PART NUMBER: VAT0.25-SMT Series **DESCRIPTION:** dc-dc converter

description

Designed to convert fixed voltages into isolated voltages, the VAT0.25-SMT series is well suited for providing board-mount local supplies in a wide range of applications, including mixed analog/digital circuits, test & measurement equip., process/machine controls, data-com/telecom fields, etc...

features

- **SMT package**
- **internal SMD construction**
- **I/O isolation: 1000 V dc**
- **no heatsink required**
- **no external component required**
- **industry standard pinout**
- **temperature range: -40°C~+85°C**



RoHS

MODEL

MODEL	input voltage nominal (V dc)	input voltage range. (V dc)	output voltage (V dc)	output current max. (mA)	output current min. (mA)	efficiency typ. (%)
VAT0.25-S5-D3.3-SMT	5	4.5~5.5	±3.3	±38	±4	62
VAT0.25-S5-D5-SMT	5	4.5~5.5	±5	±25	±3	64
VAT0.25-S5-D9-SMT	5	4.5~5.5	±9	±14	±2	65
VAT0.25-S5-D12-SMT	5	4.5~5.5	±12	±11	±2	67
VAT0.25-S5-D15-SMT	5	4.5~5.5	±15	±9	±1	66
VAT0.25-S12-D5-SMT	12	10.8~13.2	±5	±25	±3	65
VAT0.25-S12-D9-SMT	12	10.8~13.2	±9	±14	±2	64
VAT0.25-S12-D12-SMT	12	10.8~13.2	±12	±11	±2	63
VAT0.25-S12-D15-SMT	12	10.8~13.2	±15	±9	±1	64
VAT0.25-S24-D5-SMT	24	21.6~26.4	±5	±25	±3	61
VAT0.25-S24-D9-SMT	24	21.6~26.4	±9	±14	±2	62
VAT0.25-S24-D12-SMT	24	21.6~26.4	±12	±11	±2	63
VAT0.25-S24-D15-SMT	24	21.6~26.4	±15	±9	±1	65

notes:
1. All specifications measured at TA=25°C, humidity <75%, nominal input voltage and rated output load unless otherwise specified.
2. Unbalanced load: ±5%

OUTPUT

parameter	conditions/description	min	nom	max	units
output power				0.25	W
voltage accuracy	see tolerance envelope graph				
output ripple	@ 20MHz Bandwidth		50	75	mVpp
output noise	@ 20MHz Bandwidth		75	150	mVpp
line regulation	for Vin change of 1%(3.3V output)			±1.5	%
	for Vin change of 1%			±1.2	%
load regulation	10% to 100% full load				
	3.3V output		15	20	%
	5V output		10	15	%
	9V output		6.5	15	%
	12V output		6.0	15	%
	15V output		6.0	15	%
temperature coefficient	100% full load			0.03	%/°C
switching frequency	100% load, nominal input(24V input)		700		KHz
	100% load, nominal input(5V, 12V)		150		KHz

notes:
1. Test ripple and noise by “parallel cable” method.

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PART NUMBER: VAT0.25-SMT Series **DESCRIPTION:** dc-dc converter

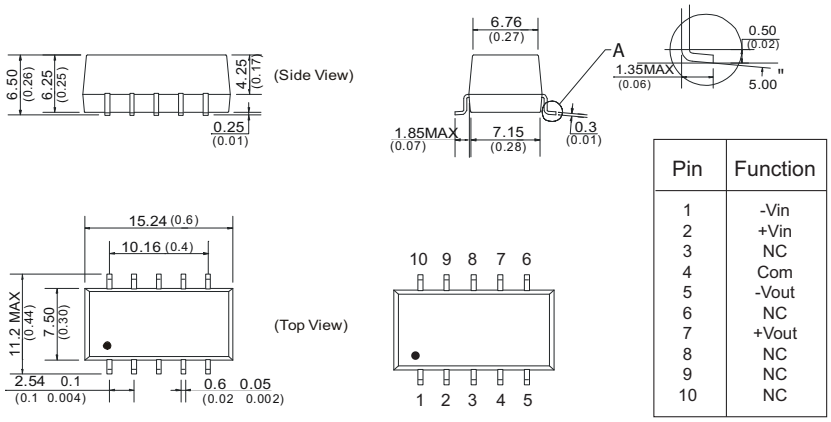
GENERAL SPECIFICATIONS

parameter	conditions/description
output short circuit protection	1 second max.
temperature rise at full load	15°C typ., 25°C max.
cooling	free air convection
operating temp. range	-40°C ~ +85°C
storage temp. range	-55°C ~ +125°C
reflow soldering temp.	260°C (1.5mm from case for 10 seconds)
storage humidity range	≤95%
case material	plastic (UL94-V0)
MTBF	>3,500,000 hours

ISOLATION SPECIFICATIONS

parameter	conditions/description	min	nom	max	units
isolation voltage	flash tested for 1 minute	1000			V dc
isolation resistance	test at 500 V dc	1000			MΩ

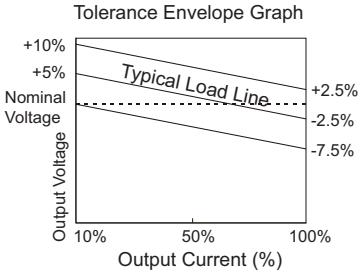
OUTLINE DIMENSIONS & RECOMMENDED LAYOUT PATTERN

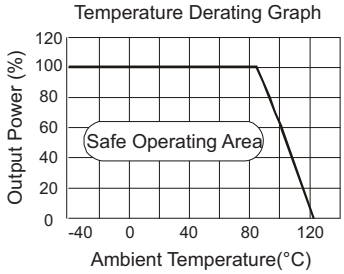


Pin	Function
1	-Vin
2	+Vin
3	NC
4	Com
5	-Vout
6	NC
7	+Vout
8	NC
9	NC
10	NC

Note: All Pins on a 2.54mm(0.1) pitch; All Pin Widths are 0.60 mm(0.02);
Tolerances:±0.15mm(0.006); Unit: mm(inch)

TYPICAL CHARACTERISTICS





PART NUMBER: VAT0.25-SMT Series **DESCRIPTION:** dc-dc converter

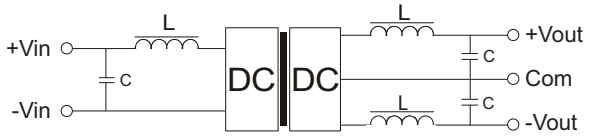
Application Notes:

- To ensure this module can operate efficiently and reliably during operation, the minimum output load should not be less than 10% of the full load. This product should never be operated under no load conditions. If the actual output power is very low you should increase the load by connecting a resistor with the proper resistance at the output end in parallel.

- Overload Protection
  Under normal operating conditions, the output circuit of these products has no protection against overload. The simplest method is to connect a self-recovery fuse in series at the input end or add a circuit breaker to the circuit.

- Recommended Circuit
  If you want to further decrease the input/output ripple, an "LC" filtering network may be connected to the input and output ends of the dc-dc converter, see (Figure 1).

Figure 1

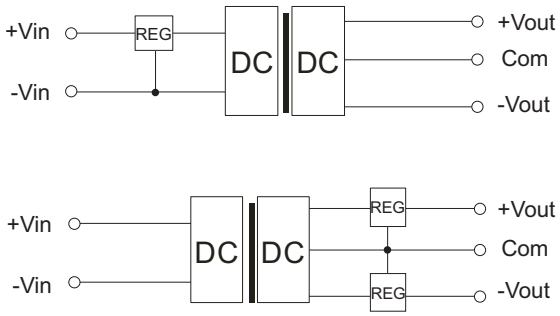


It should also be noted that the inductance and the frequency of the "LC" filtering network should be staggered with the dc-dc frequency to avoid mutual interference. However, the capacitance of the output filter capacitor must be proper. If the capacitance is too large, a startup problem might arise. It is not recommended to connect any external capacitor in the application field .

- 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 (Figure 2).

  No parallel connection or plug and play.

Figure 2



Reflow Profile

