

# YHB75 SERIES

DC/DC Converters 75W Half Brick 4:1 input



## FEATURES :

- 4:1 Wide Input Voltage Range
- High Efficiency Up to 92%
- Regulated Output Types
- No Minimum Load Required
- Over Power and Short Circuit Protection
- Over Temperature Protection
- Operating Temperature:-40°C to +87°C
- UL94V-0 Package Material
- 100% Burned In
- UL/cUL/IEC/EN 62368-1 approved, CB-Report, CE Marking
- EMC standard of Canadian ICES-003 issue7(2020) approved
- EMC standard of 47CFR FCC Part 15 subpart B approved

Specifications typical at TA=25°C, nominal input voltage and rated output current unless otherwise specified

### Selection Guide

Part Number	Input Voltage Range	Input Current		Output Voltage	Output Current	Efficiency	Maximum capacitor Load
		No-Load	Full-Load				
	Vdc	mA(typ)	mA(typ)	Vdc	mA(typ)	%(typ)	μF
YHB75-24S033	9-36	100	2780	3.3	18000	89	30000
YHB75-24S05	9-36	100	3434	5	15000	91	30000
YHB75-24S12	9-36	100	3434	12	6250	91	5200
YHB75-24S15	9-36	100	3434	15	5000	91	3300
YHB75-24S24	9-36	100	3472	24	3125	90	1300
YHB75-48S05	18-75	75	1717	5	15000	91	30000
YHB75-48S12	18-75	75	1698	12	6250	92	5200
YHB75-48S15	18-75	75	1698	15	5000	92	3300
YHB75-48S24	18-75	75	1717	24	3125	91	1300
YHB75-110S05	40-160	35	757	5	15000	90	30000
YHB75-110S12	40-160	35	749	12	6250	91	5200
YHB75-110S15	40-160	35	749	15	5000	91	3300
YHB75-110S24	40-160	35	749	24	3125	91	1300

### Part Number

YHB / 75 - 24 / S / 05  
A / B / C / D / E

- A: Series
- B: Output Power
- C: Input Voltage
- D: Single Output
- E: Output Voltage

DC-DC Converter  
**YHB75 SERIES**

75Watt

2250Vdc Isolated

4 : 1 Input Voltage Range

Single Output

Half Brick Size



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DC/DC Converters 75W Half Brich 4:1 input



## Input Specifications

Parameters	Conditions	Min	Typ	Max	Units
Input Voltage Range	24V Models	9		36	Vdc
	48V Models	18		75	
	110V Models	40		160	
Input Surge Voltage (100 ms max.)	24V Models	-0.7		50	
	48V Models	-0.7		100	
	110V Models	-0.7		170	
Start-up Voltage	24V Models			9	Vdc
	48V Models			18	
	110V Models			40	
Under Voltage Shutdown	24V Models		7.5		Vdc
	48V Models		16		
	110V Models		36		
Start-up Time	Constant Resistive Load, Nominal Vin		Power-up	30	ms
			Remote ON/OFF	30	
Input Filter	All Models		Internal Pi type		
Remote ON/OFF (Refer To -Vin PIN)	Positive Logic	DC/DC ON	Open or 3.5 - 12 Vdc		mA
		DC/DC OFF	Short or 0 - 1.2 Vdc		
	Input Current Of Ctrl PIN		-0.5	0.5	
	Remote Off Input Current		3		

## Output Specifications

Parameters	Conditions	Min	Typ	Max	Units
Voltage Tolerance	100% Load	-1		+1	%
Line Regulation	Vin(min) to Vin(max) @100% Load	-0.2		+0.2	%
Load Regulation	0% Load to 100% Load	-0.2		+0.2	%
Ripple & Noise (BW=20MHz)	With a 1uF MLCC and 33uF PolyTan	3.3Vout		75	mVp-p
		5Vout		100	
		12Vout, 15Vout		125	
	With a 4.7uF MLCC	24Vout		250	
Transient Response Setting Time	25% Load Step Change		350	500	us
Transient Response Deviation	25% Load Step Change	-5	±3	+5	%
Temperature Coefficient		-0.02		+0.02	%/°C
Voltage Adjustability	% of Vout, Maximum output deviation is inclusive of remote sense	-10		+10	%
Remote Sense	% of Vout(nom). If remote sense is not being used, Sense pins should be connected to corresponding polarity OUTPUT pins.	-10		+10	%
Output Power Protection	% of Io, Hiccup mode, Auto-recovery	120	150	180	%
Short Circuit Protection	Continuous [Hiccup Mode] ,Auto-Recovery				
Over Voltage Protection	3.3Vout		4.3		Vdc
	5Vout		6.2		
	12Vout		15		
	15Vout		18		
	24Vout		30		

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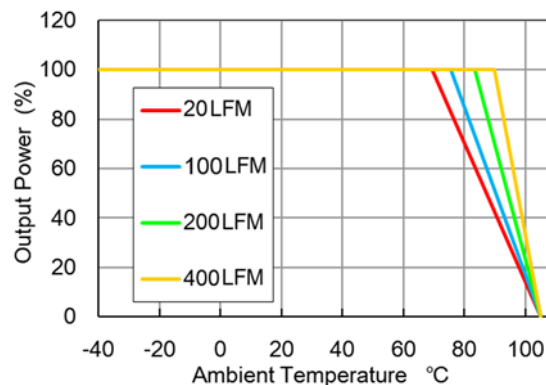
DC/DC Converters 75W Half Brich 4:1 input



## General Specifications

Parameters	Conditions	Min	Typ	Max	Units
Isolation Voltage	Input To Output (60sec)	2250			Vdc
	Input (Output) To Case (60sec)	1600			Vdc
Isolation Resistance	500Vdc	1000			MΩ
Isolation Capacitance	100kHz, 1V			2600	pF
Switching Frequency	100% Load, Nominal Input		220		KHz
Operating Ambient Temperature (Power Derating See Derating Graph)	Nominal Vin, 100% Load	YHB75-24S24, YHB75-110S05	-40	59	°C
		YHB75-24S033, YHB75-24S05, YHB75-24S12, YHB75-24S15, YHB75-48S05, YHB75-48S24, YHB75-110S12, YHB75-110S15, YHB75-110S24		64	
		YHB75-48S12, YHB75-48S15		69	
Thermal Impedance	20LFM		5.5		°C/W
	100LFM		4.5		
	200LFM		3.3		
	400LFM		2.3		
Maximum Case Temperature	Base-plate			105	°C
Over Temperature Protection	Base-plate		115		°C
Storage Temperature		-55		125	°C
Humidity	Non Condensing	5		95	%
Cooling	Natural Convection				
Case Material	Aluminum Base-plate With Plastic Case				
Potting Material	Silicone (UL94-V0)				
MTBF	MIL-HDBK-217F@25°C		3.547X10 <sup>5</sup>		Hours
Weight			100		g
Dimensions		61.0x57.9x15.0			mm

## Temperature Derating Graph



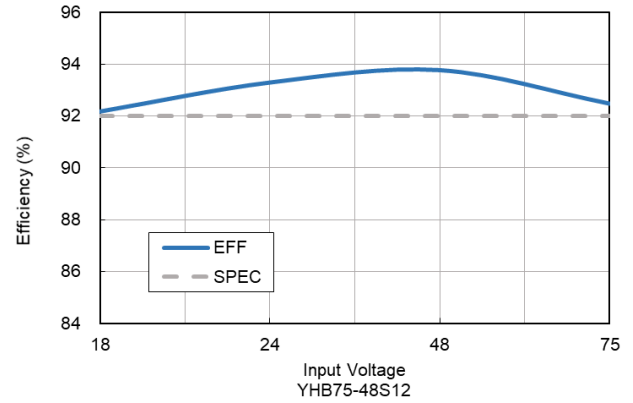
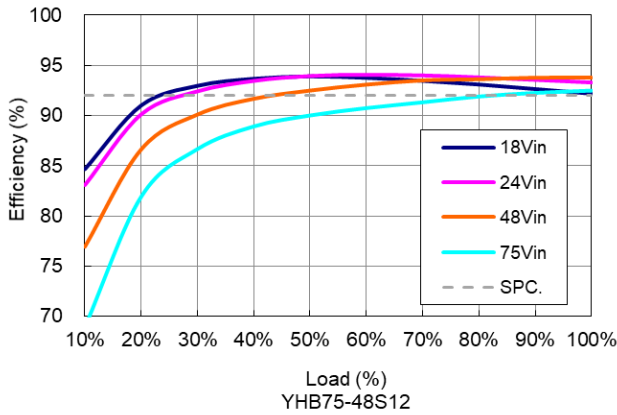
YHB75-48S12

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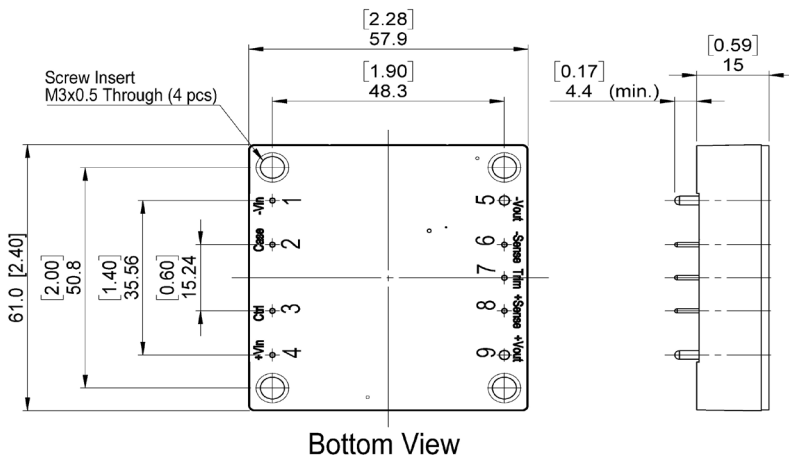
DC/DC Converters 75W Half Brick 4:1 input



## Characteristic Curve



## Dimensions



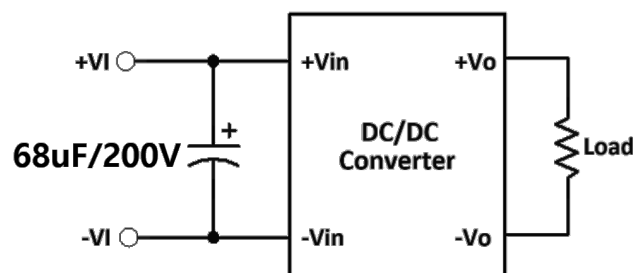
Unit : mm [inch]  
Tolerance : XX.X ±0.5 , XX.XX ±0.25

Screw mounting hole size  $\phi$  3.5mm is recommend

## PIN Assignment

Pin	Define	Diameter
1	-Vin	1.0mm[0.04"]
2	Case	1.0mm[0.04"]
3	Remote	1.0mm[0.04"]
4	+Vin	1.0mm[0.04"]
5	-Vout	2.0mm[0.08"]
6	-Sense	1.0mm[0.04"]
7	Trim	1.0mm[0.04"]
8	+Sense	1.0mm[0.04"]
9	+Vout	2.0mm[0.08"]

## Application Examples



It is necessary to parallel a capacitor across the input pins under normal operation.

Minimum Capacitance: 68 $\mu$ F/ 200V.

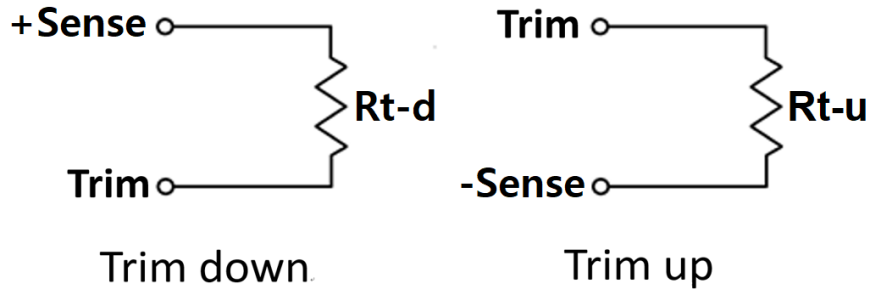
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## External Output Trimming

Output can be externally trimmed by using the method, shown as below.



YHB75-□□S033											
Trim	Vout	Vo*99%	Vo*98%	Vo*97%	Vo*96%	Vo*95%	Vo*94%	Vo*93%	Vo*92%	Vo*91%	Vo*90%
down	Rt-d =	119.41KΩ	53.50KΩ	31.54KΩ	20.55KΩ	13.96KΩ	9.57KΩ	6.43KΩ	4.08KΩ	2.25KΩ	0.78KΩ
Trim	Vout	Vo*101%	Vo*102%	Vo*103%	Vo*104%	Vo*105%	Vo*106%	Vo*107%	Vo*108%	Vo*109%	Vo*110%
up	Rt-u =	98.19KΩ	44.10KΩ	26.06KΩ	17.05KΩ	11.64KΩ	8.03KΩ	5.46KΩ	3.52KΩ	2.02KΩ	0.82KΩ

YHB75-□□S05											
Trim	Vout	Vo*99%	Vo*98%	Vo*97%	Vo*96%	Vo*95%	Vo*94%	Vo*93%	Vo*92%	Vo*91%	Vo*90%
down	Rt-d =	138.88KΩ	62.41KΩ	36.92KΩ	24.18KΩ	16.53KΩ	11.44KΩ	7.79KΩ	5.06KΩ	2.94KΩ	1.24KΩ
Trim	Vout	Vo*101%	Vo*102%	Vo*103%	Vo*104%	Vo*105%	Vo*106%	Vo*107%	Vo*108%	Vo*109%	Vo*110%
up	Rt-u =	106.87KΩ	47.76KΩ	28.06KΩ	18.21KΩ	12.30KΩ	8.36KΩ	5.55KΩ	3.44KΩ	1.79KΩ	0.48KΩ

YHB75-□□S12											
Trim	Vout	Vo*99%	Vo*98%	Vo*97%	Vo*96%	Vo*95%	Vo*94%	Vo*93%	Vo*92%	Vo*91%	Vo*90%
down	Rt-d =	280.90KΩ	125.65KΩ	73.90KΩ	48.02KΩ	32.50KΩ	22.15KΩ	14.76KΩ	9.21KΩ	4.90KΩ	1.45KΩ
Trim	Vout	Vo*101%	Vo*102%	Vo*103%	Vo*104%	Vo*105%	Vo*106%	Vo*107%	Vo*108%	Vo*109%	Vo*110%
up	Rt-u =	225.50KΩ	100.75KΩ	59.17KΩ	38.38KΩ	25.90KΩ	17.58KΩ	11.64KΩ	7.19KΩ	3.72KΩ	0.95KΩ

YHB75-□□S15											
Trim	Vout	Vo*99%	Vo*98%	Vo*97%	Vo*96%	Vo*95%	Vo*94%	Vo*93%	Vo*92%	Vo*91%	Vo*90%
down	Rt-d =	499.18KΩ	223.09KΩ	131.06KΩ	85.05KΩ	57.44KΩ	39.03KΩ	25.88KΩ	16.02KΩ	8.35KΩ	2.22KΩ
Trim	Vout	Vo*101%	Vo*102%	Vo*103%	Vo*104%	Vo*105%	Vo*106%	Vo*107%	Vo*108%	Vo*109%	Vo*110%
up	Rt-u =	404.82KΩ	180.91KΩ	106.27KΩ	68.95KΩ	46.56KΩ	31.64KΩ	20.97KΩ	12.98KΩ	6.76KΩ	1.78KΩ

YHB75-□□S24											
Trim	Vout	Vo*99%	Vo*98%	Vo*97%	Vo*96%	Vo*95%	Vo*94%	Vo*93%	Vo*92%	Vo*91%	Vo*90%
down	Rt-d =	598.97KΩ	267.93KΩ	157.59KΩ	102.42KΩ	69.31KΩ	47.24KΩ	31.48KΩ	19.66KΩ	10.46KΩ	3.11KΩ
Trim	Vout	Vo*101%	Vo*102%	Vo*103%	Vo*104%	Vo*105%	Vo*106%	Vo*107%	Vo*108%	Vo*109%	Vo*110%
up	Rt-u =	486.83KΩ	217.87KΩ	128.21KΩ	83.38KΩ	56.49KΩ	38.56KΩ	25.75KΩ	16.14KΩ	8.67KΩ	2.69KΩ