PPMxx-SIP-xxELF

Mainzer Straße 151–153
D-55299 Nackenheim
Tel. +49 6135 7026-0
Fax: +49 6135 931070
www.peak-electronics.de
peak@peak-electronics.de

PPM-SIP-SERIES Rev.11-2018

- ✓ **1.65 - 3 Watt**
- ✓ Univ. **70-400VDC / 85-264VAC***
- ✓ **Single** Output
- ✓ **Over Temperature Protection**
- ✓ **Short Circuit Protection**
- ✓ **2 kV** AC I/O Isolation
- ✓ **High Efficiency / Density**

The PPM-SIP-Series are high efficiency green power modules with miniature packaging provided by Peak. The features of this series are: wide input voltage, DC and AC all in one, high efficiency, high reliability, low loss, safety isolation etc. They are widely used in industrial, office and civil equipments, as well as applications where no special requirement for EMC performance. It is recommended to add EMI suppression circuit or take measure to shield when there is strict requirement for EMC performance.

All specifications typical at Ta=25°C, nominal input voltage and full load unless otherwise specified

Input Specifications	
Input Voltage Range	70 – 400 VDC **or** 85 – 264 VAC* universal
Input Current	120 mA, max. @ 115 VAC 60 mA, max. @ 230 VAC
Inrush Current	15 A @ 115 VAC 25 A @ 230 VAC
External Input Fuse (recommended)	1A / 250V
Input Frequency	47-63 Hz

**** Attention: For AC-Input a capacitor between PIN 7 and PIN 10 is needed!! (See page 3)***

Output Specifications	
Voltage Accuracy	±2%
Line Regulation	±0.5% @full load
Load variation (0-100%)	±1%, typ.
Ripple and Noise (20Mhz bandwidth)	
3.3 / 5 / 9 VDC models	≤ 100mV pk-pk (50mV pk-pk typ.)
12 VDC models	≤ 120mV pk-pk (60mV pk-pk typ.)
15 VDC models	≤ 150mV pk-pk (75mV pk-pk typ.)
24VDC models	≤ 240mV pk-pk (120mV pk-pk typ.)
Short Circuit Protection	Hiccup, continuous, auto recovery

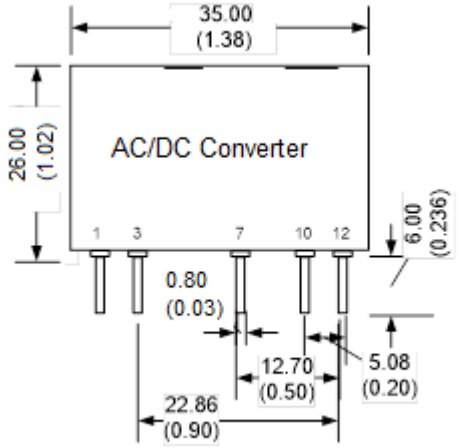
Common Specifications	
Temperature range	-40°C to +85 °C
Power derating	1.33% / °C (above 55°C)
Storage Temperature	-40°C to +105 °C
Humidity (non condensing)	85%, max.
Temperature Coefficient	±0.02%/°C
Switching Frequency	65kHz, typ.
I/O Isolation Voltage	2000VAC / 1min.
Leakage current	0.25 mA, max. @ 240VAC / 60 Hz
Case Material	UL224-rated shrinking tube
Reliability Calculated MTBF (MIL-HDBK-217F)	> 300,000 hrs

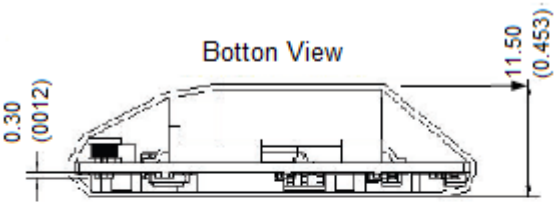
Selection Guide

Order #	Power (W)	Output Voltage (Vdc)	Output Current Full Load (mA)	Efficiency (%)	Capacity load (uF), max.
SINGLE OUTPUT					
PPM1.65-SIP-3R3ELF	1.65	3.3	500	70	5000
PPM2.5-SIP-05ELF	2.5	5	500	70	2000
PPM3-SIP-09ELF	3	9	330	75	1000
PPM3-SIP-12ELF	3	12	250	76	470
PPM3-SIP-15ELF	3	15	200	78	350
PPM3-SIP-24ELF	3	24	125	78	220

If you need other specifications, please enquire.

Package / Pinning / Derating



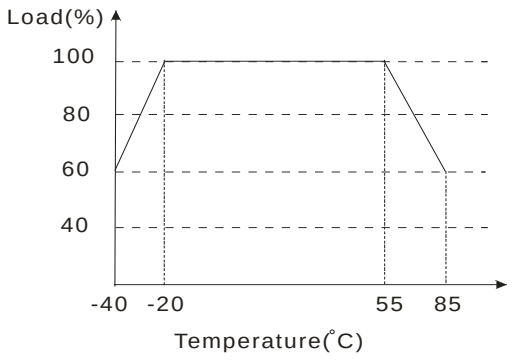


SIP AC/DC

All dimensions are typical in millimetres (inches)
- Pin section tolerance +/- 0.10 (+/-0.004)
- Case tolerance +/- 1.00 (+/-0.039)

Specification may change without notice

PIN CONNECTIONS	
#	SINGLE
1	+Vout
3	- Vout
7	- Vin
10	CAP
12	+Vin



App Notes:

Typical Application

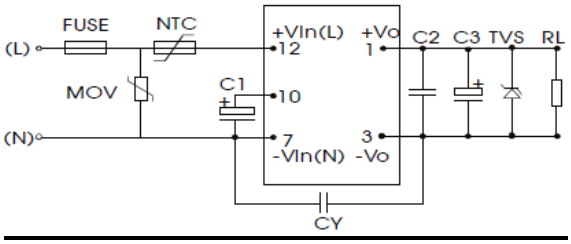
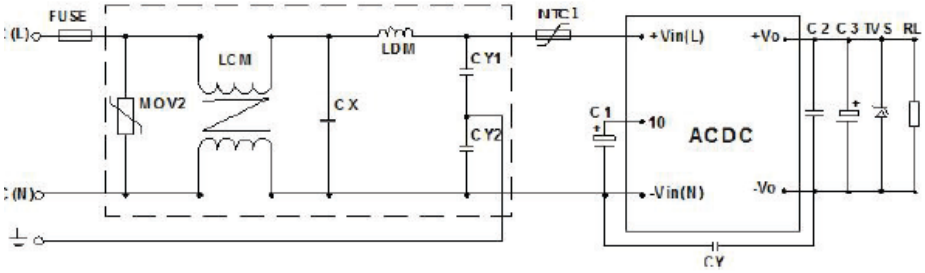


Fig. 1: Standard

EMC compliance recommended circuit



Attention: For AC-Input a capacitor (10uF/400V) between PIN 7 and PIN 10 is needed!!

External Capacitor Typical Value

Output Voltage	C1	C2	C3	FUSE	TVS
3.3V	10μF/400V	1μF/50V	470μF/16V	1A/250V	SMBJ7.0A
5V					
9V					SMBJ12A
12V					SMBJ20A
15V			100μF/35V		
24V					SMBJ30A

Note:

1. C1: **AC input**, is a filtering electrolytic capacitor, which is required when input voltage is below 100VAC, and the value of C1 is 22μF/400V.
   DC input, is a filtering capacitor in EMC Filter, the value of C1 is 10μF/400V (when input voltage is above 370VDC, and the value of C1 is 10μF/450V)
2. C2 is ceramic capacitor, it is used to filter high frequency noise. Output filtering capacitor C3 (which is required by AC input or DC input) is recommended to use high frequency and low impedance electrolytic capacitors. Voltage derating of capacitor should be 80% or above. TVS is a recommended component to protect post-circuits (if converter fails).
3. Recommended external circuit parameters in Figure 3:
   MOV2: S14K350,
   CY1、CY2: 1nF/400VAC；CX：0.1μF/275VAC；
   LCM：3.5mH; LDM：4.7mH；
4. FUSE：1A/250V Slow-Blow