PART NUMBER: VWRAT2 **DESCRIPTION:** dc-dc converter

description

Designed to convert a wide input voltage range into an isolated regulated voltage, the VWRAT2-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, datacom/telecom fields, etc...

features

- **wide (2:1) input range**
- **regulated**
- **dual voltage output**
- **I/O isolation: 1500 V dc**
- **no heatsink required**
- **short circuit protection**
- **MTBF >1,000,000 hours**
- **temperature range: -40°C~+85°C**

RoHS

MODEL

	input voltage		output voltage	output current		efficiency
	nominal (V dc)	range (V dc)	max. (V dc)	(V dc)	max. (mA)	min. (mA)	typ. (%)
VWRAT2-D12-D5-SMT	12	9.0~18.0	22	±5	±200	±20	76
VWRAT2-D12-D9-SMT	12	9.0~18.0	22	±9	±111	±11	78
VWRAT2-D12-D12-SMT	12	9.0~18.0	22	±12	±83	±8	80
VWRAT2-D12-D15-SMT	12	9.0~18.0	22	±15	±67	±7	79
VWRAT2-D24-D5-SMT	24	18.0~36.0	40	±5	±200	±20	77
VWRAT2-D24-D9-SMT	24	18.0~36.0	40	±9	±111	±11	79
VWRAT2-D24-D12-SMT	24	18.0~36.0	40	±12	±83	±8	80
VWRAT2-D24-D15-SMT	24	18.0~36.0	40	±15	±67	±7	79

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

INPUT

parameter	conditions/description	min	nom	max	units
input voltage range		12	9~18	22	V dc
		24	18~36	40	V dc

OUTPUT

parameter	conditions/description	min	nom	max	units
2W output power		0.2		2	W
voltage accuracy	refer to recommended circuit		±1	±2	%
ripple & noise	@ 20MHz Bandwidth		35	75	mVpp
line regulation	input voltage from low to high		±0.2	±0.5	%
load regulation	10% to 100% full load		±0.5	±1.0	%
temperature coefficient	refer to recommended circuit			0.03	%/°C
switching frequency	100% load, nominal input		300		KHz

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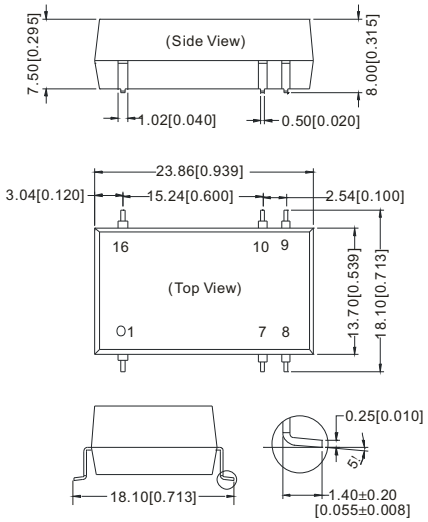
GENERAL SPECIFICATIONS

parameter	conditions/description
output short circuit protection	Hiccup, automatic recovery
temperature rise at full load	15°C typ., 35°C max.
cooling	free air convection
operating temp. range	-40°C ~ +85°C
storage temp. range	-55°C ~ +125°C
reflow soldering temp.	245°C (for 10 seconds)
storage humidity range	≤95%
MTBF	>1,000,000 hours

ISOLATION SPECIFICATIONS

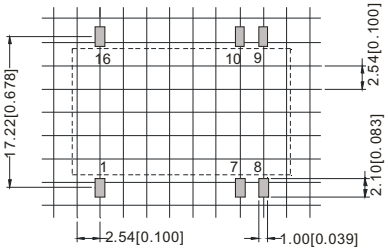
parameter	conditions/description	min	nom	max	units
isolation voltage	flash tested for 1 minute	1500			V dc
isolation resistance	test at 500 V dc	1000			MΩ
isolation capacitance	Input/Output		85		PF

OUTLINE DIMENSIONS & FOOTPRINT



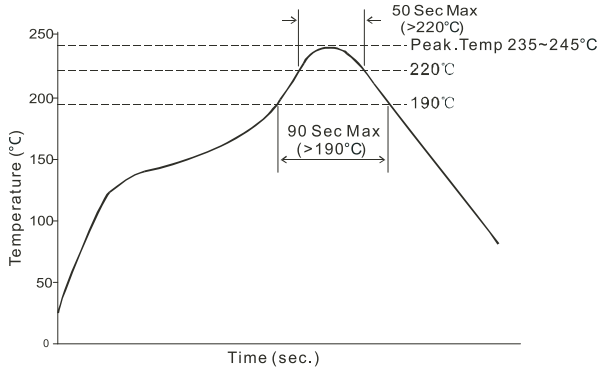
FOOTPRINT DETAILS	
Pin	
1	-Vin
7	NC
8	0V
9	+Vo
10	-Vo
16	+Vin

NC: No connection



Note:
Unit:mm[inch]
Pin section tolerances:±0.10mm[±0.004inch]
General tolerances:±0.25mm[±0.010inch]

RECOMMENDED REFLOW PROFILE



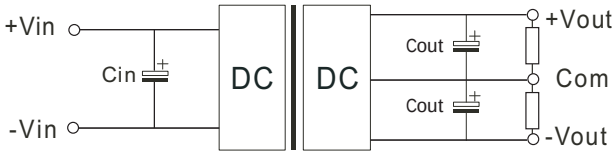
PART NUMBER: VWRAT2

DESCRIPTION: dc-dc converter

Application Notes:

- All of the VWRAT2-SMT Series have been tested according to the following recommended testing circuit before leaving the factory. This series should be tested under load (Figure 1). If you want to further decrease the input/output ripple, you can increase capacitance properly or choose capacitors with low ESR. However, the capacitance should not be too high(Table 1).

Figure 1



- Recommended circuit

It is best to test with full load and not to test without load. To further reduce output ripple, you may increase the external capacitor, choose a capacitor with low ESR, or add external inductor to the circuit as shown above.

General:
Cin: 12V 100μF
24V 10μF to 47μF
Cout:see Table 1

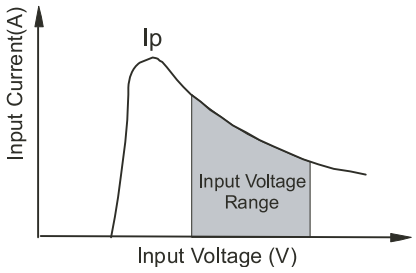
Table 1

Dual Vout (VDC)	Cout (uF)
5	560
9	470
12	330
15	220

- Input current

Nominal input voltage range. The input current of the power supply must be sufficient to the startup current (Ip) of the DC/DC module (Figure 2)

Figure 2



- Output Load

In order to ensure the product operates efficiently and reliably, make sure the specified range of input voltage is not exceeded.

No parallel connection or plug and play.

- NC Terminals

Unless otherwise specified, NC terminals of all series are used for converter's interior circuit connection, and are not allowed connection of any external circuit.

Temperature Derating Curve