

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

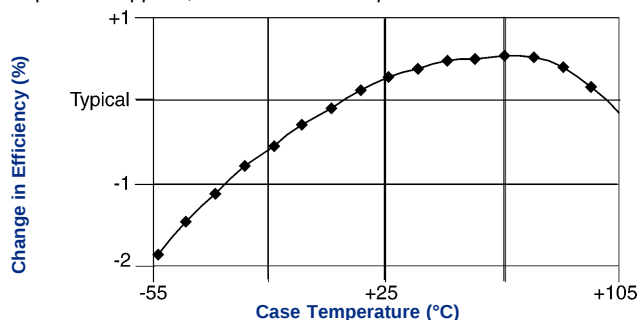
MODEL	INPUT VOLTAGE (VDC)	RATED VOUT (VDC)			RATED MAXIMUM IOU (A)		
		V1 (±)	V2 (±)	V3 (±)	V1(±)	V2(±)	V3(±)
IHB100T480312	48 (33-75)	3.3	12	12	30	4.2	4.2
IHB100T480315	48 (33-75)	3.3	15	15	30	3.4	3.4
IHB100T480512	48 (33-75)	5.1	12	12	20	4.2	4.2
IHB100T480515	48 (33-75)	5.0	15	15	20	2.0	2.0

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.

INPUT	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
	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

GENERAL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
	ISOLATION					
	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
	V _{low}				0.8	V
	V _{high}				Open Collector	
	Secondary	Open Collector/Drain				
	Sink Current-Logic Low				100	μA
	V _{low}				0.4	V
	V _{high}				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

IHB100T480312 OUTPUT	PARAMETER	CONDITIONS	V1			V2			V3			UNITS
			Min	Nom	Max	Min	Nom	Max	Min	Nom	Max	
	Output Power	Total Combined O/P Power = 100 Watts Max		50	100		25	50		25	50	W
	Set Point Voltage	$I_{O, Nom}$		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	$V_{OUT} = 1\% \text{ of } V_{OUT, Nom}$		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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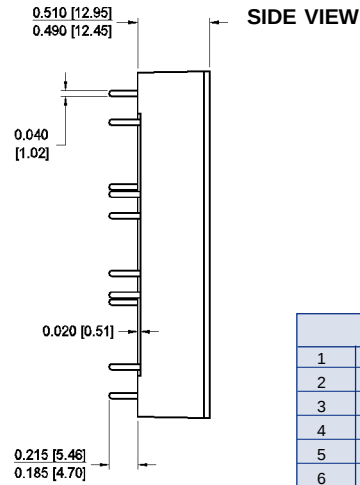
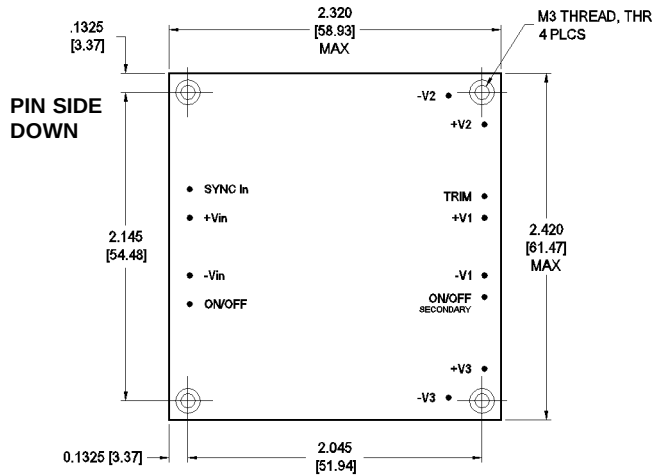
IHB100T480315 OUTPUT	PARAMETER	CONDITIONS	V1			V2			V3			UNITS
			Min	Nom	Max	Min	Nom	Max	Min	Nom	Max	
	Output Power	Total Combined O/P Power = 100 Watts Maximum		50	100		25	50		25	50	W
	Set Point Voltage	I _{O,Nom}		3.3			15.85			15.85		V
	Output Current, I _{OUT}		0.5	15	30.0	0	1.66	3.33	0	1.66	3.33	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			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								%	

IHB100T480512 OUTPUT	PARAMETER	CONDITIONS			V1	V2			V3	UNITS	
		Min	Nom	Max	Min	Nom	Max	Min	Nom	Max	
	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					%

IHB100T480515 OUTPUT	PARAMETER	CONDITIONS	Min	V1 Nom	Max	Min	V2 Nom	Max	Min	V3 Nom	Max	UNITS
	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} ≤ V _{IN} ≤ 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			A
	Transient Response	50 to 100% Load Step										
	Peak Deviation			200	300							mV
Settling Time	V _{OUT1} 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								%	

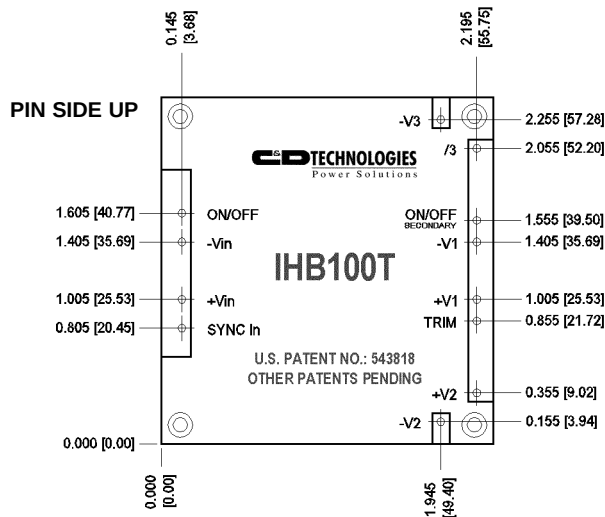
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MECHANICAL



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: ± 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.

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