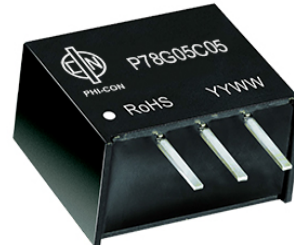


# 500 mA DC-DC Step Down Converter P78G-Series



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- Pin compatible to linear 78xx regulator (TO-220)
- Not isolated
- Efficiency up to 95 %
- Input voltage range up to 36 V
- Positive or negative output voltage possible
- Operating temperature range -40... 85 °C
- Continuous short circuit protection



## Model guide

Type	Input voltage		Input current		Output				Efficiency	
	Nom. [V <sub>DC</sub> ]	Range [V <sub>DC</sub> ]	No load		Voltage		Current max. [mA]	Capacitive load max. [μF]	@ V <sub>in</sub> min. [%]	@ V <sub>in</sub> max. [%]
			typ. [mA]	max. [mA]	[V <sub>DC</sub> ]	Tol. max. [%]				
P78G3R3C05	24	4.5...36	0.2	1.5	3.3	± 4	500	680	86	80
P78G05C05	24	6.5...36	0.2	1.5	5.0	± 3	500	680	90	84
	12	7.0...31			-5.0					
P78G09C05	24	12...36	0.2	1.5	9.0	± 3	500	680	93	90
P78G12C05	24	15...36	0.2	1.5	12.0	± 3	500	680	94	91
	12	8.0...24			-12.0					
P78G15C05	24	19...36	0.2	1.5	15.0	± 3	500	680	95	93
	12	8.0...21			-15					

## Specifications

Output	
Input voltage regulation	± 0.4 %, max.
Load regulation	± 0.6 % @ load 10..100 %
Temperature coefficient	± 0.03 % / °C
Ripple and noise (at 20 MHz BW)	75 mVp-p, max. (See fig. 1)
Short circuit protection	Continuous, automatic restart
Transient response deviation at 25% load step change, V <sub>in</sub> nom.	250 mV, max.
Transient recovery time at 25 % load step change, V <sub>in</sub> nom.	1 ms, max.
Input	
Ingrated filter	Capacitor
Reverse polarity	Unacceptable
General	
Switching frequency	550...850 kHz
Reliability calc. MTBF MIL-HDBK-217F	> 2 Mio. h @ 25 °C
Environmental	
Operating ambient temperature	-40 ... 85 °C Derating > 71 °C
Storage temperature	-55 ... 125 °C
Storage Humidity	Up to 95 %, non condensing
Cooling	free air convection >0.8m/s

EMI	
Conducted emission	EN55022, class B
Radiated emission (See fig. 2)	EN55022, class B
EMC	
Electrostatic discharge	EN 61000-4-2 Contact ± 4 kV perf. Criteria B
Radiation immunity	EN 61000-4-3 10 V/m perf. Criteria A
Electrical fast transient (See fig. 2)	EN 61000-4-4 ± 1 kV perf. Criteria B
Conducted disturbance immunity	EN 61000-4-6 3 Vrms perf. Criteria A
Safety standard	EN60950-1
Environmental	
Operating ambient temperature	-40 ... 85 °C Derating > 71 °C
Storage temperature	-55 ... 125 °C
Storage Humidity	Up to 95 %, non condensing
Cooling	free air convection >0.8 m/s
Physical	
Case material	Plastic UL94-V0
Dimensions	7.6 x 10.2 x 11.6 mm
Weight	1.8 g
Soldering temperature	260 °C, max., 10 s, max. 1.5 mm distance to body

1. The output load should not be less than 10 %. Operation under 10 % load will not damage the converter. However, they may not meet all listed specifications
2. The max. capacitive load should be tested within the input voltage range and under full load conditions.
3. All specifications measured at T<sub>a</sub> 25 °C, humidity < 75 %, nominal input voltage and rated output load unless otherwise specified.
4. All parameter are specified for the positive application unless otherwise specified.

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Fig. 1 Output ripple and noise measure circuit

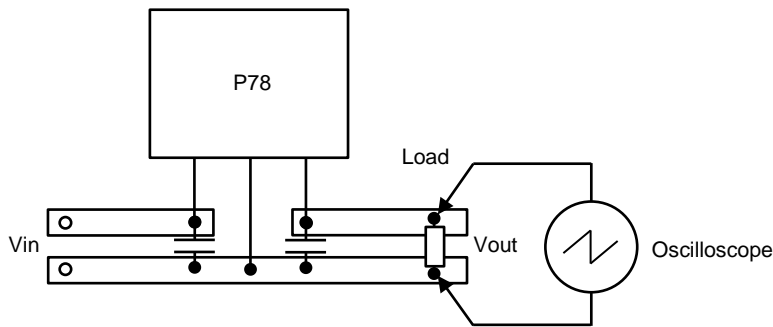
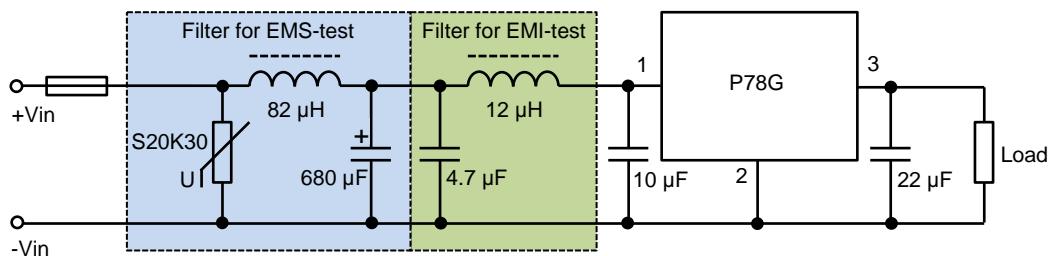
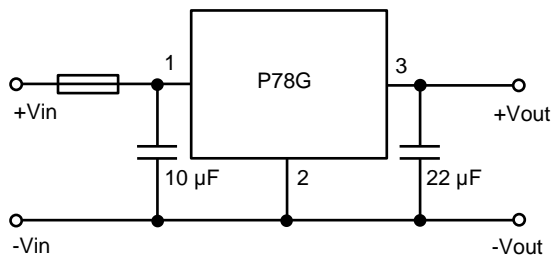


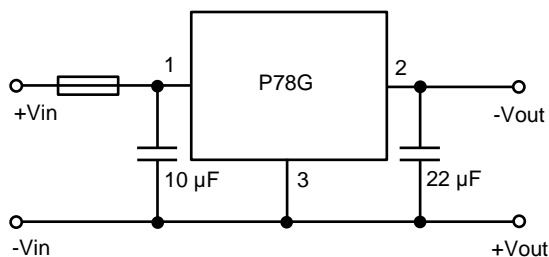
Fig. 2 EMC test circuit



Typical application circuit for positive output

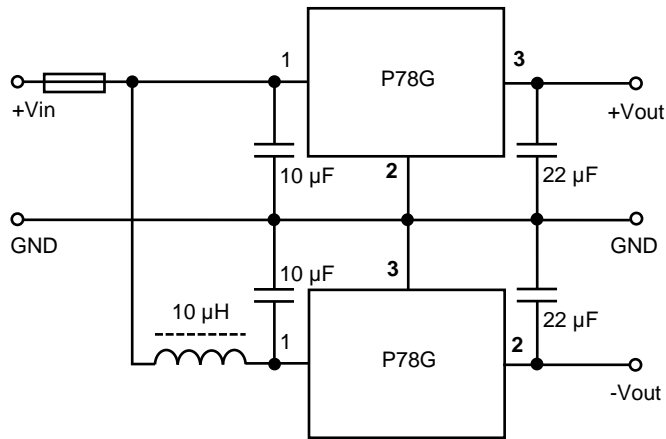


Typical application circuit for negative output

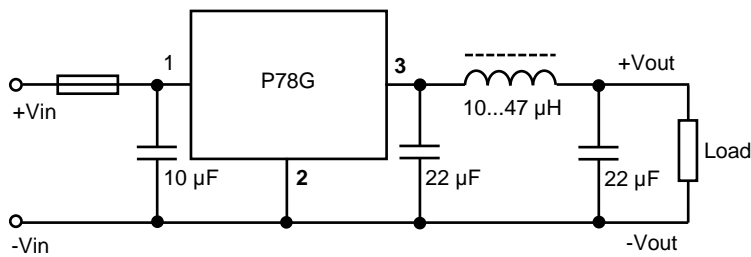


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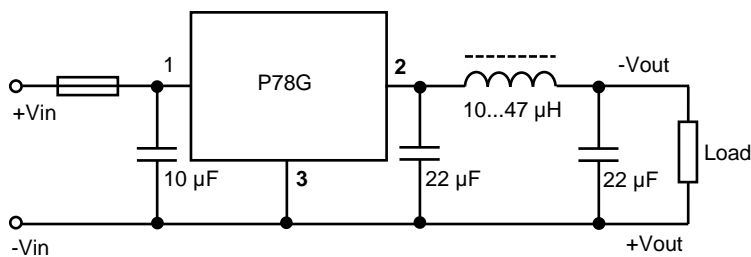
## Typical application circuit for $\pm$ dual output



## Typical application for positive output filter circuit



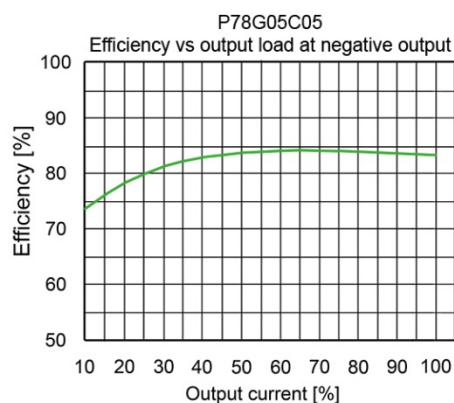
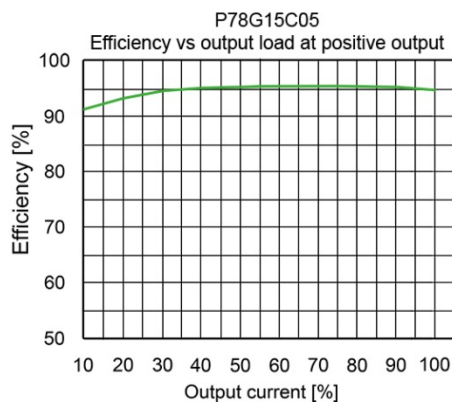
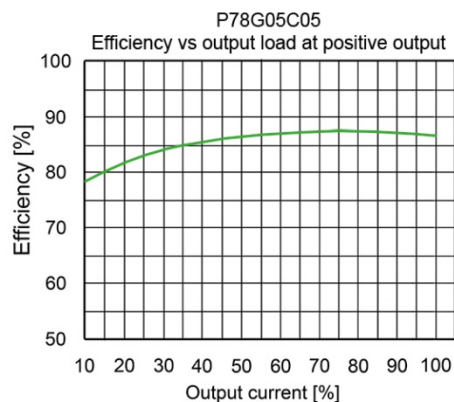
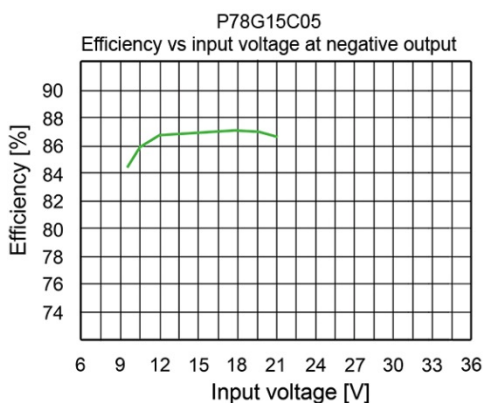
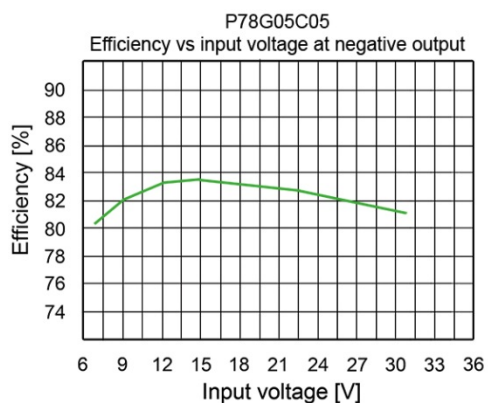
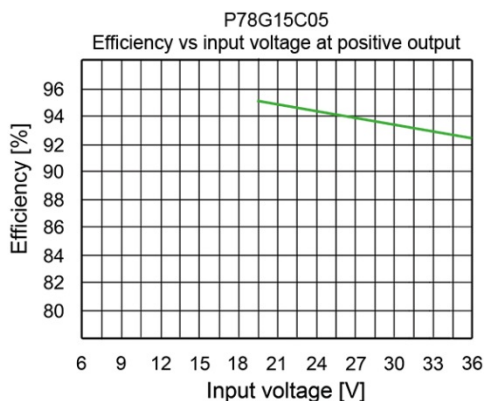
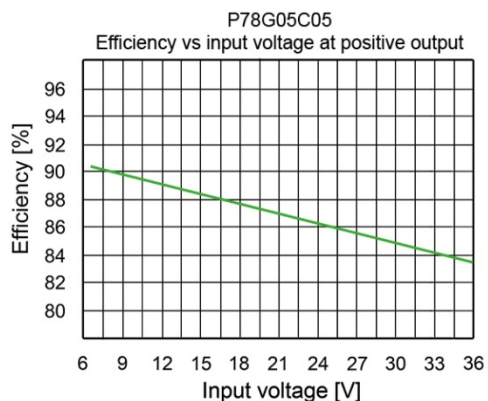
## Typical application for negative output filter circuit



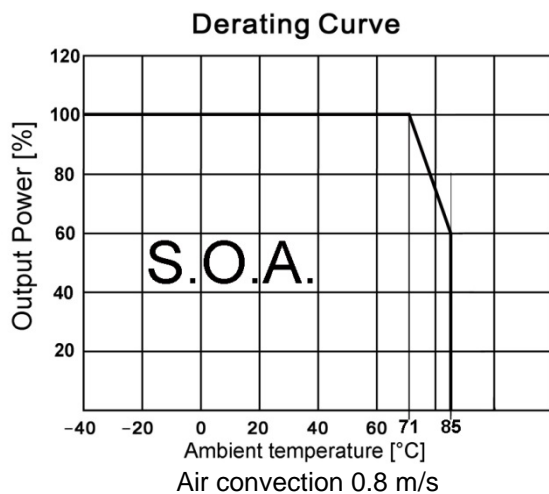


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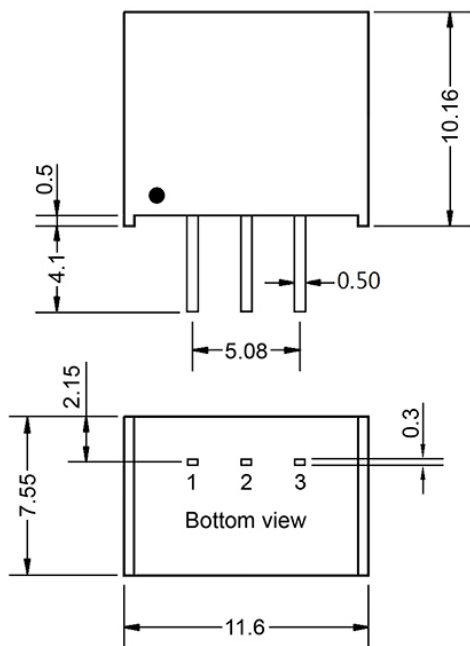
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## 500 mA DC-DC Step Down Converter P78G-Series



### Dimensions



Unit: mm  
 Pin tolerance:  $\pm 0.1$  mm  
 General tolerances:  $\pm 0.25$  mm

Pin assignment		
	Positiv output	Negativ output
1	+V Input	+V Input
2	GND	-V Output
3	+V Output	GND

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