Size: 0.94in x 0.54in x 0.35in (24mm x 13.7mm x 9mm)

FEATURES

- Industrial SMD Package
- Ultra-High I/O Isolation of 8000VDC with Reinforced Insulation
- RoHS & REACH Compliant
- Qualified for IGBT and High Isolation Apps
- Tape & Reel Package Available
- Short Circuit Protection
- UL/cUL/IEC/EN 60950-1 Safety Approvals

DESCRIPTION

The DCMSE02-HI series of DC/DC converters offers 2 watts of output power in an ultra-compact 0.94” x 0.54” x 0.35” industrial SMD package. This series consists of single and dual output models with ultra-high I/O isolation of 8000VDC with reinforced insulation. Each model in this series is qualified for IGBT and high isolation applications, is RoHS and REACH compliant, and has short circuit protection. This series has UL/cUL/IEC/EN 60950-1 safety approvals and tape & reel packaging is available.

MODEL SELECTION TABLE

Single Output Models

Model Number	Input Voltage Range	Output Voltage	Output Current		Input Current		Efficiency	Maximum Capacitive Load	Output Power
			Min Load	Max Load	No Load	Max. Load			
DCMSE02-05S05HI	5VDC (4.5~5.5VDC)	5VDC	8mA	400mA	90mA	615mA	65%	330µF	2W
DCMSE02-05S12HI		12VDC	3mA	165mA		609mA	65%		
DCMSE02-05S15HI		15VDC	2.5mA	133mA		605mA	66%		
DCMSE02-12S05HI	12VDC (10.8~13.2VDC)	5VDC	8mA	400mA	40mA	256mA	65%	330µF	2W
DCMSE02-12S12HI		12VDC	3mA	165mA		254mA	65%		
DCMSE02-12S15HI		15VDC	2.5mA	133mA		252mA	66%		
DCMSE02-24S05HI	24VDC (21.6~26.4VDC)	5VDC	8mA	400mA	30mA	127mA	65%	330µF	2W
DCMSE02-24S12HI		12VDC	3mA	165mA		127mA	65%		
DCMSE02-24S15HI		15VDC	2.5mA	133mA		126mA	66%		

MODEL SELECTION TABLE

Dual Output Models

Model Number	Input Voltage Range	Output Voltage	Output Current		Input Current		Efficiency	Maximum Capacitive Load	Output Power
			Min Load	Max Load	No Load	Max. Load			
DCMSE02-05D12HI	5VDC (4.5~5.5VDC)	±12VDC	±1.5mA	±83mA	90mA	553mA	72%	100#µF	2W
DCMSE02-05D15HI		±15VDC	±1mA	±66mA		542mA	73%		
DCMSE02-12D12HI	12VDC (10.8~13.2VDC)	±12VDC	±1.5mA	±83mA	40mA	224mA	74%	100#µF	2W
DCMSE02-12D15HI		±15VDC	±1mA	±66mA		220mA	75%		
DCMSE02-24D12HI	24VDC (21.6~26.4VDC)	±12VDC	±1.5mA	±83mA	30mA	112mA	74%	100#µF	2W
DCMSE02-24D15HI		±15VDC	±1mA	±66mA		110mA	75%		

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.

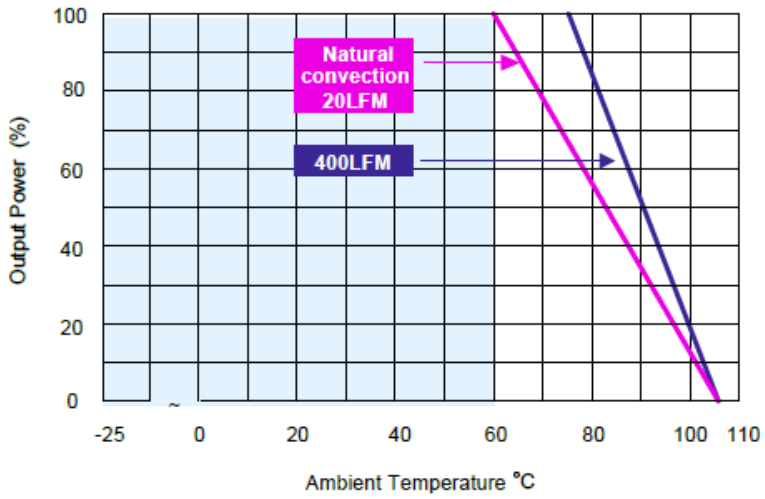
SPECIFICATION	TEST CONDITIONS		Min	Typ	Max	Unit
INPUT SPECIFICATIONS						
Input Voltage Range	5V Input Models		4.5	5	5.5	VDC
	12V Input Models		10.8	12	13.2	
	24V Input Models		21.6	24	26.4	
Input Surge Voltage (1 sec. max.)	5V Input Models		-0.7		9	VDC
	12V Input Models		-0.7		18	
	24V Input Models		-0.7		30	
Input Filter	All Models		Internal Capacitor			
OUTPUT SPECIFICATIONS						
Output Voltage			See Table			
Voltage Setting Accuracy				±2.0	±4.0	%Vnom
Line Regulation	Vin=Min. to Max. @Full Load			±1.2	±1.5	%
Load Regulation	Io=20% to 100%	5VDC Models			12	%
		All Others			10	%
Output Voltage Balance	Dual Output, Balanced Loads			±0.1	±1.0	%
Output Power			See Table			
Output Current			See Table			
Minimum Load			See Table			
Maximum Capacitive Load			See Table			
Ripple & Noise (20MHz bandwidth)	0-20MHz Bandwidth				150	mVp-p
Temperature Coefficient				±0.01	±0.02	%/ºC
PROTECTION						
Short Circuit Protection	Automatic Recovery		0.5 Second Max.			
ENVIRONMENTAL SPECIFICATIONS						
Operating Ambient Temperature	See Power Derating Curve, Natural Convection		-25		+80	ºC
Storage Temperature			-50		+125	ºC
Case Temperature					+90	ºC
Humidity	Non-Condensing				95	%RH
Cooling[4]			Natural Convection			
Lead-Free Reflow Solder Process			IPC/JEDEC J-STD-020D.1			
MTBF (Calculated)	MIL-HDBK-217F@25ºC, Ground Benign		2,000,000			Hours
GENERAL SPECIFICATIONS						
Efficiency			See Table			
Switching Frequency			50	80	100	KHz
I/O Isolation Voltage	Rated for 60 Seconds		4000			VACrms
	Tested for 1 Second		8000			VDC
I/O Isolation Resistance	500VDC		10			GΩ
I/O Isolation Capacitance	100KHz, 1V			15	20	pF
Common Mode Transient Immunity			15			KV/µs
Moisture Sensitivity Level (MSL)	IPC/JEDEC J-STD-020D.1		Level 2			
PHYSICAL SPECIFICATIONS						
Weight			0.13oz (3.75g)			
Dimensions (L x W x H)			0.94in x 0.54in x 0.35in (24mm x 13.7mm x 9mm)			
Case Material			Non-Conductive Black Plastic (Flammability to UL 94V-0 rated)			
Pin Material			Phosphor Bronze			
SAFETY CHARACTERISTICS						
Safety Approvals	UL/cUL 60950-1 recognition (UL certificate)[6] IEC/EN 60950-1 (CB Report)					

NOTES

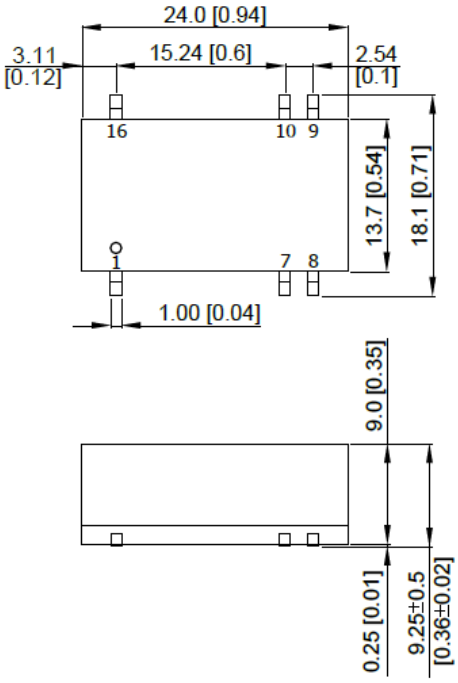
1. These power converters require a minimum output loading to maintain specified regulation, operation under no-load conditions will not damage these modules; however they may not meet all listed specifications.
2. We recommend to protect the converter by a slow blow fuse in the input supply line.
3. Other input and output voltages may be available, please contact factory.
4. Natural Convection is about 20LFM, but is not equal to still air (0LFM).
5. It is not recommended to use water-washing process on SMT units.
6. This product is Listed to applicable standards and requirements by UL.

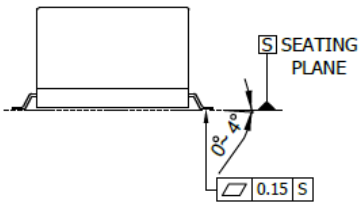
**Due to advances in technology, specifications subject to change without notice.*

DERATING CURVES

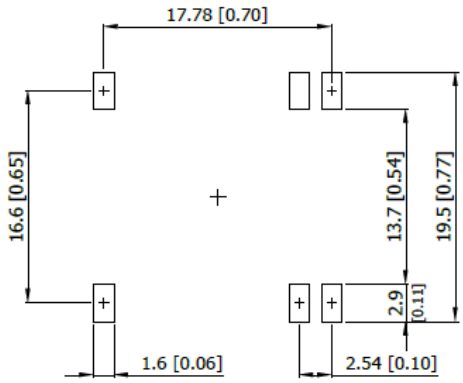


MECHANICAL DRAWINGS





Connecting Pin Patterns



Pin Connections

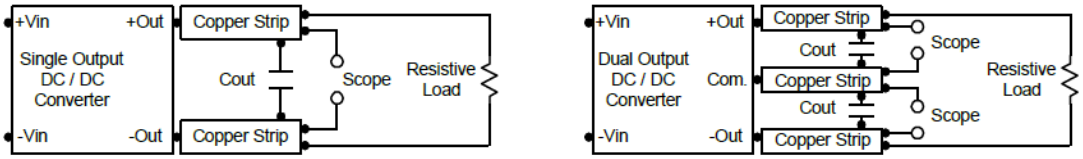
Pin	Single Output	Dual Output
1	-Vin	-Vin
7	NC	NC
8	NC	Common
9	+Vout	+Vout
10	-Vout	-Vout
16	+Vin	+Vin

Notes:
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 Cout 0.47µF 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.



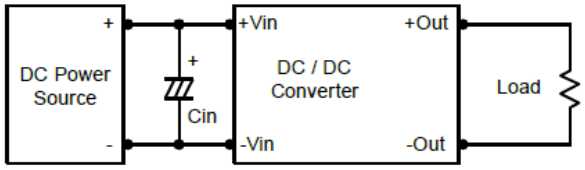
TECHNICAL NOTES

Maximum Capacitive Load

The DCMSE02-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 100µF maximum capacitive load for dual outputs and 330µF capacitive load for single outputs. The maximum capacitance can be found in data sheet.

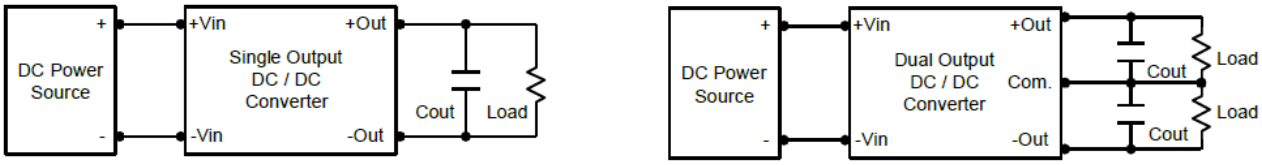
Input Source Impedance

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 < 1.0Ω at 100KHz) capacitor of a 2.2µF for the 5V input devices, a 1.0µF for the 12V input devices and a 0.47µF for the 24V input devices.



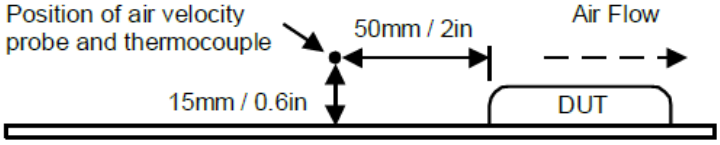
Output Ripple Reduction

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 3.3µF 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 90ºC. 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.

Contact **Wall Industries** for further information:

Phone: ☎(603)778-2300
Toll Free: ☎(888)597-9255
Fax: ☎(603)778-9797
E-mail: sales@wallindustries.com
Web: www.wallindustries.com
Address: 37 Industrial Drive
Exeter, NH 03833