

### FEATURES AND APPLICATIONS

- $\pm 10\%$  Input range
- 24 Pin DIL Package
- Regulated Output Voltage
- Full SMD Technology
- 1kVDC – 6kVDC Isolation
- Low Cost
- RoHS ✓
- Mobile/Battery Driven Applications
- Distributed Power Networks
- Data Communications Equipments
- Telecommunication Instruments
- Process/Machine Control Equipments

### GENERAL DESCRIPTION

The VMR series is a family of 2W single & dual output DC-DC converters with 1kVDC up to 6kVDC isolation. These converters achieve miniature package in a 24-pin DIL compatible case with high performance features and a short circuit protection with automatic restart and tight line/load regulation. Devices operate over a  $\pm 10\%$  Input voltage range providing stable output voltage.

Models operate from an input bus voltage of 5, 12, 24VDC offering output voltage levels of 3.3, 5, 9, 12, 15, 24,  $\pm 3.3$ ,  $\pm 5$ ,  $\pm 9$ ,  $\pm 12$ ,  $\pm 15$  or  $\pm 24$ VDC.

±10% Input single and dual Output							
Model Number	Input Voltage Range [VDC]	Output Voltage [VDC]	Input Current		Full Load Output Current [mA]	max. Capacitor Load [µF]	Efficiency [%] 12/24/48
			No-Load [mA] 12/24/48	Full Load [mA] 12/24/48			
VMR-xx3R3S2	5 12 24	3.3	75/70/25	622/245/120	500	330	53/56/57
VMR-xx05S2		5.0	75/70/25	615/260/132	400	330	65/64/63
VMR-xx09S2		9.0	75/70/25	597/245/132	222	330	67/68/63
VMR-xx12S2		12.0	75/70/25	517/238/122	166	330	70/70/68
VMR-xx15S2		15.0	75/70/25	588/252/122	133	330	68/66/68
VMR-xx24S2		24.0	75/70/25	615/256/122	83	330	65/65/68
VMR-xx3R3D2	5 12 24	$\pm 3.3$	30/20/15	638/250/121	$\pm 300$	$\pm 1000$	62/66/68
VMR-xx05D2		$\pm 5.0$	30/20/15	588/228/114	$\pm 200$	$\pm 1000$	68/73/73
VMR-xx09D2		$\pm 9.0$	40/20/15	571/222/111	$\pm 111$	$\pm 470$	70/75/75
VMR-xx12D2		$\pm 12.0$	40/20/15	571/213/104	$\pm 83$	$\pm 470$	70/78/80
VMR-xx15D2		$\pm 15.0$	40/35/20	571/216/108	$\pm 67$	$\pm 470$	70/77/77
VMR-xx24D2		$\pm 24.0$	50/35/20	579/219/111	$\pm 42$	$\pm 220$	69/76/75

\* non standard output voltages and 48V input voltage on request

xx	input voltage (05, 12, 24)
Suffix H2	2 kVDC isolation
Suffix H	3 kVDC isolation
Suffix H4	4 kVDC isolation
Suffix H5	5.2 kVDC isolation
Suffix H6	6 kVDC isolation
Suffix M	metal case instead of plastic case

## ELECTRICAL SPECIFICATIONS

Specifications typical at +25°C, nominal Input voltage, rated output current unless otherwise specified.

### Input Specifications

Voltage Range	±10%
Filter	Pi-Network
Input Reflected Ripple Current	35mA pk-pk

### Output Specifications

Voltage Accuracy	±2%, max.
Ripple and Noise (20 MHz BW)	75 mVp-p, max.
Short Circuit Protection	Continuous
Short Circuit Restart	Automatic
Line Voltage Regulation	±0.5%, max.
Load Voltage Regulation	±0.5%, max.
	±1.5%, max. for 3.3 Models
Temperature Coefficient	±0.02%/°C
Max Capacitive Load	see table

### Isolation Specification

Rated Voltage	1000 VDC, Standard
	2000 VDC, Suffix H2
	3000 VDC, Suffix H
	4000 VDC, Suffix H4
	5200 VDC, Suffix H5
	6000 VDC, Suffix H6
Resistance	10 <sup>9</sup> Ω
Capacitance	60 pF, typ.

## DIL 24 Package

Pin	Standard Isolation		H - Isolations	
	Single Output	Dual Output	Single Output	Dual Output
1	+V Input	+V Input	+V Input	+V Input
2	N.C.	-V Output	+V Input	+V Input
3	N.C.	Common	N.P.	N.P.
10	-V Output	Common	N.P.	Common
11	+V Output	+V Output	N.P.	Common
12	-V Input	-V Input	-V Output	N.P.
13	-V Input	-V Input	+V Output	-V Output
14	+V Output	+V Output	N.P.	N.P.
15	-V Output	Common	N.P.	+V Output
22	N.C.	Common	N.P.	N.P.
23	N.C.	-V Output	-V Input	-V Input
24	+V Input	+V Input	-V Input	-V Input

N.C. ...not connected  
N.P. ...no Pin

#### Notes:

All dimensions in millimeters (inches).  
Tolerance ±0.25mm (0.01).

Specifications can be changed without prior notice.

Products are not intended for and must not be used in life support systems, human implantation, nuclear facilities or systems or any other application where product failure or malfunction of the component could lead to loss of life or catastrophic property damage

### General Specifications

Efficiency	see table
Switching Frequency	40 KHz, typ. (Single Output) 300 KHz, typ. (Dual Output)
MTBF (MIL-HDBK-217 F)	> 3.072 Mhrs
Safety Standard	IEC 60950-1 (designed to meet)

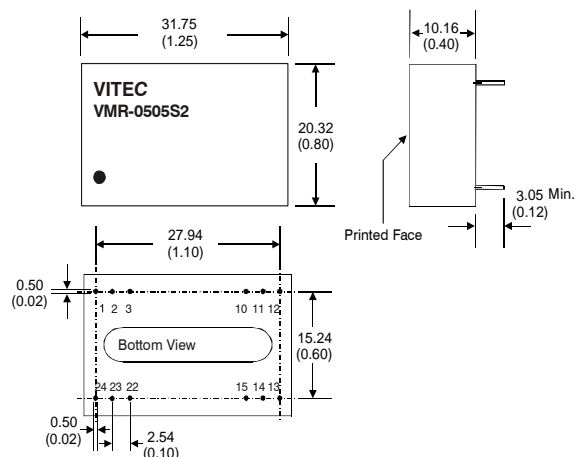
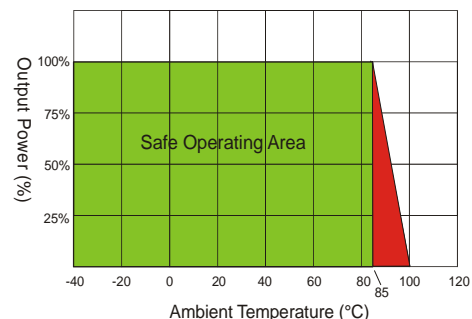
### Environmental Specification

Operating Temperature	-40°C to +85°C
Max. Case Temperature	+100°C
Storage Temperature	-40°C to +125°C
Cooling	Free-air convection

### Physical Characteristics

Dimension DIP	31.75 x 20.32 x 10.16 mm 1.25 x 0.80 x 0.40 inches
Weight	12.5 g (Plastic Case) 15.0 g (Metal Case)
Case Material:	Standard Non-conductive Black Plastic Suffix M Nickel-Coated Copper Metal

### Derating VMR-2W:



March 2009