Size: 1.25in x 0.80in x 0.41in (31.8mm x 20.3mm x 10.5mm)

FEATURES

- Wide Input Voltage Range
- Full Regulated Output Voltage
- Industrial Standard DIP-24 Package
- No Min. Load Requirement
- Ultra-High I/O Isolation with Reinforced Insulation
- Qualified for IGBT and High Isolation Applications
- Short Circuit Protection
- RoHS & REACH Compliant
- UL/cUL/IEC/EN 60950-1 Safety Approval and CE Marking

DESCRIPTION

The DCMID03 series of DC/DC converters offers 3 watts of output power in a compact 1.25” x 0.80” x 0.40” DIP-24 package. This series consists of full regulated single and dual output voltages and wide input voltage range. Each model in this series has ultra-high I/O isolation, no minimum load requirement, and short circuit protection. This series has RoHS & REACH compliance and has UL/cUL/IEC/EN 60950-1 safety approvals as well as CE marking. Please contact factory for order details.

MODEL SELECTION TABLE

Single Output Models

Model Number	Input Voltage Range	Output Voltage	Input Current		Output Current	Efficiency	Maximum Capacitive Load	Ripple & Noise	Output Power
			No Load	Max Load					
DCMID03-05S05HI	5VDC (4.5~5.5VDC)	5VDC	130mA	1017mA	600mA	59%	470µF	50mVp-p	3W
DCMID03-05S12HI		12VDC		984mA	250mA	61%			
DCMID03-05S15HI		15VDC		960mA	200mA	62%			
DCMID03-12S05HI	12VDC (10.8~13.2VDC)	5VDC	60mA	424mA	600mA	59%	470µF	50mVp-p	3W
DCMID03-12S12HI		12VDC		410mA	250mA	61%			
DCMID03-12S15HI		15VDC		400mA	200mA	62%			
DCMID03-24S05HI	24VDC (21.6~26.4VDC)	5VDC	40mA	212mA	600mA	59%	470µF	50mVp-p	3W
DCMID03-24S12HI		12VDC		198mA	250mA	63%			
DCMID03-24S15HI		15VDC		195mA	200mA	64%			

MODEL SELECTION TABLE

Dual Output Models

Model Number	Input Voltage Range	Output Voltage	Input Current		Output Current	Efficiency	Maximum Capacitive Load	Ripple & Noise	Output Power
			No Load	Max Load					
DCMID03-05D12HI	5VDC (4.5~5.5VDC)	±12VDC	130mA	1000mA	±125mA	60%	220#µF	50mVp-p	3W
DCMID03-05D15HI		±15VDC		1000mA	±100mA	60%			
DCMID03-12D12HI	12VDC (10.8~13.2VDC)	±12VDC	60mA	420mA	±125mA	60%	220#µF	50mVp-p	3W
DCMID03-12D15HI		±15VDC		420mA	±100mA	60%			
DCMID03-24D12HI	24VDC (21.6~26.4VDC)	±12VDC	40mA	210mA	±125mA	60%	220#µF	50mVp-p	3W
DCMID03-24D15HI		±15VDC		210mA	±100mA	60%			

SPECIFICATIONS

All specifications are based on 25°C, Resistive Load, Nominal Input Voltage, and Rated Output Current unless otherwise noted.
We reserve the right to change specifications based on technological advances.

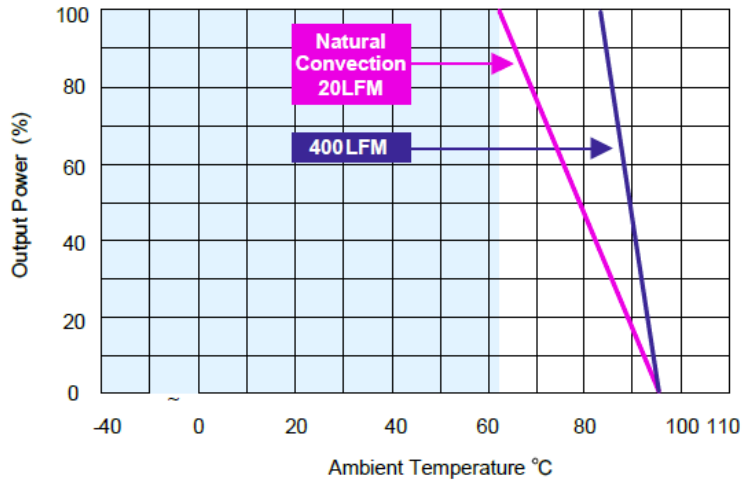
SPECIFICATION	TEST CONDITIONS	Min	Typ	Max	Unit
INPUT SPECIFICATIONS					
Input Voltage Range	5V Input Models	4.5		5.5	VDC
	12V Input Models	10.8		13.2	
	24V Input Models	21.6		26.4	
Input Surge Voltage (1 sec. max.)	5V Input Models	-0.7		7.5	VDC
	12V Input Models	-0.7		15	
	24V Input Models	-0.7		30	
Short Circuit Input Power	All Models			2500	mW
Input Filter		Internal Pi Type			
OUTPUT SPECIFICATIONS					
Output Voltage		See Table			
Voltage Accuracy				±4.0	%
Line Regulation	Vin=Min. to Max. @Full Load		±2.0		
Load Regulation	Io=10% to 100%		±0.5	±1.0	%
Voltage Balance	Dual Output, Balanced Loads				
Output Power		See Table			
Output Current		See Table			
Minimum Load		No Minimum Load Requirement			
Maximum Capacitive Load		See Table			
Ripple & Noise	0-20MHz Bandwidth			50	mVp-p
Temperature Coefficient			±0.01	±0.02	%/ºC
PROTECTION					
Short Circuit Protection		Continuous, Automatic Recovery			
ENVIRONMENTAL SPECIFICATIONS					
Operating Ambient Temperature	Natural Convection	-40		+75	ºC
Storage Temperature		-50		+125	ºC
Case Temperature				+95	ºC
Humidity	Non-Condensing			95	%RH
Lead Temperature	1.5mm from case for 10Sec.			260	ºC
Cooling		Natural Convection			
MTBF (Calculated)	MIL-HDBK-217F @25ºC, Ground Benign	1,000,000			Hours
GENERAL SPECIFICATIONS					
Typ. Efficiency	@Max. Load	See Table			
Switching Frequency		25	60		KHz
I/O Isolation Voltage	Rated for 60 Seconds	3000			VACrms
	Tested for 1 Second	6000			VDC
Isolation Resistance	500VDC	10			GΩ
Isolation Capacitance	100KHz, 1V		20		pF
Common Mode Transient Immunity		15			KV/µs
PHYSICAL SPECIFICATIONS					
Weight		0.44oz (12.4g)			
Dimensions (L x W x H)		1.25in x 0.80in x 0.41in (31.8mm x 20.3mm x 10.5mm)			
Case Material		Non-Conductive Black Plastic (Flammability to UL 94V-0 rated)			
Pin Material		Copper Alloy with Gold Plate Over Nickel Subplate			
SAFETY CHARACTERISTICS					
Safety Approvals	UL/cUL 60950-1 recognition (UL certificate) IEC/EN 6090-1 (CB-report)				
Conducted EMI	EN 55022 FCC Part 15				Class A Class A

NOTES

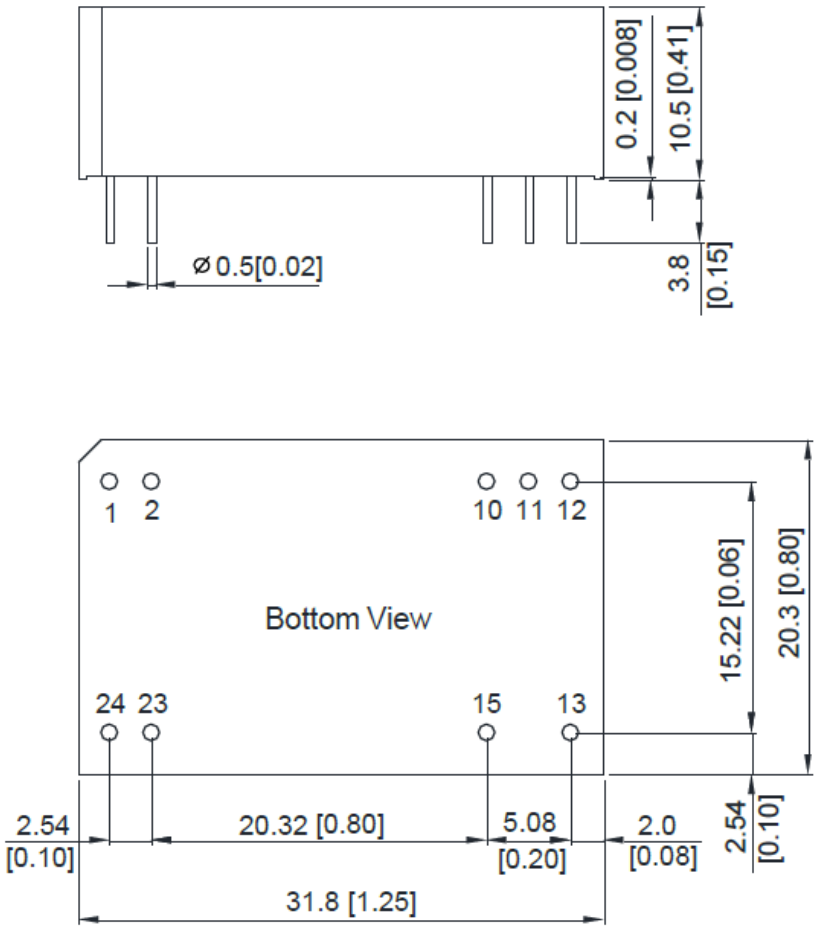
1. # for each output
2. It is recommended to protect the converter by a slow blow fuse in the input supply line.
3. Other input and output voltages may be available, please contact factory.
4. Natural Convection is about 20LFM but is not equal to still air (0 LFM)

**Due to advances in technology, specifications subject to change without notice.*

DERATING CURVES



MECHANICAL DRAWINGS



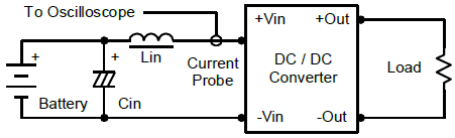
Pin Connections

Pin	Single	Dual
1	+Vin	+Vin
2	+Vin	+Vin
10	No Pin	Common
11	No Pin	Common
12	-Vout	No Pin
13	+Vout	-Vout
15	No Pin	+Vout
23	-Vin	-Vin
24	-Vin	-Vin

TEST SETUP

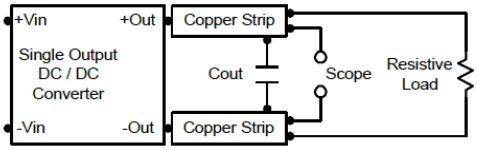
Input Reflected-Ripple Current Test Setup

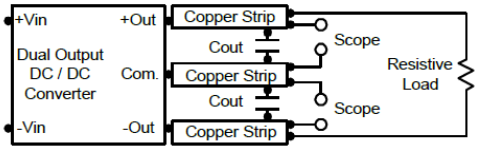
Input reflected-ripple current is measured with a inductor Lin (4.7µH) and Cin (220µF, ESR <1.0Ω at 100KHz) to simulate source impedance.
Capacitor Cin, offsets possible battery impedance.
Current ripple is measured at the input terminals of the module, measurement bandwidth is 0-500KHz.



Peak-to-Peak Output Noise Measurement Test

Use a Cout 0.33µF ceramic capacitor. Scope measurement should be made by using a BNC socket, measurement bandwidth is 0-20MHz. Position the load between 50mm and 75mm from the DC/DC Converter.





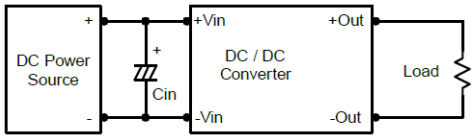
TECHNICAL NOTES

Maximum Capacitive Load

The DCMID03-HI series has limitation of maximum connected capacitance at the output. The power module may be operated in current limiting mode during start-up, affecting the ramp-up and the startup time. For optimum performance we recommend 220µF maximum capacitive load for dual outputs and 470µF capacitive load for single outputs. The maximum capacitance can be found in data sheet.

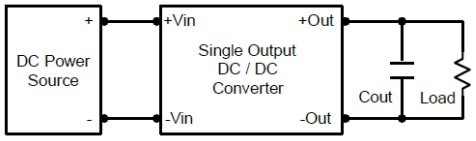
Input Source Impedance

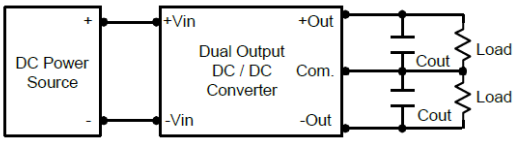
Power module should be connected to a low ac-impedance input source. Highly inductive source impedances can affect the stability of the power module. In applications where power is supplied over long lines and output loading is high, it may be necessary to use a capacitor at the input to ensure startup. Capacitor mounted close to the power module helps ensure stability of the unit, it is recommended to use a good quality low Equivalent Series Resistance (ESR <1.0Ω at 100KHz) capacitor of a 4.7µF for the 5V input devices and a 2.2µF for the 12V and 24V devices.



Output Ripple Reduction

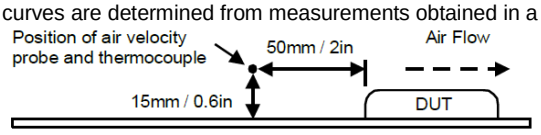
A good quality low ESR capacitor placed as close as practicable across the load will give the best ripple and noise performance. To reduce output ripple, it is recommended to use 1.5µF capacitors at the output.





Thermal Considerations

Many conditions affect the thermal performance of the power module, such as orientation, airflow over the module and board spacing. To avoid exceeding the maximum temperature rating of the components inside the power module, the case temperature must be kept below 95ºC. The derating curves are determined from measurements obtained in a test setup.



COMPANY INFORMATION

Wall Industries, Inc. has created custom and modified units for over 50 years. Our in-house research and development engineers will provide a solution that exceeds your performance requirements on-time and on budget. Our ISO9001-2008 certification is just one example of our commitment to producing a high quality, well-documented product for our customers.

Our past projects demonstrate our commitment to you, our customer. Wall Industries, Inc. has a reputation for working closely with its customers to ensure each solution meets or exceeds form, fit and function requirements. We will continue to provide ongoing support for your project above and beyond the design and production phases. Give us a call today to discuss your future projects.

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