SERIES: PSK-20E | **DESCRIPTION:** INTERNAL AC-DC POWER SUPPLY

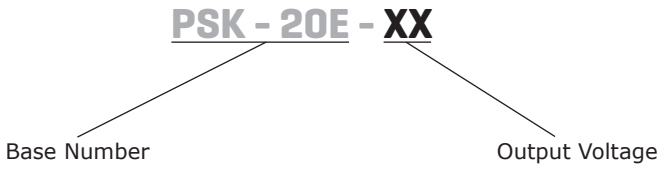
FEATURES

- universal input 85~305 Vac & 100~430 Vdc
- wide operating temperature range (-40~85°C)
- Class B emissions (EN55032/CISPR) with application circuit
- certified to IEC/EN/UL 62368-1
- isolation voltage 4,000 Vac
- short circuit and over current protection
- Class II
- low stand-by power consumption (<0.1 W)
- 2,000 m operating altitude
- high efficiency up to 87%
- OVC III

MODEL	output voltage (Vdc)	output current max (A)	output power max (W)	ripple and noise[1] max (mVp-p)	efficiency[2] typ (%)
PSK-20E-3	3.3	4.5	14.85	150	81
PSK-20E-5	5	4.0	20.0	150	85
PSK-20E-9	9	2.2	20.0	150	84
PSK-20E-12	12	1.67	20.0	150	85
PSK-20E-15	15	1.33	20.0	150	87
PSK-20E-24	24	0.83	20.0	150	87

Notes:
1. Ripple & noise are measured at 20 MHz BW, with 10μF electrolytic capacitor and 1μF ceramic capacitor.
2. It is recommended to use at a load of over 5%. If the load is below 5%, the ripple index of the product may exceed the specifications, but it does not affect the reliability of the product.
3. Unless otherwise specified, all indicators in this manual are measured at Ta=25 °C, humidity<75% RH, nominal input voltage, and output rated load.

PART NUMBER KEY



INPUT

parameter	conditions/description	min	typ	max	units
voltage[4]	ac input dc input	85 100		305 430	Vac Vdc
frequency		47	50~60	63	Hz
current	110 Vac 230 Vac			0.3 0.25	A A
external input fuse	3.15 A/300 V, slow-blow, required				
leakage current	230 Vac/50 Hz			0.1	mA
no load power consumption	at 230 Vac		0.1		W

Notes: 4. The input voltage should not exceed the specified range value to prevent permanent and irreparable damage.

OUTPUT

parameter	conditions/description	min	typ	max	units
capacitive load	3.3, 5 Vdc output model 9 Vdc output model 12 Vdc output model 15 Vdc output model 24 Vdc output model			8,000 5,400 4,000 3,000 1,000	µF µF µF µF µF
output voltage accuracy			±2		%
line regulation			±0.5		%
load regulation	0% ~ 100% load		±1.0		%
hold-up time	at 230 Vac		55		ms
temperature coefficient			±0.02		%/°C

PROTECTIONS

parameter	conditions/description	min	typ	max	units
over current protection		110			%
short circuit protection	continuous, auto recovery				

SAFETY & COMPLIANCE

parameter	conditions/description	min	typ	max	units
isolation voltage	input to output, for 1 minute, 5mA max	4,000			Vac
safety approvals	certified to 62368-1: IEC, EN, UL designed to meet 61558: EN designed to meet 60335: EN				
safety class	Class II (without external circuit)				
EMI/EMC	CISPR32/EN55032 CLASS B				
ESD	IEC/EN61000-4-2 Contact ±6 kV/Air ±8 kV, perf. Criteria A				
radiated immunity	IEC/EN61000-4-3 10 V/m, perf. Criteria A				
EFT/burst	IEC/EN61000-4-4 ±2 kV perf. Criteria A IEC/EN61000-4-4 ±4 kV (see recommended circuit Fig. 2), perf. Criteria A				
surge	IEC/EN61000-4-5 line to line ±1 kV perf. Criteria A IEC/EN61000-4-5 line to line ±2 kV (see recommended circuit Fig. 2), perf. Criteria A				
conducted immunity	IEC/EN61000-4-6 10 Vrms, perf. Criteria A				
MTBF	MIL-HDBK-217F at 25°C	1,500,000			hours
RoHS	yes				

ENVIRONMENTAL

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

SOLDERABILITY

parameter	conditions/description	min	typ	max	units
wave soldering	5~10 seconds max	255	260	265	°C
hand soldering	5~10 seconds max	355	360	365	°C

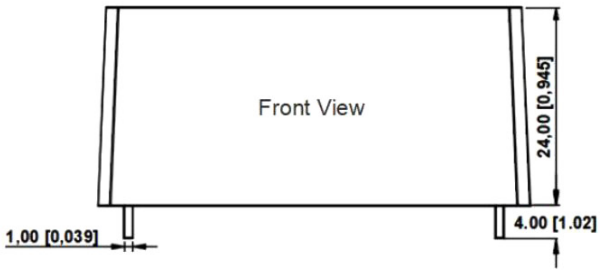
MECHANICAL

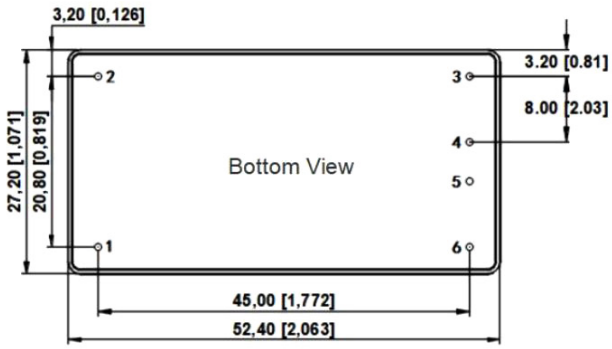
parameter	conditions/description	min	typ	max	units
dimensions	52.40 x 27.20 x 24.00 [1.331 x 0.690 x 0.610 inch]				mm
weight			54		g
case material	black plastic, flame-retardant and heat-resistant (UL94V-0)				
cooling	natural convection				

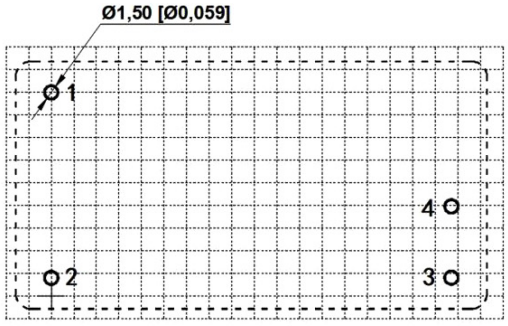
MECHANICAL DRAWING

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

PIN CONNECTIONS	
PIN	Function
1	AC(L)
2	AC(N)
3	-Vo
4	+Vo
5	no pin
6	no pin



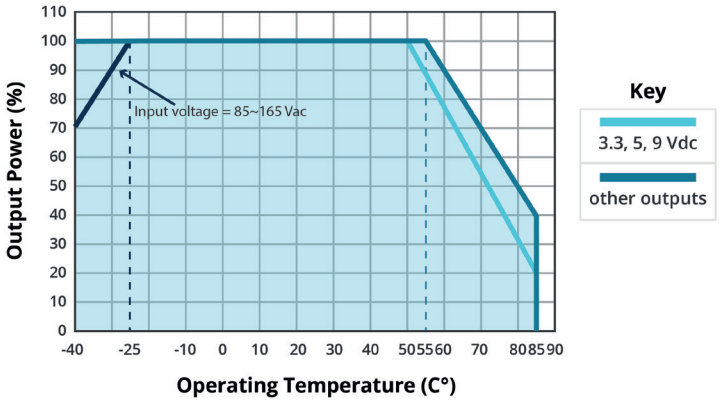




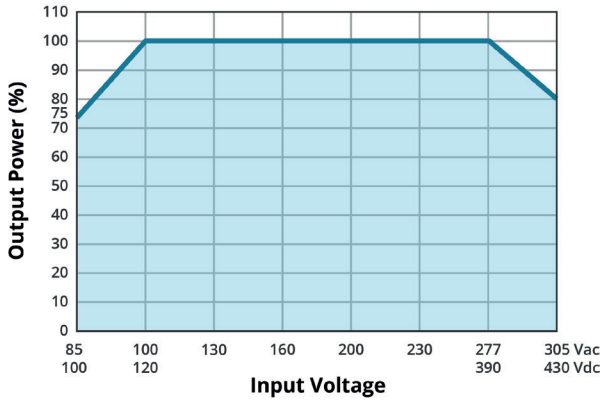
Grid size：2.54*2.54mm

DERATING CURVE

TEMPERATURE DERATING CURVE
(Input voltage = 85 ~ 305 Vac)

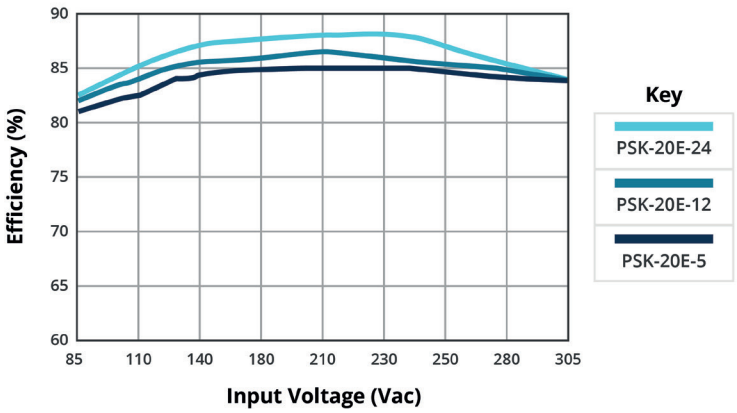


INPUT VOLTAGE DERATING CURVE
(at 25°C)

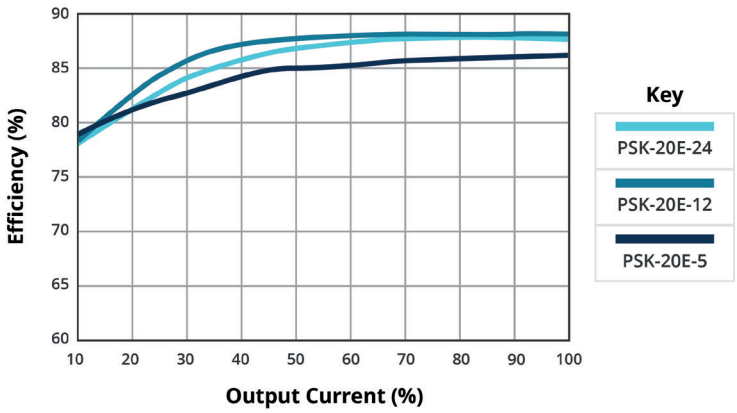


EFFICIENCY CURVES

EFFICIENCY VS INPUT VOLTAGE
(Full load)



EFFICIENCY VS OUTPUT LOAD
(Vin = 230 Vac)



APPLICATION DESIGN REFERENCE

Figure 1

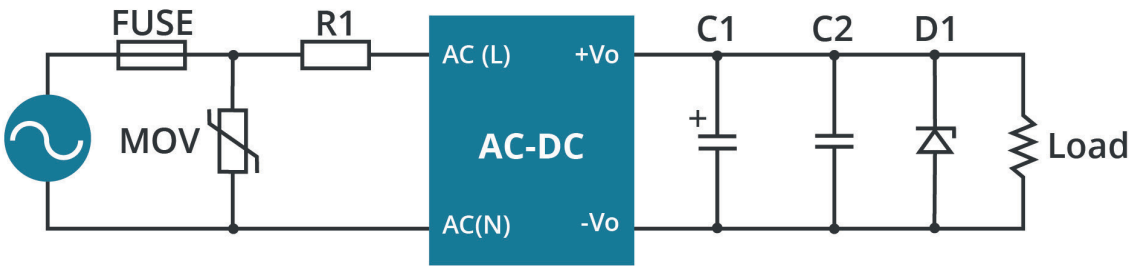


Table 1

Vout (Vdc)	FUSE	MOV	R1	C1 (μF/V)	C2 (μF/V)	D1
3.3, 5	3.15A/300V, slow-blow, required	14D561K	6.8Ω/3W (wire-wound resistor, required)	220 μF/16 V	1 μF/25 V	see note 2
9, 12				100 μF/25 V	1 μF/25 V	
15, 24				100 μF/35 V	1 μF/50 V	

Notes: 1. Fuse and MOV should be selected based on application requirements and performance criteria.
2. D1 is a TVS transistor that can protect the downstream circuit in case of module abnormalities. It is recommended to choose a model that is 1.2 times the output voltage.

EMC RECOMMENDED CIRCUIT

Figure 2

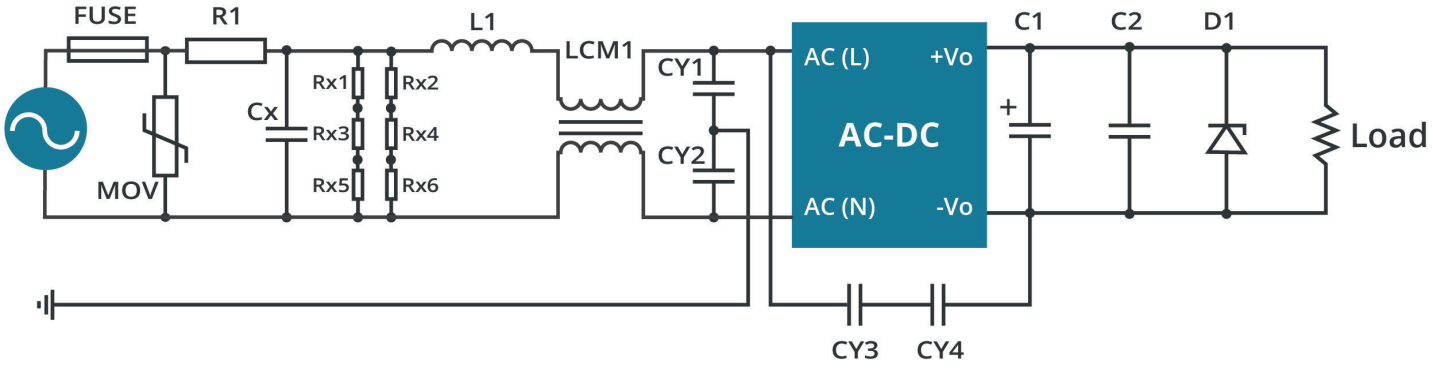


Table 2

Components	Recommended Value
FUSE	3.15A/300V, slow-blow, required
MOV	14D561K
R1	6.8Ω/3W (wire wound resistor, required)
Cx	0.33 μF/305 Vac
L1	1.2 mH/0.5 A
CY1, CY2	2.2 nF/400 Vac
CY3, CY4	1.0 nF/400 Vac
LCM	20 mH Common mode inductance
Rx1, Rx2, Rx3, Rx4, Rx5, Rx6	1.5 MΩ/1206

REVISION HISTORY

rev.	description	date
1.0	initial release	05/21/2025

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

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CUI offers a two (2) year limited warranty. Complete warranty information is listed on our website.

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