224D	9...18	±24.0	20	320	±16	±63	78	2 x 100
P3D2405D	18...36	±5.0	12	160	±75	±300	78	2 x 1000
P3D2409D	18...36	±9.0	12	158	±42	±167	79	2 x 220
P3D2412D	18...36	±12.0	12	156	±31	±125	80	2 x 220
P3D2415D	18...36	±15.0	12	156	±25	±100	80	2 x 220
P3D2424D	18...36	±24.0	12	156	±16	±63	80	2 x 100
P3D4805D	36...72	±5.0	8	80	±75	±300	78	2 x 1000
P3D4809D	36...72	±9.0	8	79	±42	±167	79	2 x 220
P3D4812D	36...72	±12.0	8	78	±31	±125	80	2 x 220
P3D4815D	36...72	±15.0	8	78	±25	±100	80	2 x 220
P3D4824D	36...72	±24.0	8	78	±16	±63	80	2 x 100

Suffix: "H" for 3.5kV isolation voltage, "M" for metal case

Derating Curve



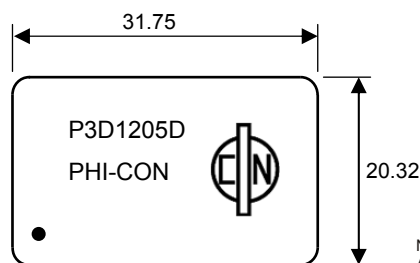
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Specifications

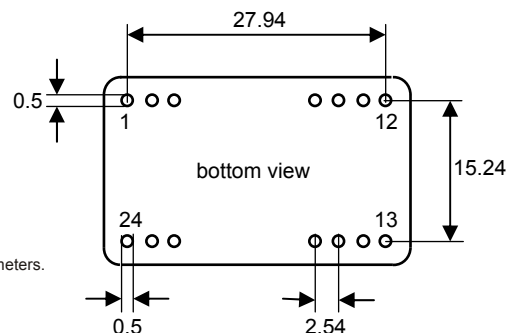
Input	
Filter	Pi Network
Input reflected ripple current	35 mA p-p
Isolation:	
Rated voltage	1500 V _{DC} , Standard 3500 V _{DC} , Suffix "H"
Resistance	10 ⁹ Ω
Capacitance	60 pF, typ.
Output	
Voltage accuracy	± 1%, max.
Voltage balance (dual outputs)	± 1%
Ripple and noise (at 20 MHz BW)	60 mVp-p, max.
Short circuit protection	Continuous
Short circuit restart	Automatic
Line voltage regulation	± 0.5%, max.
Load voltage regulation	± 0.5%, max. ± 1%, max. @ Vout 3.3V type
Temperature coefficient	± 0.02% / °C
EMC Specifications	
Radiated emissions	EN55022 class A
Conducted emissions	EN55022 class A
ESD	IEC 61000-4-2 pref. criteria B
RS	IEC 61000-4-3 pref. criteria A
EFT	IEC 61000-4-4 pref. criteria B
Surge	IEC 61000-4-5 pref. criteria B
CS	IEC 61000-4-6 pref. criteria A
PFMF	IEC 61000-4-8 pref. criteria A

General	
Efficiency	76% to 82%
Switching frequency	100 kHz...400 kHz
Safety standard in accordance to	IEC60950-1
Environmental	
Operating temperatur (ambient)	-40 °C to +85 °C
Case temperature	100 °C max.
Storage temperature	-40 °C to +125 °C
Derating	None required
Humidity	Up to 95 %, non-condensing
Cooling	Free-air convection
Reliability calc. MTBF	>2,2 Mh
Physical	
Case material	Standard, non conductive plastic UL94V-0 rated
Potting material	Epoxy UL94V-0 rated
Absolute maximum ratings	
Soldering temperature 1.5mm distance from case	260°C for 10s max.
Input voltage 100 ms max.	
Vin 5V types	-0.7...15V
Vin 12V types	-0.7...24V
Vin 24V types	-0.7...40V
Vin 48V types	-0.7...80V

Dimensions

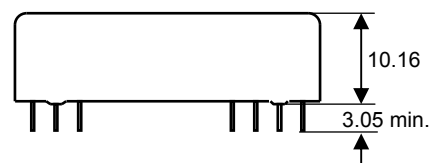


Notes:
All dimensions are typical in millimeters.
1. Pin diameter: 0.5 ±0.05
2. Pin pitch tolerance: ±0.35
3. Case Tolerance: ±0.5



Pin connections

Pin	Standard		3.5 kV _{DC}	
	Single	Dual	Single	Dual
1	+V Input	+V Input	Omitted	Omitted
2	N.C.	-V Output	-V Input	-V Input
3	N.C.	Common	-V Input	-V Input
9	Omitted	Omitted	Omitted	Common
10	-V Output	Common	Omitted	Omitted
11	+V Output	+V Output	N.C.	-V Output
12	-V Input	-V Input	Omitted	Omitted
13	-V Input	-V Input	Omitted	Omitted
14	+V Output	+V Output	+V Output	+V Output
15	-V Output	Common	Omitted	Omitted
16	Omitted	Omitted	-V Output	Common
22	N.C.	Common	+V Input	+V Input
23	N.C.	-V Output	+V Input	+V Input
24	+V Input	+V Input	Omitted	Omitted



Life Support Policy: HY-LINE does not authorize the use of any of its products for use in life support devices or systems without the express written approval of an officer of the Company. Life support systems are devices which support or sustain life, and whose failure to perform, when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in significant injury to the user. Rev: 09.11b f