

# IHB100T

## 100 Watt Triple Output Half Brick DC/DC Converter



- 33 - 75V Input Range
- Each Channel Independently Current Limited
- High Efficiency: 88% Typical
- 1500VDC Isolation Between Input and Output
- Operation to 100°C Baseplate Temperature
- 50µs Transient Recovery, 0-90% Load Step
- Primary & Secondary Remote On/Off
- IHB100T Series Approved to UL/CUL 1950, EN60950

The IHB100T series triple output standard half brick modules are designed for today's demanding industrial applications. Available in two wide range inputs, these isolated converters offer many features in the standard models. With a complement of safety agency approvals and low noise operations, the converters respond extremely fast to change in load conditions. Inherent in the design are very well-controlled output voltage and minimal need for minimum loading on main (V1) output.



### PRODUCT SELECTION CHART

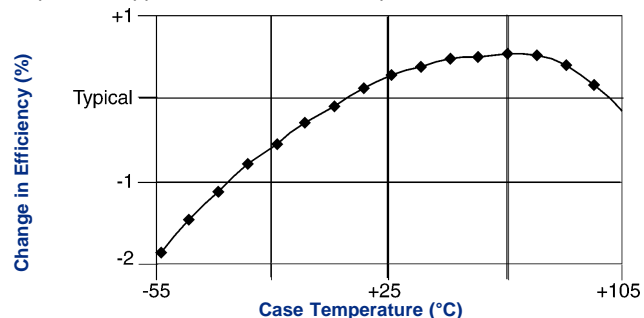
MODEL	INPUT VOLTAGE (VDC)	RATED VOUT (VDC)			RATED MAXIMUM IOUT (A)		
		V1 (±)	V2 (±)	V3 (±)	V1(±)	V2(±)	V3(±)
IHB100T480312	48 (33-75)	3.3	12	12	30	4.2	4.2
IHB100T480315	48 (33-75)	3.3	15	15	30	3.4	3.4
IHB100T480512	48 (33-75)	5.1	12	12	20	4.2	4.2
IHB100T480515	48 (33-75)	5.0	15	15	20	2.0	2.0

### ABSOLUTE MAX. RATINGS

Output Short-Circuit Duration	Continuous
Baseplate Temperature	+100°C
Lead Temperature (soldering, 10 seconds max)	+300°C
Storage Temperature	+125°C
Input to Output Isolation	1500 VDC

### EFFICIENCY vs TEMPERATURE

T<sub>CASE</sub> = +40°C, nominal input voltage, nominal load, recommended external components applied, unless otherwise specified.\*



# SPECIFICATIONS, ALL MODELS

Specifications are at  $T_{CASE} = +40^{\circ}C$  nominal input voltage unless otherwise specified.

PARAMETER	CONDITIONS	MIN			TYP			MAX			UNITS
		MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX	
INPUT	Voltage Range		33	48	75					V <sub>DC</sub>	
	Reflected Ripple Current	Peak - Peak			370					mA	
	Input Ripple Rejection	DC to 1KHz	50	60						dB	
	Maximum Input Current	Output Power = 100W $V_{IN} = 30V$						5		A	
	No Load Power Dissipation	$P_{OUT} = 0, V_{IN, Min} < V_{IN} < V_{IN, Max}$						6		W	
	Inrush Charge							0.247		mC	
	Quiescent Operating Current										
	Primary On/Off Disabled					7.5		10		mA	
	Secondary On/Off Disabled					15		20		mA	

PARAMETER	CONDITIONS	MIN			TYP			MAX			UNITS	
		MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX		
<b>ISOLATION</b>												
GENERAL	Input to Each Output	Peak Test	1500								V <sub>DC</sub>	
	Input to Baseplate		1500								V <sub>DC</sub>	
	Channel to Channel	Any Channel to Any Channel	500								V <sub>DC</sub>	
	Resistance, Input - Output		10								MΩ	
	Capacitance, Input - Output					2000					pF	
	Leakage Current	$V_{ISO} = 240V_{AC}, 60Hz$				180					μA, rms	
	<b>GENERAL</b>											
	Set Point Accuracy	$V_{IN} = \text{Nominal}, 50\% \text{ Load}$							1			%
	Turn-on Time	Within 1% of Nominal $V_{OUT}$				3.5			5			mSec
	Remote On/Off Control Inputs											
Primary	Open Collector/Drain											
Sink Current-Logic Low	$V_{IN} = V_{MAX}$							7			mA	
Vlow								0.8			V	
Vhigh								Open Collector				
Secondary	Open Collector/Drain											
Sink Current-Logic Low								100			μA	
Vlow								0.4			V	
Vhigh								Open Collector				
External Synchronization Input												
Frequency		440						520			KHz	
Pulse Width		150						320			nSec	
Source Impedance								47			Ω	
Input High Voltage		4						5			V	
Input Low Voltage		0						1			V	
Input Impedance					470						Ω	
Switching Frequency		470			480			490			KHz	
Weight								3 (85)			oz (g)	
<b>TEMPERATURE</b>												
Operation/Specification	Case Temperature											
Storage		-40						+100			°C	
Shutdown		-55						+125			°C	
Thermal Impedance	Case to Ambient	+100						+115			°C	
					8.2						°C/W	

PARAMETER	CONDITIONS	V1			V2			V3			UNITS		
		Min	Nom	Max	Min	Nom	Max	Min	Nom	Max			
IHB100T480312 OUTPUT	Output Power	Total Combined O/P Power = 100 Watts Max		50	100	25	50	25	50		W		
	Set Point Voltage	$I_{ONom}$		3.3		12.2		12.2			V		
	Output Current, $I_{OUT}$			0.5	15	30.0	0	2.1	4.2	0	2.1	4.2	A
	Output Ripple, p-p	DC to 20MHz*			100	200	150	500	150	500		mV	
	Output Adjust Range	*	3.15		3.80		Dependent on V1					V	
	Output Temperature Drift				.02	.05	.02	.05	.02	.05		%/°C	
	Line Regulation	$V_{IN, Min} \leq V_{IN} \leq V_{IN, Max}$ $I_O = I_{O, Nom}$			0.05	0.10	1.0	2.0	1.0	2.0		%	
	Load Regulation	Min Load to Rated Load			0.50	1.00	See Regulation Curves		See Regulation Curves			%	
	Current Limit Inception	Other Outputs Min Load			38		6.0		6.0			A	
	Short-Circuit Current				30	38	5.0	6.0	5.0	6.0		A	
	Transient Response	50 to 100% Load Step											
	Peak Deviation				150	250						mV	
	Settling Time	$V_{OUT}$ , 1% of $V_{OUT, Nom}$			35	50						μSec	
	Overvoltage Limit		4.2		5.0							V	
	Efficiency	$I_{OUT1} = 15A, (I_{OUT2} + I_{OUT3}) = 4.2A$ F.L. $V_{IN} = \text{Nominal}$	85	86								%	

\* See Application Notes available on the web at [www.cdpowerelectronics.com](http://www.cdpowerelectronics.com)

# SPECIFICATIONS, ALL MODELS

Specifications are at  $T_{CASE} = +40^{\circ}C$  nominal input voltage unless otherwise specified.

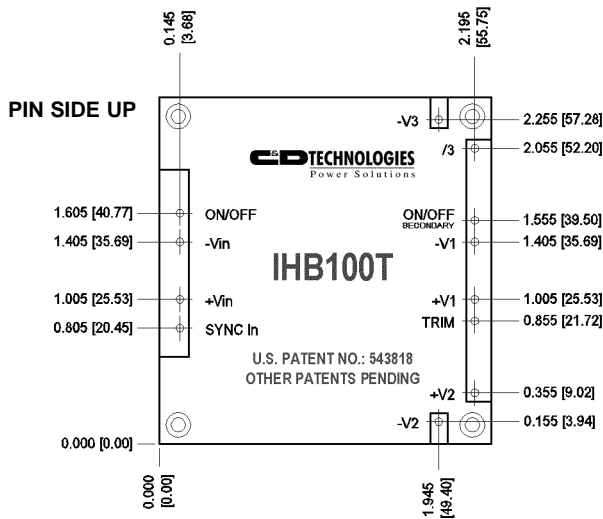
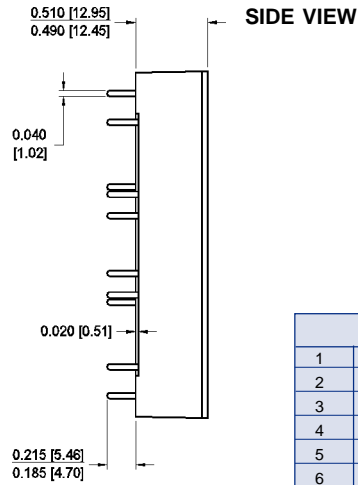
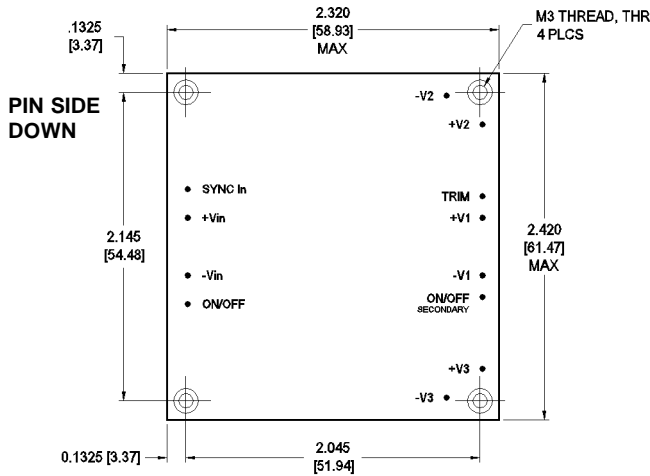
PARAMETER	CONDITIONS	V1			V2			V3			UNITS	
		Min	Nom	Max	Min	Nom	Max	Min	Nom	Max		
IHB100T480315 OUTPUT	Output Power	Total Combined O/P Power = 100 Watts Maximum									W	
	Set Point Voltage	$I_{O,Nom}$									V	
	Output Current, $I_{OUT}$	0.5	15	30.0	0	1.66	3.33	0	1.66	3.33	A	
	Output Ripple, p-p	DC to 20MHz*									mV	
	Output Adjust Range	*									V	
	Output Temperature Drift										Dependent on V1	
	Line Regulation	$V_{IN,Min} \leq V_{IN} \leq V_{IN,Max}$ $I_O = I_{O,Nom}$	.02	.05		.02	.05		.02	.05	%/°C	
	Load Regulation	Min Load to Rated Load	0.05	0.10		1.0	2.0		1.0	2.0	%	
	Current Limit Inception	Other Outputs Min Load	0.50 1.0			See Regulation Curves			See Regulation Curves			%
	Short-Circuit Current		38			5.0			5.0			A
	Transient Response	50 to 100% Load Step	30 38			4.0 5.0			4.0 5.0			A
	Peak Deviation		150 250									mV
	Settling Time	$V_{OUT}$ , 1% of $V_{OUT,Nom}$	35 50									µSec
	Overvoltage Limit		4.2			5.0						V
	Efficiency	$I_{OUT1}=15A, (I_{OUT2}+I_{OUT3}) = 3.4A$ F.L. $V_{IN}$ =Nominal	85	86								%

PARAMETER	CONDITIONS	V1			V2			V3			UNITS	
		Min	Nom	Max	Min	Nom	Max	Min	Nom	Max		
IHB100T480512 OUTPUT	Output Power	Total Combined O/P Power = 100 Watts Combined									W	
	Set Point Voltage	$I_{O,Nom}$									V	
	Output Current, $I_{OUT}$	0.5	10	20	0	2.1	4.2	0	2.1	4.2	A	
	Output Ripple, p-p	DC to 20MHz*									mV	
	Output Adjust Range	*									V	
	Output Temperature Drift										Dependent on V1	
	Line Regulation	$V_{IN,Min} \leq V_{IN} \leq V_{IN,Max}$ $I_O = I_{O,Nom}$	.02	.05		.02	.05		.02	.05	%/°C	
	Load Regulation	Min Load to Rated Load	0.05	0.10		1.0	2.0		1.0	2.0	%	
	Current Limit Inception	Other Outputs Min Load	0.50 1.0			See Regulation Curves			See Regulation Curves			%
	Short-Circuit Current		26.0			6.0			6.0			A
	Transient Response	50 to 100% Load Step	20.0 26.0			5.0 6.0			5.0 6.0			A
	Peak Deviation		200 300									mV
	Settling Time	$V_{OUT}$ , 1% of $V_{OUT,Nom}$	35 50									µSec
	Overvoltage Limit		6.0			7.0						V
	Efficiency	$I_{OUT1}=10A, (I_{OUT2}+I_{OUT3}) = 4.2A$ F.L. $V_{IN}$ =Nominal	86	87								%

PARAMETER	CONDITIONS	V1			V2			V3			UNITS	
		Min	Nom	Max	Min	Nom	Max	Min	Nom	Max		
IHB100T480515 OUTPUT	Output Power	Total Combined O/P Power = 100 Watts Max									W	
	Set Point Voltage	$I_{O,Nom}$									V	
	Output Current, $I_{OUT}$	0.5	10	20	0	1.66	3.33	0	1.66	3.33	A	
	Output Ripple, p-p	DC to 20MHz*									mV	
	Output Adjust Range	*									V	
	Output Temperature Drift										Dependent on V1	
	Line Regulation	$V_{IN,Min} \leq V_{IN} \leq V_{IN,Max}$ $I_O = I_{O,Nom}$	.02	.05		.02	.05		.02	.05	%/°C	
	Load Regulation	Min Load to Rated Load	0.05	1.0		1.0	2.0		1.0	2.0	%	
	Current Limit Inception	Other Outputs Min Load	0.05 1.0			See Regulation Curves			See Regulation Curves			%
	Short-Circuit Current		26.0			5.0			5.0			A
	Transient Response	50 to 100% Load Step	20.0 26.0			4.0 5.0			4.0 5.0			A
	Peak Deviation		200 300									mV
	Settling Time	$V_{OUT}$ , 1% of $V_{OUT,Nom}$	35 50									µSec
	Overvoltage Limit		6.0			7.0						V
	Efficiency	$I_{OUT1}=10A, (I_{OUT2}+I_{OUT3}) = 4.2A$ F.L. $V_{IN}$ =Nominal	86	87								%

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# MECHANICAL



## PIN CONNECTIONS

Pin	Function
1	PRIMARY ON/OFF
2	-VIN
3	+VIN
4	SYNC IN
5	-V2
6	+V2
7	TRIM
8	+V1
9	-V1
10	SECONDARY ON/OFF
11	+V3
12	-V3

### NOTES:

All dimensions are in inches (millimeters).  
 PIN PLACEMENT TOLERANCE:  $\pm 0.005$ "  
 MECHANICAL TOLERANCE:  $\pm 0.015$ "  
 Marked with: specific model ordered, date code, job code.  
 MATERIAL: Units are encapsulated in a low thermal resistance molding compound which has excellent chemical resistance and electrical properties in high humidity environments and over a wide operating temperature range. The encapsulant and outer shell of the unit have UL94V-0 ratings. Lead material is solder plated to allow ease of solderability.

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