

IHB60SC

60 Watt Single Output Half Brick DC/DC Converter



- RoHS Compliant
- 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 IHB60SC 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 voltages and no need for minimum loading.



PRODUCT SELECTION CHART

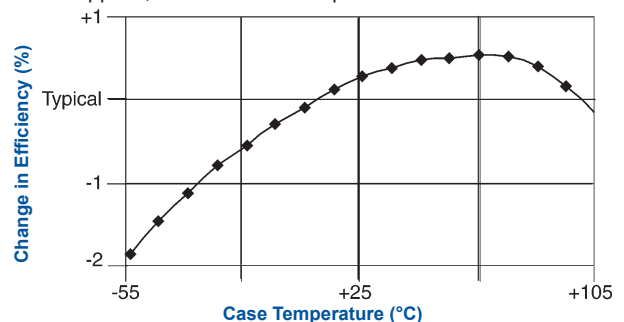
MODEL	INPUT VOLTAGE (Vdc)	RATED VOUT (Vdc)	RATED MAXIMUM IOU (A)
IHB60S2403C	24 (18-40)	3.3	18
IHB60S2405C	24 (18-40)	5.1	12
IHB60S4803C	48 (33-75)	3.3	18
IHB60S4805C	48 (33-75)	5.1	12

ABSOLUTE MAXIMUM RATINGS

Output Short-Circuit Duration	Continuous
Baseplate Temperature	+100°C
Storage Temperature	+125°C
Input to Output Isolation	1500 VDC

EFFICIENCY vs TEMPERATURE

$T_{CASE} = +40^{\circ}C$, 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	
INPUT	Voltage Range					
	IHB60S24XC Series	18	24	40	V _{DC}	
	IHB60S48XC Series	33	48	75	V _{DC}	
	Reflected Ripple Current	Peak - Peak		220	mA	
	Input Ripple Rejection	DC to 1KHz	50	60	dB	
	Maximum Input Current	Output Power = 60W				
	IHB60S24XC Series	$V_{IN} = 16V$		6	A	
	IHB60S48XC 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					
	IHB60S24XC Series			0.29	mC	
	IHB60S48XC 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			V _{DC}
	Input to Baseplate		1500			V _{DC}
	Resistance, Input - Output		10			M Ω
	Capacitance, Input - Output			2000		pF
	Leakage Current	$V_{ISO} = 240V_{AC}, 60Hz$		180		$\mu A, rms$
	GENERAL					
	Set Point Accuracy	$V_{IN} = \text{Nominal}, I_{O} = I_{Nom}$			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 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	$^{\circ}C$
	Storage		-55		+125	$^{\circ}C$
	Shutdown		+100		+115	$^{\circ}C$
	Thermal Impedance	Case to Ambient		8.2		$^{\circ}C/W$

SPECIFICATIONS, ALL MODELS

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

PARAMETER	CONDITIONS	V_{OUT}			UNITS	
		Min	Nom	Max		
IHB60SX03C** 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	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}		UNITS	
			Nom	Max		
IHB60SX05C** 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.cd4power.com

**X = Either 24 or 48

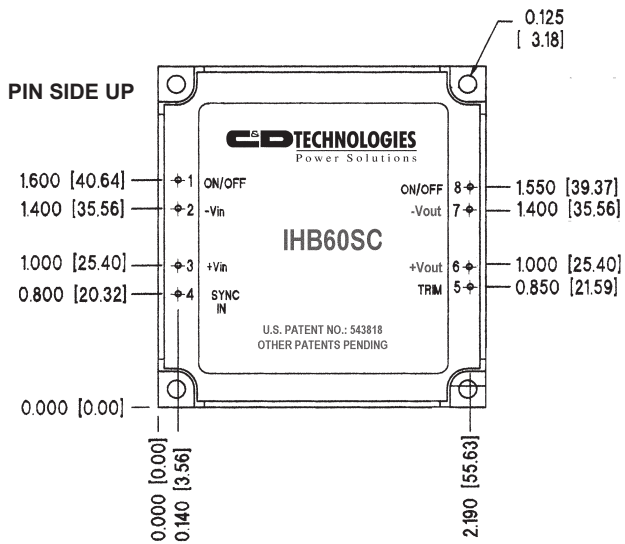
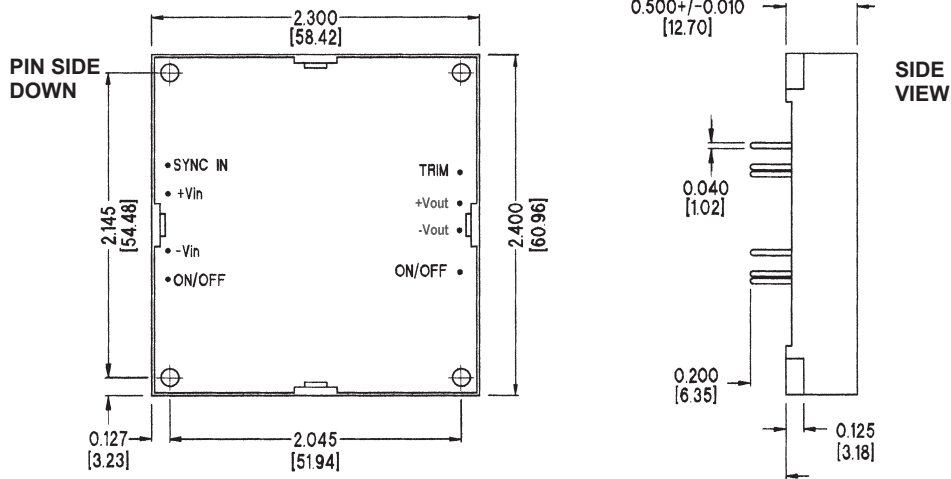
THROUGH-HOLE SOLDERING INFORMATION

These devices are intended for wave soldering or manual soldering.

They are not intended to be subject to surface mount processes under any circumstances.

The normal wave soldering process can be used with these devices where the device is subjected to a maximum wave temperature of 260°C for a period of no more than 10 seconds. Within this time and temperature range, the integrity of the device's plastic body will not be compromised and internal temperatures within the converter will not exceed 175°C. Care should be taken to control manual soldering limits identical to that of wave soldering.

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, wide operating temperature range, and good electrical properties under high humidity environments. The encapsulant and outer shell of the unit have UL94V-0 ratings. Lead material is matte tin 100 microinches min., over nickel, 40-80 microinches.

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