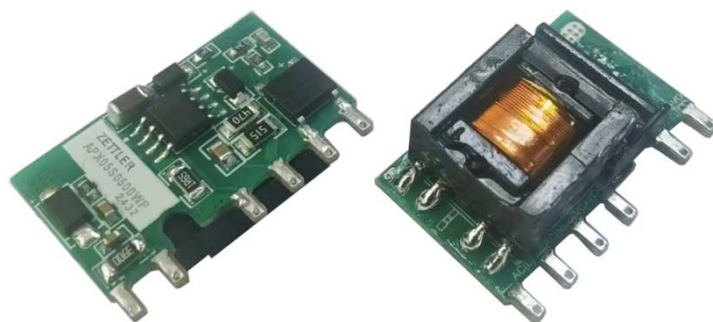


FEATURES

- PCB mounted switching Power module
- AC input voltage range: 85VAC~305VAC
- AC input rated voltage: 100VAC~277VAC
- DC input voltage range: 70VDC~430VDC
- Ambient temperature range: -40℃~85℃
- Storage temperature range: -40℃~105℃
- Leakage current (Input :305VAC): <0.20mA
- Isolation voltage: Input –Output ≥3600VAC 60S
- Insulation Resistance: Input –Output 500VDC ≥100M Ohms
- MTBF:1000Khrs Min MIL-HDBK-217F (25℃)
- Compact size, easy installation
- High efficiency low standby power consumption <0.15W, Environment-friendly
- Built-in output over current protection, over-voltage protection, short circuit protection
- Class II Construction

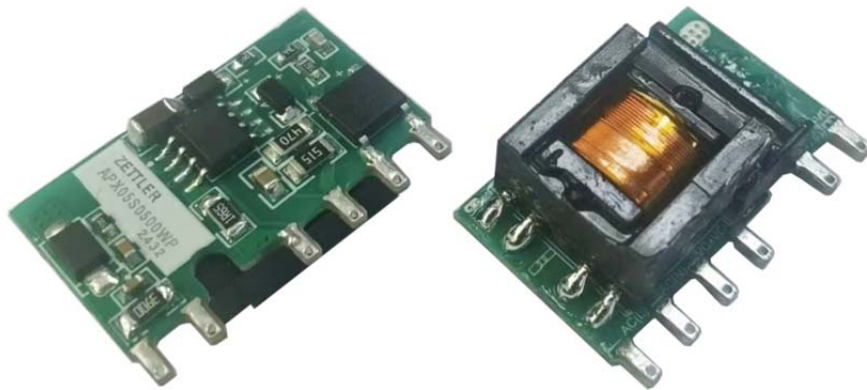


APPLICATIONS

APX05SXX00WP-200 series is one of the ZETTLER highly efficient green power AC-DC Converter series. They feature wide input range accepting either AC or DC voltage, high reliability, low power consumption and reinforced isolation. All models are particularly suitable for industrial control, electric power, instrumentation and smart home applications which have high requirement for dimension and don't have high requirement on EMC. For extremely harsh EMC environment, we recommend using the application circuit show in Design Reference of this datasheet.

MODEL LIST

Model No.	Output Power	DC Voltage	Rated Current	Efficiency 230VAC, % Typ.	Ripple&Noise (max)	Ambient TEMP(℃)	Weight
APX05S0300WP-200	3.3W	3.3Vdc	1000mA	69%	150mVp-p	85	4.9g
APX05S0500WP-200	5W	5 Vdc	1000mA	76%	150mVp-p	85	4.9g
APX05S0900WP-200	5W	9 Vdc	560mA	77%	150mVp-p	85	4.9g
APX05S1200WP-200	5W	12Vdc	420mA	79%	150mVp-p	85	4.9g
APX05S1500WP-200	5W	15Vdc	340mA	79%	150mVp-p	85	4.9g
APX05S2400WP-200	5W	24Vdc	210mA	81%	150mVp-p	85	4.9g



ORDERING CODE

Example:

ZPX=Zettler standard series

APX=Customized series

HPX=High Performance series

DPX=DC-DC

Output Power (W)

03=3W

20=20W

Output Type

S=Single Output

D=Dual Output

T=Triple Output

First Output Voltage

05=5V, 12=12V

Second Output Voltage

06=6V, 12=12V

00= No Second Output

Input AC Voltage Range

W=Wide Voltage Input

H=High Voltage Input ($\geq 165\text{VAC}$)

L=Low Voltage Input ($< 165\text{VAC}$)

Case Dimension

A: A Type case

B: B Type case...

P:PCBA(no case)

Running Number

APX

05

S

12

00

W

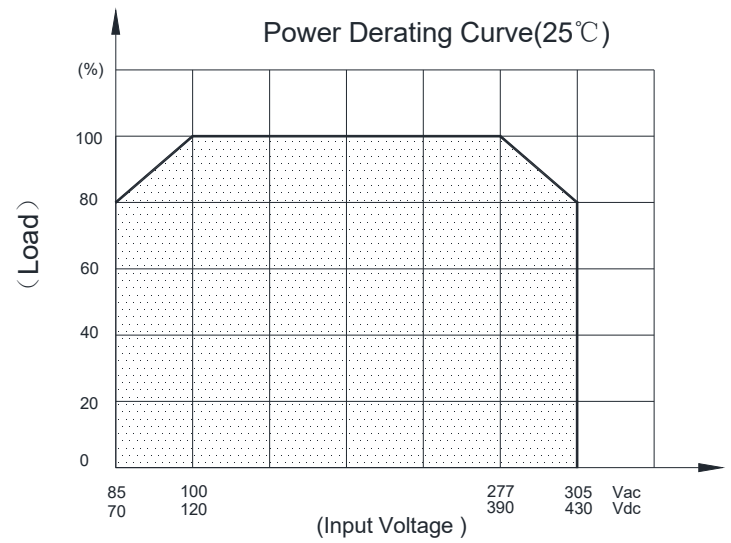
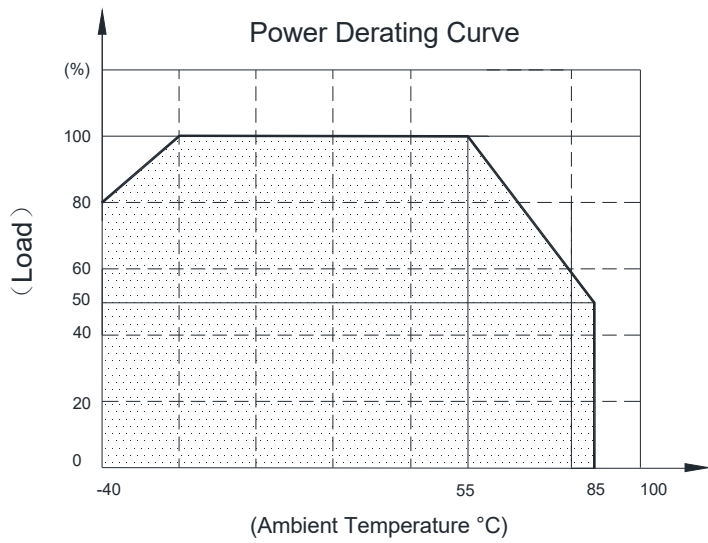
P

-200

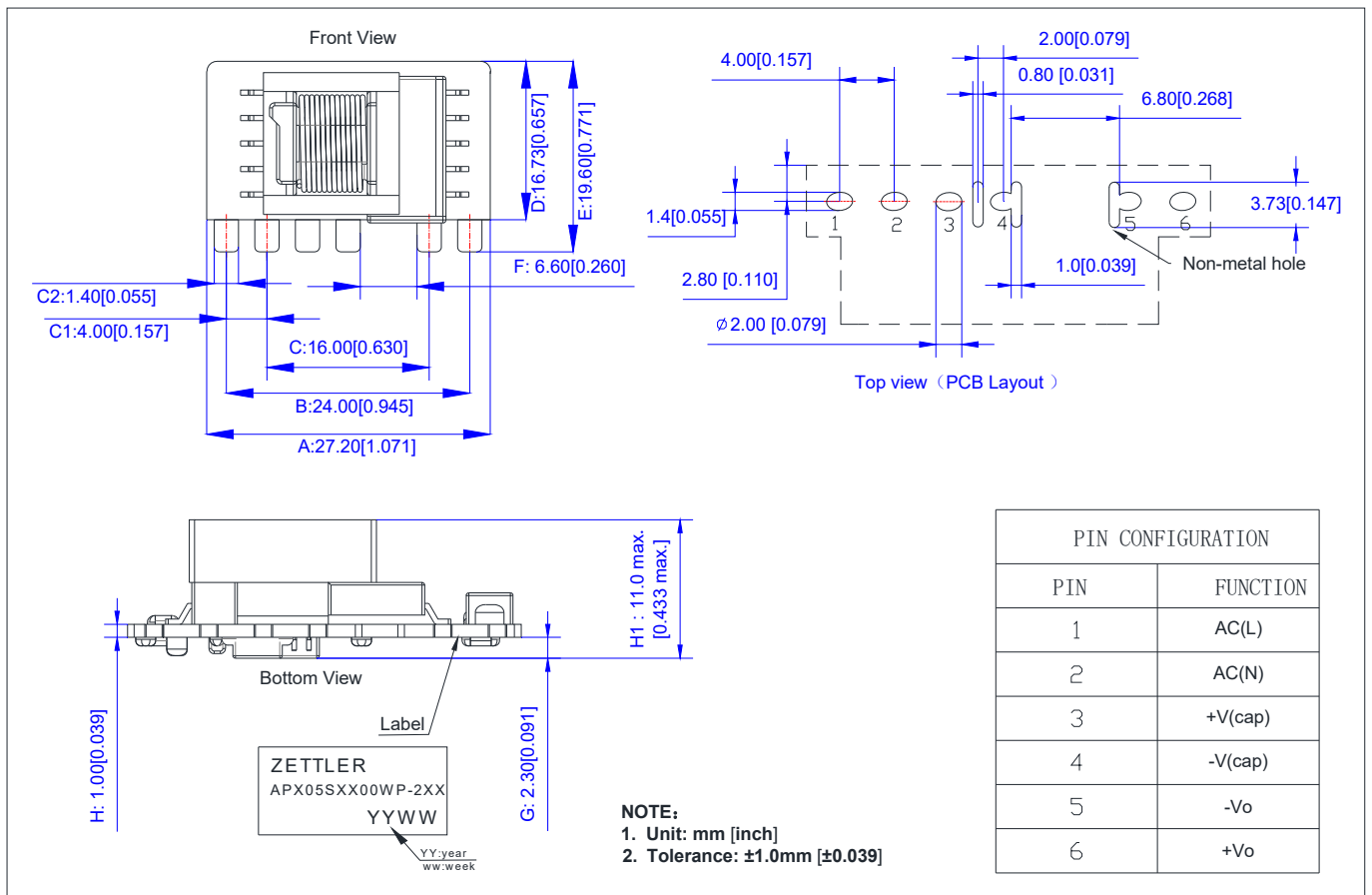
ELECTRICAL SPECIFICATION

Model No.		APX05SXX00WP-200	
Input	Rated Voltage	100-277VAC	
	Voltage Range	85-305VAC or 100-430VDC	
	Frequency (Hz)	47-63 Hz	
	Current (Full load)	115VAC	230VAC
		200mA	100mA
	Inrush Current (<500us)	20A	40A
	No Load Loss	0.15W@230Vac	
HOT PLUG	Unavailable		
Output	Voltage (V)	Refer to “Model List”	
	Current (mA) max.	Refer to “Model List”	
	Voltage Accuracy	± 5%@(10%-100% load)	
	Line Regulation	± 1.5%(at rated load)	
	Load Regulation	± 3%@(10%-100% load)	
	Minimum Load (mA)	10%	
	Ripple & Noise （mV）	Refer to “Model List”	
	Efficiency （typ.）	Refer to “Model List”	
	Start-up Time	3s	
Protection	Over Current Protection	Hiccup mode	
	Short Circuit Protection	Hiccup mode	
Environment	Operating Temperature	-40°C...+ 85°C(Reference to the De-rating Curve) @free air convection	
	Operating Humidity	10-90% RH	
	Storage Temperature	-40°C...+105°C	
	Storage Humidity	5-95% RH	
	Temperature Coefficient	±0.15%/°C （0~60°C）	
	Resistance to solder heat	260± 5°C,5-10Sec	
Physical	Case Material	N/A	
	Weight	4.9g(ref.)	
Safety & EMC	Dielectric Strength	I/P-O/P : 3600VAC	
	Safety Standards	Compliance with EN/IEC/UL62368-1;IEC/EN60335-1;IEC/EN61558-2-16	
	EMI /EMC	CISPR32/EN55032 CLASS A (Recommended circuit 1, 4) CISPR32/EN55032 CLASS B (Recommended circuit 2, 3)	Need to add external EMC component (Reference to the Schematic)
	ESD	IEC/EN 61000-4-2 Contact ±6KV perf. Criteria B	
	radiated immunity	IEC/EN61000-4-3 10V/m perf. Criteria A	
	EFT/burst	IEC/EN61000-4-4 ±2KV (Recommended circuit 1, 2) perf. Criteria B IEC/EN61000-4-4 ±4KV (Recommended circuit 3, 4) perf. Criteria B	
	surge	IEC/EN61000-4-5 line to line ±1KV (Recommended circuit 1, 2) perf. Criteria B IEC/EN61000-4-5 line to line±2KV (Recommended circuit 3, 4) perf. Criteria B	
	conducted immunity	IEC/EN61000-4-6 10Vr.m.s perf. Criteria A	
Reliability Requirement	MTBF	1000KHrs Min MIL-HDBK-217F （25°C）	
	Burn-In Test	The unit shall be burned in for 2~4 Hours under 277Vac input and with full load at 25°C	

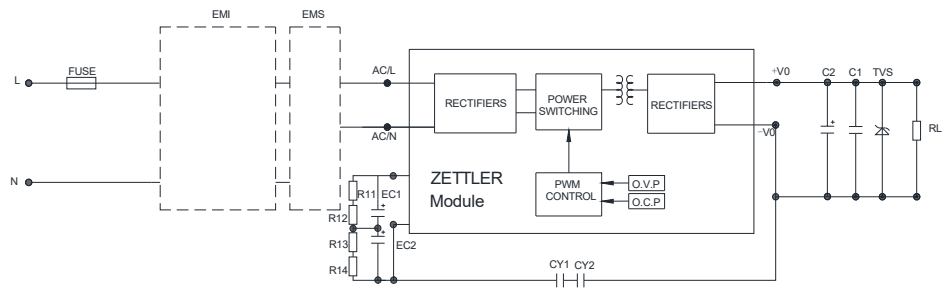
PRODUCT CHARACTERISTIC CURVE



MECHANICAL SPECIFICATION



SCHEMATIC



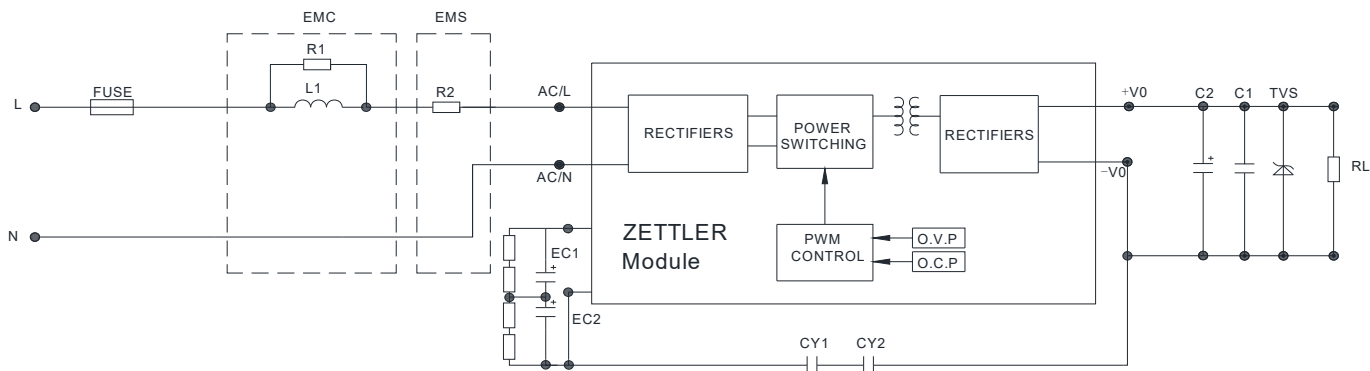
APX05SXX00WP-200 Series additional component selection guide(no EMC devices)						
Part no.	EC1/EC2	C2 (required)	C1 (required)	FUSE	CY1,CY2 (required)	TVS
APX05S0300WP-200	22UF/400V	820μ6.3V (solid-state capacitor)	104PF/50V	1A 400V	100~2200pF/ 400VAC	SMBJ5.0A
APX05S0500WP-200		470uF/16V (solid-state capacitor)				SMBJ7.0A
APX05S0900WP-200		270uF/16V (solid-state capacitor)				SMBJ12A
APX05S1200WP-200						SMBJ20A
APX05S1500WP-200		220uF/35V				SMBJ20A
APX05S2400WP-200						SMBJ30A

External recommended components selection guide (No EMC devices)

- 注:
- EC1/EC2 is used as filter capacitor with AC input (must be connected externally) and as EMC filter capacitor with DC input (must be connected), External recommended to use the capacitor with ripple current >200mA@100KHz.
 - R11/R12/R13/R14 used as voltage equalizing resistors for EC1/EC2, which must be externally connected. It is recommended to use surface mount resistors with a resistance greater than 1M Ω and a specification of 1206 or higher.
 - We recommend using an electrolytic capacitor with high frequency and low ESR (ESR of C2 at low temperature of $-40^{\circ}\text{C}\leq 1.1\Omega$) rating for C2.Choose a capacitor voltage rating with at least 20% margin, in other words not exceeding 80%. C1 is a ceramic capacitor, used for filtering high frequency noise.
 - A suppressor diode (TVS) is recommended to protect the application in case of converter failure and specification should be 1.2 times of the output voltage.

Electromagnetic Compatibility Solution--Recommended Circuit

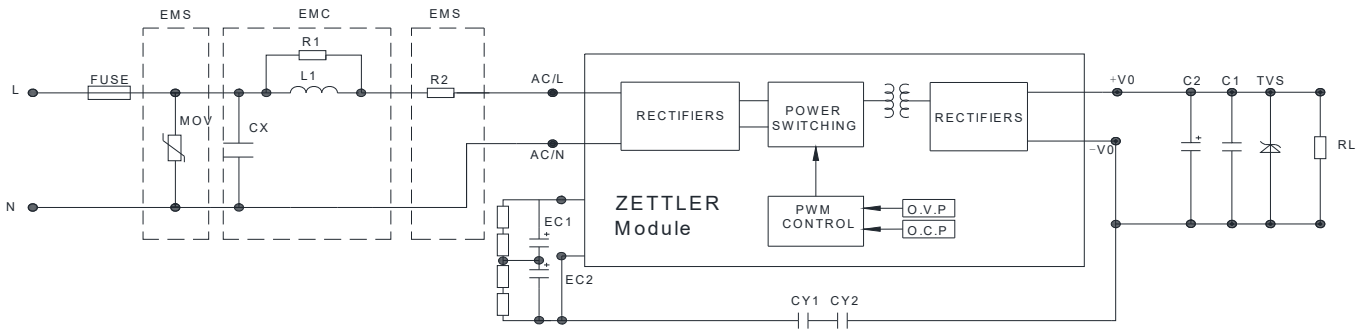
1. Application circuit 1——Basic application (Immunity Level 3, Emissions Class A)



Component	R1	L1	R2	CY1, CY2	FUSE
Spec.	10K/1206	0.5~2mH/0.5A	12 Ω /3W	100~2200pF/400VAC	1A/400V

- Note:
- R2 is the input plug-in resistor, this resistor needs to be a wire-wound resistor (required).
 - In the home appliance application environment, the two Y capacitors of the primary and secondary need to be externally connected.

2. Application circuit 2: Universal system recommended circuits for outdoor general environment (Immunity Level 4, Emissions Class B)



Component	MOV	R1	CX	L1	R2	CY1,CY2	FUSE
Spec.	14D751K	10K/1206	0.1UF/480VAC	0.5~2mH/0.5A	12Ω/3W	100~2200pF/400VAC	1A/400V

Note:

1. According to the certification requirements, the X capacitor needs to be connected in parallel with the bleeder resistance, the recommended resistance value is less than $3.8M\Omega$, and the actual need to be selected according to the certification standard.
2. R2 is the input plug-in resistor, this resistor needs to be a wire-wound resistor (required).
3. In the home appliance application environment, the two Y capacitors of the primary and secondary need to be externally connected.