



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%	220μF	50mVp-p	3W
DCMID03-05D15HI		±15VDC		1000mA	±100mA	60%			
DCMID03-12D12HI	12VDC (10.8-13.2VDC)	±12VDC	60mA	420mA	±125mA	60%	220μF	50mVp-p	3W
DCMID03-12D15HI		±15VDC		420mA	±100mA	60%			
DCMID03-24D12HI	24VDC (21.6-26.4VDC)	±12VDC	40mA	210mA	±125mA	60%	220μF	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.

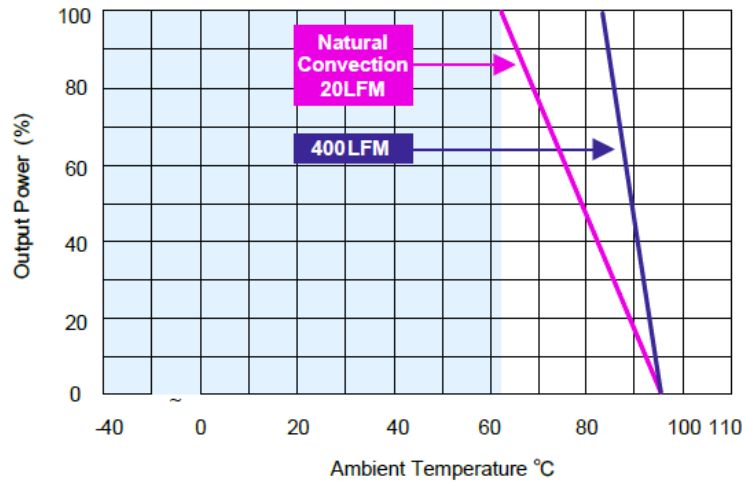
SPECIFICATION		TEST CONDITIONS		Min	Typ	Max	Unit
INPUT SPECIFICATIONS							
Input Voltage Range	5V Input Models	4.5		5.5	VDC		
	12V Input Models	10.8		13.2			
	24V Input Models	21.6		26.4			
Input Surge Voltage (1 sec. max.)	5V Input Models	-0.7		7.5	VDC		
	12V Input Models	-0.7		15			
	24V Input Models	-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	%/°C	
PROTECTION							
Short Circuit Protection		Continuous, Automatic Recovery					
ENVIRONMENTAL SPECIFICATIONS							
Operating Ambient Temperature	Natural Convection	-40		+75	°C		
Storage Temperature		-50		+125	°C		
Case Temperature				+95	°C		
Humidity	Non-Condensing			95	%RH		
Lead Temperature	1.5mm from case for 10Sec.			260	°C		
Cooling		Natural Convection					
MTBF (Calculated)	MIL-HDBK-217F @25°C, 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

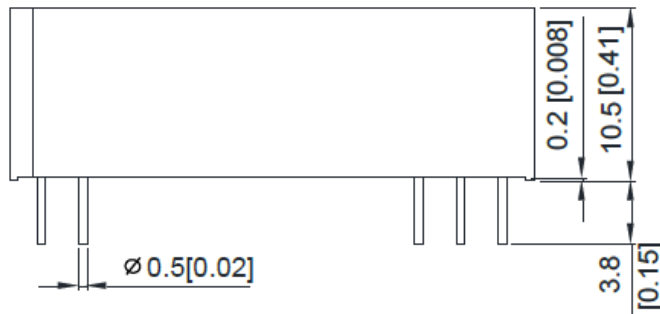
- # for each output
- It is recommended to protect the converter by a slow blow fuse in the input supply line.
- Other input and output voltages may be available, please contact factory.
- Natural Convection is about 20LFM but is not equal to still air (0 LFM)

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

DERATING CURVES

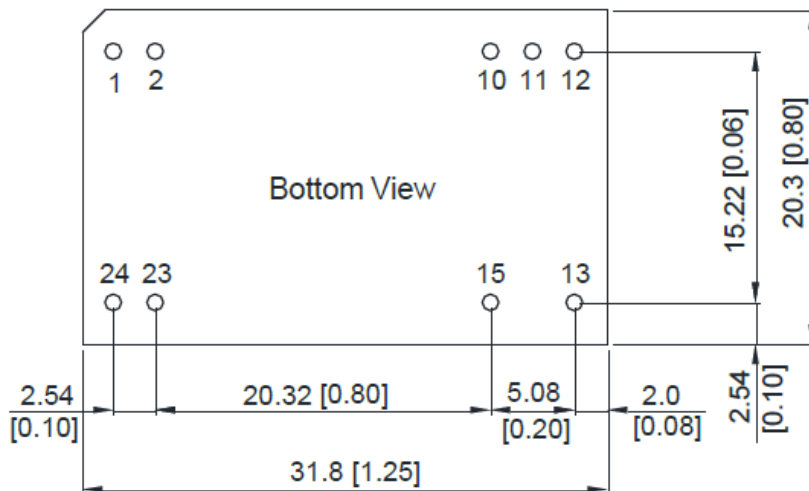


MECHANICAL DRAWINGS



Pin Connections

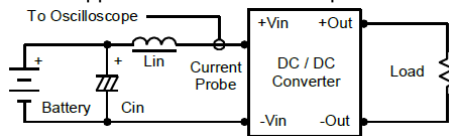
Pin	Single	Dual
1	+Vin	+Vin
2	+Vin	+Vin
10	No Pin	Common
11	No Pin	Common
12	-Vout	No Pin
13	+Vout	-Vout
15	No Pin	+Vout
23	-Vin	-Vin
24	-Vin	-Vin



TEST SETUP

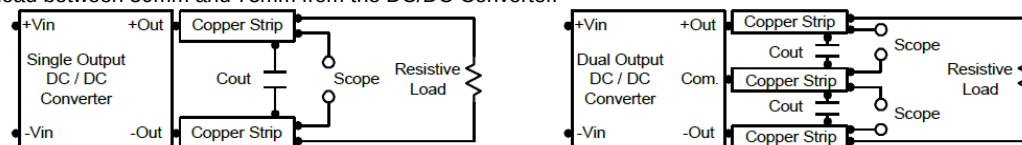
Input Reflected-Ripple Current Test Setup

Input reflected-ripple current is measured with an inductor L_{in} ($4.7\mu H$) and C_{in} ($220\mu F$, $ESR < 1.0\Omega$ at $100KHz$) to simulate source impedance. Capacitor C_{in} 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 C_{out} $0.33\mu F$ 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.



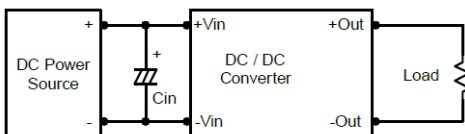
TECHNICAL NOTES

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 $220\mu F$ maximum capacitive load for dual outputs and $470\mu F$ capacitive load for single outputs. The maximum capacitance can be found in data sheet.

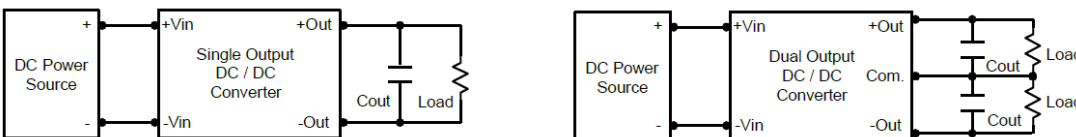
Input Source Impedance

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 ($ESR < 1.0\Omega$ at $100KHz$) capacitor of a $4.7\mu F$ for the $5V$ input devices and a $2.2\mu F$ for the $12V$ and $24V$ devices.



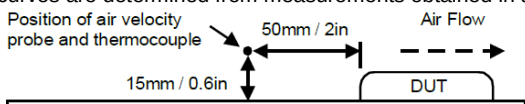
Output Ripple Reduction

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 $1.5\mu F$ 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 $95^{\circ}C$. 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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