CUI INC
a bel group

SERIES: PSK-25W | DESCRIPTION: INTERNAL AC-DC POWER SUPPLY

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FEATURES

- wide input range (85~305 Vac)
- UL/EN/IEC 62368 certified
- meets CISPR32/EN 55032 Class B without external components
- short-circuit, over-current, over-voltage protections

RoHS c UL us CE UKCA

MODEL

MODEL	output voltage (Vdc)	output current max (A)	output power max (W)	ripple and noise typ (mVp-p)	efficiency typ (%)
PSK-25W-3[1,2,3]	3.3	4.1	13.5	100	75
PSK-25W-5[1,2,3]	5	4.1	20.5	100	78
PSK-25W-9[1,2,3]	9	2.5	22.5	100	80
PSK-25W-12[1,2,3]	12	2.1	25.0	100	82
PSK-25W-15[1,2,3]	15	1.6	24.0	100	83
PSK-25W-24[1,3]	24	1.1	26.4	100	85
PSK-25W-48[1,2,3]	48	0.5	24.0	100	87

Notes: 1. Discontinued model - board mount version.
2. Discontinued model - chassis mount version.
3. Discontinued model - DIN-rail mount version.

PART NUMBER KEY

PSK - 25W - XX - X

- PSK - 25W: Base Number
- XX: Output Voltage
- X: Mounting Style
  - blank = board mount
  - T = chassis mount
  - DIN = DIN-rail mount

INPUT

parameter	conditions/description	min	typ	max	units
voltage		85 100		305 430	Vac Vdc
frequency		47		63	Hz
current	at 155 Vac at 230 Vac			0.6 0.34	A A
inrush current	at 155 Vac at 230 Vac		20 40		A A
no load power consumption	at 230 Vac			0.5	W

OUTPUT

parameter	conditions/description	min	typ	max	units
capacitive load	3.3 Vdc output models 5 Vdc output models 9 Vdc output models 12 Vdc output models 15 Vdc output models 24 Vdc output models 48 Vdc output models			48,000 12,240 5,600 5,400 2,400 1,440 600	µF µF µF µF µF µF µF
output voltage accuracy	3.3 V output models all other voltages		±3 ±2		% %
line regulation			±0.5		%
load regulation			±1.0		%
hold-up time	at 115 Vac at 230 Vac		10 60		ms ms
trimmability	see application circuit		±10		%
switching frequency			65		kHz
temperature coefficient			±0.02		%/°C

PROTECTIONS

parameter	conditions/description	min	typ	max	units
over voltage protection	3.3 / 5 Vdc output models 9 Vdc output models 12 / 15 Vdc output models 24 Vdc output models 48 Vdc output models			7.5 15 20 30 60	V V V V V
over current protection	auto recovery	120		300	Io%
short circuit protection	hiccup, continuous, auto recovery				

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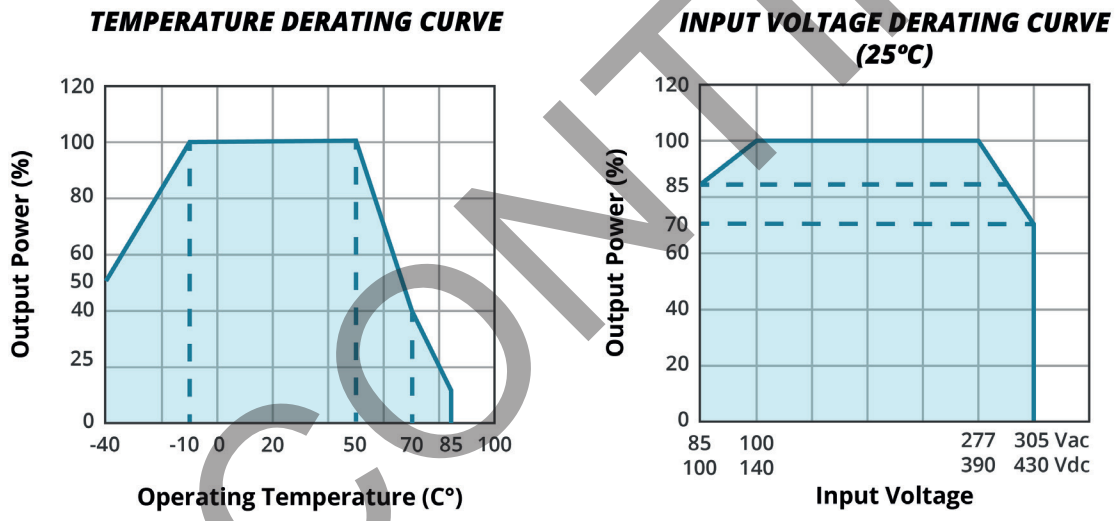
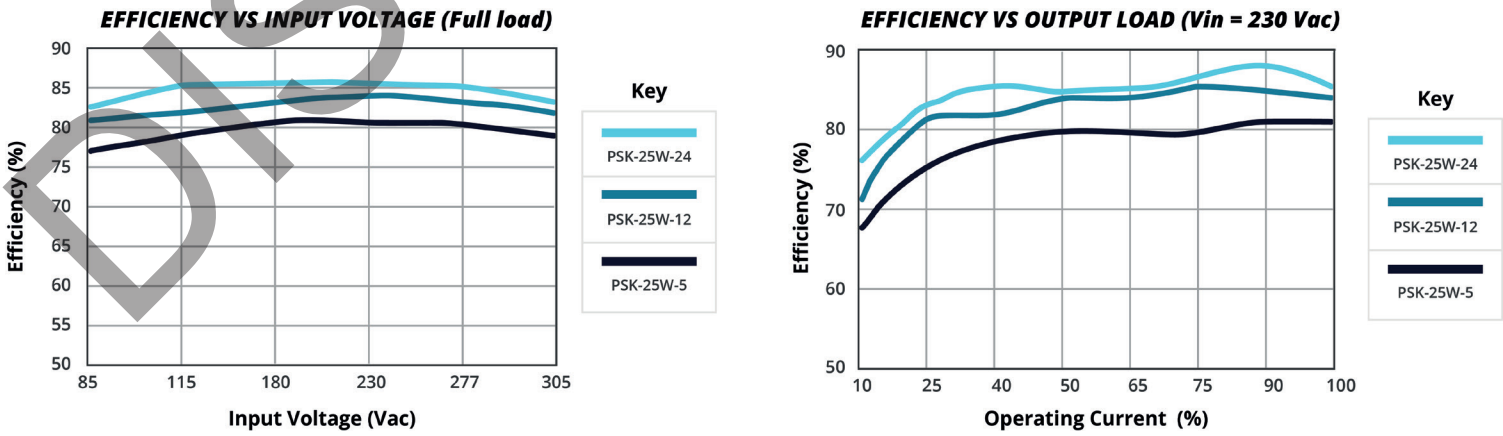
SAFETY & COMPLIANCE

parameter	conditions/description	min	typ	max	units
isolation voltage	input to output input to earth	4,000 2,500			Vac Vac
safety approvals	IEC 62368/EN 62368/UL 62368				
safety class	Class II				
EMI/EMC	CISPR32/EN 55032: 2015 Class B				
ESD	IEC/EN 61000-4-2, Contact ±6KV / Air ±8KV, perf. Criteria B				
radiated immunity	EC/EN 61000-4-3, 10V/m, perf. Criteria A				
EFT/burst	IEC/EN 61000-4-4, ±2KV, perf. Criteria B IEC/EN 61000-4-4, ±4KV, perf. Criteria B				
surge	IEC/EN 61000-4-5, line to line ±1KV, line to ground ±2KV, perf. Criteria B				
conducted immunity	EC/EN 61000-4-6, 10Vr.m.s, perf. Criteria A				
MTBF	as per MIL-HDBK-217F at 25°C	300,000			hours
RoHS	yes				

DERATING CURVE



EFFICIENCY CURVES



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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	for 5~10 seconds	255	260	265	°C
hand soldering	for 3~5 seconds	350	360	370	°C

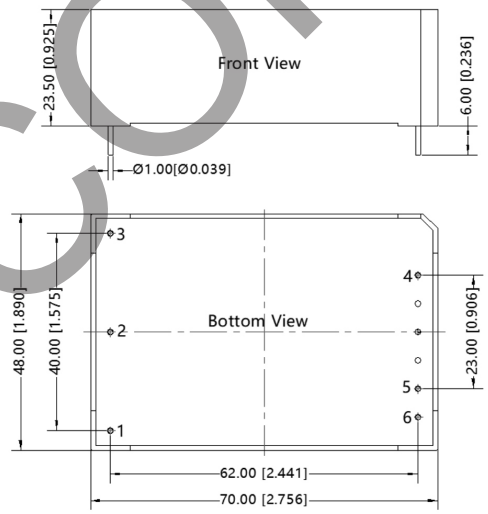
MECHANICAL

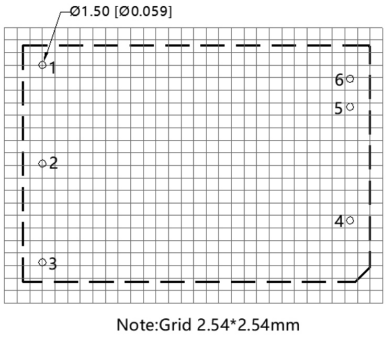
parameter	conditions/description	min	typ	max	units
dimensions	70.00 x 48.00 x 23.50 (board mount) 96.10 x 54.00 x 32.00 (chassis mount) 96.10 x 54.00 x 36.60 (DIN-rail)				mm mm mm
weight	board mount chassis mount DIN-rail		120 170 210		g g g
cooling	natural convection				
case material	Black plastic, flame-retardant and heat-resistant (UL94V-0)				

MECHANICAL DRAWING (BOARD MOUNT)

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

PIN CONNECTIONS	
PIN	Function
1	⏚
2	AC (N)
3	AC (L)
4	+Vo
5	-Vo
6	Trim





Note:Grid 2.54*2.54mm

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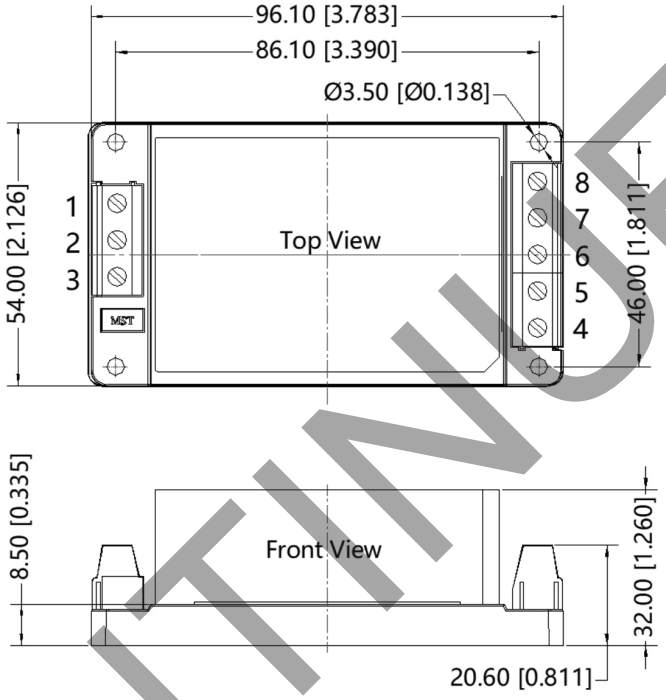
MECHANICAL DRAWING (CHASSIS MOUNT)

units: mm [inch]
tolerance: ±1.00 [±0.039]
wire range: 24~12 AWG
tightening torque: max 0.4 N·m

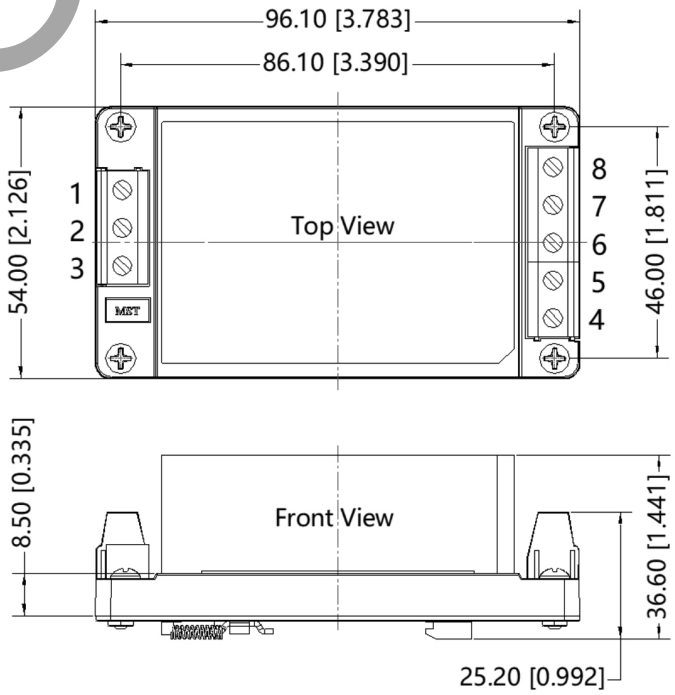
PIN CONNECTIONS	
PIN	Function
1	⏚
2	AC (N)
3	AC (L)
4	+Vo
5	NC
6	Trim
7	NC
8	-Vo



MECHANICAL DRAWING (DIN-RAIL MOUNT)

units: mm [inch]
tolerance: ±1.00 [±0.039]
wire range: 24~12 AWG
tightening torque: max 0.4 N·m

PIN CONNECTIONS	
PIN	Function
1	⏚
2	AC (N)
3	AC (L)
4	+Vo
5	NC
6	Trim
7	NC
8	-Vo



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APPLICATION CIRCUIT

Figure 1

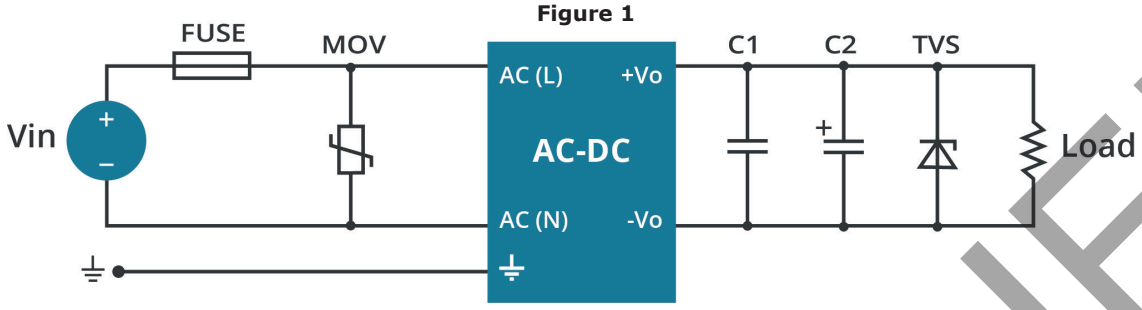

Table 1

Recommended External Circuit Components					
Vo (Vdc)	FUSE[6]	MOV[6]	C1	C2	TVS
3.3	3.15A/300V slow-blow, required	S14K350	1 µF	330 µF	SMBJ7.0A
5				330 µF	SMBJ7.0A
9				330 µF	SMBJ12A
12				330 µF	SMBJ20A
15				330 µF	SMBJ20A
24				120 µF	SMBJ30A
48				68 µF	SMBJ64A

Notes: 6. Chassis Mount and DIN-Rail Mount versions include the fuse and MOV components.

EMC RECOMMENDED CIRCUIT

Figure 2

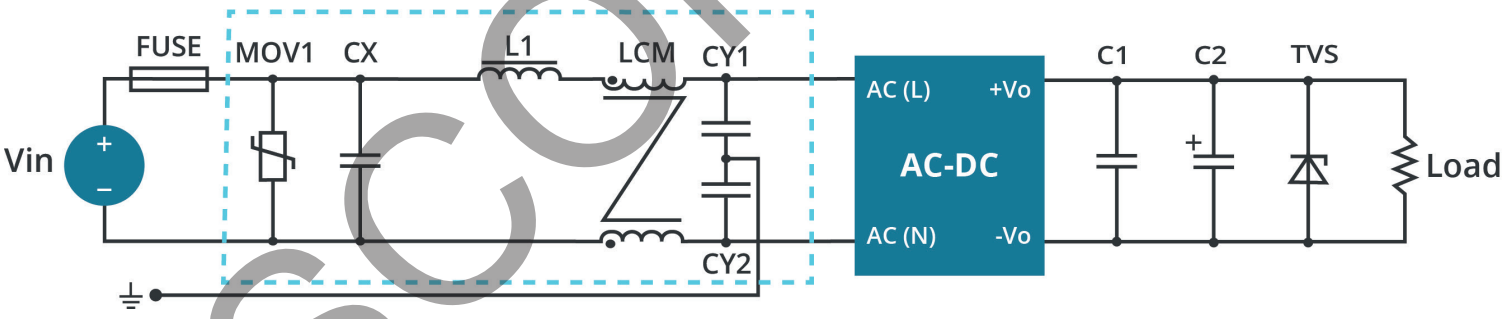

Table 2

Recommended External Circuit Components	
MOV	S14K350
CY1/CY2	1000 pF/400 Vac
CX	0.1 µF/310 Vac
LCM	10 mH
L1	4.7 µH/ 2 A
FC-LX1D	2 KV/4 KV EMC filter
FUSE	3.15 A/300 V, slow blow, required

Note: Also refer to Table 1.

Notes: 7. C1 is a ceramic capacitor used to filter high frequency noise.
8. C2 is an electrolytic capacitor and it is recommended to be high frequency and low impedance. For capacitance and current of capacitor, refer to the datasheet provided by the manufacturer. Voltage derating of capacitor should be at least 80%.
9. TVS is a recommended component to protect post-circuits (if converter fails).

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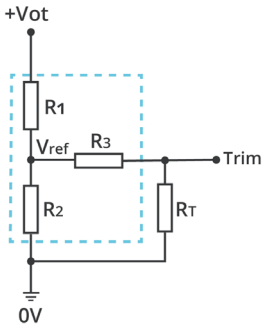
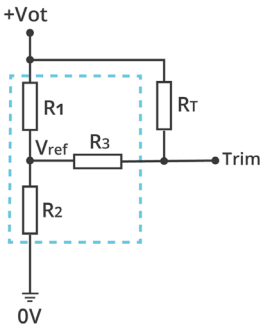
TRIM FUNCTION



Trim up



Trim down

Note: Trim resistor connection (dashed line shows internal resister network)

$$Rtrim\text{-}up = \frac{a\ R2}{R2\text{-}a} - R3 \qquad a = \frac{Vref}{Vot\text{-}Vref} \times R1$$

$$Rtrim\text{-}down = \frac{a\ R1}{R1\text{-}a} - R3 \qquad a = \frac{Vot\text{-}Vref}{Vref} \times R2$$

RT= Trim Resistor Value
a = Self-defined parameter

Table 3

Vout	R1(KΩ)	R2 (KΩ)	R3 (KΩ)	Vref(V)	Vot(V)
3.3	2	1.19	1	1.24	Output voltage after regulation, variation ≤ ±10%
5	3.3	3.3	1	2.5	
9	7.5	2.87	1	2.5	
12	3.83	1	1	2.5	
15	7.5	1.5	1	2.5	
24	8.66	1	1	2.5	
48	27	1.49	1	2.5	

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REVISION HISTORY

rev.	description	date
1.0	initial release	06/30/2020
1.01	curves and circuit drawings updated	03/25/2021
1.02	efficiency curves updated	11/04/2021
1.03	UKCA mark added	06/03/2022
1.04	discontinued models PSK-25-3, PSK-25-3-T, PSK-25-3-DIN, PSK-25-95, PSK-25-5-T, PSK-25-5-DIN, PSK-25-9, PSK-25-9-T, PSK-25-9-DIN, PSK-25-12, PSK-25-12-T, PSK-25-12-DIN, PSK-25-15, PSK-25-15-T, PSK-25-15-DIN, PSK-25-24, PSK-25-24-DIN, PSK-25-48, PSK-25-48-T, PSK-25-48-DIN	09/13/2022

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.

CUI reserves the right to make changes to the product at any time without notice. Information provided by CUI is believed to be accurate and reliable. However, no responsibility is assumed by CUI for its use, nor for any infringements of patents or other rights of third parties which may result from its use.

CUI products are not authorized or warranted for use as critical components in equipment that requires an extremely high level of reliability. A critical component is any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.