

IHB60SC

60 Watt Single Output Half Brick DC/DC Converter



OBSOLETE PRODUCT
Contact factory for replacement model

- 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

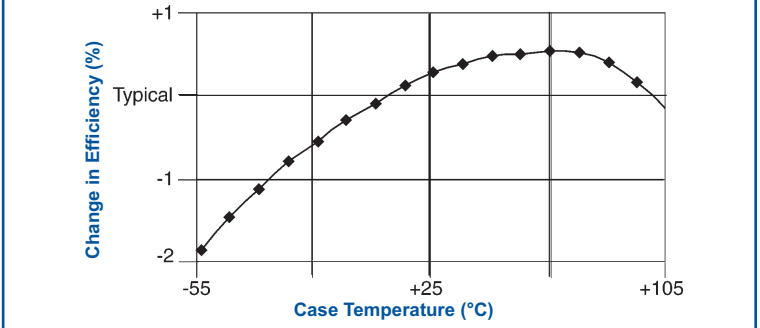
| MODEL | INPUT VOLTAGE (VDC) | RATED VOUT (VDC) | RATED MAXIMUM IOU (A) |
|-------------|---------------------|------------------|-----------------------|
| IHB60S2403C | 24 (18-40) | 3.3 | 18 |
| IHB60S2405C | 24 (18-40) | 5.1 | 12 |
| IHB60S4803C | 48 (33-75) | 3.3 | 18 |
| IHB60S4805C | 48 (33-75) | 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°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 |
| | 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 | Case Temperature | | | | | |
| Operation/Specification | | -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 | 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 | %/°C |
| | Line Regulation | $V_{IN,Min} \leq V_{IN} \leq V_{IN,Max}$ | | .02 | %/°C |
| | | $I_O = I_{O,Nom}$ | | 0.05 | % |
| | Load Regulation | Min Load to Rated Load | | 0.50 | % |
| | Current Limit Inception | Other Outputs Min Load | | 23 | A |
| | Short-Circuit Current | | | 19 | A |
| | Transient Response | 50 to 100% Load Step | | | |
| | Peak Deviation | | | 150 | mV |
| | Settling Time | V_{OUT} 1% of $V_{OUT,Nom}$ | | 35 | μSec |
| | Overvoltage Limit | | 4.2 | | 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 | 12 | A |
| | Output Ripple, p-p | DC to 20MHz* | | 100 | mV |
| | Output Adjust Range | * | 4.60 | | V |
| | Output Temperature Drift | | | .02 | %/°C |
| | Line Regulation | $V_{IN,Min} \leq V_{IN} \leq V_{IN,Max}$ | | | %/°C |
| | | $I_O = I_{O,Nom}$ | | 0.05 | % |
| | Load Regulation | Min Load to Rated Load | | 0.50 | % |
| | Current Limit Inception | | | 16.0 | A |
| | Short-Circuit Current | | | 12.6 | A |
| | Transient Response | 50 to 100% Load Step | | | |
| | Peak Deviation | | | 200 | mV |
| | Settling Time | V_{OUT} 1% of $V_{OUT,Nom}$ | | 35 | μSec |
| | Overvoltage Limit | | 6.0 | | V |
| Efficiency | $V_{IN}=NOM, I_O=12A$ | 86 | 87 | % | |

*See Application Notes available on the web at www.murata-ps.com

**X = Either 24 or 48

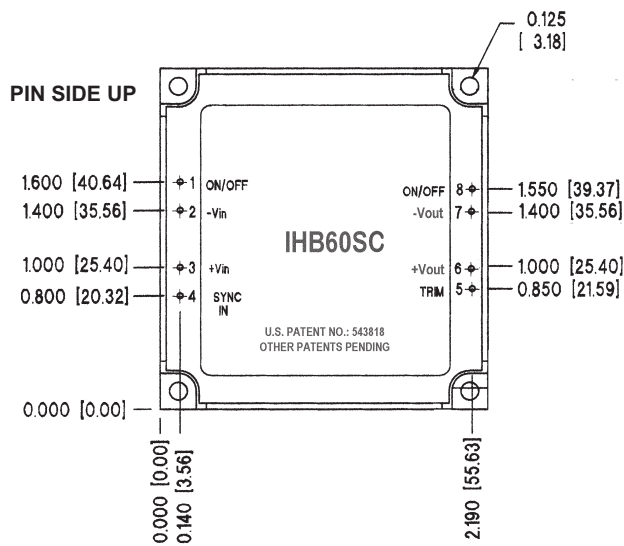
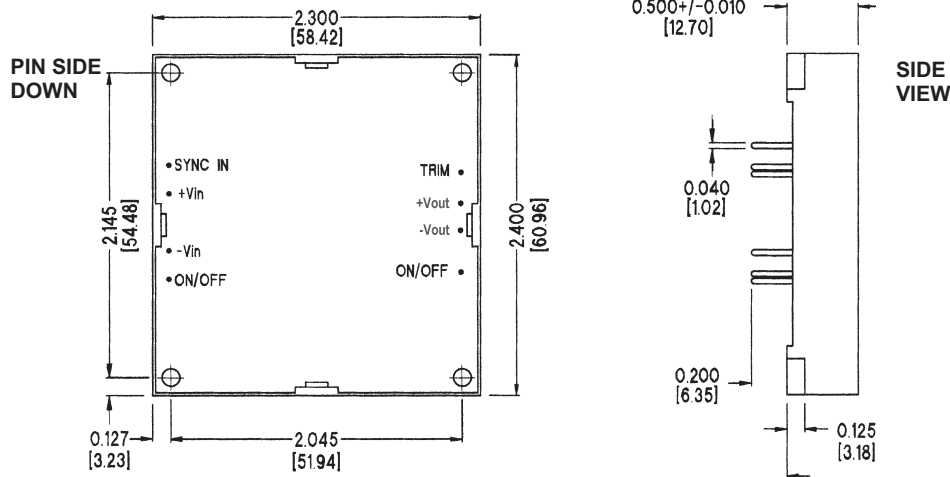
THROUGH-HOLE SOLDERING INFORMATION

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: $\pm 0.005"$
 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, 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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