PPMxx-SA-xxELF

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PPM-SIP-SERIES Rev.08-2013

- ✓ **2.5 - 3 Watt**
- ✓ Univ. **100-400VDC** / **85-264VAC***
- ✓ **Single** Output
- ✓ **Short Circuit Protection**
- ✓ **3 kV** AC I/O Isolation
- ✓ **High Efficiency** / **Density**

The PPM-SIP-Series are high efficiency 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℃, nominal input voltage and full load unless otherwise specified

Input Specifications

Input Voltage Range	100 – 400 VDC **or** 85 – 264 VAC* universal
Input Current	120mA, max.
Inrush Current	40A
External Input Fuse (recommended)	1A / 250V

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

Output Specifications

Voltage Accuracy	5 / 9 / 15 / 24 V DC Output: ±5% 12 V DC Output: ±8%
Input variation	±1.5%, typ.
Load variation (10-100%)	±2.5%, typ.
Ripple and Noise (20Mhz bandwidth)	
5 / 15 / 24 VDC models	≤ 240mV pk-pk
9 / 12 VDC models	≤ 150mV pk-pk
Short Circuit Protection	Continuous, auto recovery
Over Temperature Protection	No

Common Specifications

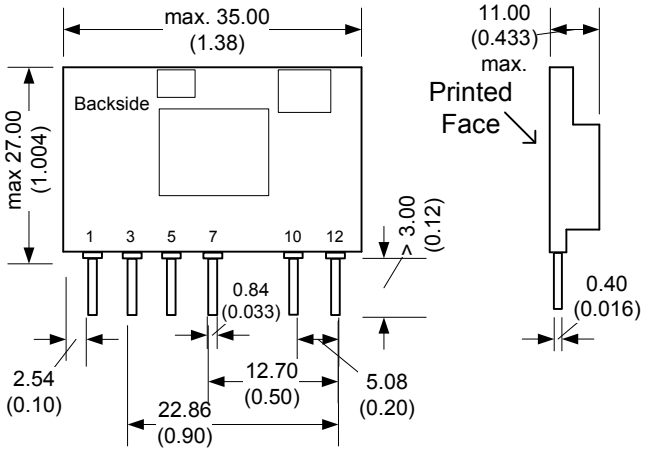
Temperature range	-40℃ to +85 ℃
Power derating	1.33% / ℃ (above 55℃)
Case temperature	+90℃, max.
Storage	-40℃ to +105 ℃
Humidity (non condensing)	85%, max.
Temperature Coefficient	0.15%/℃
Switching Frequency	50kHz, max.
I/O Isolation Voltage	3000VAC / 1min.
Case Material	UL94V-0 rated
Reliability Calculated MTBF (MIL-HDBK-217F)	> 300,000 hrs

Selection Guide

Order #	Power (W)	Output Voltage (Vdc)	Output Current Full Load (mA)	Efficiency (%)
SINGLE OUTPUT				
PPM2.5-SA-05ELF	2.5	5	500	69
PPM3-SA-09ELF	3	9	333	76
PPM3-SA-12ELF	3	12	250	78
PPM3-SA-15ELF	3	15	200	78
PPM3-SA-24ELF	3	24	125	78

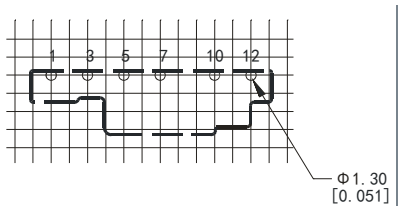
If you need other specifications, please enquire.

Package / Pinning / Derating

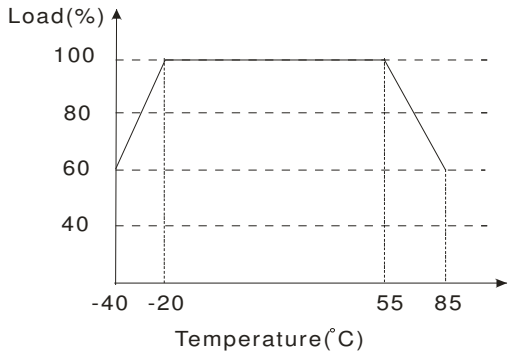


All dimensions are typical in millimeters (inches).
- Pin section tolerance: +/-0.10 (+/-0.004)
- Case tolerance +/-0.5 (+/-0.02)
Specification may change without notice.

SIP – AC/DC

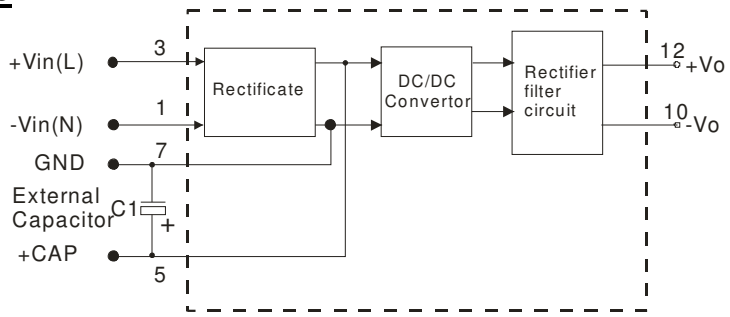


PIN CONNECTIONS	
#	SINGLE
1	- Vin
3	+ Vin
5	+CAP
7	GND
10	- Vout
12	+Vin

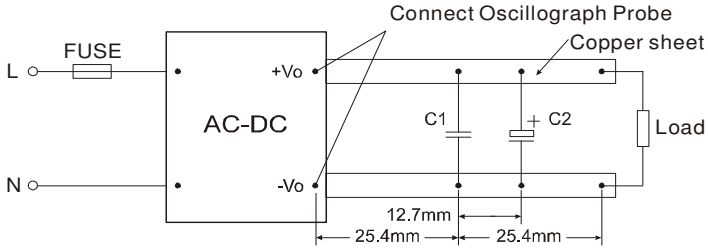


App Notes:

Structure Figure

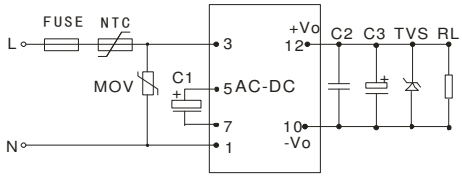


Anear Measure

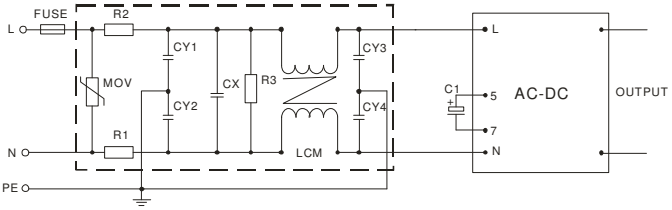


Typical Application

DC Input Figure 1



AC Input Figure 2



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
5V	22μF/400V	1μF/50V (Ceramic Capacitor)	470μF/35V	1A/250V	SMBJ7.0A
9V			330μF/35V		SMBJ12A
12V			150μF/35V		SMBJ20A
15V					
24V					SMBJ30A

Note:

1. C1: AC input, is 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 22μF/450V), If EMC performance is not required, C1 could not be needed.
2. Output filtering capacitor C2 (which is required at AC input or DC input) is recommended to use high frequency and low impedance electrolytic capacitors. For capacitance and current of capacitor please refer to manufacture's datasheet. Voltage derating of capacitor should be 80% or above. C3 is a ceramic capacitor, it is used to filter high frequency noise. TVS is a recommended component to protect post-circuits (if converter fails). External input NTC is recommended to use 5D-9.
3. For standard EMC requirement, please refer to figure 1, if higher EMC requirement, please refer to figure 3.
   MOV: Varistor, model: 561KD14，it is used to protect the device under surge;
   R1 、R2：2Ω/3W Winding resistor；R3：1MΩ/2W；
   CY1、CY2、CY3、CY4：1nF/400VAC；
   CX：0.22μF /275VAC；
   LCM：10mH-30mH