



VSB01(H) Series

1 Watts

1W SINGLE OUTPUT

FIXED INPUT

ISOLATED & UNREGULATED

MINIATURE SIP PACKAGE

LOW COST

SHORT LEAD TIME

- Efficiency up to 80%
- Small Footprint
- Miniature SIP Package
- Single Output Voltage
- 1.5K & 3K(H) VDC Isolation Voltage
- Temperature Range: 1.5K -40°C ~ +105°C
3K -40°C ~ +85°C
- Industry Standard Pin Configuration
- UL94-V0 Package
- No Heat Sink Required
- No External Component Required
- PCB Mounting
- RoHS Compliance

APPLICATIONS

The VSB01(H)-Series are designed for the single power supply which is isolated from the input power supply in a distributed power supply system.

Apply to:

- 1) The input voltage is fixed (voltage variation $\leq \pm 10\%$).
- 2) The input and output isolation voltage is 1.5K or 3K VDC.
- 3) The regulation of the output voltage, ripple and noise are not demanding.

These products don't apply to:

- 1) The input supply voltage is varied (variation $\geq \pm 10\%$).
- 2) The isolation voltage between input and output is required to be $>3000\text{VDC}$.

Product Program

Part Number	Input Voltage (VDC)		Output Voltage (VDC)	Output Current (mA)		Efficiency (% Typ)	Package Style
	Nominal	Range		Max	Min		
VSB01-03S03(H)	3.3	3.0~3.6	3.3	303	30	72(68)	SIP
VSB01-03S05(H)	3.3	3.0~3.6	5	200	20	72 (71)	SIP
VSB01-05S33	5	4.5~5.5	3.3	303	30	76	SIP
VSB01-05S05(H)	5	4.5~5.5	5	200	20	80(75)	SIP
VSB01-05S09(H)	5	4.5~5.5	9	111	12	80(73)	SIP
VSB01-05S12(H)	5	4.5~5.5	12	84	9	80(74)	SIP
VSB01-05S15(H)	5	4.5~5.5	15	67	7	80(75)	SIP
VSB01-05S24	5	4.5~5.5	24	42	4	80	SIP
VSB01-12S33	12	10.8~13.2	3.3	303	30	72	SIP
VSB01-12S05(H)	12	10.8~13.2	5	200	20	80(71)	SIP
VSB01-12S09	12	10.8~13.2	9	111	12	80	SIP
VSB01-12S12(H)	12	10.8~13.2	12	83	9	80(73)	SIP
VSB01-12S15	12	10.8~13.2	15	67	7	80	SIP
VSB01-15S05	15	13.5~16.5	5	200	20	80	SIP
VSB01-15S12	15	13.5~16.5	12	84	9	80	SIP
VSB01-15S15	15	13.5~16.5	15	67	6	81	SIP
VSB01-24S33	24	21.6~26.4	3.3	303	30	72	SIP
VSB01-24S05(H)	24	21.6~26.4	5	200	20	80(71)	SIP
VSB01-24S09	24	21.6~26.4	9	111	12	80	SIP
VSB01-24S12	24	21.6~26.4	12	83	9	80	SIP
VSB01-24S15	24	21.6~26.4	15	67	7	80	SIP
VSB01-24S24	24	21.6~26.4	24	42	4	80	SIP

ISOLATION SPECIFICATIONS

Item	Test conditions	Min	Typ	Max	Units
Isolation voltage	Tested for 1 minute	1500	3000(H)	3000	VDC
Isolation resistance	Test at 500VDC	1000	1000(H)		MΩ

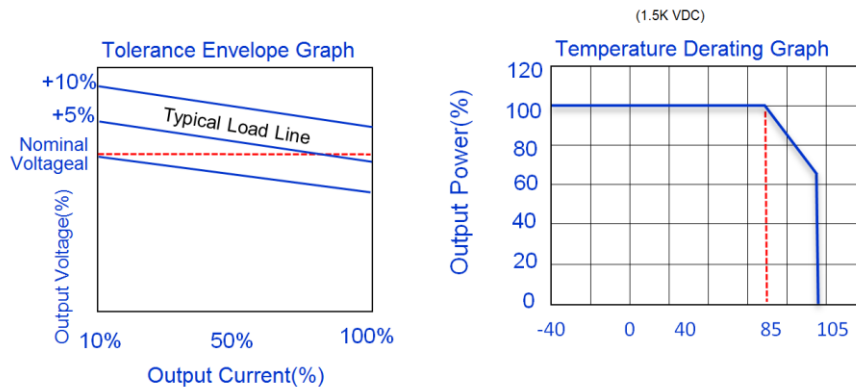
COMMON SPECIFICATION

Short circuit protection	1 second
Temperature rise at full load	25°C MAX, 15°C TYP
Cooling	Free air convection
Operating temperature range	-40°C~+105°C (1.5K) -40°C~+85°C (3K)
Storage temperature range	-55°C ~+125°C
Lead temperature	300°C (1.5mm from case for 10 seconds)
Storage humidity range	≤ 95%
Case material	Plastic (UL94-V0)
MTBF	>3,500,000 hours
Dimensions	11.6x6.00x10.16mm

Output SPECIFICATION

Item	Test conditions	MIN	TYP	MAX	Units
Output power		0.1		1	W
Line regulation	For Vin change of ±1%(3.3V outout) For Vin change of ±1%(5V;9V;12V;15V;24V output)			±1.5 ±1.2	%
Load regulation	10% to 100% load (3.3V output) 10% to 100% load (5V output) 10% to 100% load (9V output) 10% to 100% load (12V output) 10% to 100% load (15V output) 10% to 100% load (24V output)		18 12 8 7 6 5		%
Output voltage accuracy	See tolerance envelope graph				
Temperature drift	100% full load			±0.03	%°C
Output ripple	20MHz Bandwidth		60	150	mVp-p
Switching frequency	Full load, nominal input		100		KHz

TYPICAL CHARECTERISTICS



FOOTPRINT DETAILS

PIN	1	2	3	4
SINGLE	-Vin	+Vin	COMMON	+Vout

RECOMMENDED CIRCUIT

Overload Protection

The output circuit of this series has no protection against over-current and short-circuits. To connect a self-recovery fuse in series at the input end or add a circuit breaker to the circuit for protection purpose.

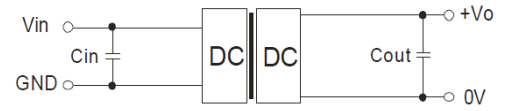


Figure 2 (IS 1.5K VDC)

Output Voltage Regulation and Over-voltage Protection Circuit

The simplest device for output voltage regulation, over-voltage and over-current protection is a linear voltage regulator with overheat protection that is connected to the input or output end in series (see Figure 2).

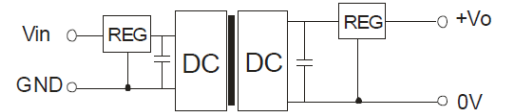


Figure 3 (IS 1.5K VDC)

External Capacitor Table

Vin	External capacitor	Vout	External capacitor
3.3/5VDC	4.7uF	3.3/5VDC	10uF
12VDC	2.2uF	7.2/9VDC	4.7uF
15VDC	1uF	12VDC	2.2uF
24VDC	1uF	15VDC	1uF
--	--	24VDC	0.47uF

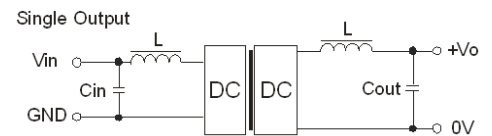


Figure 1 (IS 3K VDC)

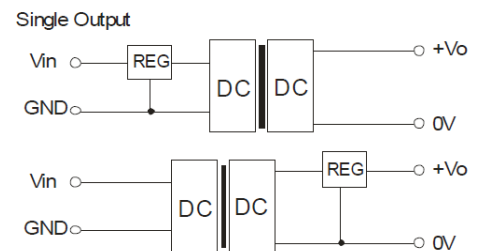
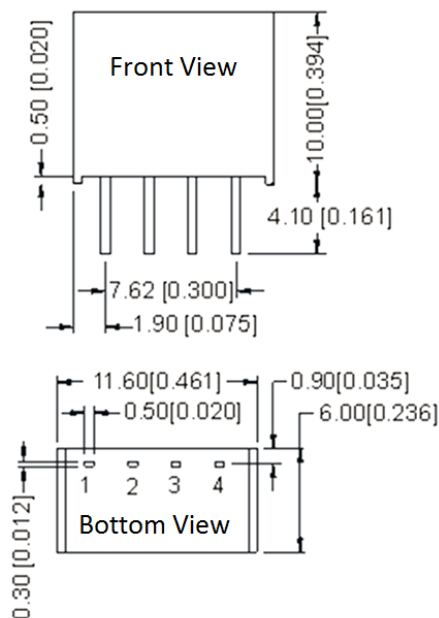


Figure 2 (IS 3K VDC)

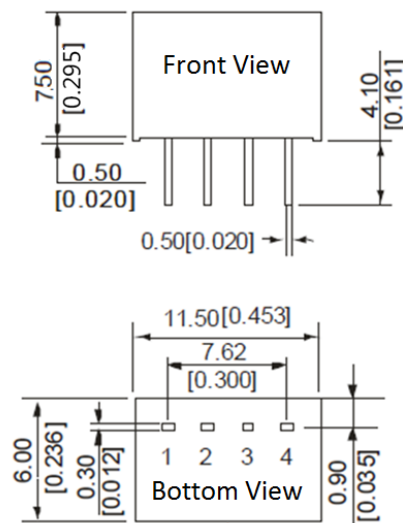
OUTLINE DIMENSIONS & RECOMMENDED FOOTPRINT



VSB01-1W



VSB01(H)-1W



Dimensions: mm (Inch)
Pin tolerance: ± 0.10 (± 0.004)
Pin pitch tolerance: ± 0.25 (± 0.01)