Size: 1in x 1in x 0.40in (25.4mm x 25.4mm x 10.16mm)

FEATURES

- Wide 2:1 Input Voltage Range
- Fully Regulated Output Voltages
- No Minimum Load Requirement
- Optional Remote On/Off Control
- Optional Heatsink
- RoHS & REACH Compliant
- Over Load and Short Circuit Protection
- Shielded Metal Case with Insulated Baseplate
- Low No Load Power Consumption
- I/O Isolation of 1500VDC
- UL/cUL/IEC/EN 60950-1 Safety Approvals

DESCRIPTION

The DCMJW10 series of DC/DC converters offers up to 10 watts of output power in a 1" x 1" x 0.40" shielded metal case. This series consists of fully regulated single and dual output models with a wide 2:1 input voltage range. Each model in this series has low no load power consumption, over load and short circuit protection, and has optional remote on/off and heatsink. This series has UL/cUL.IEC/EN 60950-1 safety approvals and an I/O isolation of 1500VDC. Please call factory for ordering details.

MODEL SELECTION TABLE

Single Output Models

Model Number	Input Voltage Range	Output Voltage	Output Current	Input Current		Ripple & Noise	Efficiency	Maximum Capacitive Load	Output Power
				Max Load	No Load				
DCMJW10-12S033	12VDC (9~18VDC)	3.3VDC	2500mA	838mA	15mA	80mVp-p	82%	4700µF	10W
DCMJW10-12S05		5VDC	2000mA	980mA		80mVp-p	85%	2200µF	
DCMJW10-12S051		5.1VDC	2000mA	1000mA		100mVp-p	85%	2200µF	
DCMJW10-12S12		12VDC	830mA	954mA		100mVp-p	87%	330µF	
DCMJW10-12S15		15VDC	670mA	952mA		100mVp-p	88%	220µF	
DCMJW10-24S033	24VDC (18~36VDC)	3.3VDC	2500mA	414mA	12mA	80mVp-p	83%	4700µF	10W
DCMJW10-24S05		5VDC	2000mA	490mA		80mVp-p	85%	2200µF	
DCMJW10-24S051		5.1VDC	2000mA	500mA		100mVp-p	85%	2200µF	
DCMJW10-24S12		12VDC	830mA	472mA		100mVp-p	88%	330µF	
DCMJW10-24S15		15VDC	670mA	471mA		100mVp-p	89%	220µF	
DCMJW10-48S033	48VDC (36~75VDC)	3.3VDC	2500mA	207mA	10mA	80mVp-p	83%	4700µF	10W
DCMJW10-48S05		5VDC	2000mA	242mA		80mVp-p	86%	2200µF	
DCMJW10-48S051		5.1VDC	2000mA	250mA		100mVp-p	85%	2200µF	
DCMJW10-48S12		12VDC	830mA	233mA		100mVp-p	89%	330µF	
DCMJW10-48S15		15VDC	670mA	235mA		100mVp-p	89%	220µF	

MODEL SELECTION TABLE

Dual Output Models

Model Number	Input Voltage Range	Output Voltage	Output Current	Input Current		Ripple & Noise	Efficiency	Maximum Capacitive Load(1)	Output Power
				Max Load	No Load				
DCMJW10-12D05	12VDC (9~18VDC)	±5VDC	±1000mA	992mA	15mA	100mVp-p	84%	1000#µF	10W
DCMJW10-12D12		±12VDC	±416mA	956mA		100mVp-p	87%	150#µF	
DCMJW10-12D15		±15VDC	±333mA	957mA		100mVp-p	87%	100#µF	
DCMJW10-24D05	24VDC (18~36VDC)	±5VDC	±1000mA	490mA	12mA	100mVp-p	85%	1000#µF	10W
DCMJW10-24D12		±12VDC	±416mA	473mA		100mVp-p	88%	150#µF	
DCMJW10-24D15		±15VDC	±333mA	468mA		100mVp-p	89%	100#µF	
DCMJW10-48D05	48VDC (36~75VDC)	±5VDC	±1000mA	242mA	10mA	100mVp-p	86%	1000#µF	10W
DCMJW10-48D12		±12VDC	±416mA	239mA		100mVp-p	87%	150#µF	
DCMJW10-48D15		±15VDC	±333mA	237mA		100mVp-p	88%	100#µF	

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.)	12VDC Input Models		-0.7		25	VDC
	24VDC Input Models		-0.7		50	
	48VDC Input Models		-0.7		100	
Start-Up Threshold	12VDC Input Models				9	VDC
	24VDC Input Models				18	
	48VDC Input Models				36	
Under Voltage Shutdown	12VDC Input Models				8.5	VDC
	24VDC Input Models				17	
	48VDC Input Models				34	
Input Filter			Internal Pi Type			
OUTPUT SPECIFICATIONS						
Output Voltage			See Table			
Voltage Accuracy					±2.0	%Vnom.
Line Regulation	Vin=Min. to Max. @Full Load				±1.0	%
Load Regulation	Io=0% to 100%	Single Output			±0.5	%
		Dual Output			±1.0	
Voltage Balance	Dual Outputs, Balanced Loads				±2.0	%
Output Power			See Table			
Output Current			See Table			
Minimum Load			No Minimum Load Requirement			
Maximum Capacitive Load			See Table			
Ripple & Noise (20MHz bandwidth)	0-20MHz Bandwidth	3.3V & 5V Output		80		mVp-p
		Other Outputs		100		
Transient Recovery Time[2]	25% Load Step Change			300		µsec
Transient Response Deviation	25% Load Step Change			±3	±5	%
Cross Regulation (Dual)	Asymmetrical Load 25%/100% FL				±5.0	%
Temperature Coefficient				±0.01	±0.02	%/ºC
REMOTE ON/OFF CONTROL						
Converter On			3.5V~12V or Open Circuit			
Converter Off			0~1.2V or Short Circuit (Pin 2 and Pin 6)			
Control Input (on)	Vctrl=5V				0.5	mA
Control Input (off)	Vctrl=0V				-0.5	mA
Control Common			Referenced to Negative Input			
Standby Input Current				5		mA
PROTECTION						
Short Circuit Protection	Hiccup Mode, Automatic Recovery			0.7		Hz
Over Load Protection	Hiccup		110	150		%
ENVIRONMENTAL SPECIFICATIONS						
Operating Ambient Temperature			-40		+80	ºC
Storage Temperature			-50		+125	ºC
Case Temperature					+100	ºC
Humidity	Non-Condensing				95	%RH
Cooling[5]			Natural Convection			
RFI			Six-Sided Shielded, Metal Case			
Lead Temperature	1.5mm from case for 10sec				260	ºC
MTBF (Calculated)	MIL-HDBK-217F@25ºC, Ground Benign		2,596,000			Hours
GENERAL SPECIFICATIONS						
Efficiency	Typ. @Max Load		See Table			
Switching Frequency				330		KHz
Isolation Voltage	60 Seconds		1500			VDC
	1 Second		1800			
Isolation Resistance	500VDC		1000			MΩ
Isolation Capacitance	100KHz, 1V				2000	pF

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
PHYSICAL SPECIFICATIONS						
Weight	Standard			0.53oz (15g)		
	Heatsink Attachment			0.070oz (2g)		
Dimensions (L x W x H)	Standard			1in x 1in x 0.4in (25.4mm x 25.4mm x 10.16mm)		
	Heatsink			1.22in x 1in x 0.77in (31mm x 25.4mm x 19.5mm)		
Case Material				Aluminum Alloy, Black Anodized Coating		
Base Material				FR4 PCB (Flammability to 94V-0 Rated)		
Pin Material				Tinned Copper		
Heatsink Material				Aluminum		
Heatsink Finish				Anodic Treatment (black)		
SAFETY CHARACTERISTICS						
Safety Approvals	UL/cUL 60950-1 Recognition (CSA Certificate)[7] IEC/EN 60950-1 (CB-Report)					
EMI	EN55032, FCC Part 15					Class A
EMS	EN55024					
	ESD	EN61000-4-2 Air±8kV, Contact ±6kV				A
	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

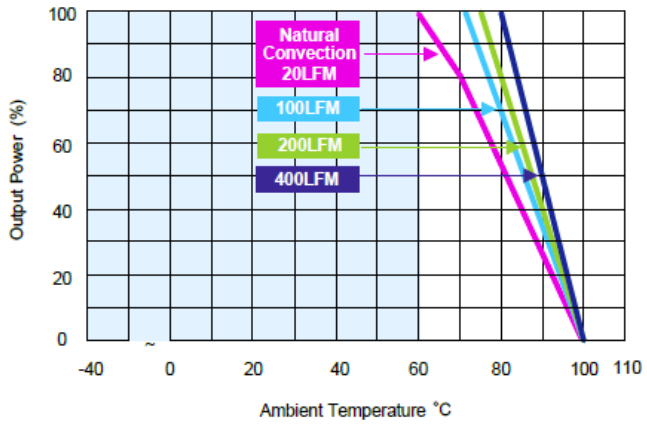
NOTES

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 fast blow fuse in the input supply line.
4. Other input and output voltages may be available, please contact factory.
5. Natural Convection is about 20LFM but is not equal to still air (0 LFM).
6. To meet EN61000-4-4 & EN61000-4-5, an external capacitor across the input pins is required. Suggested capacitor: 330µF/80V
7. This product is Listed to applicable standards and requirements by UL.

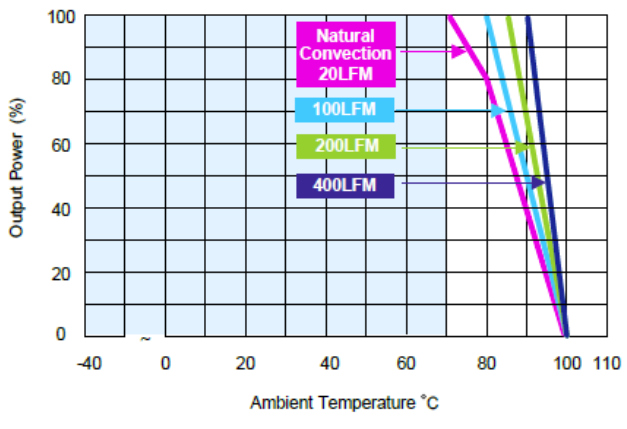
**Due to advances in technology, specifications subject to change without notice.*

DERATING CURVES

Derating Curve without Heatsink

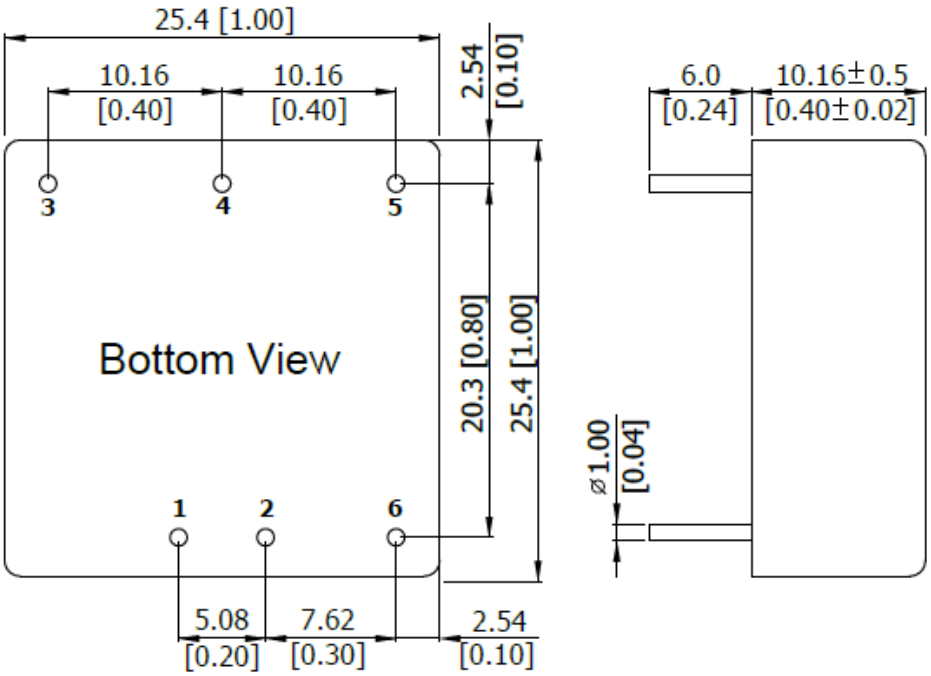


Derating Curve with Heatsink



MECHANICAL DRAWINGS

Standard Package

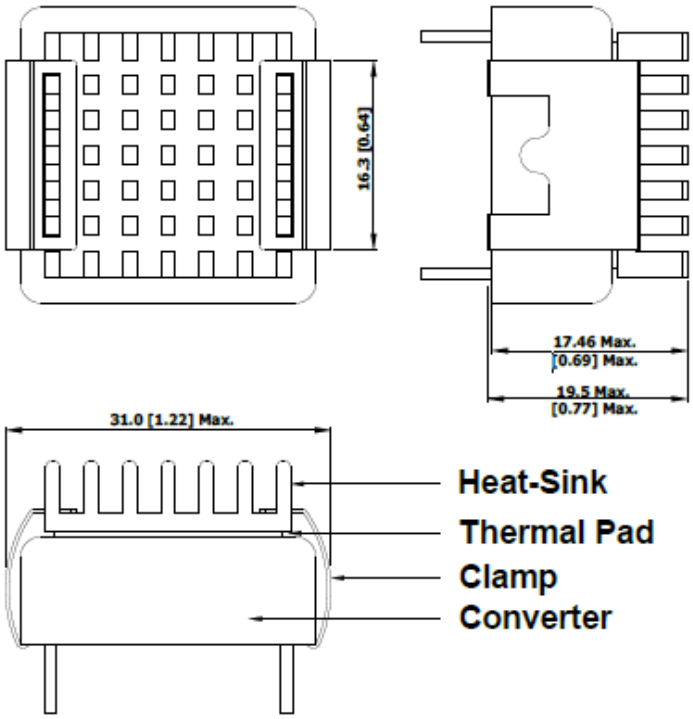


Pin Connections

Pin	Single Output	Dual Output
1	+Vin	+Vin
2	-Vin	-Vin
3	+Vout	+Vout
4	No Pin	Common
5	-Vout	-Vout
6	Remote On/Off (Optional)	

Notes: All dimensions in mm (inches)
Tolerance: X.X±0.5 (X.XX±0.02)
X.XX±0.25 (X.XXX±0.01)
Pin Diameter Ø 1.0±0.05 (0.04±0.002)

Heatsink (Option –HS)



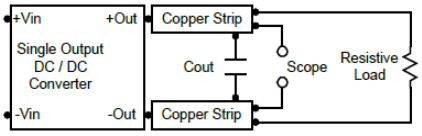
Advantages of adding heatsink are:
1. Improve heat dissipation and increase stability and reliability of the DC/DC converters at high operating temperatures.

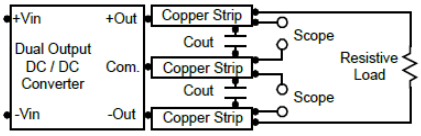
2. To increase operating temperature of the DC/DC converter, please refer to derating curve.

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

Remote On/Off

Positive logic remote on/off turns the module on during a logic high voltage on the remote on/off pin and off 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. The switch can be an open collector or equivalent. A logic low is 0V to 1.2. A logic high is 3.5V to 12V. The maximum sink current at the on/off terminal (Pin 6) during a logic low is -500uA.

Over Load Protection

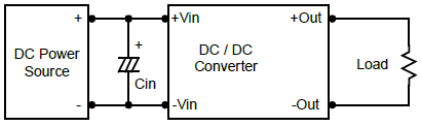
To provide protection in a fault (output overload) condition, the unit is equipped with internal current limiting circuitry and can endure current limiting for an unlimited duration. At the point of current-limit inception, the unit shifts from voltage control to current control. The unit operates normally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

Over Voltage Protection

The output over voltage clamp consists of control circuitry, which is independent of the primary regulation loop that monitors the voltage on the output terminals. The control loop of the clamp has a higher voltage set point than the primary loop. This provides a redundant voltage control that reduced the risk of output over voltage.

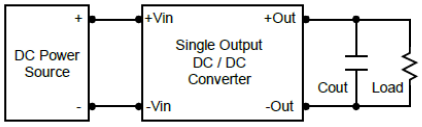
Input Source Impedance

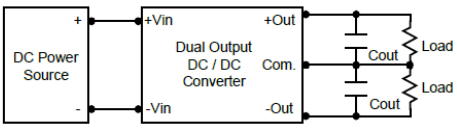
The power module should be connected to a low ac-impedance input source. Highly inductive source impedances can affect the stability of the power module. In applications where power is supplied over long lines and output loading is high, it may be necessary to use a capacitor at the input to ensure startup. By using a good quality low Equivalent Series Resistance (ESR < 1.0Ω at 100kHz) capacitor of a 12µF for the 12V, 4.7µF for the 24V input devices and a 2.2µF for the 48V devices, capacitor mounted close to the power module helps ensure stability of the unit.



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.



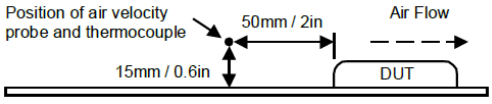


Maximum Capacitive Load

This series has limitation of maximum connected capacitance on the output. The power module may operate in current limiting mode during start-up, affecting the ramp-up and the startup time. See data sheet for maximum capacitance

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 100ºC. The derating curves are determined from measurements obtained in a test setup.



MODEL NUMBER SETUP

DCMJW	10	-	24	S	12	-	HS	R
Series Name	Output Power		Input Voltage	Output Quantity	Ouptut Voltage		Heatsink Option	Remote On/Off Option
			12: 12VDC **24:** 24VDC **48:** 48VDC	**S:** Single	**033:** 3.3VDC **05:** 5VDC **051:** 5.1VDC **12:** 12VDC **15:** 15VDC		**None:** No Heatsink **HS:** Heatsink	**None:** No Remote On/Off **R:** Remote On/Off **HSR:** Heatsink w/ Remote On/Off
				D: Dual	**5:** ±5VDC **12:** ±12VDC **15:** ±15VDC			

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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