

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

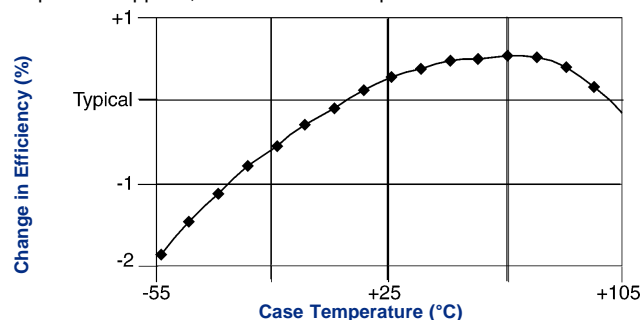
MODEL	INPUT VOLTAGE (VDC)	RATED VOUT (VDC)			RATED MAXIMUM IOUT (A)		
		V1 (±)	V2 (±)	V3 (±)	V1(±)	V2(±)	V3(±)
IHB100T480312	48 (33-75)	3.3	12	12	30	4.2	4.2
IHB100T480315	48 (33-75)	3.3	15	15	30	3.4	3.4
IHB100T480512	48 (33-75)	5.1	12	12	20	4.2	4.2
IHB100T480515	48 (33-75)	5.0	15	15	20	2.0	2.0

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_{CASE} = +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	NOM	MAX	MIN	NOM	MAX	MIN	NOM	MAX	
INPUT	Voltage Range			33		48			75		V _{DC}
	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	NOM	MAX	MIN	NOM	MAX	MIN	NOM	MAX		
ISOLATION												
GENERAL	Input to Each Output	Peak Test		1500							V _{DC}	
	Input to Baseplate			1500							V _{DC}	
	Channel to Channel	Any Channel to Any Channel		500							V _{DC}	
	Resistance, Input - Output			10							MΩ	
	Capacitance, Input - Output					2000					pF	
	Leakage Current	$V_{ISO} = 240V_{AC}, 60Hz$					180				μA, rms	
	GENERAL											
	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)	
TEMPERATURE												
Operation/Specification	Case Temperature			-40					+100		°C	
Storage				-55					+125		°C	
Shutdown				+100					+115		°C	
Thermal Impedance	Case to Ambient					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										
	Set Point Voltage		50	100		25	50		25	50	W	
	Output Current, I_{OUT}	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

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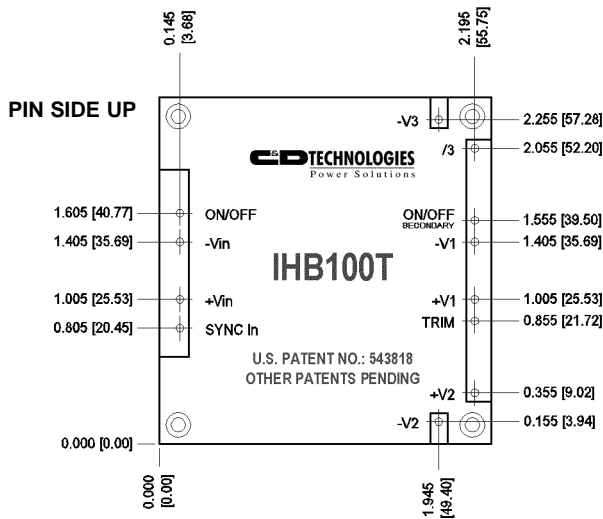
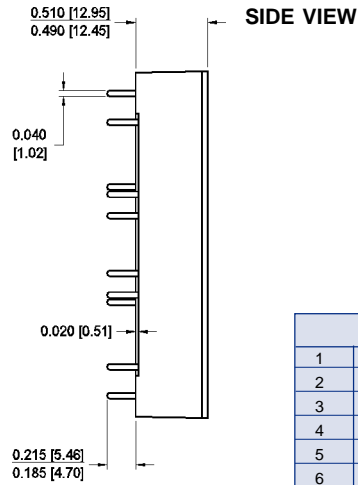
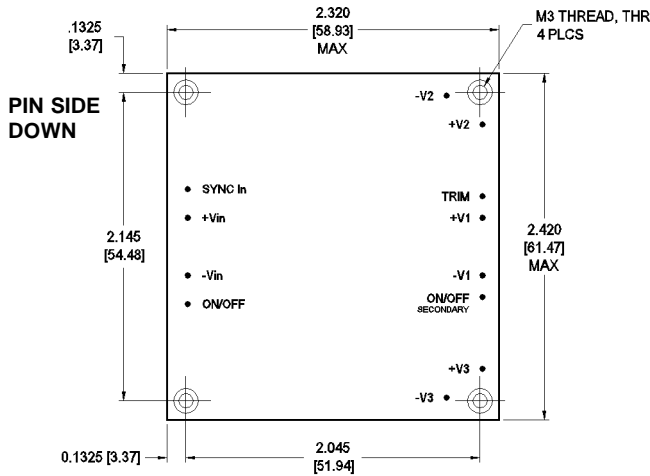
PARAMETER	CONDITIONS	V1			V2			V3			UNITS		
		Min	Nom	Max	Min	Nom	Max	Min	Nom	Max			
IHB100T480315 OUTPUT	Output Power	Total Combined O/P Power = 100 Watts Maximum		50	100	25	50	25	50	W			
	Set Point Voltage	$I_{O,Nom}$		3.3		15.85		15.85		V			
	Output Current, I_{OUT}			0.5	15	30.0	0	1.66	3.33	0	1.66	3.33	A
	Output Ripple, p-p	DC to 20MHz*		100		200	125		500	125		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		1.0	See Regulation Curves		See Regulation Curves				%
	Current Limit Inception	Other Outputs Min Load		38			5.0			5.0			A
	Short-Circuit Current			30		38	4.0		5.0	4.0		5.0	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	$I_{OUT1}=15A, (I_{OUT2}+I_{OUT3}) = 3.4A$ 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		50	100	25	50	25	50	W			
	Set Point Voltage	$I_{O,Nom}$		5.1		12		12		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*		100		150	150		500	150		500	mV
	Output Adjust Range	*		4.75		5.50	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		1.0	See Regulation Curves		See Regulation Curves				%
	Current Limit Inception	Other Outputs Min Load		26.0			6.0			6.0			A
	Short-Circuit Current			20.0		26.0	5.0		6.0	5.0		6.0	A
	Transient Response	50 to 100% Load Step											
	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		50	100	25	50	25	50	W			
	Set Point Voltage	$I_{O,Nom}$		5.0		15.3		15.3		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*		100		150	125		500	125		500	mV
	Output Adjust Range	*		4.60		5.50	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		1.0	1.0		2.0	1.0		2.0	%
	Load Regulation	Min Load to Rated Load		0.05		1.0	See Regulation Curves		See Regulation Curves				%
	Current Limit Inception	Other Outputs Min Load		26.0			5.0			5.0			A
	Short-Circuit Current			20.0		26.0	4.0		5.0	4.0		5.0	A
	Transient Response	50 to 100% Load Step											
	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							%

* See Application Notes available on the web at www.cdpowerelectronics.com

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: ± 0.005 "
 MECHANICAL TOLERANCE: ± 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.

C&D Technologies (Power Electronics) Ltd.
 Shannon, Co. Clare, Ireland
 Tel: +353.61.474.133 Fax: +353.61.474.141

Power Electronics Division, United States
 3400 E Britannia Drive, Tucson, Arizona 85706
 Tel: 800.547.2537 Fax: 520.770.9369

C&D Technologies, (NCL)
 Milton Keynes MK14 5BU UK
 Tel: +44 (0)1908 615232 Fax: +44 (0)1908 617545

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