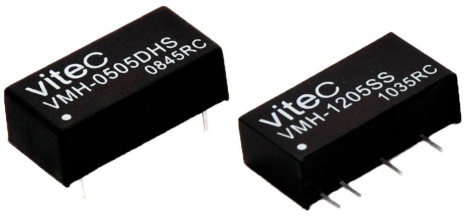
VMH SERIES

2 Watt DC/DC Converter
Single/Dual Output
1 - 6 kVDC Isolation

vitec dc conversion

FEATURES AND APPLICATIONS

- 7 Pin SIL or 14 Pin DIL Package
- Low Ripple and Noise
- 1000 up to 6000 VDC Isolation
- Cost Effective; RoHS ✓
- Mobile Applications
- Portable Equipments
- Telecommunication Instruments
- Mixed Analog / Digital Subsystems



GENERAL DESCRIPTION

The VMH series is a family of cost effective 2 W single & dual output DC-DC converters with 1kVDC - 6kVDC isolation. These converters achieve low cost and miniature SIL or DIL size without compromising performance or field reliability.
Models operate from an input bus voltage of 3.3, 5, 12 and 24 VDC offering output voltage levels of 3.3, 5, 7.2, 9, 12, 15, 18, 24, ±3.3, ±5, ±7.2, ±9, ±12, ±15, ±18 or ±24 VDC.

SIL 7 Package - Standard Types

Type Number	Input Voltage [VDC]	Output Voltage [VDC]	Output Current [mA]
VMH-xx3R3SS	3.3 5 12 24	3.3	400
VMH-xx05SS		5.0	400
VMH-xx7R2SS		7.2	278
VMH-xx09SS		9.0	222
VMH-xx12SS		12.0	166
VMH-xx15SS		15.0	134
VMH-xx18SS		18.0	111
VMH-xx24SS		24.0	83
VMH-xx3R3S	3.3 5 12 24	± 3.3	± 200
VMH-xx05S		± 5.0	± 200
VMH-xx7R2S		± 7.2	± 139
VMH-xx09S		± 9.0	± 111
VMH-xx12S		± 12.0	± 83
VMH-xx15S		± 15.0	± 67
VMH-xx18S		± 18.0	± 56
VMH-xx24S		± 24.0	± 42

DIL 14 Package - Standard Types

Type Number	Input Voltage [VDC]	Output Voltage [VDC]	Output Current [Am]
VMH-xx3R3DS	5 12 24	3.3	400
VMH-xx05DS		5.0	400
VMH-xx7R2DS		7.2	278
VMH-xx09DS		9.0	222
VMH-xx12DS		12.0	166
VMH-xx15DS		15.0	134
VMH-xx18DS		18.0	111
VMH-xx24DS		24.0	83
VMH-xx3R3D	5 12 24	± 3.3	± 200
VMH-xx05D		± 5.0	± 200
VMH-xx7R2D		± 7.2	± 139
VMH-xx09D		± 9.0	± 111
VMH-xx12D		± 12.0	± 83
VMH-xx15D		± 15.0	± 67
VMH-xx18D		± 18.0	± 56
VMH-xx24D		± 24.0	± 42

xx = input voltage (33, 05, 12, 24)

33	**3.3 Vdc ± 10%**
05	**5.0 Vdc ± 10%**
12	**12 Vdc ± 10%**
24	**24 Vdc ± 10%**

* 3.3V input: DIL14 package or H-option on request
** Non-standard output voltages on request

Options :

Suffix HS	**2kVDC isolation**
Suffix H	**3kVDC isolation**
Suffix H4	**4kVDC isolation**
Suffix H6	**6kVDC isolation**
Suffix P	**continuous short circuit protection**

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ELECTRICAL SPECIFICATIONS

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

Input Specifications

Voltage Range	±10%
Filter	Capacitors

Output Specifications

Voltage Accuracy	±3%, max.
Voltage Balance (Dual Outp.)	±1%
Ripple and Noise (20 MHz BW)	75 mVp-p, max.
Short Circuit Protection	Momentary
Option "P"	Continuous (on request)
Line Voltage Regulation	±1.2% / 1.0% of Vin
Load Voltage Regulation	±10%, Load=20~100% ±20% (3.3V output)
Temperature Coefficient	±0.02%/°C
Max. Capacitor Load	Single Output: 470 µF Dual Output: ±220 µF

Isolation Specification

I/O Isolation Voltage 1 Minute, Flash Tested for 1 Second	1000 VDC, Standard 2000 VDC, Suffix HS 3000 VDC, Suffix H 4000 VDC, Suffix H4 6000 VDC, Suffix H6
Leakage Current	1×10^{-6} A
Resistance	10^9 Ω
Capacitance	60 pF, typ.

General Specifications

Efficiency	66% to 82%
Switching Frequency	80 kHz, var.
Reliability Calculated MTBF	>1.121 Mhrs (MIL-HDBK-217 F)
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
Humidity	max. 95%, non-condensing
Cooling	Free-air convection

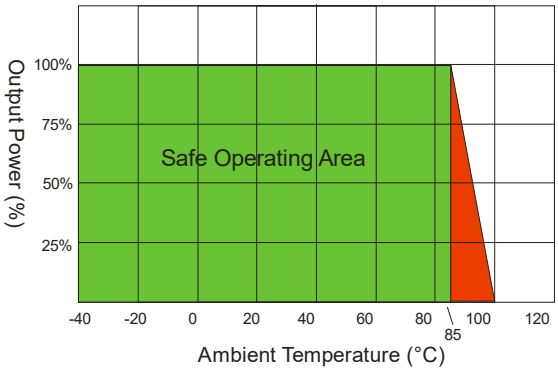
EMC Characteristics (For SIL7 Series)

Radiated Emissions	EN55022 Class B
EN61000-4-2 (ESD)	Perf. Criteria B
EN61000-4-3 (RS)	Perf. Criteria A

Physical Characteristics

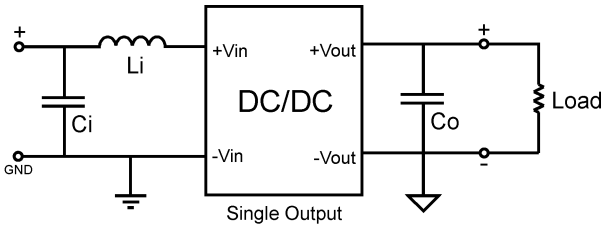
Dimension SIP	19.50 x 6.00 x 9.50 mm 0.76 x 0.24 x 0.39 inches
Dimension DIP	20.32 x 10.16 x 6.85 mm 0.80 x 0.40 x 0.27 inches
Weight	SIL7 2.3 g DIL14 2.6 g
Case Material	Non-conductive plastic

Derating Curve



Additional Ripple & Noise Filter

Single Output: To reduce converter's ripple & noise, it is recommended to add a 4.7 µF ~ 220 µF (±4.7µF ~ ±100µF for dual output) capacitor in output end. For EMI performance improvement, it is recommended to add a 12 µH inductor and a 10 µF ~ 100 µF capacitor at input side.



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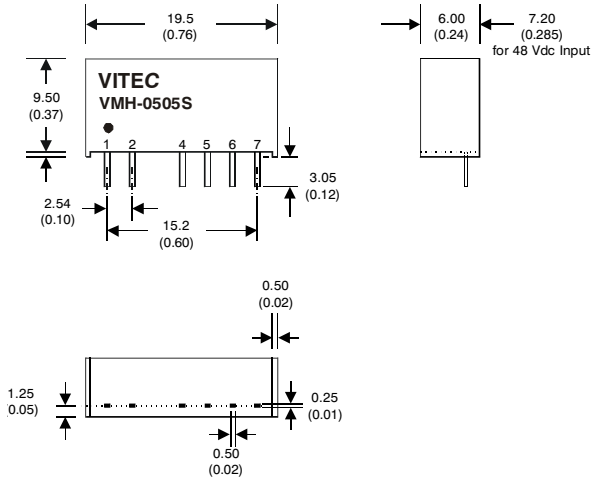
PACKAGE AND PINNING

SIL 7 Package

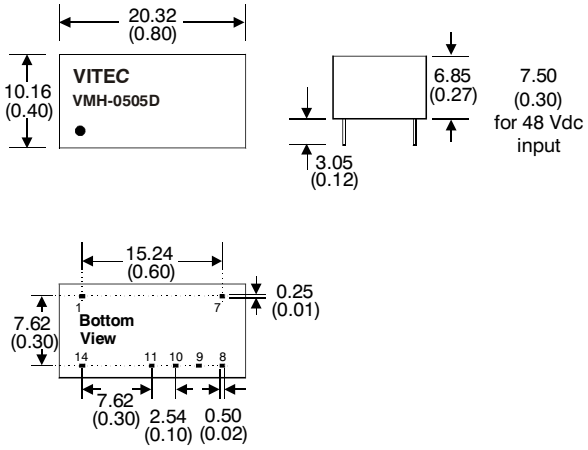
	1-2kVDC Isolation		3-6kVDC Isolation	
Pin	Single Output	Dual Output	Single Output	Dual Output
1	+V Input	+V Input	+V Input	+V Input
2	- V Input	- V Input	- V Input	- V Input
4	- V Output	- V Output	Omitted	Omitted
5	Omitted	Common	- V Output	- V Output
6	+V Output	+V Output	Omitted	Common
7	Omitted	Omitted	+V Output	+V Output



DIL 14 Package

	1-2kVDC Isolation		3-6kVDC Isolation	
Pin	Single Output	Dual Output	Single Output	Dual Output
1	- V Input	- V Input	- V Input	- V Input
7	NC	NC	NC	NC
8	Omitted	Common	+V Output	+V Output
9	+V Output	+V Output	Omitted	Common
10	Omitted	Omitted	- V Output	- V Output
11	- V Output	- V Output	Omitted	Omitted
14	+V Input	+V Input	+V Input	+V Input

NC…not connected



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

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