CUI INC
a bel group

SERIES: VSK-S15 | **DESCRIPTION:** AC-DC POWER SUPPLY

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FEATURES

- up to 15W continuous power
- compact board mount design
- universal input (85~264 Vac / 100~370 Vdc)
- single output from 3.3~48 Vdc
- over voltage, over current, and short circuit protections
- UL/cUL safety approvals
- efficiency up to 85%

MODEL	output voltage (Vdc)	output current max (A)	output power max (W)	ripple and noise[1] typ (mVp-p)	efficiency typ (%)
VSK-S15-3R3U*	3.3	3	9.9	50	73
VSK-S15-5U*	5	2.8	14	50	76
VSK-S15-9U*	9	1.6	14.4	50	78
VSK-S15-12U*	12	1.25	15	50	80
VSK-S15-15U*	15	1.0	15	50	80
VSK-S15-24U	24	0.625	15	50	84
VSK-S15-48U*	48	0.32	15	50	85

Notes: 1. Ripple and noise are measured at 20 MHz BW by "parallel cable" method with 1 uF ceramic and 10 uF electrolytic capacitors on the output.
2. *Discontinued model.

PART NUMBER KEY

VSK-S15 - XXU

Base Number — Output Voltage

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INPUT

parameter	conditions/description	min	typ	max	units
voltage		85 100		264 370	Vac Vdc
frequency		47		63	Hz
current	at 115 Vac at 230 Vac			370 220	mA mA
inrush current	at 115 Vac at 230 Vac		10 20		A A
leakage current	at 230 Vac, 50 Hz (RMS)		0.1		mA
input fuse	2 A/250 V, slow-blow type (external)				

OUTPUT

parameter	conditions/description	min	typ	max	units
capacitive load	3.3 Vdc output model 5 Vdc output model 9 Vdc output model 12 Vdc output model 15 Vdc output model 24 Vdc output model 48 Vdc output model			36,000 20,000 6,000 3,000 3,000 900 370	µF µF µF µF µF µF µF
line regulation	at full load		±0.5		%
load regulation	at 10~100% load		±1		%
voltage set accuracy			±2		%
hold-up time	at 115 Vac at 230 Vac		15 80		ms ms
switching frequency			65		kHz
temperature coefficient			±0.02		%/°C

PROTECTIONS

parameter	conditions/description	min	typ	max	units
over current protection	auto restart	110			%
short circuit protection	continuous, auto restart				
over voltage protection	3.3 Vdc output model 5 Vdc output model 9 Vdc output model 12 Vdc output model 15 Vdc output model 24 Vdc output model 48 Vdc output model			7.5 7.5 12 20 20 30 60	Vdc Vdc Vdc Vdc Vdc Vdc Vdc

SAFETY & COMPLIANCE

parameter	conditions/description	min	typ	max	units
isolation voltage	input to output for 1 minute	3,000			Vac
safety approvals	UL60950-1, CE				
safety class	class II				
conducted emissions	CISPR22/EN55022, Class B				
radiated emissions	CISPR22/EN55022, Class B				
ESD	IEC/EN61000-4-2 Class B, contact ±6 kV/air ±8 kV				
radiated immunity	IEC/EN61000-4-3 Class A, 10V/m				
EFT/burst	IEC/EN61000-4-4 Class B, ±2 kV				
	IEC/EN61000-4-4 Class B, ±4 kV (external circuit required, see figure 2)				

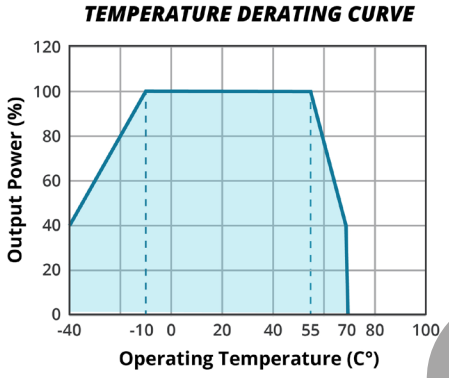
SAFETY & COMPLIANCE (CONTINUED)

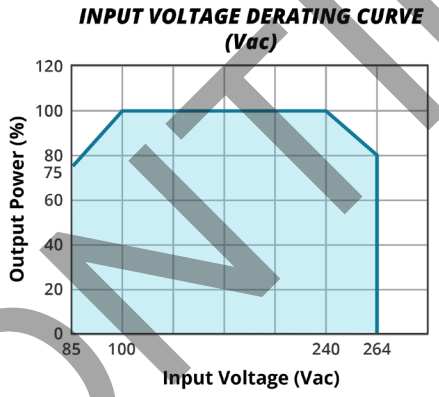
parameter	conditions/description	min	typ	max	units
surge	IEC/EN61000-4-5 Class B, ±1 kV/±2 kV IEC/EN61000-4-5 Class B, ±2 kV/±4 kV (external circuit required, see figure 2)				
conducted immunity	IEC/EN61000-4-6 Class A, 10 Vr.m.s				
PFM	IEC/EN61000-4-8 Class A, 10 A/m				
voltage dips & interruptions	IEC/EN61000-4-11 Class B, 0%-70%				
MTBF	as per MIL-HDBK-217F at 25 °C	300,000			hrs
RoHS	2011/65/EU				

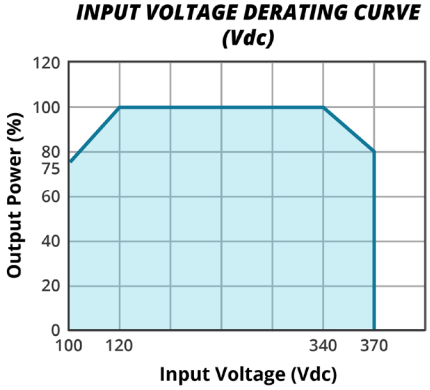
ENVIRONMENTAL

parameter	conditions/description	min	typ	max	units
operating temperature	see derating curves	-40		70	°C
storage temperature		-40		105	°C
storage humidity	non-condensing			95	%

DERATING CURVES

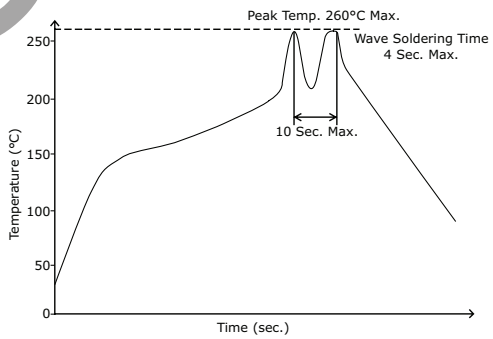






SOLDERABILITY

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



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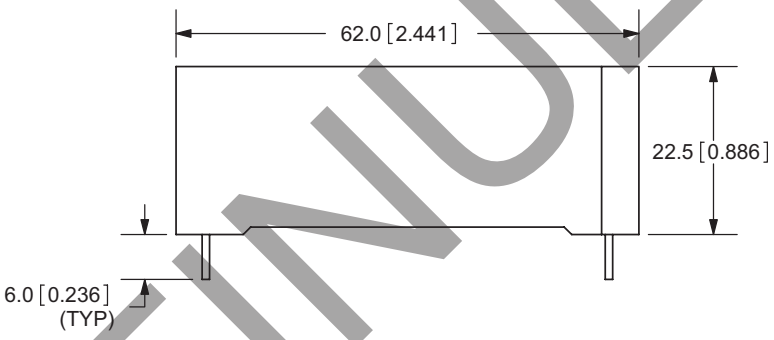
MECHANICAL

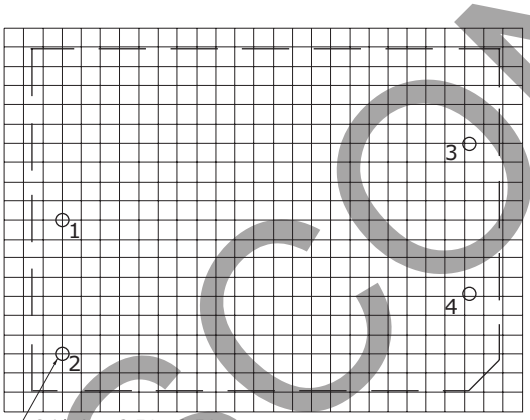
parameter	conditions/description	min	typ	max	units
dimensions	62.0 x 45.0 x 22.5 (2.44 x 1.77 x 0.88 inch)				mm
case material	UL94V-0				
weight			85		g
cooling	convection cooling				

MECHANICAL DRAWING

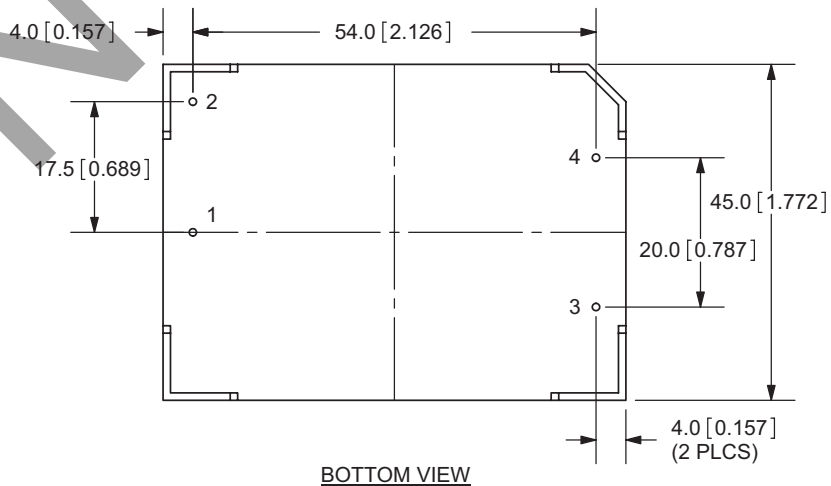
units: mm[inches]
tolerance: ±0.50[±0.020]
pin diameter: Ø1.00[0.039]±0.10[±0.004]

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





Top View
PCB Layout



BOTTOM VIEW

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TYPICAL APPLICATION CIRCUIT

Figure 1

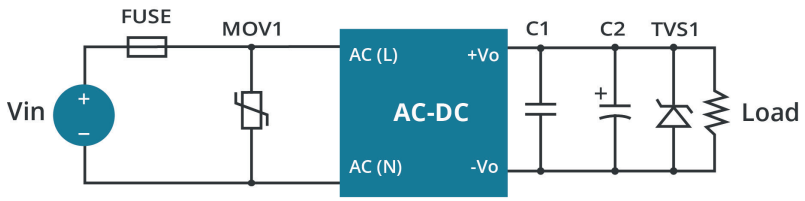

Table 1

Recommended External Circuit Components					
MODEL	FUSE	MOV1	C1	C2	TVS
VSK-S15-3R3U	2A/250V	S14K350	1µF	680µF	SMBJ7.0A
VSK-S15-5U	2A/250V	S14K350	1µF	680µF	SMBJ7.0A
VSK-S15-9U	2A/250V	S14K350	1µF	470µF	SMBJ12A
VSK-S15-12U	2A/250V	S14K350	1µF	220µF	SMBJ20A
VSK-S15-15U	2A/250V	S14K350	1µF	220µF	SMBJ20A
VSK-S15-24U	2A/250V	S14K350	1µF	68µF	SMBJ30A
VSK-S15-48U	2A/250V	S14K350	1µF	33µF	SMBJ64A

EMC RECOMMENDED CIRCUIT

Figure 2

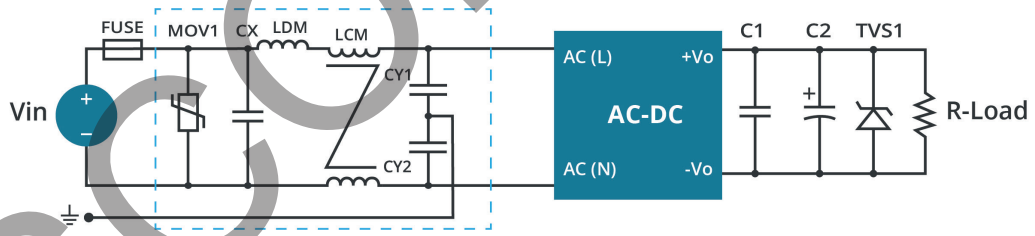

Table 2

Recommended External Circuit Components	
MOV1	S14K350
CY1, CY2	1000pF/400Vac
CX	0.1µF/275Vac
LCM	10mH
LDM	4.7µH/2A

Note: Also refer to Table 1

Notes:
1. Output filtering capacitor C2 is an electrolytic capacitor, It is recommended to use high frequency and low impedance electrolytic capacitors. For capacitance and current of capacitor please refer to manufacture's datasheet. Voltage derating of capacitor should be 80% or above. C1 is used to filter high frequency noise. TVS is recommended component to protect post-circuits (when converter fails).
2. All specifications measured at Ta=25C, humidity <75%, nominal input voltage, and rated output load, unless otherwise specified.

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REVISION HISTORY

rev.	description	date
1.0	initial release	07/26/2011
1.01	V-Infinity branding removed	08/16/2012
1.02	added dual and triple output models	11/16/2012
1.03	updated derating curves	01/29/2013
1.04	updated spec and removed models	07/22/2014
1.05	updated operating and storage temperatures	06/10/2015
1.06	company logo updated	10/29/2020
1.07	UKCA mark added, derating curves and circuit figures updated	06/01/2022
1.08	discontinued models VSK-S15-12U, VSK-S15-15U, VSK-S15-48U, VSK-S15-9U, VSK-S15-3R3U	11/11/2022

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.

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