

Size: 0.86in x 0.37in x 0.44in (21.8mm x 9.3mm x 11.2mm)

FEATURES

- Ultra-Wide 4:1 Input Voltage Range
- Fully Regulated Output Voltages
- Ultra-Compact SIP-8 Package
- No Min. Load Requirement
- Over Load and Short Circuit Protection
- Remote On/Off Control
- RoHS & REACH Compliant
- UL/cUL/IEC/EN 60950-1 Safety Approvals

DESCRIPTION

The DCMIW05 series of DC/DC converters offers 5 watts of output power in an ultra-compact 0.86” x 0.37” x 0.44” SIP-8 package. This series consists of fully regulated single and dual output models with an ultra-wide 4:1 input voltage range. Each model in this series has no minimum load requirement, over load and short circuit protection, and remote on/off control This series has UL/cUL/IEC/EN 60950-1 safety approvals and is RoHS & REACH compliant.

MODEL SELECTION TABLE

Single Output Models

Model Number	Input Voltage Range	Output Voltage	Output Current	Input Current		Maximum Capacitive Load	Efficiency	Ripple & Noise	Output Power
				@Max Load	@No Load				
DCMIW05-12S033	12VDC (4.5~18VDC)	3.3VDC	1075mA	389mA	60mA	1000µF	76%	100mVp-p	5 Watts
DCMIW05-12S05		5VDC	1000mA	514mA		1000µF	81%		
DCMIW05-12S12		12VDC	417mA	502mA		220µF	83%		
DCMIW05-12S15		15VDC	334mA	503mA		100µF	83%		
DCMIW05-12S24		24VDC	209mA	510mA		100µF	82%		
DCMIW05-24S033	24VDC (9~36VDC)	3.3VDC	1075mA	197mA	30mA	1000µF	76%	100mVp-p	5 Watts
DCMIW05-24S05		5VDC	1000mA	257mA		1000µF	81%		
DCMIW05-24S12		12VDC	417mA	251mA		220µF	83%		
DCMIW05-24S15		15VDC	334mA	249mA		100µF	84%		
DCMIW05-24S24		24VDC	209mA	252mA		100µF	83%		
DCMIW05-48S033	48VDC (18~75VDC)	3.3VDC	1075mA	97mA	20mA	1000µF	76%	100mVp-p	5 Watts
DCMIW05-48S05		5VDC	1000mA	130mA		1000µF	80%		
DCMIW05-48S12		12VDC	417mA	126mA		220µF	83%		
DCMIW05-48S15		15VDC	334mA	124mA		100µF	84%		
DCMIW05-48S24		24VDC	209mA	127mA		100µF	82%		

MODEL SELECTION TABLE

Dual Output Models

Model Number	Input Voltage Range	Output Voltage	Output Current	Input Current		Maximum Capacitive Load(1)	Efficiency	Ripple & Noise	Output Power
				@Max Load	@No Load				
DCMIW05-12D12	12VDC (4.5~18VDC)	±12VDC	±209mA	516mA	60mA	100#µF	81%	100mVp-p	5 Watts
DCMIW05-12D15		±15VDC	±167mA	509mA		47#µF	82%		
DCMIW05-24D12	24VDC (9~36VDC)	±12VDC	±209mA	255mA	30mA	100#µF	82%	100mVp-p	5 Watts
DCMIW05-24D15		±15VDC	±167mA	255mA		47#µF	82%		
DCMIW05-48D12	48VDC (18~75VDC)	±12VDC	±209mA	127mA	20mA	100#µF	82%	100mVp-p	5 Watts
DCMIW05-48D15		±15VDC	±167mA	126mA		47#µF	83%		

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				See Table		
Input Surge Voltage (1 Sec. Max.)	12V Input Models		-0.7		36	VDC
	24V Input Models		-0.7		50	
	48V Input Models		-0.7		100	
Start-Up Threshold Voltage	12V Input Models				4.5	VDC
	24V Input Models				9	
	48V Input Models				18	
Under Voltage Shutdown	12V Input Models				4	VDC
	24V Input Models				8.5	
	48V Input Models				17.5	
Short Circuit Input Power	All Models				2500	mW
Input Filter	All Models			Internal Capacitor		
OUTPUT SPECIFICATIONS						
Output Voltage				See Table		
Voltage Setting Accuracy					±2.0	%Vnom.
Line Regulation	Vin= Min. to Max. @Full Load			±0.3	±0.5	%
Load Regulation	Io=0% to 100%			±0.5	±1.0	%
Voltage Balance	Dual Output, Balanced Loads			±1.0	±2.0	%
Output Power				See Table		
Output Current				See Table		
Maximum Capacitive Load				See Table		
Ripple & Noise	0-20MHz Bandwidth				100	mVp-p
Transient Recovery Time[2]	25% Load Step Change			500		µsec
Transient Response Deviation	25% Load Step Change			±3	±5	%
Temperature Coefficient				±0.01	±0.02	%/ºC
REMOTE ON/OFF CONTROL						
Converter On				Open or High Impedance		
Converter Off				2~4mA Current Applied via 1Kohm resistor		
Standby Input Current	Supply Off & Nominal Vin			2.5		mA
PROTECTION						
Short Circuit Protection				Continuous, Automatic Recovery		
Over Load Protection	Foldback			170		%
ENVIRONMENTAL SPECIFICATIONS						
Operating Ambient Temperature	Natural Convection		-40		+75	ºC
Storage Temperature			-55		+125	ºC
Case Temperature					+90	ºC
Humidity	Non-Condensing				95	%RH
Lead Temperature	1.5mm from case for 10Sec.				260	ºC
Cooling				Natural Convection[7]		
MTBF	Calculated per MIL-HDBK-217F @25ºC, Ground Benign			2,400,000		Hours
GENERAL SPECIFICATIONS						
Efficiency	@Max. Load			See Table		
Switching Frequency			100			KHz
Isolation Voltage	60 Seconds		1500			VDC
	1 Second		1800			
Isolation Resistance	500VDC		1000			MΩ
Isolation Capacitance	100KHz, 1V			250		pF
PHYSICAL SPECIFICATIONS						
Weight				0.17oz (4.8g)		
Dimensions (L x W x H)				0.86 x 0.37 x 0.44in (21.8 x 9.3 x 11.2mm)		
Case Material	Flammability to UL 94V-0 rated			Non-Conductive Black Plastic		
Pin Material				Alloy 42		
SAFETY CHARACTERISTICS						
Safety Approvals	UL/cUL 60950-1 Recognition (CSA Cert.), IEC/EN 60950-1 (CB Report)					
EMI	Conduction, EN55022, FCC part 15[5]					Class A
EMS	EN55024					
	ESD	EN61000-4-2 Air ±8kV, Contact ±6kV				
	Radiated Immunity	EN61000-4-3 10V/m				A
	Fast Transient	EN61000-4-4 ±2kV[6]				A
	Surge	EN61000-4-5 ±1kV[6]				A
	Conducted Immunity	EN61000-4-6 10Vrms				A

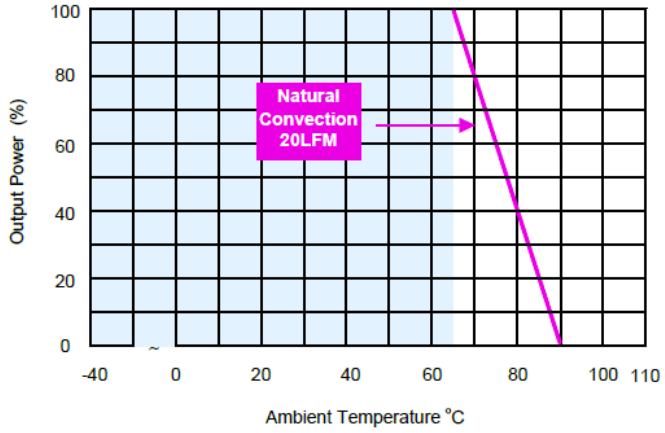
NOTES

1. # for each output.
2. Transient recovery time is measured to within 1% error band for a step change in output load of 75% to 100%.
3. It is recommended to protect the converter by a slow blow fuse in the input supply line.
4. Other input and output voltages may be available, please contact factory.
5. To meet EN55022 Class A an external filter, please contact factory
6. To meet EN61000-4-4 & EN61000-4-5 an external capacitor across the input pins is required.
7. Natural convection is 20LFM but is not equal to still air (0 LFM).

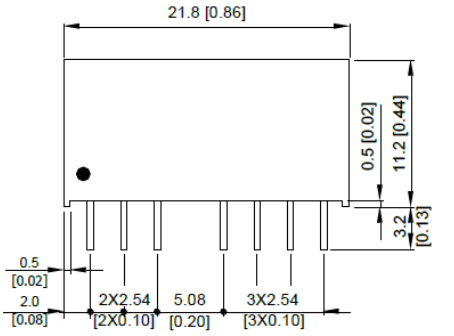
**Due to advances in technology, specifications subject to change without notice.*

DERATING CURVES

Power Derating Curve



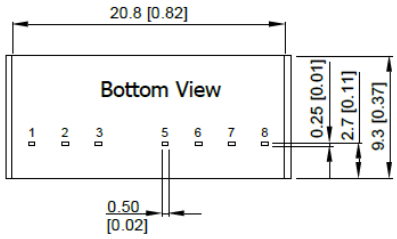
MECHANICAL DRAWINGS



Pin Connections

Pin	Single Output	Dual Output
1	-Vin	-Vin
2	+Vin	+Vin
3	Remote On/Off	Remote On/Off
5	NC	NC
6	+Vout	+Vout
7	-Vout	Common
8	NC	-Vout

NC: No Connection

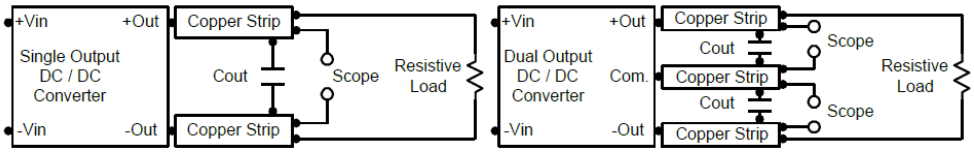


Notes:
All dimensions in mm (inches)
Tolerance: X.X±0.5 (X.XX±0.02)
X.XX±0.25 (X.XXX±0.01)
Pins ±0.1 (±0.004)

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.



TEST SETUP

Remote On/Off

Negative logic remote on/off turns the module off during a logic high voltage on the remote on/off pin, and on during a logic low. To turn the power module on and off, the user must supply a switch to control the voltage between the on/off terminal and the –Vin terminal. A logic high is 2~4mA current applied via 1Kohm resistor. A logic low is open circuit or high impedance

Maximum Capacitive Load

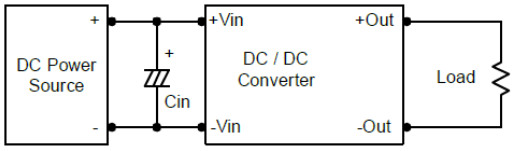
The DCMIW05 series has limitation of maximum connected capacitive at the output. The power module may be operated in current limiting mode during start-up, affecting the ramp-up and the startup time. The maximum capacitance can be found in the data sheet.

Overcurrent Protection

To provide protection in a fault (output overload) condition, the unit is equipped with internal current limiting circuitry and can endure current limiting for ar unlimited duration. At the point of current-limit inception, the unit shifts from voltage control to current control. The unit operates normally once the output current is brought back into its specified range.

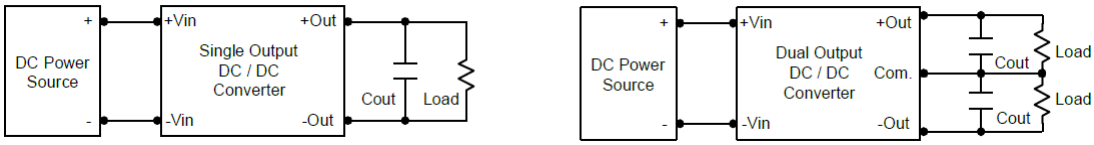
Input Source Impedance

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 4.7µF for the 12V input devices and a 2.2µF for the 24V and 48V devices.



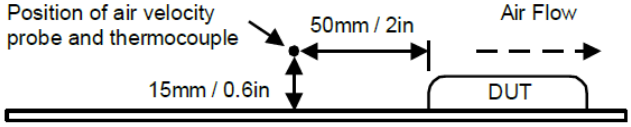
Output Ripple Reduction

A good quality low ESR capacitor placed 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 105ºC. 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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