CUI INC
a bel group

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				

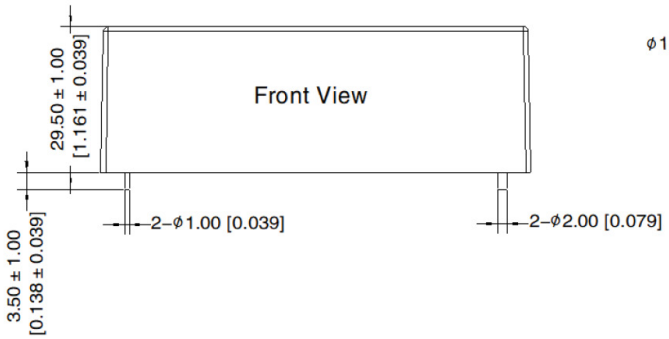
SOLDERABILITY

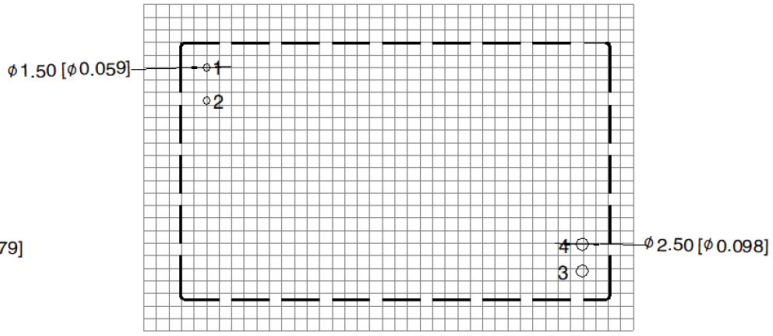
parameter	conditions/description	min	typ	max	units
wave soldering	5~10 seconds max	255	260	265	°C
hand soldering	3~5 seconds max	350	360	370	°C

MECHANICAL DRAWING

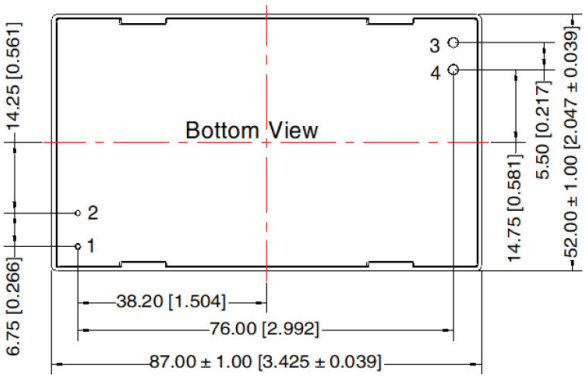
units: mm [inch]
pin diameter tolerance: ±0.10 [±0.004]
tolerance: ±0.50 [±0.020]

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

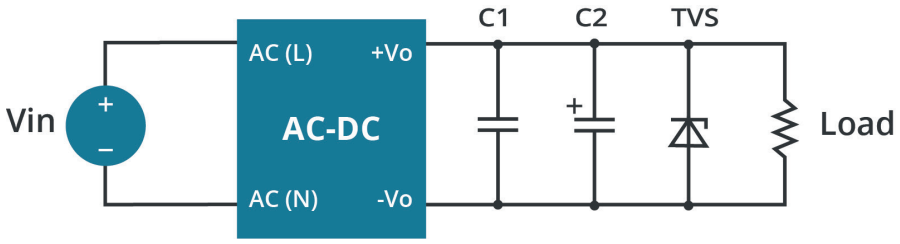
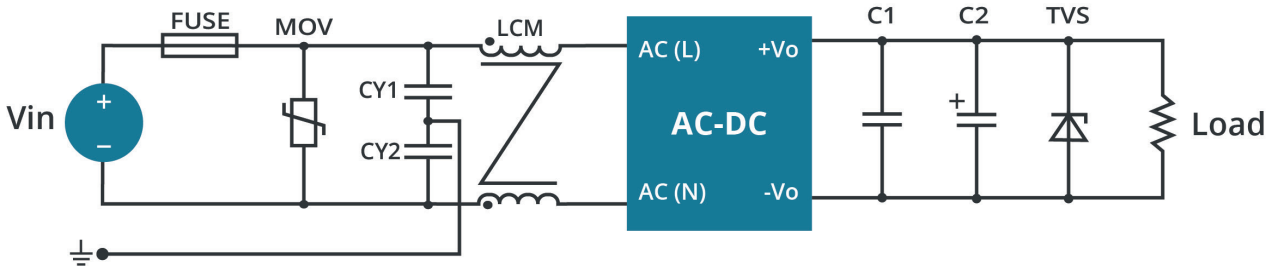


Table 1

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

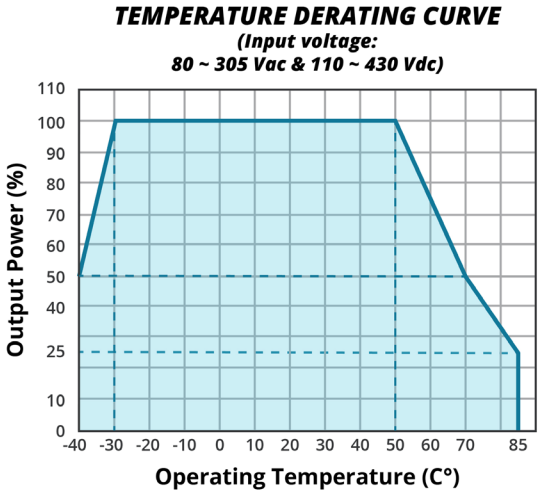


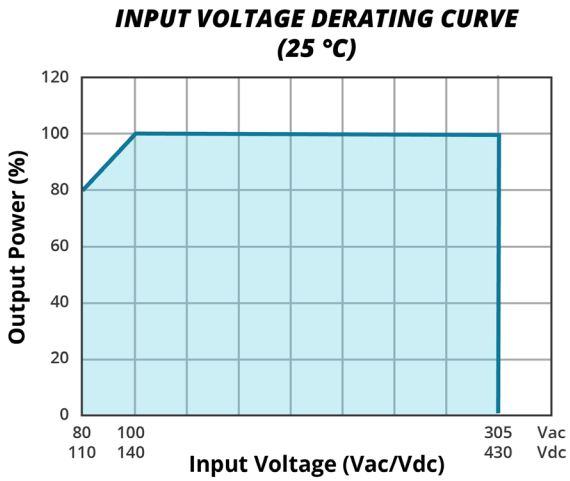
Note: EMC application circuit with higher requirements.

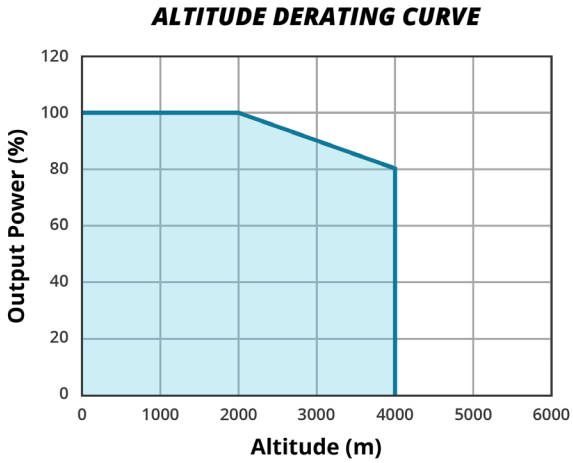
Table 2

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

DERATING CURVE

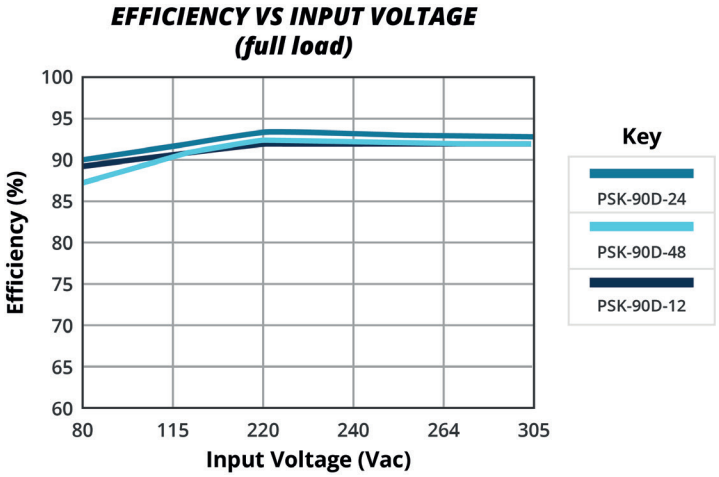


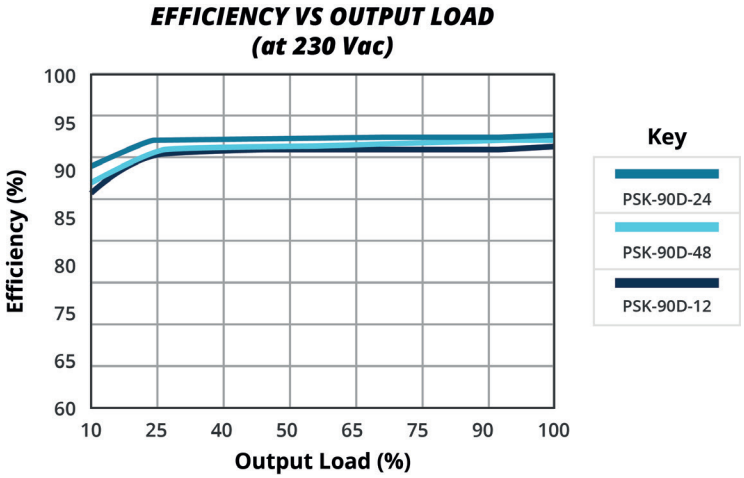




Note: 1. With an AC input between 80-100VAC and a DC input between 110-140DC, the output power must be derated as per temperature derating curves.
2. This product is suitable for applications using natural air cooling; for applications in closed environment please consult with CUI.

EFFICIENCY CURVES





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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CUI Inc.:

PSK-90D-12 PSK-90D-15 PSK-90D-24 PSK-90D-48