



Size: 2.28in x 2.4in x 0.5in (57.9mm x 61mm x 12.7mm)

FEATURES

- Wide Input Voltage Range
- Industry Standard Half-Brick Package
- High Reliability & High Efficiency
- Low Ripple & Noise
- Advanced Potting Technology
- Input Under Voltage, Over Voltage, Over Temperature, Short Circuit, and Over Current Protection

APPLICATIONS

- Radar
- Electronic Warfare
- Industrial Control
- Railway
- Defense

DESCRIPTION

The DCHB500 series of DC/DC power modules offers up to 500 watts of output power in a compact 2.28" x 2.4" x 0.5" industry standard half-brick package. This series consists of single output models with a wide input voltage range and advanced potting technology. Each model in this series features high reliability, high efficient, low ripple & noise, as well as protection against input under voltage, over voltage, over temperature, over current, and short circuit conditions. Please contact factory for order details.

MODEL SELECTION TABLE

Model Number ⁽¹⁾	Input Voltage Range	Output Voltage	Output Current	Ripple & Noise	Efficiency	Output Power
DCHB500-24S5	24VDC (18~36VDC)	5VDC	60A	50mV	93%	Up to 500W
DCHB500-24S6.5		6.5VDC	50A	50mV	94%	
DCHB500-24S12		12VDC	42A	50mV	94%	
DCHB500-24S24		24VDC	21A	100mV	93%	
DCHB500-24S28		28VDC	18A	100mV	92.8%	
DCHB500-24S36		36VDC	14A	150mV	91%	
DCHB500-24S48		48VDC	10.5A	200mV	91%	
DCHB500-280S5	280VDC (200~400VDC)	5VDC	60A	75mV	89.5%	Up to 500W
DCHB500-280S12		12VDC	30A	180mV	92.5%	
DCHB500-280S15		15VDC	24A	200mV	92.5%	
DCHB500-280S24		24VDC	21A	400mV	92.5%	
DCHB500-280S28		28VDC	18A	400mV	93.5%	
DCHB500-280S36		36VDC	10.5A	500mV	92%	
DCHB500-280S48		48VDC	10.5A	500mV	92%	

SPECIFICATIONS

All specifications are based on 25°C baseplate temperature, Rated Input Voltage, and Rated Output 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	24VDC Nominal Input Models			18	24	36	VDC			
	280VDC Nominal Input Models			200	280	400				
No Load Input Current	Typical Input, Output No Load, TC=25°C			24VDC Nominal Input Models			600	mA		
				280VDC Nominal Input Models			100			mA
Input Under Voltage Lockout	24VDC Nominal Input Models, 50% Load			Turn On			15.0	15.5	16.0	VDC
				Turn Off			16.5	17.0	17.5	
				Hysteresis Voltage			1.5			
	280VDC Nominal Input Models, 50% Load			Turn On			175	185	195	VDC
				Turn Off			180	190	200	
				Hysteresis Voltage			5			
				Turn On			415	425	435	
			Turn Off			402	410	418		
			Hysteresis Voltage			15				

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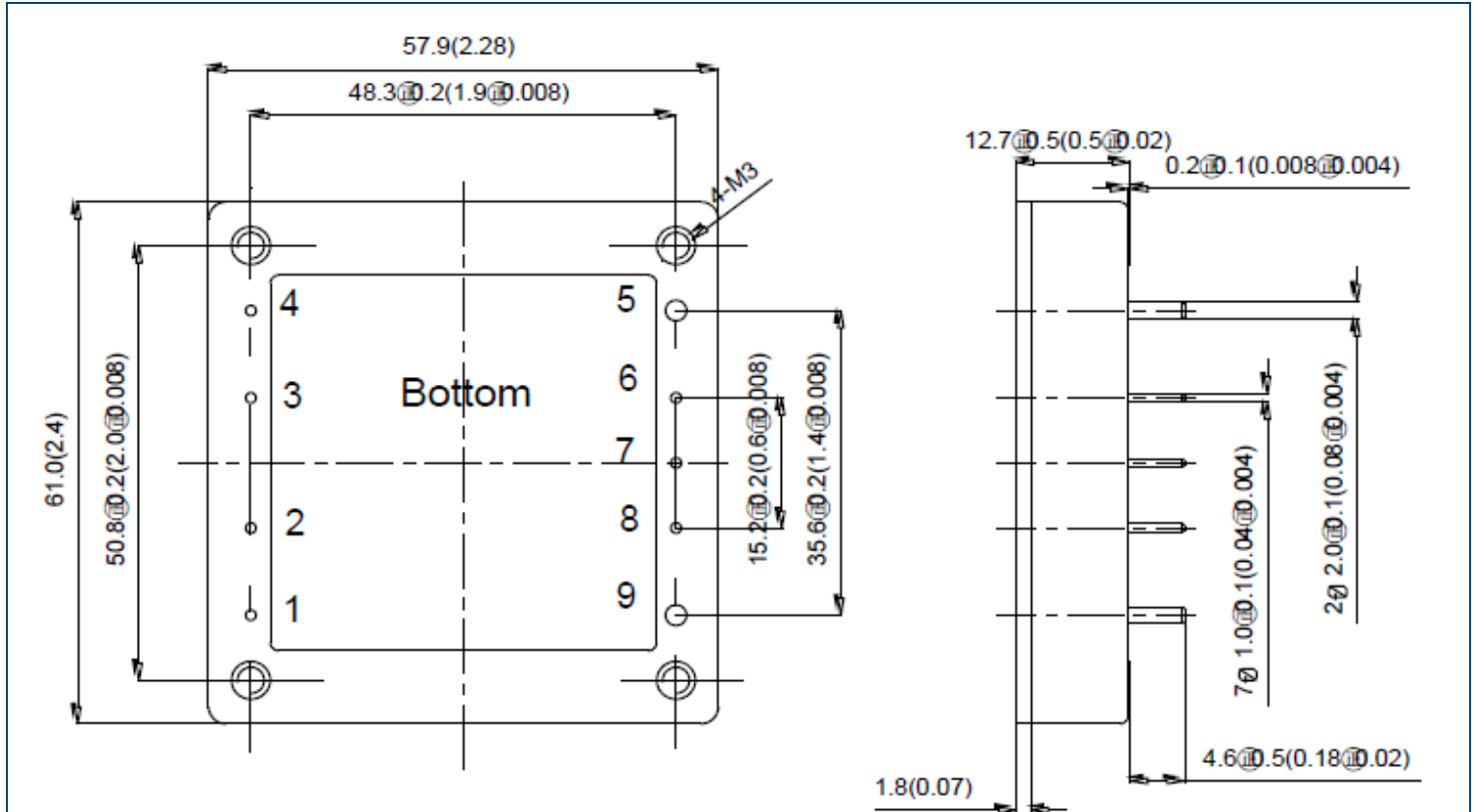
SPECIFICATION	TEST CONDITIONS		Min	Typ	Max	Unit
OUTPUT SPECIFICATIONS						
Output Voltage			See Table			
Output Voltage Set Point	Typical Input, 50% Load				±1	%VDC
Line Regulation	Full Range, 100% Load				±0.2	%
Load Regulation	Typical Input, 0-100% Load				±0.5	%
Output Voltage Trim Range	Output power ≤ Max Output Power, Output Current ≤ Max Output Current		-10		+10	%
Output Power					500	W
Output Current			See Table			
Ripple & Noise (p-p) ⁽²⁾			See Table			
Transient Response ⁽³⁾	24VDC Nominal Models	Overshoot Amplitude		±5		%Vout
		Recovery Time		500		µs
	280VDC Nominal Models	Overshoot Amplitude		±5		%Vout
		Recovery Time		1000		µs
Temperature Coefficient	T grade: Tc=-40~+100°C; M grade: Tc=55~+100°C				±0.02	%/°C
REMOTE ON/OFF CONTROL						
Positive Logic	24VDC Nominal Input Models	NC or logic high, nominal output	3.5		25.0	VDC
		Logic low, control current ≤1mA, no output	-0.3		1.2	
	280VDC Nominal Input Models	NC or logic high, nominal output	3.5		10	
		Logic low, control current ≤1mA, no output	-0.3		1.2	
PROTECTION						
Short Circuit Protection	Can be a long short circuit		Automatic Recovery			
Output Current Limit	Typical Input, Constant current hiccup mode protection, self-recovery	24VDC Nominal Input Models	110		150	%IoMax
		280VDC Nominal Input Models	110		155	
Over Voltage Protection	Typical Input, 50% load output, constant-current hiccup mode protection, self-recovery	24VDC Nominal Input Models	115		140	%Vout
		280VDC Nominal Input Models	114		135	
Over Temperature Protection	Shutdown, Thermistor PCB nearby temp	24VDC Nominal Input Models	110	120	130	°C
		280VDC Nominal Input Models	100	110	120	
Over Temperature Recover	Recover Turn On, Thermistor PCB Nearby Temp	24VDC Nominal Input Models	100	110	120	°C
		280VDC Nominal Input Models	90	100	110	
ENVIRONMENTAL SPECIFICATIONS						
Operating Temperature	T grade baseplate temperature (Standard)		-40		+100	°C
	M grade baseplate temperature (M Option)		-55		+100	
Storage Temperature	Ambient Temperature		-55		+125	°C
Relative Humidity	Non-Condensing		5		95	%
Storage Humidity	Non-Condensing		5		95	%
MTBF	Typical Input, Typical Output, Tc=25°C			2 x 10 ⁶		H
GENERAL SPECIFICATIONS						
Efficiency	Typical Input, Typical Output, Tc=25°C		See Table			
Switching Frequency	Full Range			300		KHz
Isolation Voltage	Test Conditions: 1mA/60S, rate of rise 500VDC/s; no breakdown, no arc	24VDC Nominal Input Models	Input to Output	1500		VDC
			Input to Case	1500		
			Output to Case	500		
		280VDC Nominal Input Models	Input to Output	4250		
			Input to Case	3535		
			Output to Case	1500		
Isolation Resistance	Relative humidity 90%, under standard atmospheric pressure, 500VDC		100			MΩ
Dielectric Strength	I/O		1500VDC and 4250VDC			
PHYSICAL SPECIFICATIONS						
Weight	24VDC Nominal Input Models		4.23oz (120g)			
	280VDC Nominal Input Models		3.88oz (110g)			
Dimensions (L x W x H)			2.28in x 2.4in x 0.5in (57.9mm x 61mm x 12.7mm)			

NOTES

1. Add "M" to end of product model number to indicate M grade temperature range. Add -P to model number to indicate positive logic.
2. Typical input, typical output, BW=20MHz, output parallel a 0.1µF ceramic cap and 10µF tantalum cap.
3. 25%-50%-25%, 50%-75%-50% load step change, di/dt=2.5A/µs. Output add min capacitance load.
4. This series is not recommended for parallel operation.

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

MECHANICAL DRAWINGS



Notes:

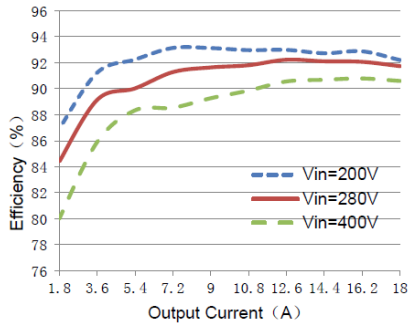
1. Unit in mm (in)
2. Baseplate: Aluminum + Plastic Case
3. Pins 5, 9 $\varnothing 2.0\text{mm}$ (0.08in)
4. Other pins $\varnothing 1.0\text{mm}$ (0.04)
5. No individual tolerance: $x.x \pm 0.5\text{mm}$ ($\pm 0.02\text{in}$), $x.xx \pm 0.25\text{mm}$ ($\pm 0.01\text{in}$)

PIN ASSIGNMENT

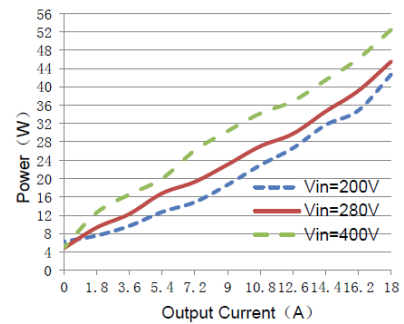
Pin No.	Label	Function
1	Vin (+)	Input Voltage (+)
2	ON/OFF	ON/OFF Remote Control
3	NC	No Pin
4	Vin (-)	Input Voltage (-)
5	Vout (-)	Output Voltage (-)
6	Sense (-)	Remote Sense (-)
7	Trim	Output Voltage Trim Pin
8	Sense (+)	Remote Sense (+)
9	Vout (+)	Output Voltage (+)

CHARACTERISTIC CURVES

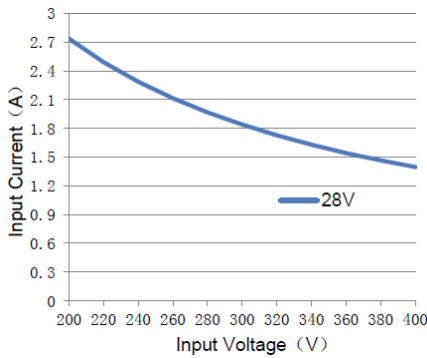
DCHB500-280S28 Efficiency (Tc=25°C)



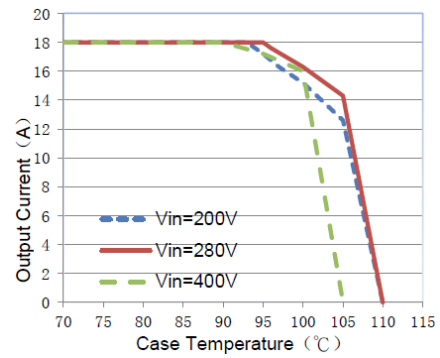
DCHB500-280S28 Power Dissipation (Tc=25°C)



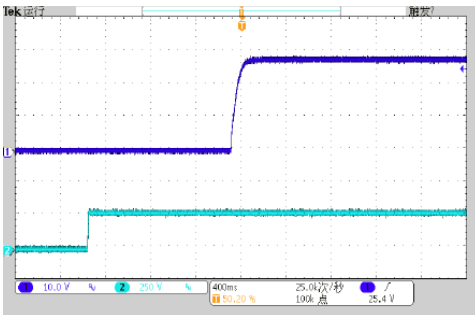
DCHB500-280S28 Input Current vs. Input Voltage (Tc=25°C)



DCHB500-280S28 Derating

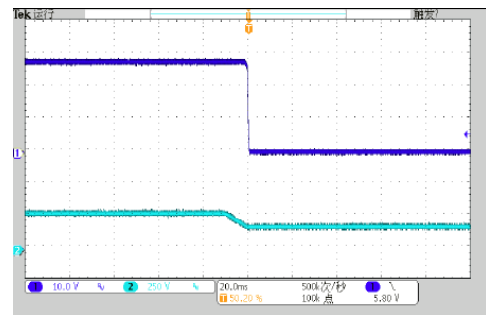


DCHB500-280S28 Startup



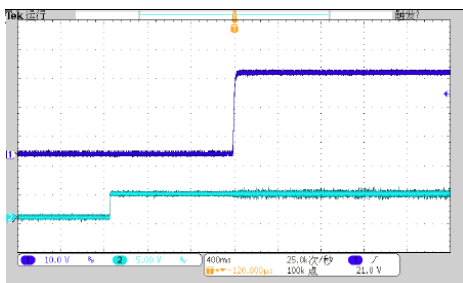
CH1: Output Voltage (10V/div)
CH2: Input Voltage (250V/div)

DCHB500-280S28 Shutdown



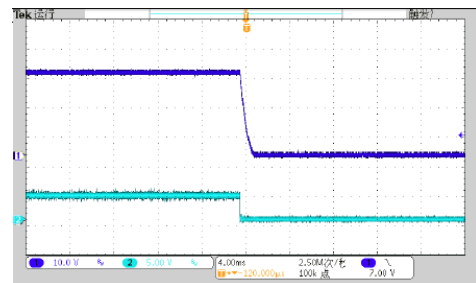
CH1: Output Voltage (10V/div)
CH2: Input Voltage (250V/div)

DCHB500-280S28 Turn On By ON/OFF



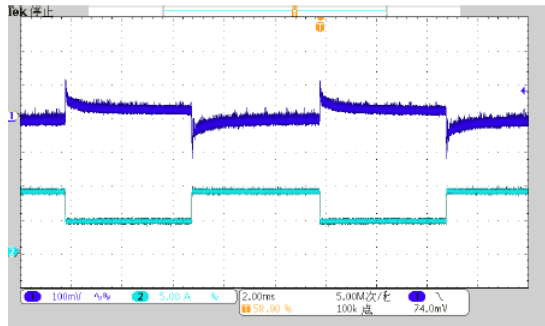
CH1: Output Voltage (10V/div)
CH2: ON/OFF Voltage (5V/div)

DCHB500-280S28 Turn Off by ON/OFF



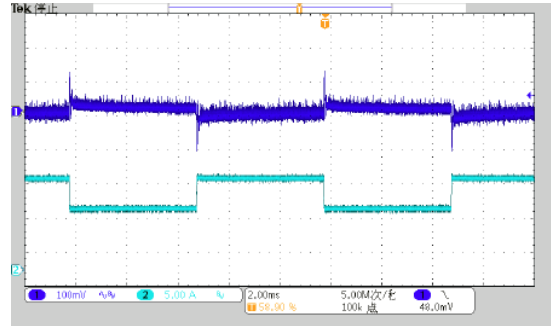
CH1: Output Voltage (10V/div)
CH2: ON/OFF Voltage (5V/div)

DCHB500-280S28 25%-50%-25% (2.5 μ s) Dynamic



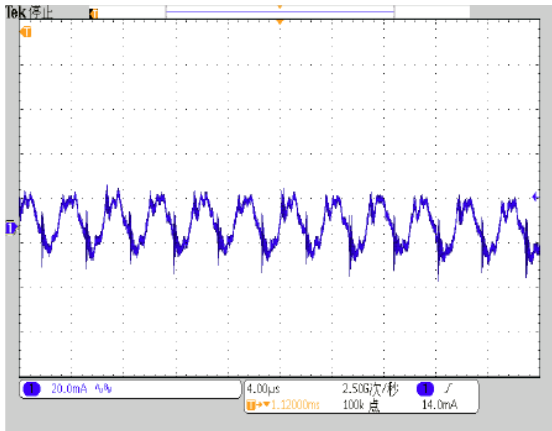
CH1: Output Voltage (100mV/div)
CH2: Output Current (5A/div)

DCHB500-280S28 50%-75%-50% (2.5A μ s) Dynamic



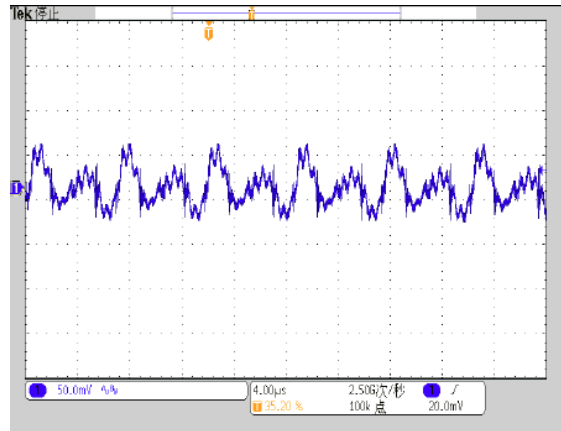
CH1: Output Voltage (100mV/div)
CH2: Output Current (5A/div)

DCHB500-280S28 Input Terminal Ripple Current



100mA/div

DCHB500-280S28 Output Voltage Ripple



50mV/div

MODEL NUMBER SETUP

DCHB	500	-	24	S	24	M	-	P
Series Name	Output Power		Input Voltage	Output Quantity	Ouput Voltage	Temperature		Logic
			24: 18~36VDC 280: 200~400VDC	S: Single	5: 5VDC 6.5: 6.5VDC 12: 12VDC 24: 24VDC 28: 28VDC 36: 36VDC 48: 48VDC	None: -40 to 110°C M: -55 to 110°C		None: Negative P: Positive

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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