



# CHB150W8 SERIES 150 WATT 8:1 INPUT ISOLATED DC-DC CONVERTER

## Features

- Efficiency Up to 90%
- Fixed Switching Frequency
- Regulated Outputs
- Remote On/Off
- Fully protected (OTP/OCP/OVP/UVLO)
- 1500Vdc I/O Isolation
- Operating Case Temperature -40 to +100°C
- Half Brick Size Meet Industrial Standard  
2.28x2.40x0.50
- UL60950-1 2nd Approval



MODEL NUMBER	INPUT VOLTAGE	OUTPUT VOLTAGE	OUTPUT CURRENT		INPUT CURRENT		% EFF.			CAPACITOR LOAD MAX.
			MIN.	MAX.	NO LOAD	FULL LOAD	(1)	(2)	(3)	
CHB150W8-36S12	9-75 VDC	12 VDC	0 mA	12.5 A	60 mA	4.66 A	89.5	89.5	89.5	5000uF
CHB150W8-36S15	9-75 VDC	15 VDC	0 mA	10 A	60 mA	4.63 A	90	90	90	5000uF
CHB150W8-36S24	9-75 VDC	24 VDC	0 mA	6.25 A	60 mA	4.66 A	89.5	89.5	89	2000µF <sup>(4)</sup>
CHB150W8-36S28	9-75 VDC	28 VDC	0 mA	5.35 A	60 mA	4.63 A	90	90	89.5	1500uF <sup>(4)</sup>
CHB150W8-36S48	9-75 VDC	48 VDC	0 mA	3.13 A	60 mA	4.63 A	90	90.5	89.5	1000µF <sup>(4)</sup>

NOTE:

1. Nominal Input Voltage 36 VDC
2. Measured at 24Vin
3. Measured at 48Vin
4. The output terminal of 24, 28, 48Vout models required a minimum capacitor 100uF to maintain specified regulation
5. The input external capacitor recommend to parallel with 330uF ESR<0.7Ω to reduce the input ripple voltage

## PART NUMBER

Series	Nominal Input Voltage	Number of Outputs	Nominal Output Voltage	Remote On/Off Logic
CHB150W8-	II	O	XX	L
CHB150W8	36: 36 VDC	S: Single	12: 12VDC 15: 15VDC 24: 24VDC 28: 28VDC 48: 48VDC	None: Positive N: Negative

Part Number Example:

**CHB150W8-36S12N:** Half Brick, 150W, 8:1 9-75Vdc Input, Single 12Vdc Output, Negative Logic



# CHB150W8 Series

## TECHNICAL SPECIFICATIONS

(All specifications are typical at nominal input, full load at 25°C unless otherwise noted.)

### ABSOLUTE MAXIMUM RATINGS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Input Voltage	Continuous	All	-0.3		75	V <sub>dc</sub>
Input Surge Voltage	100ms max.	All			100	V <sub>dc</sub>
Operating Case Temperature	At the Center Part of Base Plate	All	-40		100	°C
Storage Temperature		All	-55		105	°C

### INPUT CHARACTERISTICS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units	
Operating Input Voltage		All	9	36	75	V <sub>dc</sub>	
Input Under Voltage Lockout							
Turn-On Voltage Threshold		All	8.5	9.0	9.5	V <sub>dc</sub>	
Turn-Off Voltage Threshold		All	7.5	8.0	8.5	V <sub>dc</sub>	
Lockout Hysteresis Voltage		All		1		V <sub>dc</sub>	
Maximum Input Current	V <sub>in</sub> =9V, Full Load.	All		20		A	
No-Load Input Current	V <sub>in</sub> =36V, I <sub>o</sub> =0A	See Model Number Table					mA
Input Filter	LC filter.	All					
Inrush Current (I <sup>2</sup> t)	As per ETS300 132-2.	All			1	A <sup>2</sup> s	
Input Reflected Ripple Current	P-P thru 10uH inductor, 5Hz to 20MHz.	All			50	mA	
Recommended Input Fuse	Fast acting type	All		30		A	
Input Capacitance (External)	<0.7Ω ESR	All		330		uF	

### OUTPUT CHARACTERISTICS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Voltage Set Point Accuracy	V <sub>in</sub> =36V, Full Load, T <sub>c</sub> =25°C	All	-1.0		+1.0	%
Output Voltage Regulation						
Load Regulation	Full Load to No Load	All			±0.2	%
Line Regulation	V <sub>in</sub> =High Line to Low Line, Full Load	All			±0.2	%
Temperature Coefficient	T <sub>c</sub> =-40°C to 100°C	All			±0.03	%/°C
Output Voltage Ripple and Noise (5Hz to 20MHz bandwidth)						
Peak-to-Peak	Full load, 10uF tantalum and 1.0uF ceramic capacitors (for V <sub>o</sub> =48V: Full Load 10uF aluminum and 1uF ceramic capacitors).	12V <sub>o</sub>			120	mV
		15V <sub>o</sub>			120	
		24V <sub>o</sub>			280	
		28V <sub>o</sub>			280	
		48V <sub>o</sub>			480	
RMS.	Full load, 10uF tantalum and 1.0uF ceramic capacitors (for V <sub>o</sub> =48V: Full Load 10uF aluminum and 1uF ceramic capacitors).	12V <sub>o</sub>			60	mV
		15V <sub>o</sub>			60	
		24V <sub>o</sub>			100	
		28V <sub>o</sub>			100	
		48V <sub>o</sub>			200	
Output Current Range	V <sub>in</sub> = 9 to 36V	See Model Number Table				A
Over Current Protection	<90% V <sub>o</sub>	All	105	160	200	%
Short Circuit Protection	Hiccup Mode. Auto Recovery.	All	Continuous, Auto Recovery.			
External Load Capacitance	Full load (Constant resistive load)	See Model Number Table				uF
Output Voltage Trim Range	P <sub>o</sub> ≤ max rated power, I <sub>o</sub> ≤ I <sub>o,max</sub>	Others	-10		+10	%
	V <sub>in</sub> =9-13V, I <sub>out</sub> =max rated current	28V <sub>o</sub>	-10		0	
	V <sub>in</sub> =13-75V, P <sub>out</sub> =max rated power, I <sub>out</sub> =max rated current	28V <sub>o</sub>	-10		+10	



# CHB150W8 Series

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Output Voltage Remote Sense Range	$P_o \leq \text{max rated power}$ , $I_o \leq I_{o\_max}$ % of nominal $V_o$	All			+10	%
Over Voltage Protection	Limited Voltage, % of Nominal $V_o$	All	115	125	140	%

## EFFICIENCY

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
100% Load	$V_{in}=24V, 36V, 48V$	See Model Number Table				%

## DYNAMIC CHARACTERISTICS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Output Voltage Current Transient						
Error Band	75% to 100% of $I_{o\_max}$ step load change $dI/dt=0.1A/us$ (within 1% $V_{out}$ nominal)	All			$\pm 5$	%
Recovery Time	$V_{in}=24,36,48V$ ; output Capacitance 100uF, 10uF solid tantalum and 1.0uF ceramic capacitors	All			500	us
Turn-On Delay and Rise Time						
Full load (Constant resistive load)						
Turn-On Delay Time, From On/Off Control	$V_{on/off}$ to 90% $V_{o\_set}$ , Remote On	All		80	100	ms
Turn-On Delay Time, From Input	$V_{in\_min}$ to 90% $V_{o\_set}$ , Power Up	All		100	150	ms
Output Voltage Rise Time	10% $V_{o\_set}$ to 90% $V_{o\_se}$	All		30	50	ms

## ISOLATION CHARACTERISTICS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Isolation Voltage (100% factory Hi-Pot tested @2sec.)	1 minute; Input to Output, input to case, output to case	All			1500	$V_{dc}$
Isolation Resistance	Input to Output	All	10			M $\Omega$
Isolation Capacitance	Input to Output	48Vo Others		2500 2300		pF
	Input to Case (Base Plate)	All		1000		
	Output to Case (Base Plate)	All		1000		

## FEATURE CHARACTERISTICS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Switching Frequency	Output Ripple Frequency	All	180	200	220	KHz
On/Off Control, Positive Remote On/Off logic, Refer to $-V_{in}$ pin.						
Logic Low (Module Off)	$V_{on/off}$ at $I_{on/off}=1.0mA$	All	0		1.2	V
Logic High (Module On)	$V_{on/off}$ at $I_{on/off}=0.0uA$ , Pin open=On	All	3.5		75	V
On/Off Control, Negative Remote On/Off logic, Refer to $-V_{in}$ pin						
Logic High (Module Off)	$V_{on/off}$ at $I_{on/off}=0.0uA$ , Pin open=Off	All	3.5		75	V
Logic Low (Module On)	$V_{on/off}$ at $I_{on/off}=1.0mA$	All	0		1.2	V
On/Off Current (for both remote on/off logic)	$I_{on/off}$ at $V_{on/off}=0V$	All			1	mA
Leakage Current (for both remote on/off logic)	Logic High, $V_{on/off}=15V$	All			1	mA
Off Converter Input Current	Shutdown input idle current	All		12	18	mA
Over Temperature Shutdown	Temperature at the Center Part of Base Plate, Non-Latching	All		105		$^{\circ}C$
Over Temperature Recovery		All		95		$^{\circ}C$



# CHB150W8 Series

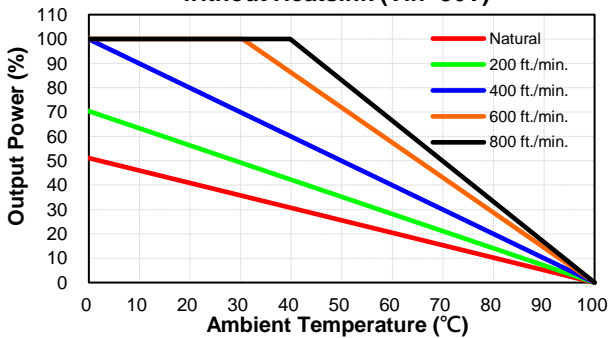
## GENERAL SPECIFICATIONS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
MTBF	$I_o=100\%$ of $I_{o\_max}$ ; MIL-HDBK - 217F_Note 1, GB, 25°C	All		800		K hours
Weight		All		109		grams
Case Material	Plastic, DAP, UL 94V-0					
Base plate Material	Aluminum					
Potting Material	UL 94V-0					
Pin Material	Base: Copper Plating: Nickel with Matte Tin					
Shock/Vibration	MIL-STD-810F Compliant					
Humidity	95% RH max. Non Condensing					
Altitude	2000m Operating Altitude, 12000m Transport Altitude					
Thermal Shock	MIL-STD-810F					
EMI	Meets EN55032 (with external filter)					Class A
Application Note Link	<a href="#">CHB150W8-36S Series App Notes</a>					
Packaging Information Link	<a href="#">Packaging Information</a>					

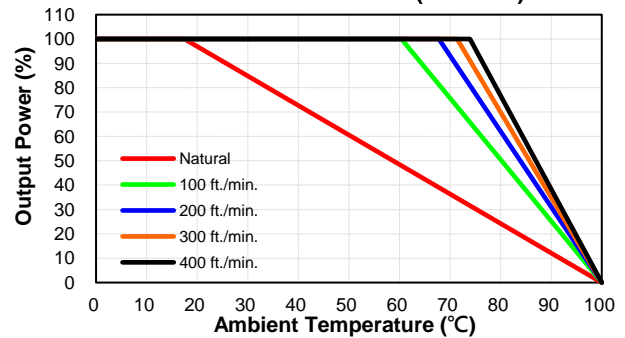
## CHARACTERISTIC CURVE

### Power Derating Curve

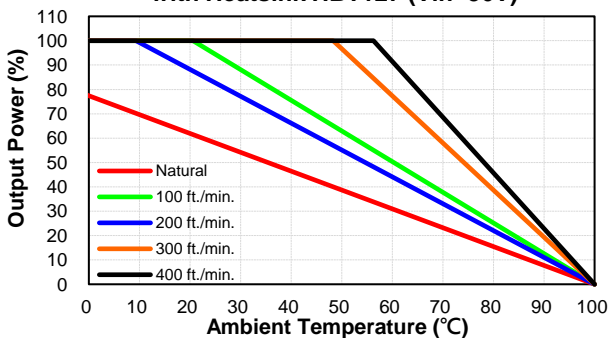
CHB150W8-36S Derating Curve without Heatsink (Vin=36V)



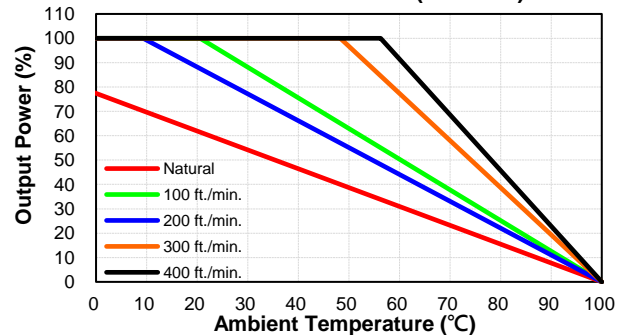
CHB150W8-36S Derating Curve with Heatsink HBT254 (Vin=36V)



CHB150W8-36S Derating Curve with Heatsink HBT127 (Vin=36V)



CHB150W8-36S Derating Curve with Heatsink HBL210 (Vin=36V)

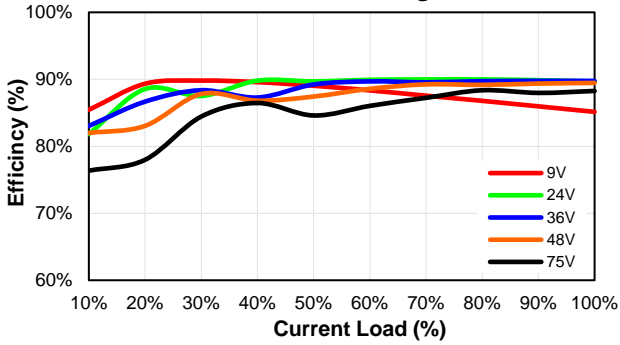




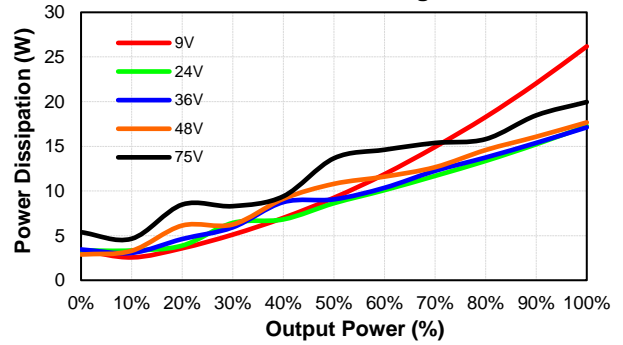
# CHB150W8 Series

## Performance Data

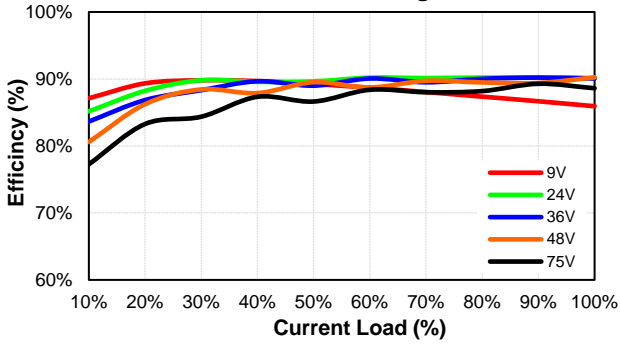
**CHB150W8-36S12**  
Eff Vs Io @25 Deg. C



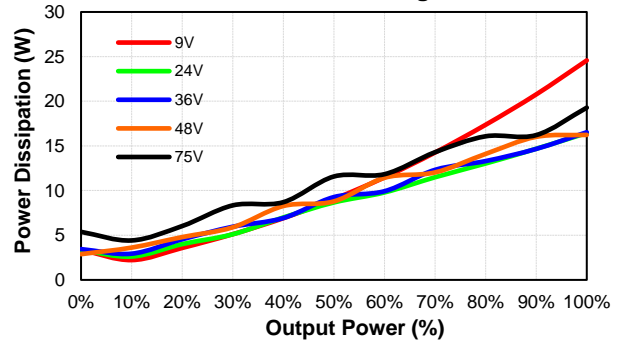
**CHB150W8-36S12**  
Pd Vs Po @25 Deg. C



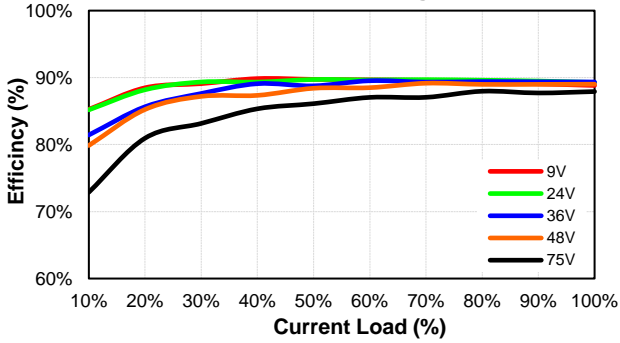
**CHB150W8-36S15**  
Eff Vs Io @25 Deg. C



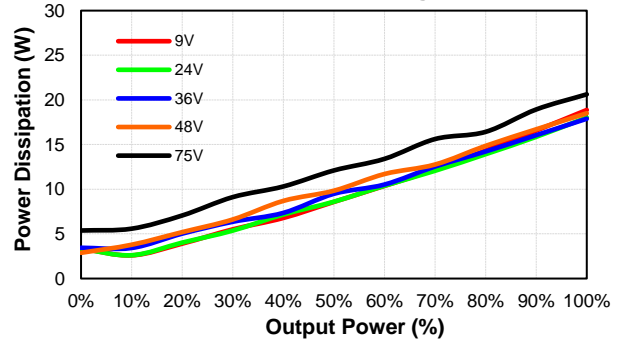
**CHB150W8-36S15**  
Pd Vs Po @25 Deg. C



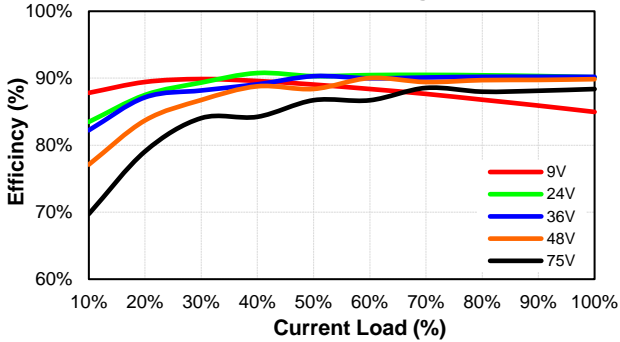
**CHB150W8-36S24**  
Eff Vs Io @25 Deg. C



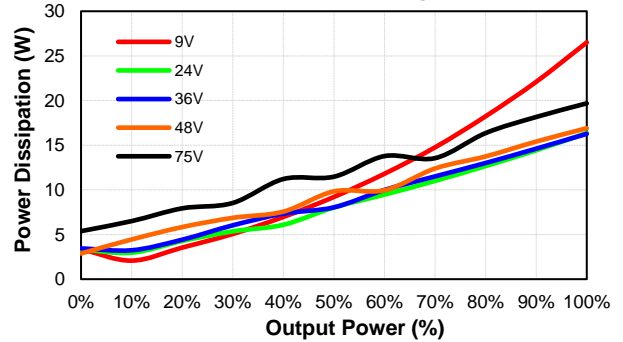
**CHB150W8-36S24**  
Pd Vs Po @25 Deg. C



**CHB150W8-36S28**  
Eff Vs Io @25 Deg. C



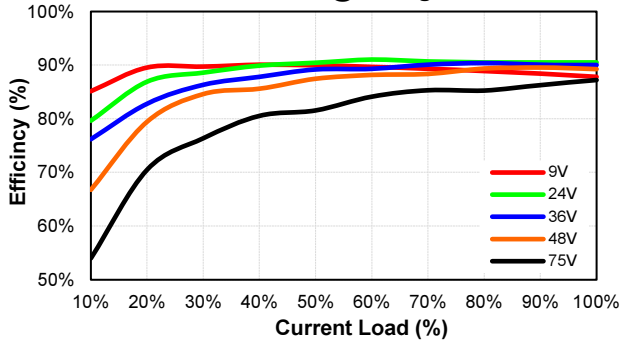
**CHB150W8-36S28**  
Pd Vs Po @25 Deg. C



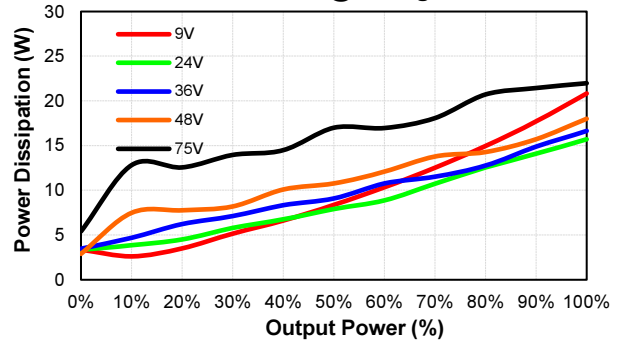


# CHB150W8 Series

**CHB150W8-36S48**  
Eff Vs Io @25 Deg. C



**CHB150W8-36S48**  
Pd Vs Po @25 Deg. C



## MECHANICAL SPECIFICATION

CASE HB

All Dimensions In Inches(mm)

Tolerances Inches: X.XX= ±0.02 , X.XXX= ±0.010

Millimeters: X.X= ±0.5 , X.XX=±0.25

