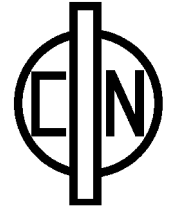


3W DC-DC Converter P3M-Series



PHI-CON

- Wide 2:1 input range
- Flat case profile 7 mm
- Continuous short circuit protection
- Over Voltage protection
- Soft start function
- No internal tantalum capacitors
- Efficiency up to 88 %

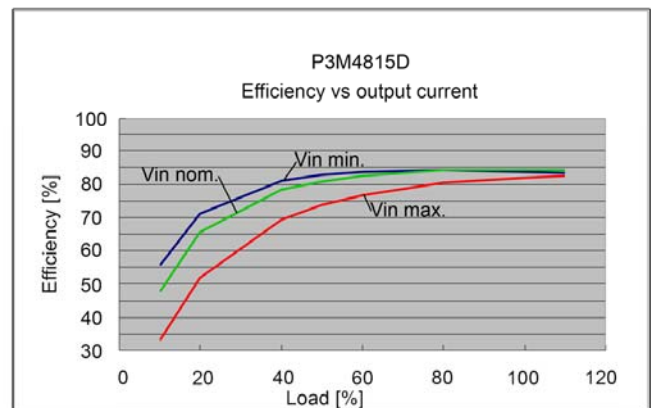
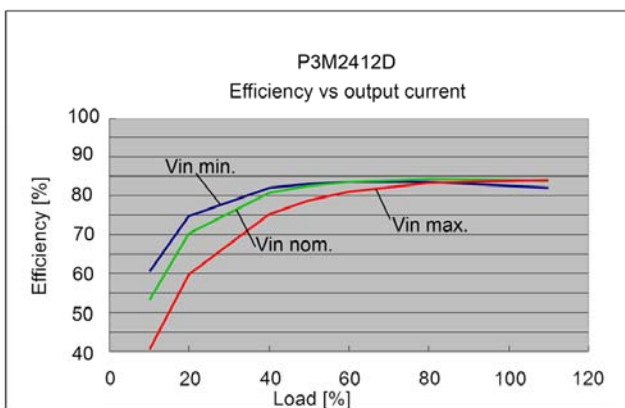
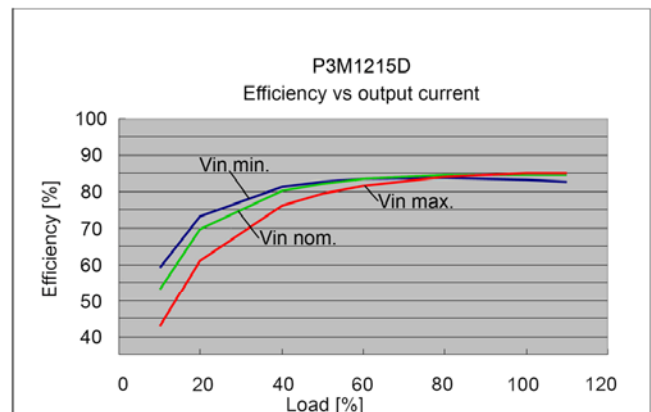
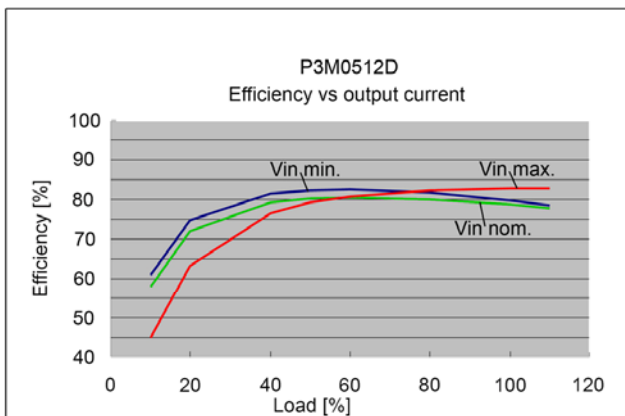
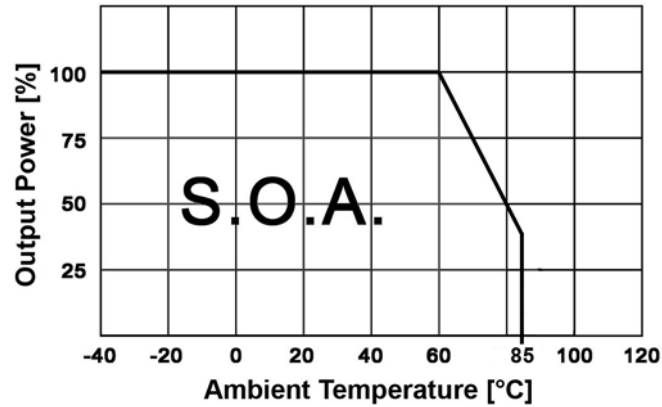


Model selection guide

Type	Input voltage range [V _{DC}]	Input current		Output voltage [V _{DC}]	Output current		Efficiency typ. [%]	Capacitance load max. (see note 3) [μF]
		no load [mA]	full load [mA]		min. [mA]	max. [mA]		
Single output								
P3M0505S	4.5...9	50	896	5.0	0	600	67	100
P3M0512S	4.5...9	50	857	12.0	0	250	70	100
P3M0515S	4.5...9	50	857	15.0	0	200	70	100
P3M1205S	9...18	25	357	5.0	0	600	70	100
P3M1212S	9...18	25	338	12.0	0	250	74	100
P3M1215S	9...18	25	338	15.0	0	200	74	100
P3M2405S	18...36	15	176	5.0	0	600	71	220
P3M2412S	18...36	15	167	12.0	0	250	75	220
P3M2415S	18...36	15	167	15.0	0	200	75	220
P3M4805S	36...75	10	90	5.0	0	600	71	220
P3M4812S	36...75	10	82	12.0	0	250	76	220
P3M4815S	36...75	10	82	15.0	0	200	76	220
Dual output								
P3M0512D	4.5...9	50	780	±12.0	0	±130	82	2 x 220
P3M0515D	4.5...9	50	750	±15.0	0	±100	82	2 x 100
P3M1212D	9...18	25	317	±12.0	0	±130	84	2 x 220
P3M1215D	9...18	25	301	±15.0	0	±100	85	2 x 100
P3M2412D	18...36	15	159	±12.0	0	±130	84	2 x 220
P3M2415D	18...36	15	151	±15.0	0	±100	85	2 x 100
P3M4812D	36...75	10	79	±12.0	0	±130	84	2 x 220
P3M4815D	36...75	10	76	±15.0	0	±100	84	2 x 100

3W DC-DC Converter P3M-Series

Derating Curve



3W DC-DC Converter P3M-Series

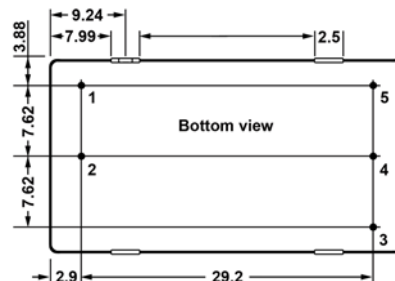
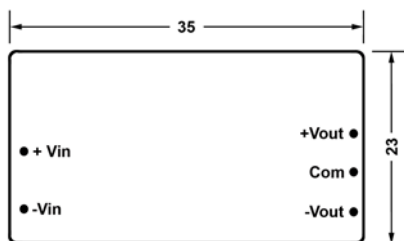
Specifications

Input	
Filter	Pi network
Start up time @ min. Vin and constant resistive load	20 ms, max.
Reflected ripple current	20 mA _{p-p} (see note 5)
Output	
Voltage accuracy	± 1 %
Voltage balance (dual outputs)	± 1 %
Ripple and noise (at 20 MHz BW)	75 mV _{p-p} , max. (see note 2)
Short circuit protection	Continuous
Short circuit restart	Automatic
Overcurrent protection	185 % typ. of full load
Line regulation	± 0.5 %, max.
Load regulation (@ 0...100 % load)	± 1 %, max. @ balanced load
Cross regulation (dual output)	± 5 %, max. (see note 1)
Temperature coefficient	± 0.02 % / °C
Transient response deviation	± 3 %, max. (see note 4)
Over voltage protection	
5 V output type	6.2 V, z-diode clamp voltage
12 V output type	15 V, z-diode clamp voltage
15 V output type	18 V, z-diode clamp voltage
± 12 V output type	± 15 V, z-diode clamp voltage
± 15 V output type	± 18 V, z-diode clamp voltage
Physical	
Dimensions	35 x 23 x 7 mm
Weight	16 g, max.

Isolation	
Rated voltage input to output, input or output to case	500 V _{AC}
Resistance	50 ⁶ Ω min. @ 500 V
Capacitance input / output	500 pF, max.
General	
Safety standard (designed to meet)	IEC / EN60950-1
Reliability calculated MTBF (Mil –HDBK-217 F)	> 1.6 Mio. hours
Switching frequency	100 kHz
Environmental	
Operating temperature (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
Absolute maximum ratings	
Input voltage, 100 ms, max.	
5 V input types	-0.7...15 V _{DC}
12 V input types	-0.7...25 V _{DC}
24 V input types	-0.7...50 V _{DC}
48 V input types	-0.7...100 V _{DC}
Soldering temperature	260 °C, 10 s max.
1.5 mm distance from case	

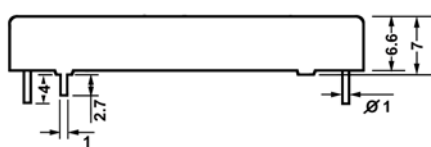
Note:

1. One load is 25 % to 100 % load, the other load is 100 % load, the output voltage variable rate is within ±5 %.
2. Typical value at nominal input voltage and full load, measured by 20 MHz oscilloscope.
3. Test by nominal input voltage and constant resistive load.
4. Tested by normal Vin and 50 % load step change (100 % ... 50 % of full output current, 50 % ... 0 % of full output current).
5. Measured Input reflected ripple current with a simulated source inductance of 12 μH.
6. Exceeding the absolute ratings of the unit could cause damage. It is not allowed for continuous operating.



Pin connections

Pin	Single	Dual
1	-V Input	-V Input
2	+V Input	+V Input
3	+V Output	+V Output
4	Omitted	Common
5	-V Output	-V Output



Notes :

All dimensions are typical in millimeters.

1. Pin diameter: 1.0 ±0.05
2. Pin pitch tolerance: ±0.35
3. Case Tolerance: ±0.5
4. The converter metal case is in contact with the cleaning stand of on the PCB. To keep isolation, an adequate PCB layout on the mounted side is required.

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