



**Size:**  
1.0 x 1.0 x 0.4 inches  
25.4 x 25.4 x 10.16 mm

**Weight:**  
0.53oz (15g)

**Applications:**

- Battery Operated Equipment
- Instrumentation
- Distributed Power Architectures
- Communication & Industrial Electronics

**FEATURES**

- RoHS Compliant
- Up to 10 Watts Output Power
- Single & Dual Outputs
- Remote On/Off Control
- 1500VDC I/O Isolation
- High Efficiency up to 87%
- 1.0" x 1.0" x 0.4" Package Size
- 4:1 Ultra Wide Input Voltage Ranges
- Shielded Metal Case with Isolated Base-plate
- -40°C to +80°C Operating Temperature Range
- Over Load & Short Circuit Protection
- UL/IEC/EN 60950-1 Safety Approvals (Pending)
- Input Filter Complies to EN55032, Class A & FCC, Level A
- Heatsink (Optional)

**DESCRIPTION**

The DCMJU10 series of DC/DC power converters offers 10 Watts of output power in a 1.0" x 1.0" x 0.4" shielded metal package with an industry standard pin-out. This series consists of single and dual output models with a 4:1 ultra wide input voltage range and tight output voltage regulation. State-of-the-art circuit topology provides a very high efficiency up to 87% and an operating temperature range of -40°C to +80°C. Further features include remote on/off control, 1500VDC I/O isolation, and over load and short circuit protection. These converters are RoHS compliant and are ideal for use in battery operated equipment, instrumentation, distributed power architectures in communication and industrial electronics and many other space critical applications.

**MODEL SELECTION TABLE**

**SINGLE OUTPUT MODELS**

Model Number	Input Voltage	Output Voltage	Output Current		Input Current		Output Power	Efficiency	Maximum Capacitive Load
			Min <sup>(1)</sup>	Max	No Load	Max Load			
DCMJU24S33-10	24 VDC (9 - 36 VDC)	3.3 VDC	330mA	2200mA	30mA	352mA	7.26W	86%	560µF
DCMJU24S05-10		5 VDC	300mA	2000mA		496mA	10W	84%	560µF
DCMJU24S51-10		5.1 VDC	300mA	2000mA		506mA	10.2W	84%	560µF
DCMJU24S12-10		12 VDC	125mA	830mA		483mA	10W	86%	150µF
DCMJU24S15-10		15 VDC	100mA	660mA		474mA	10W	87%	150µF
DCMJU24S24-10		24 VDC	62mA	410mA		477mA	9.84W	86%	68µF
DCMJU48S33-10	48 VDC (18 - 75 VDC)	3.3 VDC	330mA	2200mA	20mA	180mA	7.26W	85%	560µF
DCMJU48S05-10		5 VDC	300mA	2000mA		248mA	10W	84%	560µF
DCMJU48S51-10		5.1 VDC	300mA	2000mA		253mA	10.2W	84%	560µF
DCMJU48S12-10		12 VDC	125mA	830mA		241mA	10W	86%	150µF
DCMJU48S15-10		15 VDC	100mA	660mA		237mA	10W	87%	150µF
DCMJU48S24-10		24 VDC	62mA	410mA		238mA	9.84W	86%	68µF

**DUAL OUTPUT MODELS**

Model Number	Input Voltage	Output Voltage	Output Current		Input Current		Output Power	Efficiency	Maximum Capacitive Load
			Min <sup>(1)</sup>	Max	No Load	Max Load			
DCMJU24D05-10	24 VDC (9 - 36 VDC)	±5 VDC	±150mA	±1000mA	30mA	496mA	10W	84%	±220µF
DCMJU24D12-10		±12 VDC	±62mA	±410mA		477mA	9.84W	86%	±100µF
DCMJU24D15-10		±15 VDC	±50mA	±330mA		474mA	10W	87%	±100µF
DCMJU48D05-10	48 VDC (18 - 75 VDC)	±5 VDC	±150mA	±1000mA	20mA	248mA	10W	84%	±220µF
DCMJU48D12-10		±12 VDC	±62mA	±410mA		238mA	9.84W	86%	±100µF
DCMJU48D15-10		±15 VDC	±50mA	±330mA		237mA	10W	87%	±100µF

**NOTES**

1. The DCMJU10 series requires a minimum output loading to maintain specified regulations. Operation under no-load conditions will not damage these devices; however they may not meet all listed specifications.
2. Transient recovery time is measured to within 1% error band for a step change in output load from 75% to 100%.
3. All DC/DC converters should be externally fused at the front end for protection.
4. To order the converter with a heatsink, please add the suffix "HS" to the model number. (Ex: DCMJU24S12-10HS)
5. Other input and output voltages may be available; please call factory for ordering details.
6. This product is Listed to applicable standards and requirements by UL.

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

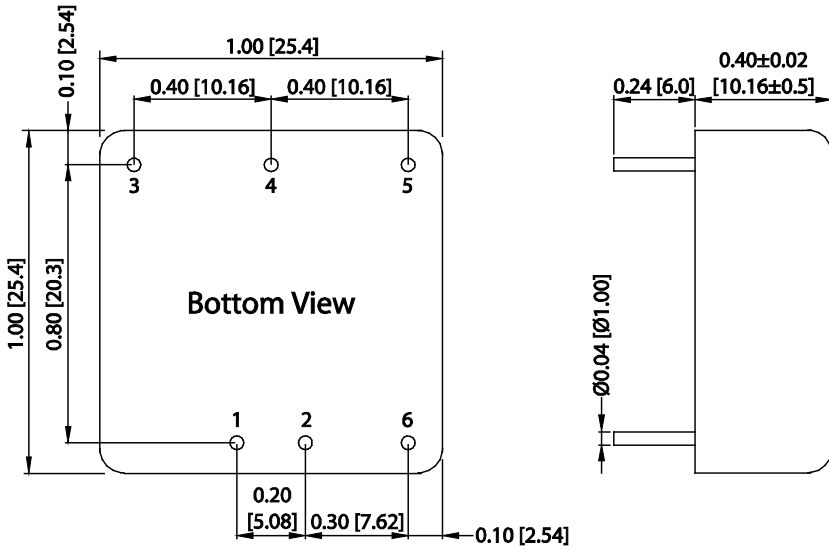
**SPECIFICATIONS: DCMJU10 SERIES**

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

SPECIFICATION	TEST CONDITIONS	Min	Typ	Max	Unit
<b>INPUT SPECIFICATIONS</b>					
Input Voltage Range	24VDC nominal input models	9	24	36	VDC
	48VDC nominal input models	18	48	75	
Input Surge Voltage (100ms max.)	24VDC nominal input models	-0.7		50	VDC
	48VDC nominal input models	-0.7		100	
Start-up Voltage	24VDC nominal input models			9	VDC
	48VDC nominal input models			18	
Under Voltage Shutdown	24VDC nominal input models			8.5	VDC
	48VDC nominal input models			17	
Input Current		See Table			
Reverse Polarity Input Current				1.5	A
Short Circuit Input Power			2500		mW
Internal Power Dissipation				5000	mW
Input Fuse (Note 3)	24VDC nominal input models	2000mA slow-blow type			
	48VDC nominal input models	1000mA slow-blow type			
Input Filter	All Models	Internal Pi Type			
<b>OUTPUT SPECIFICATIONS</b>					
Output Voltage		See Table			
Output Voltage Accuracy				±2.0	%
Output Voltage Balance	Dual Outputs, Balanced loads		±1.0	±2.0	%
Line Regulation	Low line to high line at full load		±0.3	±1.0	%
Load Regulation	15% load to 100% load		±0.5		%
Minimum Load		See Table			
Output Power		See Table			
Output Current		See Table			
Ripple & Noise (20MHz BW) (Page 5)	0-20MHz Bandwidth			100	mVp-p
Transient Recovery Time (Note 2)	25% load step change		300	600	µs
Transient Response Deviation	25% load step change		±3	±6	%
Temperature Coefficient			±0.01	±0.02	%/°C
<b>PROTECTION</b>					
Over Load Protection	foldback	110	150		%
Short Circuit Protection		Hiccup Mode, Automatic Recovery			
<b>REMOTE ON/OFF (Page 4)</b>					
Positive Logic	Converter On	2.5V~50V or open circuit			
	Converter Off	0V~1.0V or short circuit (Pin 2 and Pin 6)			
Control Input Current	On	Vctrl = 5V		500	µA
	Off	Vctrl = 0V		-500	
Control Common		Referenced to negative input			
Stand-by Input Current	Nominal Vin			10	mA
<b>GENERAL</b>					
Efficiency		See Table			
Switching Frequency			450		KHz
Isolation Voltage (Input to Output)	60 seconds	1500			VDC
	1 second	1800			
Isolation Resistance	500VDC	1000			MΩ
Isolation Capacitance	100kHz, 1V			1500	pF
Maximum Capacitive Load		See Table			
<b>ENVIRONMENTAL SPECIFICATIONS</b>					
Operating Temperature Range	With derating, Natural Convection	-40		+80	°C
Case Temperature				+100	°C
Storage Temperature		-50		+125	°C
Humidity	Non-condensing			95	% RH
RFI		Six-sided shielded metal case			
Cooling		natural convection			
Lead Temperature	1.5mm from case for 10 seconds			260	°C
MTBF (calculated)	MIL-HDBK-217F at 25°C, Ground Benign	350,000			hours
<b>PHYSICAL SPECIFICATIONS</b>					
Weight		0.53oz (15g)			
Dimensions (L x W x H)		1.00 x 1.00 x 0.43 inches (25.4 x 25.4 x 10.16 mm)			
Case Material		Aluminum alloy, black anodized coating			
Base Material		FR4 PCB (flammability to UL 94V-0 rated)			
<b>SAFETY &amp; EMC</b>					
Safety Approvals (pending)		UL/cUL 60950-1 recognition (CSA certificate) <sup>(6)</sup> , IEC/EN 60950-1 (CB-scheme)			
Conducted EMI		EN55032 Class A & FCC part 15 Class A Compliance			

MECHANICAL DRAWINGS

Standard Models



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	Remote On/Off

Unit: inches [mm]

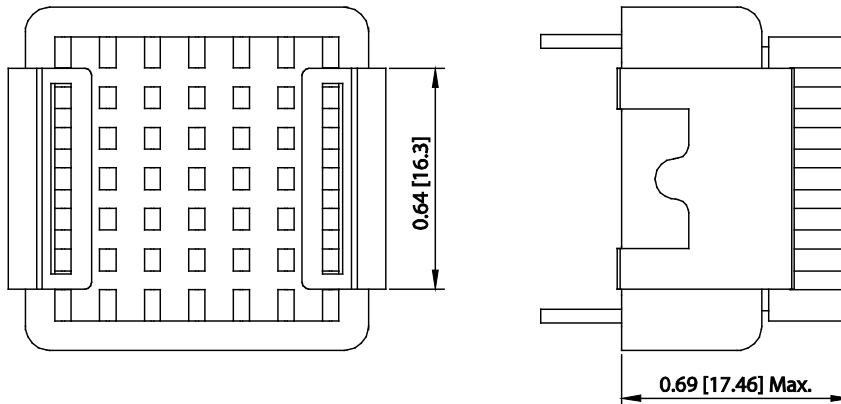
Tolerance: X.XX±0.01 [X.X±0.25]  
X.XXX±0.005 [X.XX±0.13]

Pin Diameter: Ø0.04±0.002 [Ø1.0±0.05]

Physical Characteristics

Case Size: 1.0 x 1.0 x 0.4 inches [25.4 x 25.4 x 10.16 mm]  
Case Material: Aluminum alloy, black anodized coating  
Base Material: FR4 PCB (flammability to UL 94V-0 rated)  
Weight: 0.53oz (15g)

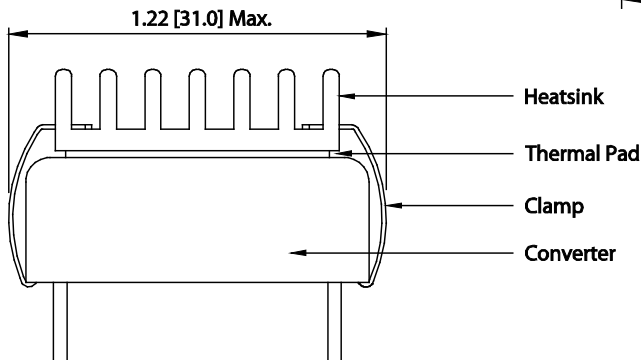
Heatsink Option (Suffix "HS")



Unit: inches [mm]

Physical Characteristics

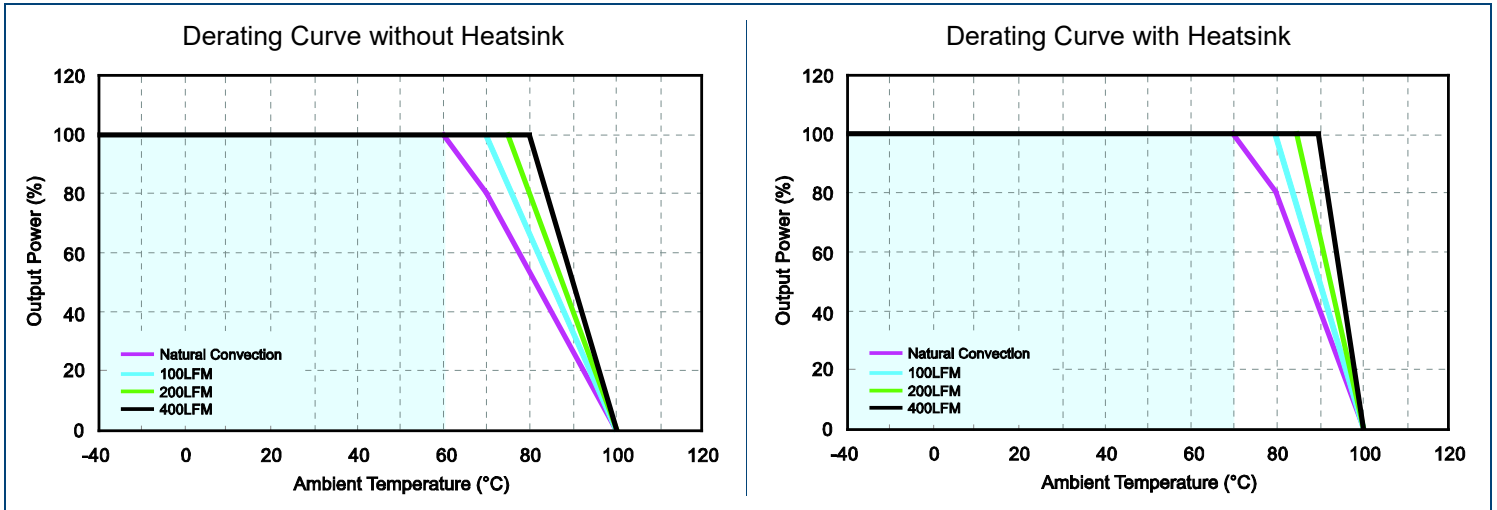
Heatsink Material: Aluminum  
Finish: Anodic treatment (black)  
Heatsink Weight: 0.07oz (2g)



Advantages of Adding a Heatsink

1. To help heat dissipation and increase the stability and reliability of DC/DC converters at high operating temperature atmosphere.
2. To upgrade the operating temperature of DC/DC converters, please refer to Derating Curves.
3. To order the module with a heatsink please add the suffix "HS" to the model number (Ex: DCMJU24S12-10HS)

**DERATING CURVES**



**DESIGN & FEATURE CONSIDERATIONS**

**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 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 1V. A logic high is 2.5V to 50V. The maximum sink current at on/off terminal during a logic low is -500µA. The maximum allowable leakage current of the switch at on/off terminal (2.5V to 50V) is 500µA.

**Over Current Protection**

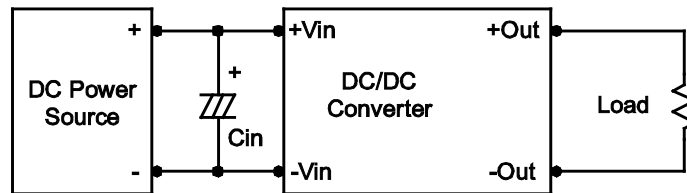
To provide protection in a fault (output overload) condition, the unit is equipped with internal current limiting circuitry and can endure overload for an unlimited duration. At the point of current-limit inception, the unit shifts from voltage control to current control. The unit operates normally once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

**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.

A 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 6.8µF for the 24V and 48V devices.



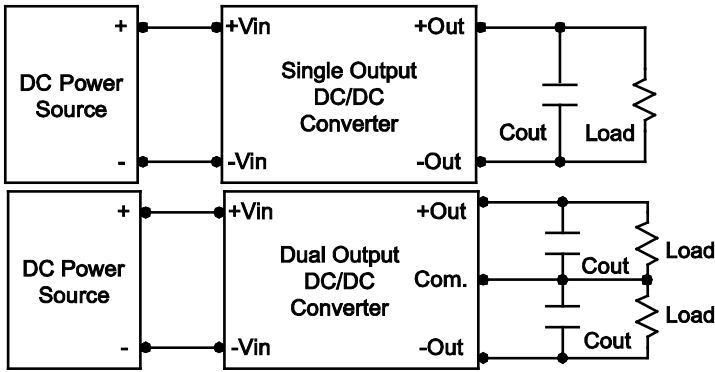
**Maximum Capacitive Load**

The DCMJU10 series has a limitation of maximum connected capacitance on the output. The power module may be operated in current limiting mode during start-up, affecting the ramp-up and the start-up time. The maximum capacitance can be found in the model selection table.

**DESIGN & FEATURE CONSIDERATIONS**

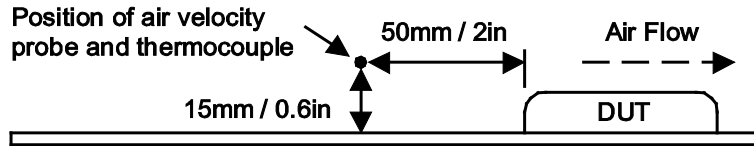
**Output Ripple Reduction**

A good quality low ESR capacitor placed as close as possible across the load will give the best ripple and noise performance. To reduce output ripple, it is recommended to use 4.7µF capacitors at the output.



**Thermal Considerations**

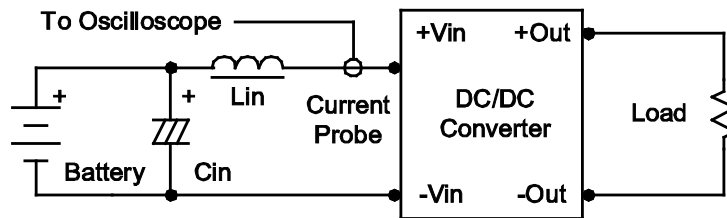
Many conditions affect the thermal performance of the power module, such as orientation, airflow over the module, and board spacing. To avoid exceeding the maximum temperature rating of the components inside the power module, the case temperature must be kept below 100°C. The derating curves are determined from measurements obtained in a test setup.



**TEST CONFIGURATIONS**

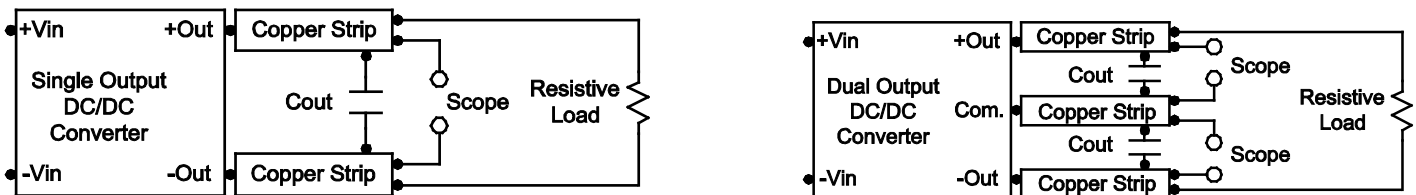
**Input Reflected-Ripple Current Test Setup**

Input reflected-ripple current is measured with an inductor  $L_{in}$  (4.7µH) and  $C_{in}$  (220µF, ESR < 1.0Ω at 100 KHz) 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 0-500 KHz.



**Peak-to-Peak Output Noise Measurement Test**

Use a 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.



MODEL NUMBER SETUP

DCMJU	24	S	12	-	10	HS
Series Name	Input Voltage	Output Quantity	Ouput Voltage		Output Power	Heatsink
	<b>24:</b> 9-36 VDC <b>48:</b> 18-75 VDC	<b>S:</b> Single Output  <b>D:</b> Dual Output	<b>3.3:</b> 3.3 VDC <b>05:</b> 5 VDC <b>5.1:</b> 5.1 VDC <b>12:</b> 12 VDC <b>15:</b> 15 VDC <b>24:</b> 24 VDC  <b>05:</b> ±5 VDC <b>12:</b> ±12 VDC <b>15:</b> ±15 VDC		<b>10:</b> 10 Watts	<b>None:</b> No Heatsink <b>HS:</b> Heatsink

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](mailto:sales@wallindustries.com)  
 Web: [www.wallindustries.com](http://www.wallindustries.com)  
 Address: 37 Industrial Drive  
 Exeter, NH 03833

©2019 Wall Industries, Inc. Specifications subject to change without notice. Wall Industries is not responsible for typographical errors. The information contained herein is for informational purposes only. This information is provided by Wall Industries and we make no representations or warranties of any kind, express or implied, about the completeness, accuracy, reliability, suitability or availability with respect to the information contained in this document for any purpose. All product and manufacturer names are trademarks or registered trademarks of their respective companies.