C&D TECHNOLOGIES
Power Solutions

Corporate: www.cdtechno.com
Product: www.cdpowerelectronics.com

IHB60S

60 Watt Single Output Half Brick DC/DC Converter

- 18 - 40 & 33 - 75V Input Range
- High Efficiency: 84% 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
- Adjustable Output Voltage
- IHB60S Series Approved to UL/CUL 1950, EN60950

The IHB60S series 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 no need for minimum loading.

PRODUCT SELECTION CHART

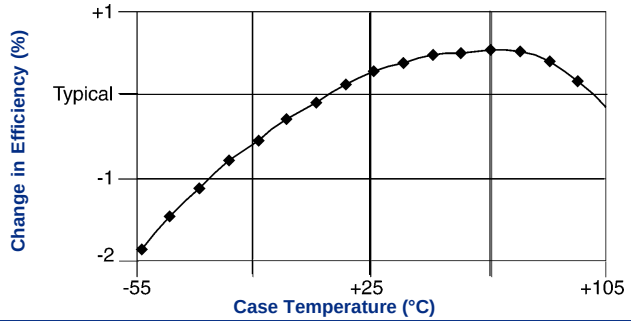
MODEL	INPUT VOLTAGE (VDC)	RATED VOUT (VDC)	RATED MAXIMUM IOUT (A)
IHB60S2403	24 (18-40)	3.3	18
IHB60S2405	24 (18-40)	5.1	12
IHB60S4803	48 (33-75)	3.3	18
IHB60S4805	48 (33-75)	5.1	12

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°C nominal input voltage unless otherwise specified.

	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
INPUT	Voltage Range					
	IHB60S24X Series		18	24	40	VDC
	IHB60S48X Series		33	48	75	VDC
	Reflected Ripple Current	Peak - Peak			220	mA
	Input Ripple Rejection	DC to 1KHz	50	60		dB
	Maximum Input Current	Output Power = 60W				
	IHB60S24X Series	V_{IN} = 16V			6	A
	IHB60S48X Series	V_{IN} = 30V			3	A
	No Load Power Dissipation	P_{OUT} = 0, $V_{IN,Min}$<V_{IN}<$V_{IN,Max}$			6	W
	Inrush Charge					
	IHB60S24X Series				0.29	mC
	IHB60S48X Series				0.165	mC
	Quiescent Operating Current					
	Primary On/Off Disabled			7.5	10	mA
	Secondary On/Off Disabled			15	25	mA

	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
GENERAL	**ISOLATION**					
	Input to Output	Peak Test	1500			VDC
	Input to Baseplate		1500			VDC
	Resistance, Input - Output		10			MΩ
	Capacitance, Input - Output			2000		pF
	Leakage Current	V_{ISO} = 240VAC, 60Hz		180		µA, rms
	GENERAL					
	Set Point Accuracy	V_{IN} = Nominal, I_O=I_{Nom}			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 Impedence				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	Case Temperature				
	Operation/Specification		-40		+100	°C
	Storage		-55		+125	°C
	Shutdown		+100		+115	°C
	Thermal Inpedance	Case to Ambient		8.2		°C/W

SPECIFICATIONS, ALL MODELS

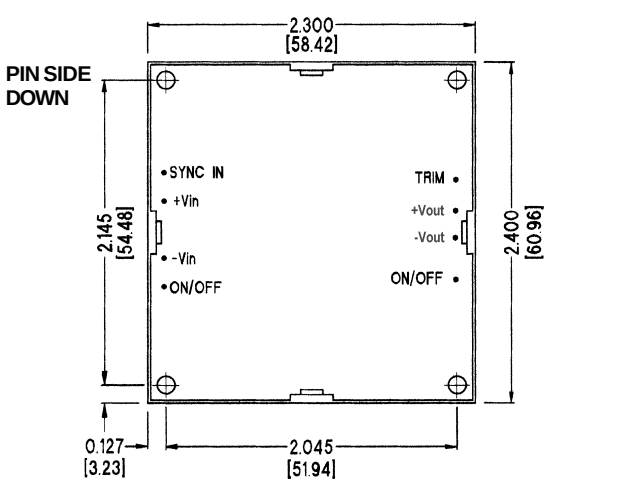
Specifications are at T_{CASE} = +40°C nominal input voltage unless otherwise specified.

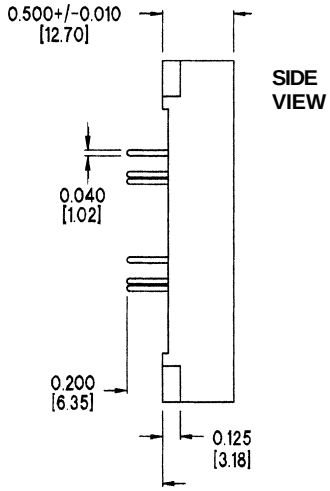
	PARAMETER	CONDITIONS	Min	V_{OUT} Nom	Max	UNITS
IHB60SX03** OUTPUT	Output Power	60 Watts Max		30	60	W
	Set Point Voltage	$I_{O\,Nom}$		3.3		V
	Output Current, I_{OUT}		0	9.0	18.0	A
	Output Ripple, p-p	DC to 20MHz*		100	200	mV
	Output Adjust Range	*	3.15		3.80	V
	Output Temperature Drift			.02	.05	%/°C
	Line Regulation	$V_{IN,Min} \leq V_{IN} \leq V_{IN,Max}$ $I_O = I_{O,Nom}$		0.05	0.10	%
	Load Regulation	Min Load to Rated Load		0.50	1.00	%
	Current Limit Inception	Other Outputs Min Load		23		A
	Short-Circuit Current			19	25	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	V_{IN}=NOM, I_O=18A	83	84		%

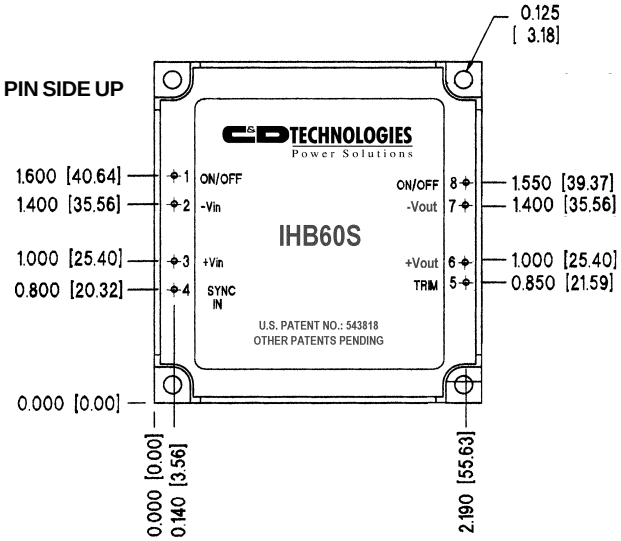
	PARAMETER	CONDITIONS	Min	V_{OUT} Nom	Max	UNITS
IHB60SX05** OUTPUT	Output Power	60 Watts Max		30	60	W
	Set Point Voltage	$I_{O\,Nom}$		5.1		V
	Output Current, I_{OUT}		0	6.0	12	A
	Output Ripple, p-p	DC to 20MHz*		100	200	mV
	Output Adjust Range	*	4.60		5.50	V
	Output Temperature Drift			.02	.05	%/°C
	Line Regulation	$V_{IN,Min} \leq V_{IN} \leq V_{IN,Max}$ $I_O = I_{O,Nom}$		0.05	0.10	%
	Load Regulation	Min Load to Rated Load		0.50	1.0	%
	Current Limit Inception			16.0		A
	Short-Circuit Current			12.6	16.0	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		6.8	V
	Efficiency	V_{IN}=NOM, I_O=12A	86	87		%

* See Application Notes available on the web at www.cdpowerelectronics.com
** X = Either 24 or 48

MECHANICAL







PIN CONNECTIONS	
1	PRIMARY ON/OFF
2	-VIN
3	+VIN
4	SYNC IN
5	TRIM
6	-VOUT
7	+VOUT
8	SECONDARY ON/OFF

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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