SERIES: PSK-90D | **DESCRIPTION:** INTERNAL AC-DC POWER SUPPLY

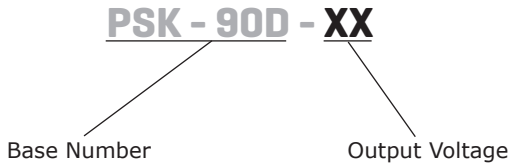
FEATURES

- wide input range (80 ~ 305 Vac or 110 ~ 430 Vdc)
- operating ambient temperature range (-40°C ~ 85°C)
- high I/O isolation test voltage up to 4,200 Vac
- over voltage category III
- over voltage, over current, short circuit protections
- input safety Class II
- designed to meet 62368: IEC/EN/UL; 60335: EN; 61588: EN
- meets Class B radiated and conducted emissions
- specified for ac or dc input voltage

MODEL	output voltage (Vdc)	output current max (A)	output power max (W)	ripple and noise[1] max (mVp-p)	efficiency[2] typ (%)
PSK-90D-12	12	6.7	80.4	120	92
PSK-90D-15	15	5.670	85.05	120	92.5
PSK-90D-24	24	3.750	90.0	200	93
PSK-90D-48	48	1.875	90.0	240	93

Notes: 1. At full load, nominal input, 20 MHz bandwidth oscilloscope, with 1 µF ceramic and 10 µF electrolytic capacitors on the output.
2. At 230 Vac input.
3. All specifications are measured at Ta=25°C, humidity <75%, nominal input voltage, and rated output load unless otherwise specified.

PART NUMBER KEY



INPUT

parameter	conditions/description	min	typ	max	units
voltage	ac input dc input	80 110		305 430	Vac Vdc
frequency		47		63	Hz
current	115 Vac 230 Vac			2 1.1	A A
inrush current	115 Vac 230 Vac		35 65		A A
leakage current	277 Vac/50 Hz			0.25	mA
built in fuse	3.15A /300V, slow-blow				
no load power consumption				0.21	W

OUTPUT

parameter	conditions/description	min	typ	max	units
capacitive load	12 Vdc 15 Vdc 24 Vdc 48 Vdc			6,800 4,500 3,000 470	µF µF µF µF
output voltage accuracy			±2		%
line regulation	at full load		±0.5		%
load regulation	0~100% load		±1.0		%
hold-up time	115 Vac 230 Vac		10 30		ms ms
switching frequency			75		kHz
temperature coefficient			±0.02		%/°C

PROTECTIONS

parameter	conditions/description	min	typ	max	units
over voltage protection	clamp or hiccup 12 Vdc output 15 Vdc output 24 Vdc output 48 Vdc output			 16 25 35 60	 V V V V
over current protection	auto recovery	110			%
short circuit protection	continuous, auto recovery, hiccup				

SAFETY & COMPLIANCE

parameter	conditions/description	min	typ	max	units
isolation voltage	input to output for 1 minute, 5mA max	4,200			Vac
insulation resistance	input to output at 500 Vdc	100			MΩ
safety approvals	designed to meet 62368: IEC, EN, UL designed to meet 60335: EN designed to meet 61558: EN				
safety class	Class II				
conducted emissions	CISPR32/EN55032 CLASS B				
radiated emissions	CISPR32/EN55032 CLASS B				
ESD	IEC/EN61000-4-2 Contact ±6KV/Air ±8KV, perf. Criteria A				
radiated immunity	IEC/EN61000-4-3 10V/m, perf. Criteria A				
EFT/burst	IEC/EN61000-4-4 ±2KV, perf. Criteria A				
surge	IEC/EN61000-4-5 line to line ±2KV, perf. Criteria A IEC/EN61000-4-5 line to line ±2KV/ line to ground ±4KV, perf. Criteria B (circuit in Figure 2)				

SAFETY & COMPLIANCE

parameter	conditions/description	min	typ	max	units
conducted immunity	IEC/EN61000-4-6 10Vr.m.s, perf. Criteria A				
voltage dips and interruption	IEC/EN61000-4-11 0%, 70%, perf. Criteria B				
PFM	IEC/EN61000-4-8 30A/m, perf. Criteria A				
vibration	10 ~ 500Hz, 2G 10min./1cycle, period for 60min. each along X, Y, Z axes				
power derating	-40°C ~ -30°C 50°C ~ 70°C 70°C ~ 80°C 80Vac ~ 100Vac 2,000m ~ 4,000m	5.0 2.50 1.66 1.0 10.0			%/°C %/°C %/°C %/Vac %/Km
MTBF	MIL-HDBK-217F at 25°C	500,000			hours
RoHS	yes				

ENVIRONMENTAL

parameter	conditions/description	min	typ	max	units
operating temperature		-40		85	°C
storage temperature		-40		85	°C
storage humidity		0		95	%

MECHANICAL

parameter	conditions/description	min	typ	max	units
dimensions	87.00 x 52.00 x 29.50 [3.425 x 2.047 x 1.161 inch]				mm
weight			200		g
case material	black plastic, flame-retardant and heat-resistant (UL94V-0)				
cooling	natural convection				

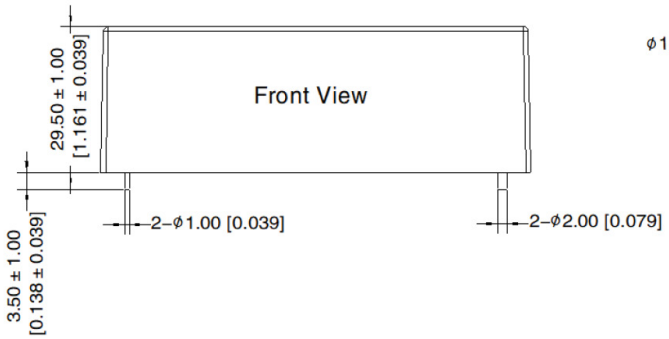
SOLDERABILITY

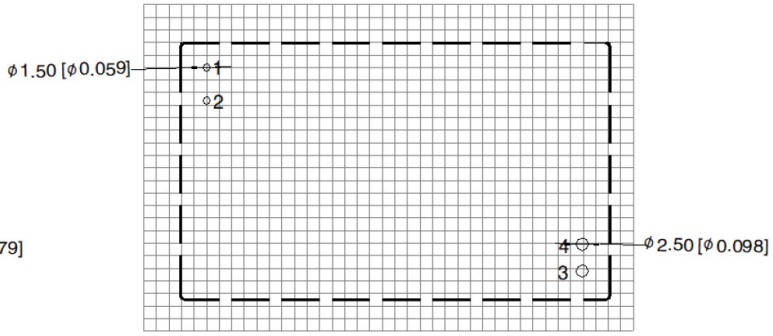
parameter	conditions/description	min	typ	max	units
wave soldering	5~10 seconds max	255	260	265	°C
hand soldering	3~5 seconds max	350	360	370	°C

MECHANICAL DRAWING

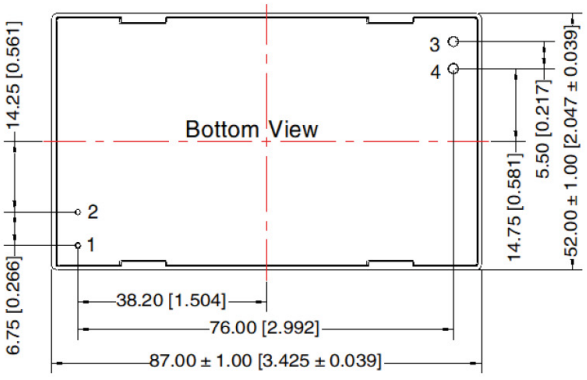
units: mm [inch]
pin diameter tolerance: ±0.10 [±0.004]
tolerance: ±0.50 [±0.020]

PIN CONNECTIONS	
PIN	Function
1	AC(N)
2	AC(L)
3	+Vo
4	-Vo





Note：Grid 2.54*2.54mm



APPLICATION DESIGN REFERENCE

Output Filtering Components:
It is recommended using an electrolytic capacitor with high frequency, and low ESR 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 and TVS is a recommended suppressor diode to protect the application in case of a converter failure.

Figure 1

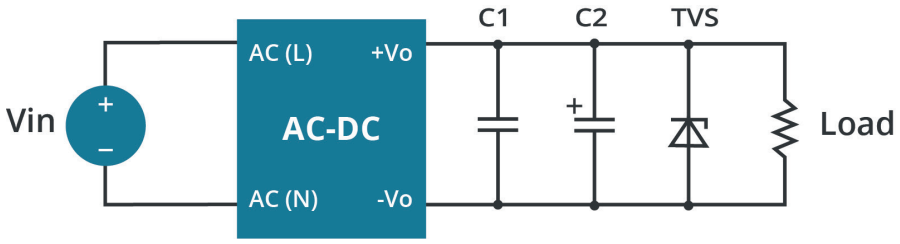
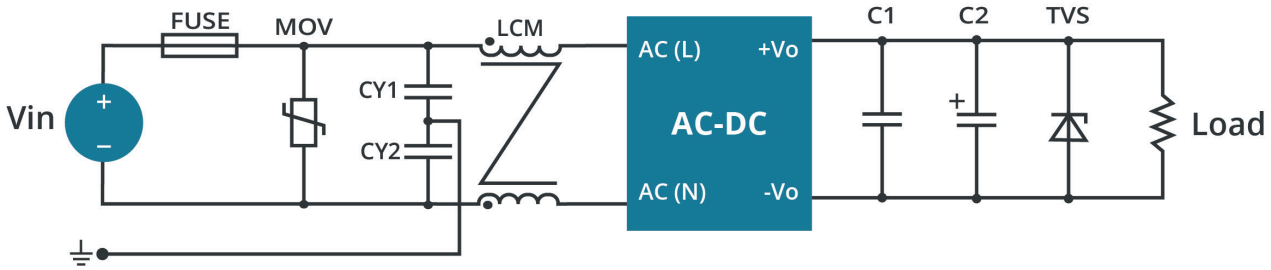


Table 1

Part No.	C1(μF)	C2(μF)	TVS
PSK-90D-12	1μF/100V	330μF/35V	SMBJ20A
PSK-90D-15		330μF/35V	SMBJ20A
PSK-90D-24		200μF/35V	SMBJ30A
PSK-90D-48		100μF/63V	SMBJ60A

EMC RECOMMENDED CIRCUIT

Figure 2



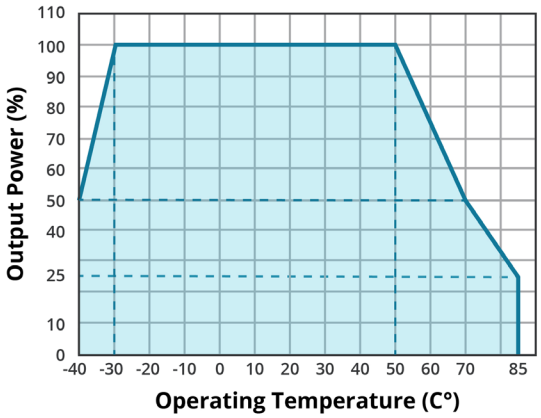
Note: EMC application circuit with higher requirements.

Table 2

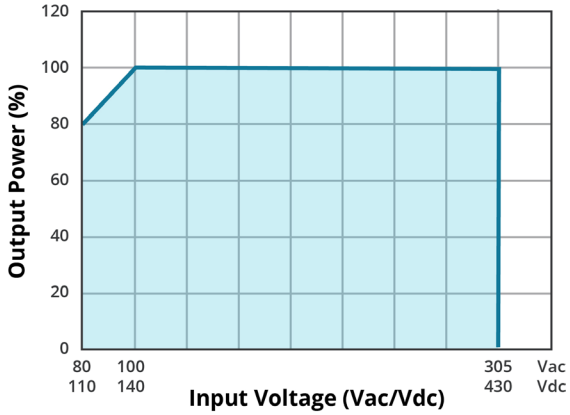
Components	Recommended Value
FUSE	6.3A/300V, slow-blow, required
MOV	S14K350
CY1/CY2	1nF/400VAC
LCM	10mH

DERATING CURVE

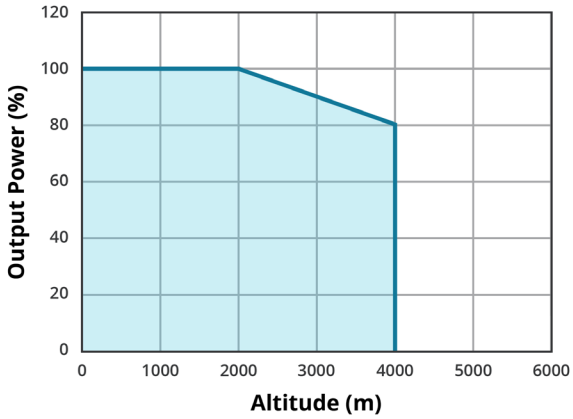
TEMPERATURE DERATING CURVE
(Input voltage: 80 ~ 305 Vac & 110 ~ 430 Vdc)



INPUT VOLTAGE DERATING CURVE (25 °C)



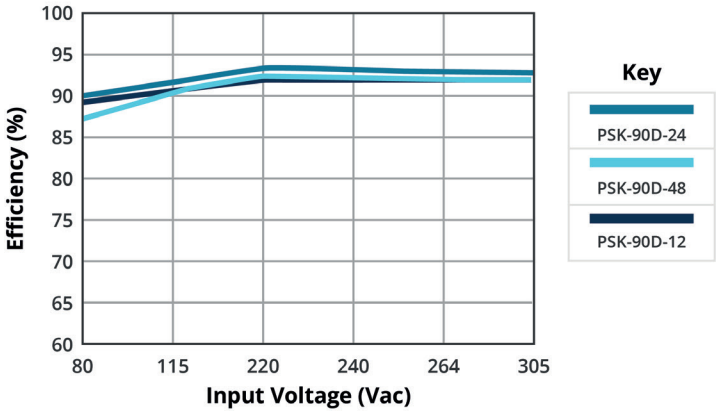
ALTITUDE DERATING CURVE



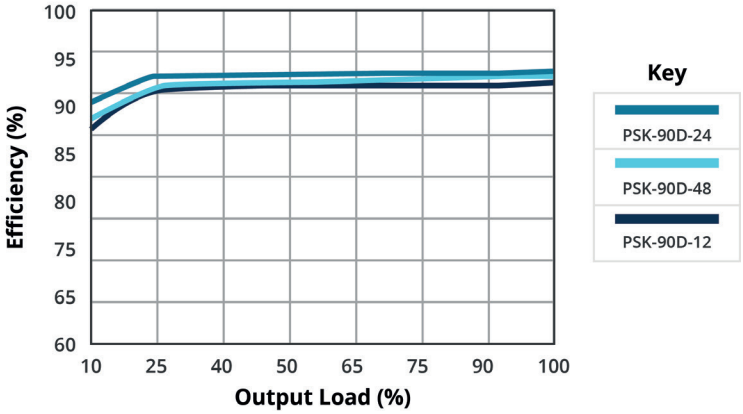
Note: 1. With an AC input between 80-100VAC and a DC input between 110-140DC, the output power must be derated as per temperature derating curves.
2. This product is suitable for applications using natural air cooling; for applications in closed environment please consult with CUI.

EFFICIENCY CURVES

EFFICIENCY VS INPUT VOLTAGE (full load)



EFFICIENCY VS OUTPUT LOAD (at 230 Vac)



REVISION HISTORY

rev.	description	date
1.0	initial release	11/09/2022

The revision history provided is for informational purposes only and is believed to be accurate.

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