



Size: 0.77in x 0.40in x 0.28in (19.5mm x 10.2mm x 7.1mm)

FEATURES

- Wide Input Voltage Ranges
- Industrial Standard SIP-7 Package
- Common Mode Transient Immunity: 15KV/μs
- Qualifies for IGBT and High Isolation Applications
- Short Circuit Protection
- UL/cUL/IEC/EN 60950-1 Safety Approvals

DESCRIPTION

The DCMA01-HI series of DC/DC converters offers 1 watt of output power in a compact 0.77" x 0.40" x 0.28" industrial standard SIP-7 package. This series consists of single and dual output models with wide input voltage ranges and high efficiency. Each model in this series qualifies for IGBT and high isolation applications, has short circuit protection, and has UL/cUL/IEC/EN 60950-1 safety approvals. This series is RoHS & REACH compliant.

MODEL SELECTION TABLE

Single Output Models

Model Number	Input Voltage Range	Output Voltage	Output Current		Input Current		Load Regulation	Maximum Capacitive Load	Efficiency	Output Power
			Min Load	Max Load	No Load	Max Load				
DCMA01-05S033HI	5VDC (4.5~5.5VDC)	3.3VDC	6mA	303mA	35mA	286mA	20%	1000μF	70%	1W
DCMA01-05S05HI		5VDC	4mA	200mA		286mA	15%	470μF	70%	
DCMA01-05S09HI		9VDC	2mA	111mA		266mA	10%	470μF	75%	
DCMA01-05S12HI		12VDC	1.7mA	84mA		261mA	10%	220μF	77%	
DCMA01-05S15HI		15VDC	1.3mA	66mA		254mA	10%	220μF	78%	
DCMA01-12S033HI	12VDC (10.9~13.2VDC)	3.3VDC	6mA	303mA	17mA	117mA	20%	1000μF	71%	1W
DCMA01-12S05HI		5VDC	4mA	200mA		117mA	15%	470μF	71%	
DCMA01-12S09HI		9VDC	2mA	111mA		110mA	10%	470μF	76%	
DCMA01-12S12HI		12VDC	1.7mA	84mA		108mA	10%	220μF	78%	
DCMA01-12S15HI		15VDC	1.3mA	66mA		104mA	10%	220μF	79%	
DCMA01-15S033HI	15VDC (13.5~16.5VDC)	3.3VDC	6mA	303mA	16mA	95mA	20%	1000μF	70%	1W
DCMA01-15S05HI		5VDC	4mA	200mA		95mA	15%	470μF	70%	
DCMA01-15S09HI		9VDC	2mA	111mA		89mA	10%	470μF	75%	
DCMA01-15S12HI		12VDC	1.7mA	84mA		90mA	10%	220μF	75%	
DCMA01-15S15HI		15VDC	1.3mA	66mA		84mA	10%	220μF	79%	
DCMA01-24S033HI	24VDC (21.6~26.4VDC)	3.3VDC	6mA	303mA	12mA	60mA	20%	1000μF	70%	1W
DCMA01-24S05HI		5VDC	4mA	200mA		60mA	15%	470μF	70%	
DCMA01-24S09HI		9VDC	2mA	111mA		56mA	10%	470μF	75%	
DCMA01-24S12HI		12VDC	1.7mA	84mA		53mA	10%	220μF	78%	
DCMA01-24S15HI		15VDC	1.3mA	66mA		52mA	10%	220μF	80%	

MODEL SELECTION TABLE

Dual Output Models

Model Number	Input Voltage Range	Output Voltage	Output Current		Input Current		Load Regulation	Maximum Capacitive Load ⁽¹⁾	Efficiency	Output Power
			Min Load	Max Load	No Load	Max Load				
DCMA01-05D05HI	5VDC (4.5~5.5VDC)	±5VDC	±2mA	±100mA	35mA	282mA	15%	220#μF	71%	1W
DCMA01-05D09HI		±9VDC	±1.1mA	±56mA		269mA	10%	220#μF	75%	
DCMA01-05D12HI		±12VDC	±0.8mA	±42mA		262mA	10%	100#μF	77%	
DCMA01-05D15HI		±15VDC	±0.7mA	±33mA		254mA	10%	100#μF	78%	
DCMA01-05D159HI		15, -9VDC	+0.7, -1.1mA	+33, -55mA		260mA	10%	100, 220μF	76%	
DCMA01-12D05HI	12VDC (10.9~13.2VDC)	±5VDC	±2mA	±100mA	17mA	116mA	15%	220#μF	72%	1W
DCMA01-12D09HI		±9VDC	±1.1mA	±56mA		111mA	10%	220#μF	76%	
DCMA01-12D12HI		±12VDC	±0.8mA	±42mA		108mA	10%	100#μF	78%	
DCMA01-12D15HI		±15VDC	±0.7mA	±33mA		104mA	10%	100#μF	79%	
DCMA01-12D159HI		15, -9VDC	+0.7, -1.1mA	+33, -55mA		107mA	10%	100, 220μF	77%	
DCMA01-15D05HI	15VDC (13.5~16.5VDC)	±5VDC	±2mA	±100mA	16mA	94mA	15%	220#μF	71%	1W
DCMA01-15D09HI		±9VDC	±1.1mA	±56mA		90mA	10%	220#μF	75%	
DCMA01-15D12HI		±12VDC	±0.8mA	±42mA		86mA	10%	100#μF	78%	
DCMA01-15D15HI		±15VDC	±0.7mA	±33mA		84mA	10%	100#μF	79%	
DCMA01-15D159HI		15, -9VDC	+0.7, -1.1mA	+33, -55mA		87mA	10%	100, 220μF	76%	
DCMA01-24D05HI	24VDC (21.6~26.4VDC)	±5VDC	±2mA	±100mA	12mA	59mA	15%	220#μF	71%	1W
DCMA01-24D09HI		±9VDC	±1.1mA	±56mA		56mA	10%	220#μF	75%	
DCMA01-24D12HI		±12VDC	±0.8mA	±42mA		55mA	10%	100#μF	77%	
DCMA01-24D15HI		±15VDC	±0.7mA	±33mA		53mA	10%	100#μF	78%	
DCMA01-24D159HI		15, -9VDC	+0.7, -1.1mA	+33, -55mA		55mA	10%	100, 220μF	75%	

SPECIFICATIONS

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

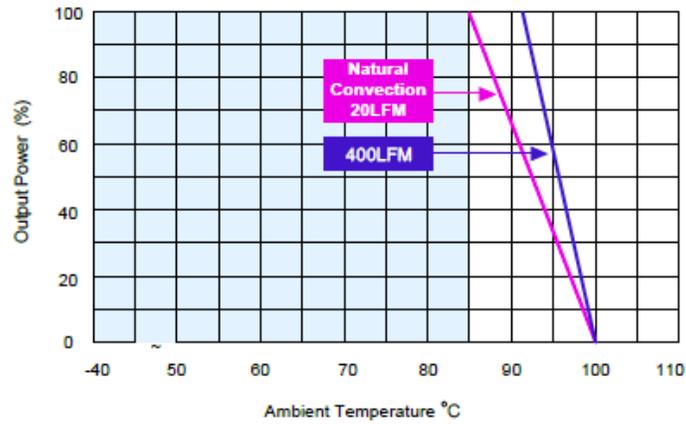
SPECIFICATION	TEST CONDITIONS	Min	Typ	Max	Unit
INPUT SPECIFICATIONS					
Input Voltage Range			±10		%
Input Surge Voltage (1 sec. max.)	5V Input Models	-0.7		9	VDC
	12V Input Models	-0.7		18	
	15V Input Models	-0.7		20	
	24V Input Models	-0.7		30	
Input Voltage Range	5V Input Models	4.5	5	5.5	VDC
	12V Input Models	10.8	12	13.2	
	15V Input Models	13.5	15	16.5	
	24V Input Models	21.6	24	26.4	
Input Filter	All Models	Internal Capacitor			
OUTPUT SPECIFICATIONS					
Output Voltage		See Table			
Voltage Accuracy				±5.0	%Vnom
Line Regulation	For Vin Change of 1%		±1.2		%
Load Regulation	Io=20% to 100%	See Table			
Voltage Balance	Dual Output, Balanced Loads		±0.1	±1.0	%
Output Power		See Table			
Output Current		See Table			
Maximum Capacitive Load		See Table			
Ripple & Noise	0-20MHz Bandwidth			100	Mvp-p
Temperature Coefficient			±0.01	±0.02	%/°C
PROTECTION					
Short Circuit Protection		Continuous, Automatic Recovery			
ENVIRONMENTAL SPECIFICATIONS					
Operating Ambient Temperature	Natural Convection	-40		+85	°C
Storage Temperature		-55		+125	°C
Humidity	Non-Condensing			95	%RH
Case Temperature				+100	°C
Lead Temperature	1.5mm from Case for 10sec.			260	°C
Cooling		Natural Convection			
MTBF (Calculated)	MIL-HDBK-217F@25°C, Ground Benign	2,000,000 Hours			
GENERAL SPECIFICATIONS					
Typ. Efficiency	@Max. Load	See Table			
Switching Frequency			100		KHz
Isolation Voltage	Rated for 60 Seconds	5200			VDC
	Tested for 1 Second	5700			
Isolation Resistance	500VDC	10			GΩ
Isolation Capacitance	100KHz, 1V		7		pF
Common Mode Transient Immunity		15			KVμs
PHYSICAL SPECIFICATIONS					
Weight		0.085oz (2.4g)			
Dimensions (L x W x H)		0.77in x 0.40in x 0.28in (19.5mm x 10.2mm x 7.1mm)			
Case Material		Non-Conductive Black Plastic (Flammability to UL 94V-0 Rated)			
Pin Material		Alloy 42			
SAFETY CHARACTERISTICS					
Safety Approvals	UL/cUL 60950-1 ⁽⁶⁾ recognition (CSA Certificate), IEC/EN 60950-1 (CB Report)				

NOTES

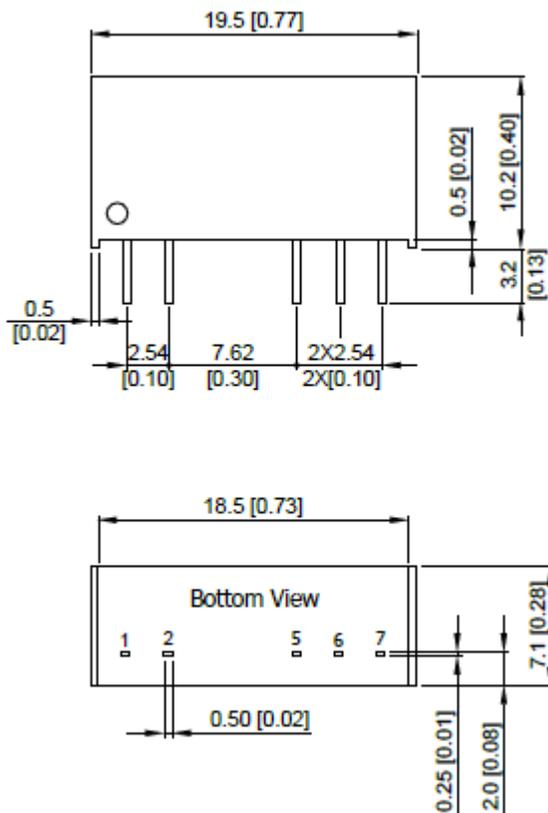
- # for each output.
- These power converters require a minimum output loading to maintain specified regulation, operation under no-load conditions will not damage these modules; however they may not meet all specifications listed.
- It is recommended to protect the converter by a slow blow fuse in the input supply line.
- Other inputs and outputs may be available, please contact factory.
- Natural convection is about 20LFM but is not equal to still air (0LFM).
- This product is Listed to applicable standards and requirements by UL.

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

DERATING CURVES



MECHANICAL DRAWINGS



Pin Connections

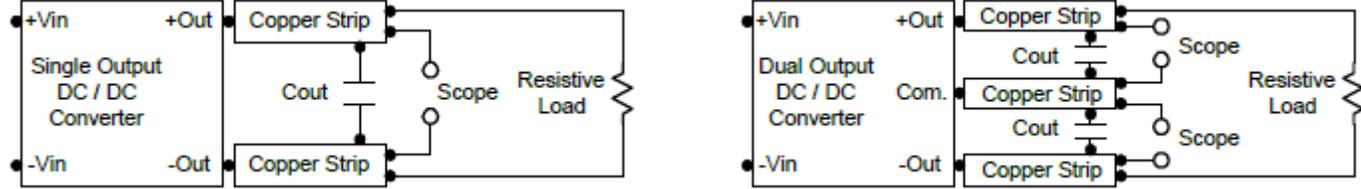
Pin	Single	Dual
1	+Vin	+Vin
2	-Vin	-Vin
5	-Vout	-Vout
6	No Pin	Common
7	+Vout	+Vout

All dimensions in mm (inches)
Tolerance: X.X±0.5 (X.XX±0.02)
 X.XX±0.25 (X.XXX±0.01)
Pins ±0.05 (±0.002)

TEST SETUP

Peak-to-Peak Output Noise Measurement Test

Use a C_{out} 0.33 μ 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.



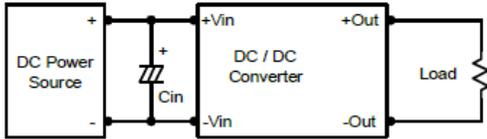
TERMINAL BLOCK OPTIONS

Maximum Capacitive Load

The DCMA01-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. The maximum can be found in the data sheet.

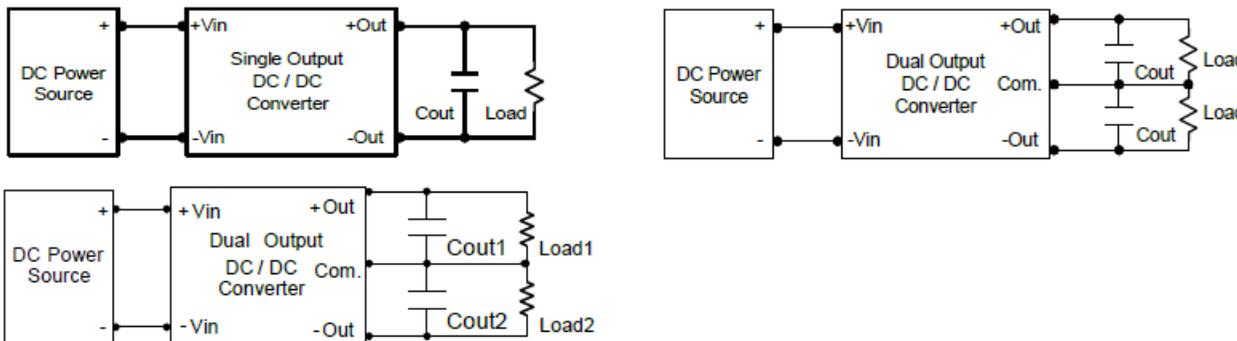
Input Source Impedance

The 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 <math><1.0\Omega</math> at 100KHz) capacitor of a 2.2 μ F for the 5V input devices, a 1.0 μ F for the 12V, 15V input devices and a 0.4 μ F for the 24V devices.



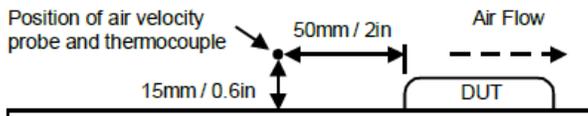
Output Ripple Reduction

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 1.0 μ 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 100°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 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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