SERIES: VSK-S10-T | **DESCRIPTION:** AC-DC POWER SUPPLY

FEATURES

- up to 10 W continuous output
- encapsulated compact case
- universal input (85~264 Vac)
- single regulated output from 3.3~24 Vdc
- over voltage, short circuit, and short circuit protection
- CE, UL safety approval
- efficiency up to 83%

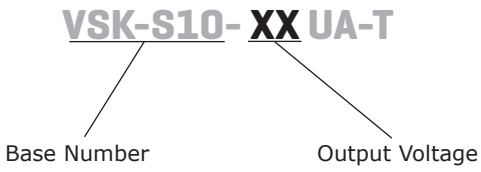


MODEL

MODEL	output voltage (Vdc)	output current max (A)	output power max (W)	ripple and noise[1] max (mVp-p)	efficiency max (%)
VSK-S10-3R3UA-T	3.3	2	6.6	100	72
VSK-S10-5UA-T	5	2	10	100	76
VSK-S10-9UA-T	9	1.1	10	100	80
VSK-S10-12UA-T	12	0.9	10	100	81
VSK-S10-15UA-T	15	0.7	10	100	82
VSK-S10-24UA-T	24	0.45	10	100	83

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

PART NUMBER KEY



Please read our datasheet & drawing disclaimer here.

INPUT

parameter	conditions/description	min	typ	max	units
voltage		85 100		264 370	Vac Vdc
frequency		47		440	Hz
current	at 110 Vac at 230 Vac		230 150		mA mA
inrush current	at 110 Vac at 230 Vac		10 20		A A
input fuse	recommended external 2 A/250 V, slow-blow type				
temperature coefficient			±0.02		%/°C
no load power consumption			0.5		W

OUTPUT

parameter	conditions/description	min	typ	max	units
capcitive load	3.3 Vdc model 5 Vdc model 9 Vdc model 12 Vdc model 15 Vdc model 24 Vdc model			15,000 12,000 6000 2000 1500 500	µF µF µF µF µF µF
line regulation	full load		±0.5		%
load regulation	at 10~100% load		±1		%
voltage set accuracy	3.3 Vdc model all other models		±3 ±2		% %
hold-up time	at 230 Vac		80		ms
switching frequency			65		kHz

PROTECTIONS

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

SAFETY & COMPLIANCE

parameter	conditions/description	min	typ	max	units
isolation voltage	input to output	4,000			Vac
safety approvals	UL60950-1				
safety class	Class II				
conducted emissions	CISPR11/EN55011, Class A, CISPR11/EN55011, Class B (external circuit required, see figure 2)				
radiated emissions	CISPR11/EN55011, Class A, CISPR11/EN55011, Class B (external circuit required, see figure 2)				
ESD	IEC/EN61000-4-2 Class B, contact ±6 kV/air ±8kV				
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)				
surge	IEC/EN61000-4-5 Class B, ±1 kV (external circuit required, see figure 1)				
	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				

SAFETY & COMPLIANCE (CONTINUED)

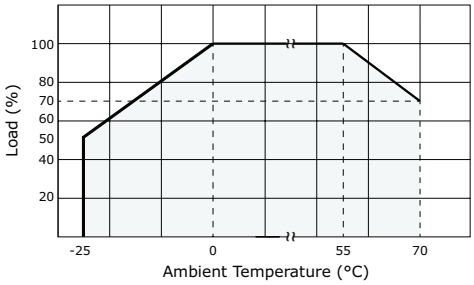
parameter	conditions/description	min	typ	max	units
PFM	IEC/EN61000-4-8 Class A, 10 A/m				
voltage dips & interruptions	IEC/EN61000-4-11 Class B, 0%-70%				
MTBF	as per MIL-HDBK-217F, at 25°C	300,000			hours
RoHS	2011/65/EU				

ENVIRONMENTAL

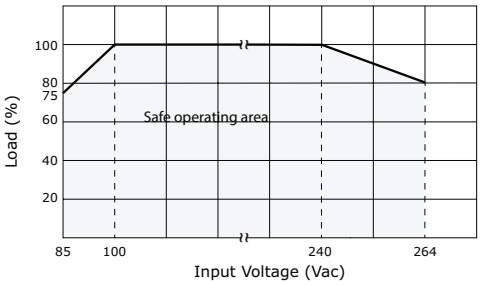
parameter	conditions/description	min	typ	max	units
operating temperature	see derating curves	-25		70	°C
storage temperature		-25		105	°C
storage humidity				95	%

DERATING CURVES

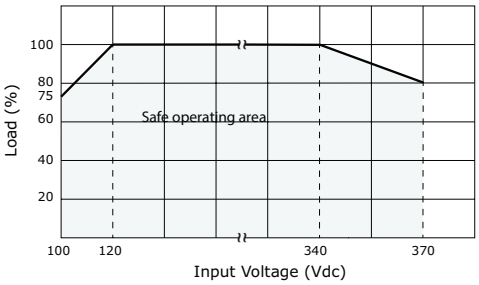
load vs. ambient temperature



load vs. input voltage (Vac)



load vs. input voltage (Vdc)



MECHANICAL

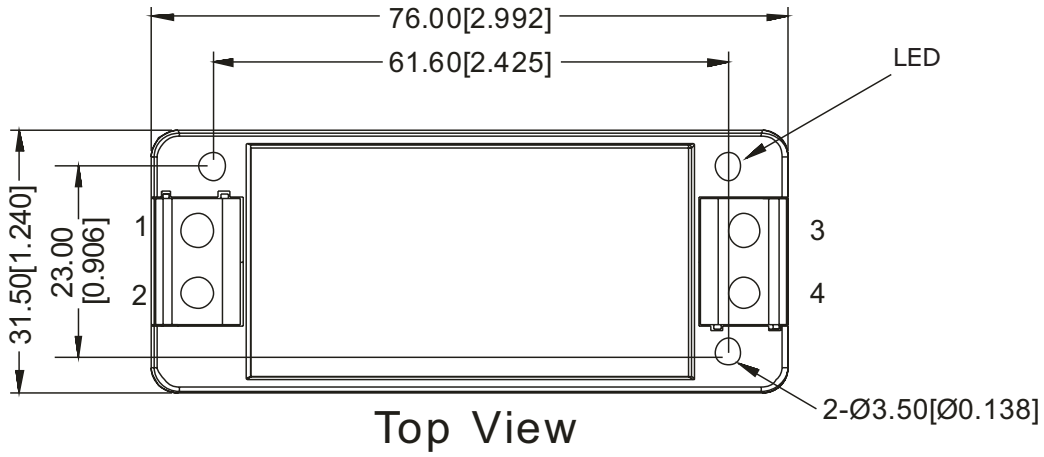
parameter	conditions/description	min	typ	max	units
dimensions	76 x 31.50 x 27.80 (2.992 x 1.240 x 1.0944 inch)				mm
material	UL94V-0				
weight			70		g

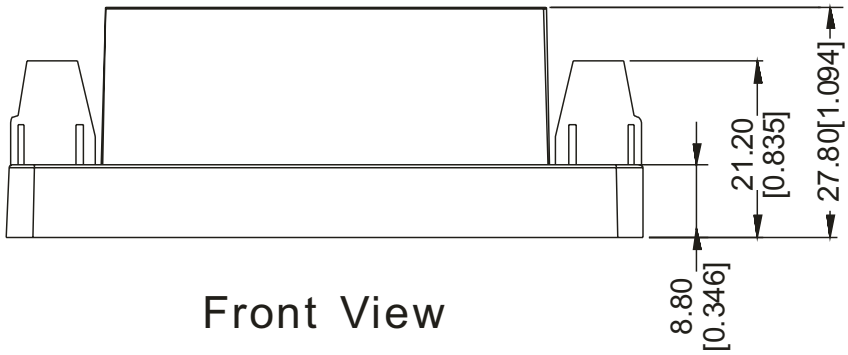
MECHANICAL DRAWING

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

wire range: 24~12 AWG

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





TYPICAL APPLICATION CIRCUIT

Figure 1

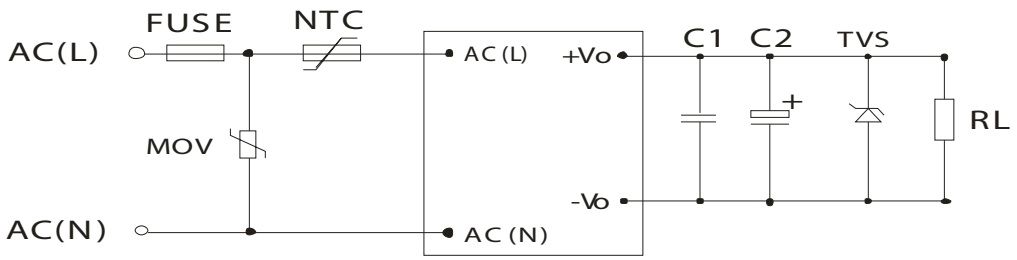


Table 1

Recommended External Circuit Components						
MODEL	C1[1]	C2[1]	TVS	FUSE	MOV	NTC
VSK-S10-3R3UA-T	1 µF/50V	220 µF/10V	SMBJ7.0A	2A/250V	S14K300	10D-10
VSK-S10-5UA-T	1 µF/50V	220 µF/10V	SMBJ7.0A	2A/250V	S14K300	10D-10
VSK-S10-9UA-T	1 µF/50V	120 µF/25V	SMBJ12A	2A/250V	S14K300	10D-10
VSK-S10-12UA-T	1 µF/50V	120 µF/25V	SMBJ20A	2A/250V	S14K300	10D-10
VSK-S10-15UA-T	1 µF/50V	120 µF/25V	SMBJ20A	2A/250V	S14K300	10D-10
VSK-S10-24UA-T	1 µF/50V	68 µF/35V	SMBJ30A	2A/250V	S14K300	10D-10

Note: 1. Output filtering capacitor C1 is a ceramic capacitor that is used to filter high frequency noise. 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 the manufacturer's datasheet. Voltage derating of capacitor should be 80% or above.

EMC RECOMMENDED CIRCUIT

Figure 2

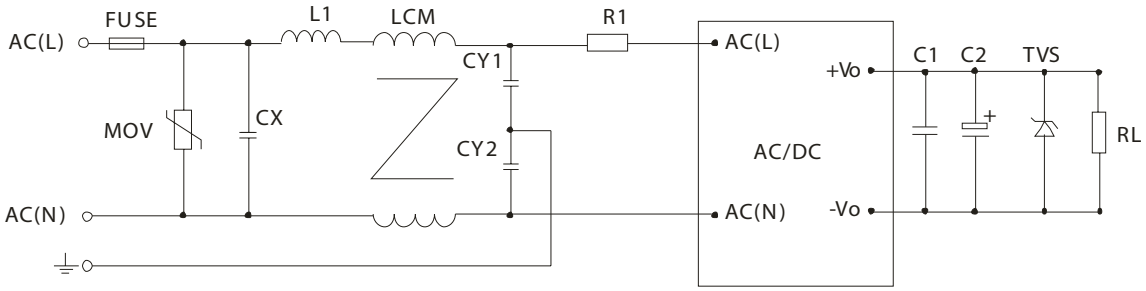


Table 2

Recommended External Circuit Components								
FUSE	MOV	CY1, CY2	CX	LCM	L1	R1	C1, C2,	TVS
2A/250 Vdc slow fusing	S14K300	1nF/400VAC	0.1µF/275VAC	2.2mH	4.7µH/2.0A	12Ω/3W	see Table 1	see Table 1

Note: 1. All specifications measured at Ta=25°C, humidity <75%, nominal Vac input voltage, and rated output load, unless otherwise specified.

REVISION HISTORY

rev.	description	date
1.0	initial release	09/06/2012
1.01	updated mechanical drawing and product photo	11/28/2012
1.02	updated spec	03/08/2013
1.03	changed internal IC, updated datasheet	06/08/2015

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

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