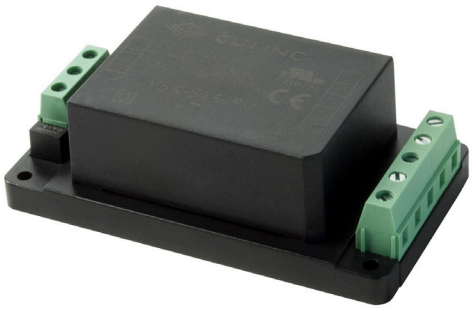
CUI INC®

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

FEATURES

- up to 15W continuous power
- compact chassis 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

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

PART NUMBER KEY

VSK-S15 - XXU - T

Base Number — Output Voltage

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 (included on chassis)				

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)

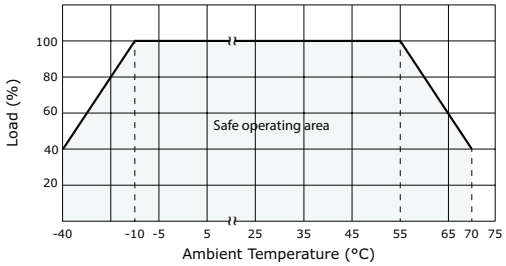
parameter	conditions/description	min	typ	max	units
surge	IEC/EN61000-4-5 Class B, ±1 kV/±2 kV IEC/EN61000-4-5 Class B, ±2 kV/±4 kV (external circuit required, see figure 2)				
conducted immunity	IEC/EN61000-4-6 Class A, 10 Vr.m.s				
PFM	IEC/EN61000-4-8 Class A, 10 A/m				
voltage dips & interruptions	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

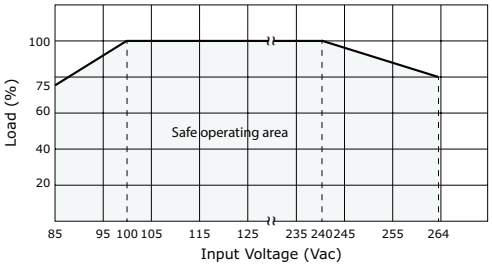
parameter	conditions/description	min	typ	max	units
operating temperature	see derating curves	-40		70	°C
storage temperature		-40		105	°C
storage humidity	non-condensing			95	%

DERATING CURVES

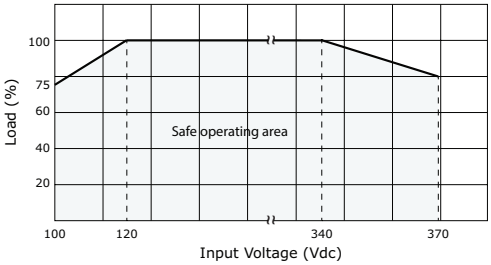
load vs. ambient temperature
(at 100~240 Vac)



load vs. input voltage (Vac)
(at 25°C)



load vs. input voltage (Vdc)
(at 25°C)



MECHANICAL

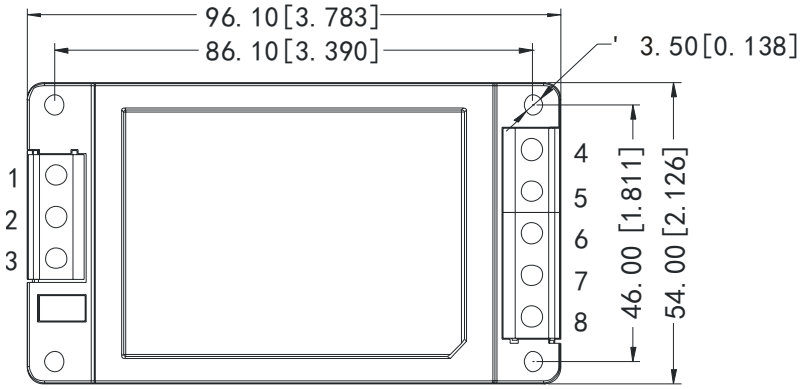
parameter	conditions/description	min	typ	max	units
dimensions	96.10 x 54.00 x 31.00 (3.783 x 2.126 x 1.22 inch)				mm
case material	UL94V-0				
weight			135		g
cooling	convection cooling				

MECHANICAL DRAWING

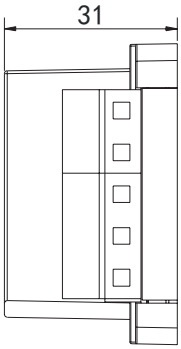
units: mm[inches]
tolerance: ±0.50[±0.020]

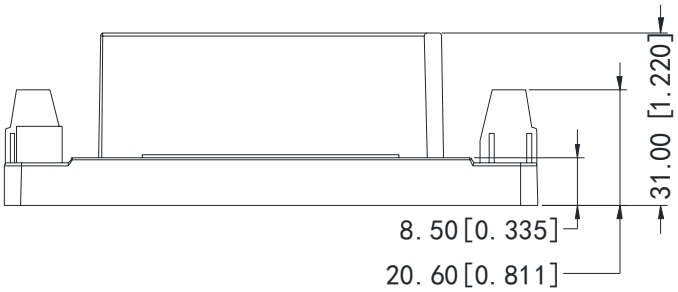
wire range: 24~12 AWG

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



Top View





Side View

TYPICAL APPLICATION CIRCUIT

Figure 1

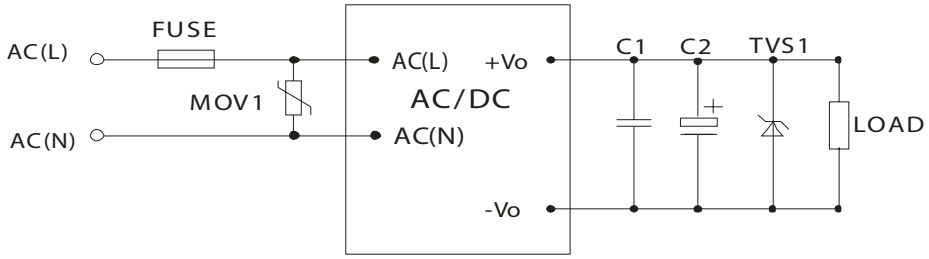


Table 1

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

Note: 1. Fuse included on chassis

EMC RECOMMENDED CIRCUIT

Figure 2

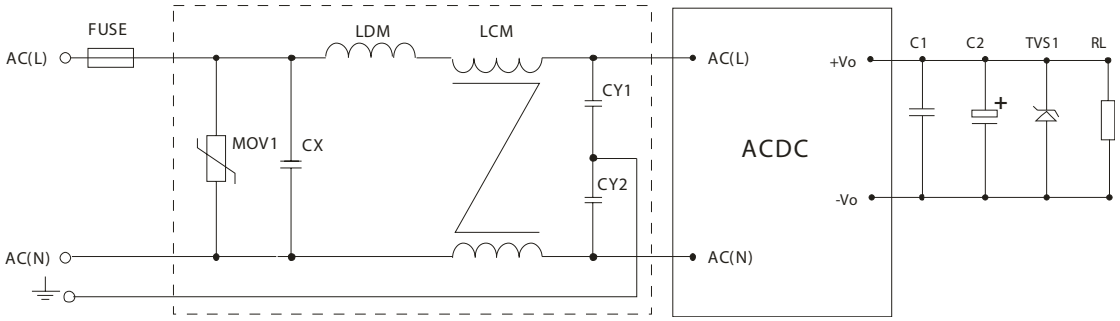


Table 2

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.

REVISION HISTORY

rev.	description	date
1.0	initial release	09/06/2012
1.01	corrected pinout	10/21/2013
1.02	updated spec	08/20/2014
1.03	updated operating and storage temperatures	06/10/2015

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.