

6W DC-DC Converter P6M-Series



- 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 %

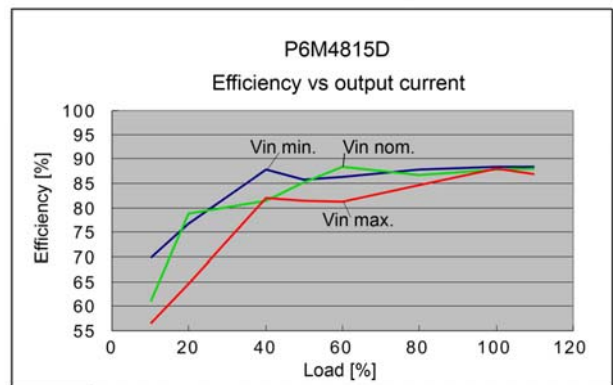
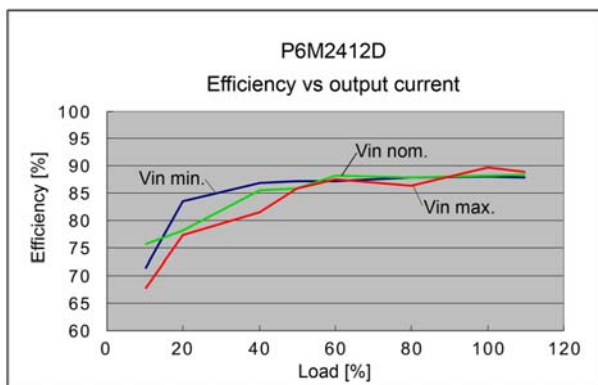
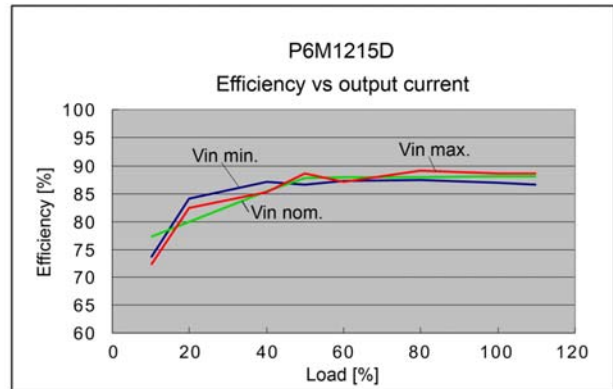
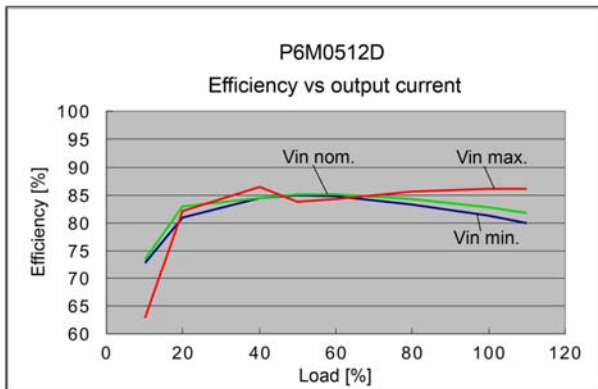
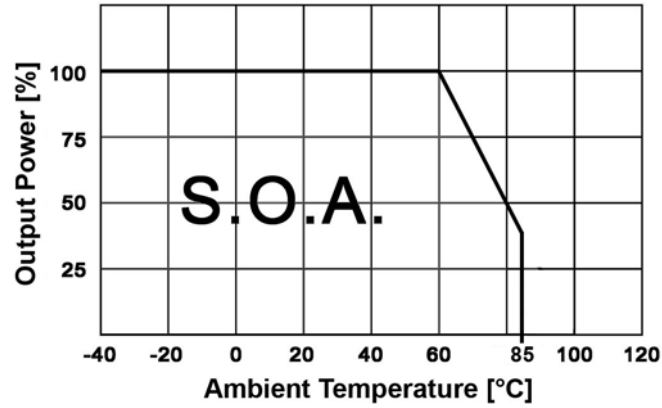


Model selection guide

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								
P6M053R3S	4.5...9	45	905	3.3	0	1000	73	1000
P6M0505S	4.5...9	45	1315	5.0	0	1000	76	1000
P6M0512S	4.5...9	45	1520	12.0	0	500	79	680
P6M0515S	4.5...9	45	1520	15.0	0	400	79	680
P6M123R3S	9...18	25	360	3.3	0	1000	76	1000
P6M1205S	9...18	25	620	5.0	0	1200	81	1200
P6M1212S	9...18	25	590	12.0	0	500	85	680
P6M1215S	9...18	25	590	15.0	0	400	85	470
P6M243R3S	18...36	25	225	3.3	0	1200	73	1200
P6M2405S	18...36	25	310	5.0	0	1200	80	1200
P6M2412S	18...36	25	300	12.0	0	500	84	680
P6M2415S	18...36	25	290	15.0	0	400	86	470
P6M483R3S	36...75	25	110	3.3	0	1200	74	1200
P6M4805S	36...75	25	155	5.0	0	1200	80	1200
P6M4812S	36...75	25	150	12.0	0	500	84	680
P6M4815S	36...75	25	145	15.0	0	400	85	470
Dual output								
P6M0512D	4.5...9	50	1500	±12.0	0	±250	82	2 x 220
P6M0515D	4.5...9	50	1500	±15.0	0	±200	82	2 x 220
P6M1212D	9...18	15	580	±12.0	0	±250	88	2 x 220
P6M1215D	9...18	15	580	±15.0	0	±200	88	2 x 220
P6M2412D	18...36	10	290	±12.0	0	±250	88	2 x 220
P6M2415D	18...36	10	290	±15.0	0	±200	88	2 x 220
P6M4812D	36...75	6	145	±12.0	0	±250	87	2 x 220
P6M4815D	36...75	6	145	±15.0	0	±200	88	2 x 220

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Derating Curve



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Specifications

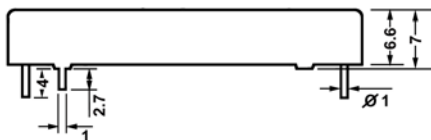
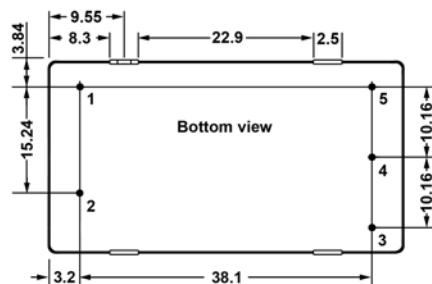
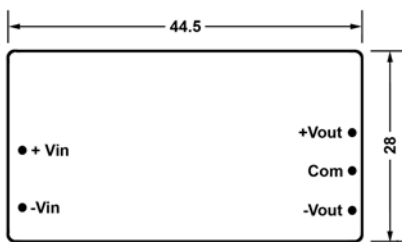
Input	
Filter	Pi network
Start up time @ min. Vin and constant resistive load	20 ms, max.
Reflected ripple current	20 mAp-p (see note 5)
Output	
Voltage accuracy	± 1 %
Voltage balance (dual outputs)	± 1 %
Ripple and noise (at 20 MHz BW)	75 mVp-p, max. (see note 2)
Short circuit protection	Continuous
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	
3.3 V output type	3.9 V, z-diode clamp voltage
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	44.5 x 28 x 7 mm
Weight	25 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	1 nF, max.
General	
Safety standard (designed to meet)	IEC / EN60950-1
Reliability calculated MTBF (Mil -HDBK-217 F)	> 1.28 Mio. hours
Switching frequency	330 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...36 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.

Dimensions



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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