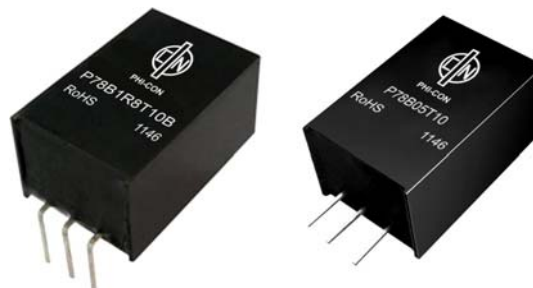


PHI-CON

# 1000 mA DC-DC Step Down Converter P78B-Series

- Non isolated
- 3 Pin SIL
- Pin compatible with 78xx linear regulator
- Efficiency up to 97%
- Operating temperature range -40...+85°C
- Continuous short circuit protected
- Thermal shut down



## Model selection guide

Typ	Input voltage range [V <sub>DC</sub> ]	Input current		Output			Efficiency	
		No-load [mA]	Voltage [V <sub>DC</sub> ]	Current [mA]	Capacitive load max. [μF]	@ V <sub>in</sub> min. [%]	@ V <sub>in</sub> max. [%]	
P78B1R5T10	4.75...26	5...8	1.5	1000	1000	80	71	
P78B1R8T10	4.75...26	5...8	1.8	1000	1000	83	74	
P78B2R5T10	4.75...28	5...8	2.5	1000	1000	88	80	
P78B3R3T10	4.75...28	5...8	3.3	1000	1000	90	83	
P78B05T10	6.5...32	5...8	5.0	1000	1000	93	88	
P78B6R5T10	9...32	5...8	6.5	1000	1000	94	90	
P78B09T10	12...32	5...8	9.0	1000	1000	95	92	
P78B12T10	16...32	5...8	12.0	1000	1000	96	94	
P78B15T10	20...32	5...8	15.0	1000	1000	97	94	

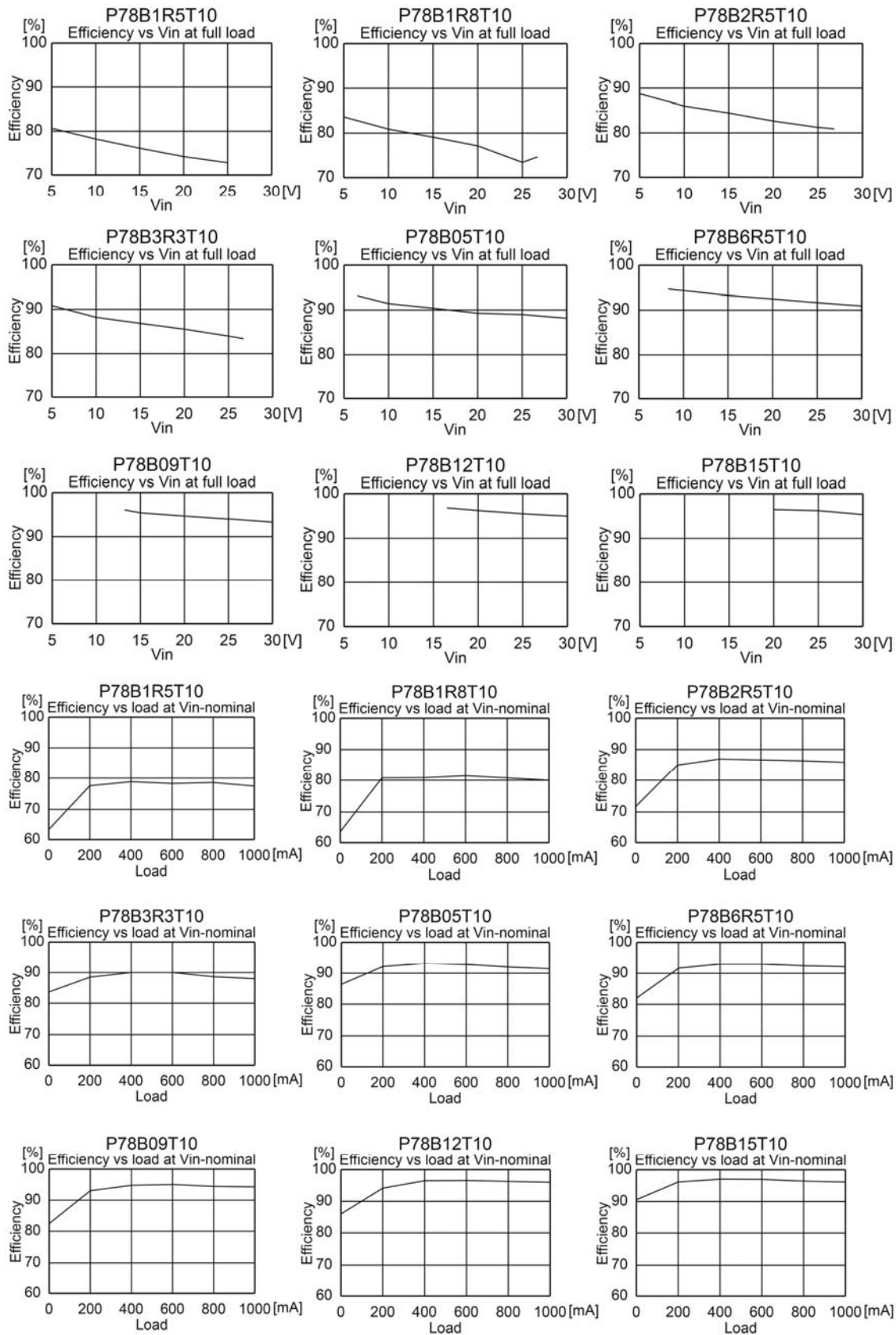
Suffix "B" for bent lead version

## Specifications

<b>Output</b>	
Voltage accuracy	± 3 %, max.
Input voltage regulation	± 0.4 %, max.
Load regulation	± 0.6 % @ load 10..100 %
Temperature coefficient	± 0.02 % / °C
Ripple and noise (at 20 MHz BW)	35 mVp-p, max.
Short circuit protection	not limited, automatic recovery
Thermal shutdown	150 °C, typ. internal temp.
Output current limit	3 A, typ.
<b>Input</b>	
Short circuit input power	1.8 W, max.
<b>General</b>	
Switching frequency	330 kHz, typ.
Reliability calc. MTBF @ 25°C MIL-HDBK-217F	>2 Mio. h

<b>Environmental</b>	
Operating ambient temperature	-40 °C ... +85 °C
Case temperature	100 °C, max.
Storage temperature	-55 °C ... +125 °C
Derating	see diagram
Humidity	Up to 95%, non-condensing
Cooling	free air convection
<b>Physical</b>	
Dimensions	SIP3 17.5 x 11.5 x 9 mm
Weight	3.7 g
Case material	Plastic UL94-V0
Soldering temperature	300°C for 10s 1,5mm distance from case

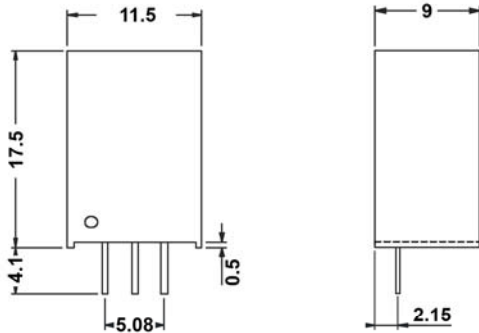
# 1000 mA DC-DC Step Down Converter P78B-Series



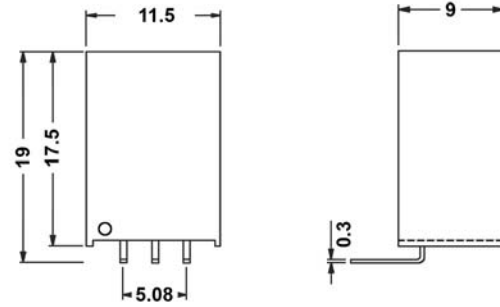
# 1000 mA DC-DC Step Down Converter P78B-Series

## Dimensions

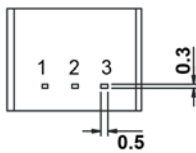
Standard version



Bent version

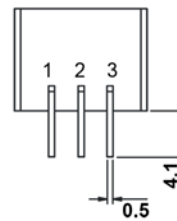


Bottom View

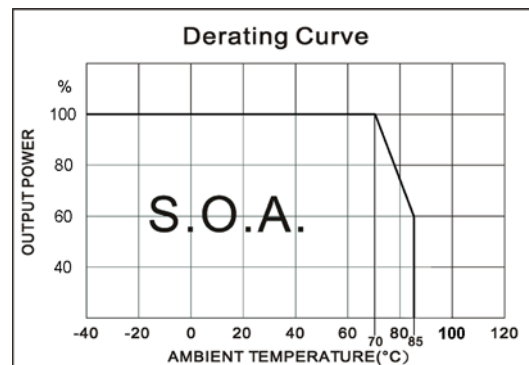


All dimensions in mm  
Pin tolerances: 0.10mm  
Package and pitch tolerances: 0.25mm

Bottom View

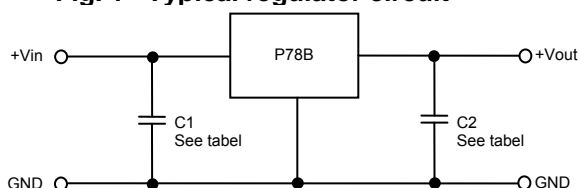


Pin	Connections
1	+V Input
2	GND
3	+V Output

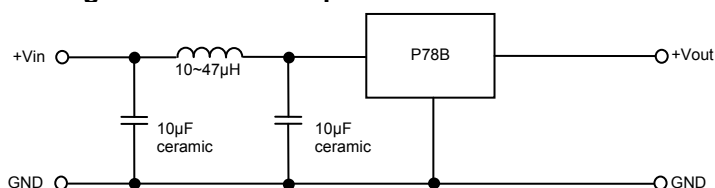


# 1000mA DC-DC Step Down Converter P78B-Series

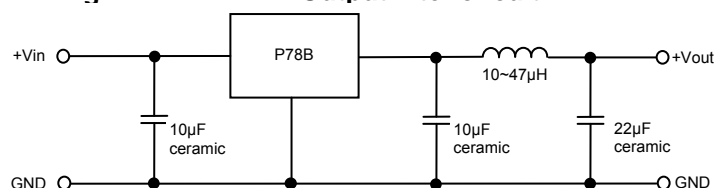
**Fig. 1 Typical regulator circuit**



**Fig. 3 Input filter circuit**



**Fig. 4 Output filter circuit**



Part number	C1	C2
P78B1R5T10	10 µF, 50V, ceramic	22 µF, 6.3V, ceramic
P78B1R8T10	10 µF, 50V, ceramic	22 µF, 6.3V, ceramic
P78B2R5T10	10 µF, 50V, ceramic	22 µF, 6.3V, ceramic
P78B3R3T10	10 µF, 50V, ceramic	22 µF, 6.3V, ceramic
P78B05T10	10 µF, 50V, ceramic	22 µF, 16V, ceramic
P78B6R5T10	10 µF, 50V, ceramic	10 µF, 16V, ceramic
P78B09T10	10 µF, 50V, ceramic	10 µF, 16V, ceramic
P78B12T10	10 µF, 50V, ceramic	10 µF, 25V, ceramic
P78B15T10	10 µF, 50V, ceramic	10 µF, 25V, ceramic

1. C1 and C2 are required and should be fitted close to the converter pins.
2. The capacitance of C1, C2 sees external capacitor table. It can be increased properly if required, and tantalum or low ESR electrolytic capacitors may also suffice.
3. Not for parallel connection or plug and play operation!

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