SERIES: VSK-S1 | **DESCRIPTION:** AC-DC POWER SUPPLY

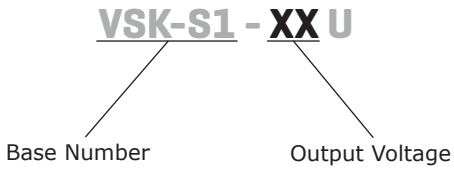
FEATURES

- up to 1 W continuous power
- compact board mount design
- universal input (85~305 Vac / 120~430 Vdc)
- single output from 3.3~24 V
- over current and short circuit protection
- UL/cUL and CE safety approvals
- efficiency up to 75%

MODEL	output voltage (Vdc)	output current max (A)	output power max (W)	ripple and noise[1] max (mVp-p)	efficiency typ (%)
VSK-S1-3R3U	3.3	0.3	1	100	63
VSK-S1-5U	5	0.2	1	100	68
VSK-S1-9U	9	0.111	1	100	72
VSK-S1-12U	12	0.083	1	100	73
VSK-S1-15U	15	0.067	1	100	74
VSK-S1-24U	24	0.042	1	100	75

Notes: 1. At full load, 100 ~ 240 Vac input, 20 MHz bandwidth oscilloscope, each output terminated with 10 µF aluminum electrolytic and 0.1 µF ceramic capacitors.

PART NUMBER KEY



INPUT

parameter	conditions/description	min	typ	max	units
voltage		85 120		305 430	Vac Vdc
frequency		47		63	Hz
current	at 110 Vac at 230 Vac		30 17		mA mA
inrush current	at 110 Vac at 230 Vac		5 11		A A

OUTPUT

parameter	conditions/description	min	typ	max	units
line regulation				±2	%
load regulation	10 ~ 100%			±5	%
voltage accuracy	3.3 V model all other models			±6 ±5	% %
switching frequency				100	kHz

PROTECTIONS

parameter	conditions/description	min	typ	max	units
over current protection				110	%
short circuit protection	auto recovery with no damage from a short on any output				

SAFETY & COMPLIANCE

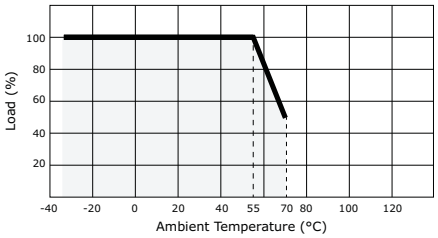
parameter	conditions/description	min	typ	max	units
isolation voltage	for 1 minute	3,000			Vac
safety approvals	UL 60950-1, EN 60950-1/IEC 60950-1				
safety class	class II				
EMI/EMC	CISPR22/EN 55022 Class B, IEC/EN 61000-4-(2,3,4,5,6,8,11)				
leakage current				0.15	mA
RoHS compliant	yes				
MTBF	25°C	300,000			hrs

ENVIRONMENTAL

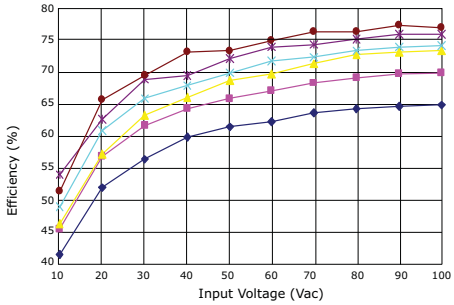
parameter	conditions/description	min	typ	max	units
operating temperature		-25		70	°C
storage temperature		-40		85	°C
operating humidity	non-condensing	30		90	%
storage humidity		20		95	%

DERATING CURVES

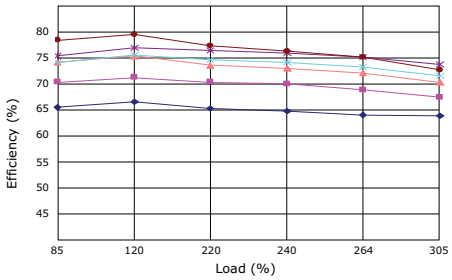
1. output power vs. ambient temperature



2. efficiency vs. output power (Vin=220Vac)



3. efficiency vs. input voltage (load=100%)

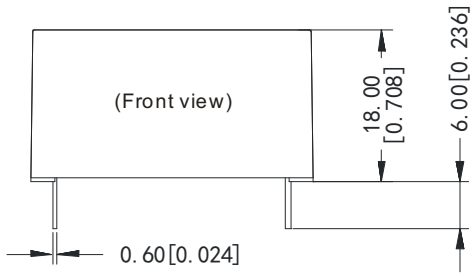


MECHANICAL

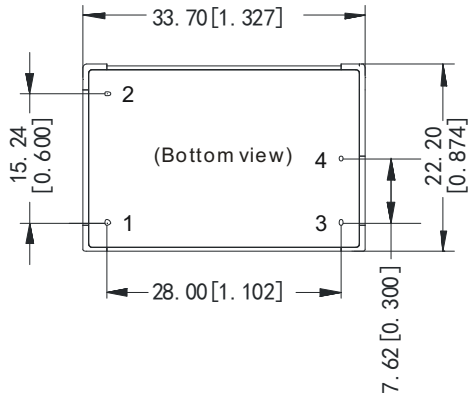
parameter	conditions/description	min	typ	max	units
dimensions	1.327 x 0.874 x 0.708 (33.70 x 22.20 x 18.00 mm)				inch
case material	UL94V-0				
weight			20		g

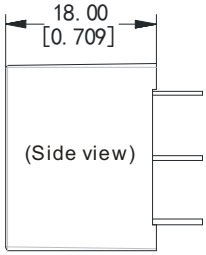
MECHANICAL DRAWING

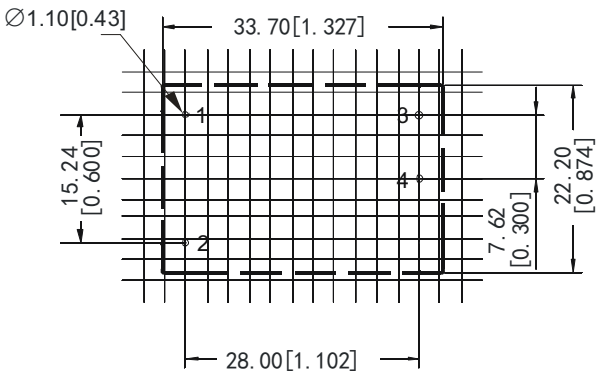
units: mm [inches]
tolerance: ±0.5 [±0.02]
pin section tolerance: ±0.10 mm [±0.004]



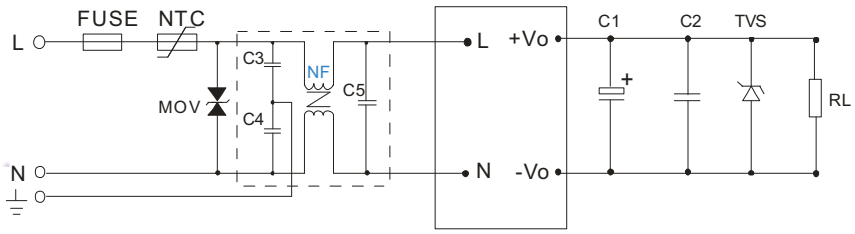
PIN CONNECTIONS	
PIN	FUNTION
1	AC(N)
2	AC(L)
3	-Vo
4	+Vo







TYPICAL APPLICATION CIRCUIT



EXTERNAL CAPACITORS TYPICAL VALUE (Unit: μF)			
MODEL	C1	C2	TVS
VSK-S1-3R3U	220 μF	0.1 μF/50 V	SMBJ7.0A
VSK-S1-5U	220 μF	0.1 μF/50 V	SMBJ7.0A
VSK-S1-9U	120 μF	0.1 μF/50 V	SMBJ12A
VSK-S1-12U	120 μF	0.1 μF/50 V	SMBJ20A
VSK-S1-15U	120 μF	0.1 μF/50 V	SMBJ20A
VSK-S1-24U	68 μF	0.1 μF/50 V	SMBJ30A

Notes:
1. Output filtering capacitor C1 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. C2 is ceramic capacitor, it is used to filter high frequency noise. TVS is a recommended component to protect post-circuits (if converter fails).
2. It is recommended to use a 0.5A/250V slow blow FUSE and 5D-9 for NTC.
3. MOV is required to protect the device under surge. Varistor model: 561KD14
   C3,C4: Y capacitor, recommended parameter 2,200~4,700pF/400V;
   C5: X capacitor, recommended parameter 0.1~0.3μF/300V;
   NF: common model choke, recommended inductance is about 15mH~30mH.

REVISION HISTORY

rev.	description	date
1.0	initial release	06/04/2012
1.01	picture updated	09/06/2012

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

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