

VSA-5W Series is a step down converter which has achieved high efficiency with the ultra low price. By adopting an original multi chip module IC, it succeeded in cutting down the number of parts drastically. According to that, the reliability is improved higher and low cost has been achieved. For the function, it is built in the heat protection and over current protection. Heat sink is not required.

<Features>

- Ultra Small Type
- High Efficiency (82-91%)
- Original MCM - IC
- MTBF 1,000,000Hrs.
- Low cost
- Simple structure
- Easy to use ; SIP / DIP type
- Adjustable output range
- Over-Heat Protection (For VSA24 model only)
- Over-Current Protection
- Non- isolation converter
- Heat sink not required
- Operating Temperature range -20°C to +70°C
(Possible Start up range -30°C to -20°C)
(Temperature derating required)
- Long life, High reliability



<Model, Rating>

Table 1

Model VSA (5W) Series	Rating Input Voltage Vdc	Rating Output Voltage Vdc	Output Current A	Line Regulation %(typ)	Load Regulation %(typ)	Ripple & Noise mVpp(typ)	Efficiency %(typ)	Package Type
VSA05-2.5S1R2	5	2.5	0-1.2	0.2	0.7	30	89	SIP
VSA05-2.5S1R2-D	(4.75-6)	(1.5-3.3)						DIP
VSA24-3.3S1R2	24	3.3	0-1.2	1.5	1	60	82	SIP
VSA24-3.3S1R2-D	(9-36)	(3-5)						DIP
VSA24-12S0R6	24	12	0-0.55	1.5	1	100	91	SIP
VSA24-12S0R6-D	(18-36)	(9-12)						DIP

Note 1: Rating input voltage () value indicates Input voltage range.

Note 2: Rating output voltage () value indicates adjustable, possible range.

<Specification>

Table 2

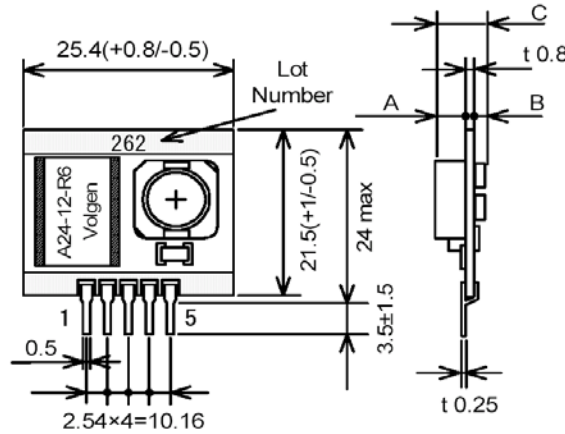
Rating Input Voltage	Refer to Table 1
Rating Output Voltage	Refer to Table 1
Adjustable Output range	Output voltage is adjustable within the above range in Table 1. (By the external resistance)
Line regulation	VSA05 model: 0.2% typ., VSA24 model: 1.5% typ. (For the input voltage range of table1, at rating load)
Load regulation	VSA05 model: 0.7% typ., VSA24 model: 1.0% typ. (At rating input voltage, when load changes 0 to 100%)
Temperature coefficient	±0.01%/ °C typ. (When operating temperature changes between -20 to +50°C)
Ripple & Noise	Refer to Table 1 (20 MHz bandwidth)
Efficiency	82% to 91% typ. (Rating I/O, room temperature, refer to Table 1)
Over-Current Protection	Operates at more than 105% of rating load current.
Over-Voltage Protection	None
ON/OFF Control	Between 1 pin (ON/OFF) and 3 pin (GND) [Open: Output OFF, Short: Output ON]
No - load Input current	2.5V model: 11mA typ., 3.3V model: 15mA typ., 12V model: 25mA typ. (No load)
Stand-by current	2.5V model: 100µA typ., 3.3V/ 12V model: 1mA typ. (OFF Control)
MTBF	1,000,000Hr min (EIAJ RCR-9102)
Oscillation frequency	2.5V model: 300kHz typ., 3.3V/ 12V model: 250 kHz typ.
Operating Temp. range	-30°C to +70°C, Possible start-up Range (-30 to -20°C) (Refer to Page 6, Thermal derating)
Storage Temp. range	-30°C to +85°C
Humidity range	20% to 95% R.H (Max temperature 35 °C, no - condensing)
Cooling Condition	Natural air - cooling (Set in a place with good air circulation.)
Vibration	5 to 10 Hz All amplitude 10 mm, 10 to 55 Hz acceleration 2G (1 hr. in each of 3 directional axes)
Shock	Acceleration 20G (3 times in each of 3 directional axes), Shocking time 11±5ms
Weight	4g typ.
Outline Dimensions	Refer to Page 2, "Outline"

* If no specified condition is described in the above specification, I/O voltage is rating, Output current is max., and ambient temperature is 25 °C

<Outline>

[1] SIP Type

VSA05-2.5S1R2
VSA24-3.3S1R2
VSA24-12S0R6



(Figure 1)

Model	A	B	C
VSA05model	4.5 typ	2.5 typ	8.0 max
VSA24model	4.2 typ	2.0 typ	7.0 typ

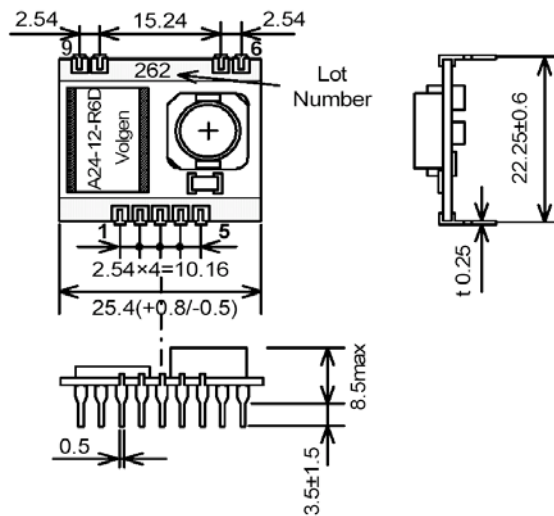
pin	Function
1	On/Off
2	+Vin
3	GND
4	+Vout
5	V.adj

Dimensions: mm

Tolerances with nothing specified ± 0.5

[2] DIP Type

VSA05-2.5S1R2-D
VSA24-3.3S1R2-D
VSA24-12S0R6-D



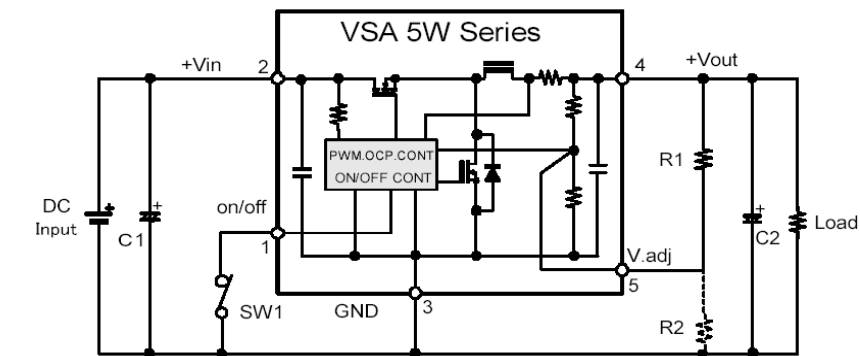
(Figure 2)

pin	Function
1	On/Off
2	+Vin
3	GND
4	+Vout
5	V.adj
6	NO CONNECTION
7	NO CONNECTION
8	NO CONNECTION
9	NO CONNECTION

Dimensions: mm

Tolerances with nothing specified ± 0.5

<Block Diagram>



(Figure 3)

SW1
Open=Output OFF
Short=Output ON