

FEATURES AND APPLICATIONS

- 2:1 Input Range
- High Efficiency up to 93%
- 1500 Vdc Isolation, 3500 on request
- Low Ripple and Noise
- Continuous Short Circuit Protection
- Over Current and Over Voltage Protection
- 2 x 1 x 0.4 inches
- RoHS ✓

GENERAL DESCRIPTION

The VM20 series is a family of 20W single and dual output DC-DC converters. These converters combine a nickel-coated copper package in a compatible case (50.8 x 25.4 x 10.2 mm) with high performance features such as 1500 VDC or 3500 VDC input/output isolation voltage, continuous short circuit protection with automatic restart and tight line and load regulation. Wide range VM20 devices operate over 2:1 input voltage range providing stable output voltage.

Models operate with input voltages of 12, 24 and 48Vdc offering output voltage levels of 3.3, 5, 12, 15, ±12 and ±15Vdc. Cooling is by free-air convection.

2:1 Input single and dual Output							
Model Number	Input Voltage Range [VDC]	Output Voltage [VDC]	Input Current		Full Load Output Current [mA]	max. Capacitor Load [uF]	Efficiency [%] 12/24/48
			No-Load [mA] 12/24/48	Full Load [mA] 12/24/48			
VM20-xx3R3S	9-18 18-36 36-72	3,3	60/35/25	1738/859/425	5500	10000	90/91/91
VM20-xx05S		5	60/35/25	1872/926/463	4000	6800	92/93/93
VM20-xx12S		12	30/25/15	1915/946/473	1670	1000	90/91/91
VM20-xx15S		15	30/25/15	1915/946/473	1330	680	90/91/91
VM20-xx12D	9-18 18-36	± 12	30/30/20	1937/957/478	± 835	± 470	89/90/90
VM20-xx15D	36-72	± 15	30/30/20	1937/957/484	± 665	± 330	89/90/89

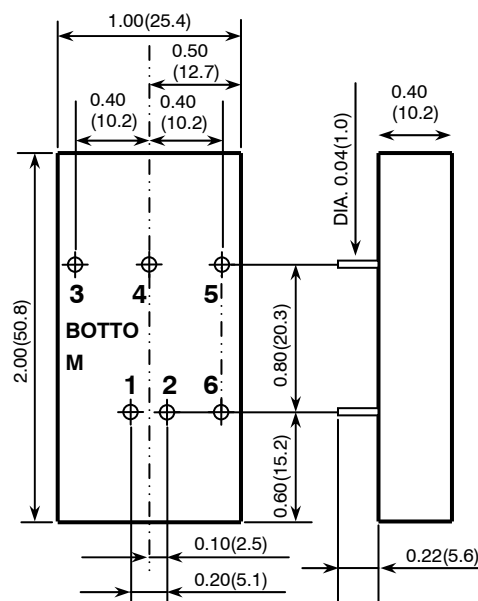
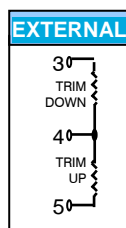
* non standard output voltages on request

xx nominal Input voltage:
12 (9 – 18VDC)
24 (18 – 36VDC)
48 (36 – 75VDC)

Suffix H 3.5 kVDC Isolation, on request

PIN Connections

Standard		
Pin	Single Output	Dual Output
1	+V Input	+V Input
2	- V Input	-V Input
3	+V Output	+V Output
4	Trim	Common
5	-V Output	-V Output
6	Remote On/Off	Remote On/Off



ELECTRICAL SPECIFICATIONS

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

Input Specifications

2:1 Input Voltage Range	see table
Input Filter	Pi-Type
Start up Time	20mS, typ.
Under Voltage Lockout	on / off
12V input	8.6Vdc / 7.9 Vdc, typ.
24V input	17.8Vdc / 16.0 Vdc, typ.
48V input	33.5Vdc / 30.5 Vdc, typ.
Input Current	see table
Input Reflected Ripple Currents	20mA pk-pk *
	* measured with a simulated source inductance of 12uH
Remote ON/OFF Control	
ON	3 to 12 Vdc or open circuit
OFF	0 to 1,2 Vdc or Short circuit Pin2 and Pin6 (OFF idle current 5mA typ.)
	Control voltage referenced to negative input (Pin2)

General Specifications

Efficiency	89% to 93%, see table
Switching Frequency	330 kHz, typ.
Isolation Voltage	1500 VDC, Standard 3500 VDC, H-Option (on request)
Isolation Capacitance	1.2 nF, typ.
Isolation Resistance	10 ⁹ Ohms, min.
MTBF (MIL-HDBK-217 F)	>684 khrs

Physical Characteristics

Dimensions	50.8 x 25.4 x 10.2 mm 2.0 x 1.0 x 0.4 inches
Case Material	Nickel-Coated Copper with Non-conductive Base
Potting Material	Epoxy (UL94V-0 rated)
Weight	30g

Output Specifications

Output Voltage Accuracy	±1%, max.
Output Voltage Trim	±10%, max.; (Single output only)
Ripple and Noise (20 MHz BW)	75 mVp-p, max. (measured with 1uF ceramic capacitor)
Line Voltage Regulation	±0,2%, max.
Load Voltage Regulation	(0% to 100% Loading) Single output: ±0,5%, max. Dual output: ±1% (balanced output)
Cross Regulation (Dual Output)	±5%, (25% to 100% Loading)
Temperature Coefficient	±0.02%/°C
Short Circuit Protection	Continuous (Automatic Recovery)
Over Current Protection	140% of Full Load, typ.
Max. Capacitive Load	see table
Over Voltage Protection	Zener Diode

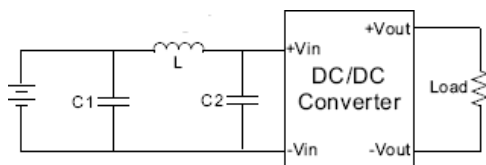
Environmental Specification (Reference)

Operating Temperature	-40°C to +85°C derating above 70°C
Max. Case Temperature	+100°C
Storage Temperature	-40°C to +125°C
Cooling	Free-air Convection
EMI/RFI *	EN55022 Class A
ESD	EN61000-4-2, Perf. Criteria B
RS	EN61000-4-3, Perf. Criteria A
EFT**	EN61000-4-4, Perf. Criteria B
Surge**	EN61000-4-5, Perf. Criteria B
CS	EN61000-4-6, Perf. Criteria A
PFMF	EN61000-4-8, Perf. Criteria A

* with external input filter (see below)

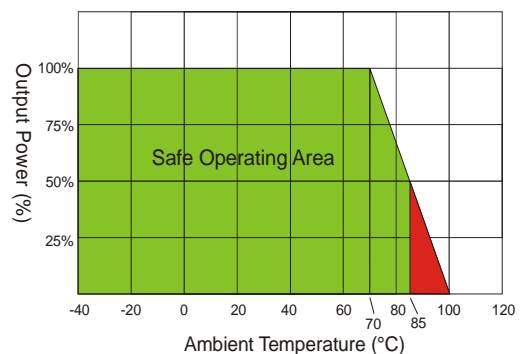
** an external filter capacitor is required: Nippon KY series, 220uF/100

Suggest adding external input filter to meet conducted emissions:



VM20-Series:	L	C1	C2
12V Input	12uH	330uF/100V	-
24V Input	12uH	220uF/100V	-
48V Input	12uH	220uF/100V	-

Derating VM20:



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

December 2008

V i t e c POWER GmbH

Hans Kudlich Gasse 12/3, A-2230 Gänserndorf, Austria, Tel.: +43/2282/3144, Fax.: +43/2282/60494, Email: office@vitecpower.com

www.vitecpower.com