



Features

- Vicor Pin Compatible
- High efficiency
- High Input Voltage
- Fixed switching frequency provides predictable EMI
- No life-span constrained Capacitor inside Isolation 2250V Input-to-output
- Fully protected: OVP, OTP, OCP and UVLO
- Output voltage trim range of -10%, +10%
- Remote sense for the output voltage
- RoHS compliant

UVLO	OCP	OVP	OTP
Metal Case	ON/OFF Remote	PI Filter Built-in	2250Vdc Isolation

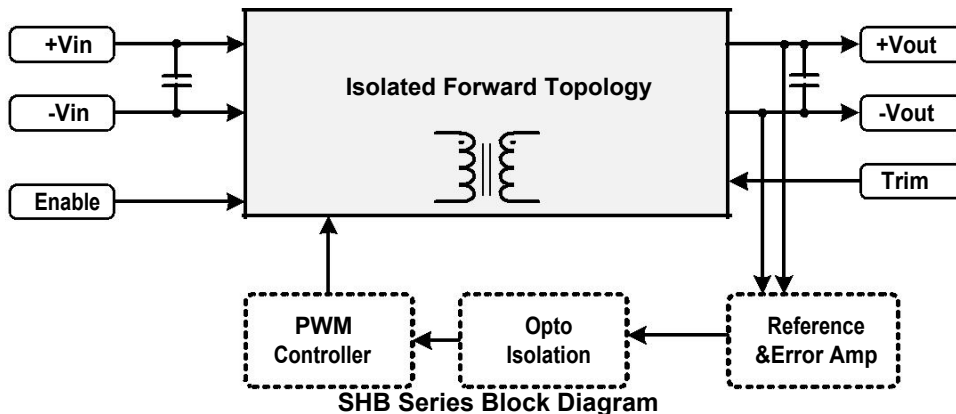


Applications

- Railway System Transportation
- Telecommunication
- Industry Control System
- Embedded Systems
- Semiconductor Equipment

Description

SHB Half-Brick converter series are composed of Isolated, board-mountable, fixed switching frequency DC-DC converters that use synchronous rectification to achieve extremely high-power conversion efficiency. These DC-DC converter modules use advanced power processing, control and packaging technologies to enhance the performance, flexibility, reliability and cost effectiveness of mature power components. Each module is six-sided metal case enclosed to provide protection from the harsh environments seen in many industrial and transportation applications.



MODEL NUMBER STRUCTURE

SHB	110	120	- S -	P	-	B	300V0
Series Name	Input Voltage (VDC)	Output Voltage (VDC)	Output Quantity	Remote Control Option		Shape	Watt
Supreme series	018: 9-36 024: 18-36	120: 12 240: 24	S: Single	P: Positive logic N: Negative logic		B: Base Plate	150
Half	110: 40-160	280: 28					200
Brick	300 : 200-400	480: 48					300

Model Selection Guide

Typical @ Ta=+25 °C under nominal line voltage conditions unless noted.

Model	Input		Output			Efficiency
	Voltage(V)		Voltage	Current	Power	
	Range	Nominal	(V)	(A)	(W)	Typ.(%)
SHB018120-S-P-B200V0	9-36	18	12	16.7	200	89
SHB018240-S-P-B200V0	9-36	18	24	8.33	200	89
SHB018280-S-P-B200V0	9-36	18	28	7.14	200	89
SHB018480-S-P-B200V0	9-36	18	48	4.16	200	89
SHB018120-S-P-B300V0	9-36	18	12	25	300	89
SHB018240-S-P-B300V0	9-36	18	24	12.5	300	89
SHB018280-S-P-B300V0	9-36	18	28	10.7	300	88
SHB018480-S-P-B300V0	9-36	18	48	6.25	300	88
SHB024120-S-P-B200V0	18-36	24	12	16.7	200	89
SHB024240-S-P-B200V0	18-36	24	24	8.33	200	89
SHB024280-S-P-B200V0	18-36	24	28	7.14	200	89
SHB024480-S-P-B200V0	18-36	24	48	4.16	200	89
SHB024120-S-P-B300V0	18-36	24	12	25	300	89
SHB024240-S-P-B300V0	18-36	24	24	12.5	300	89
SHB024280-S-P-B300V0	18-36	24	28	10.7	300	89
SHB024480-S-P-B300V0	18-36	24	48	6.25	300	89
SHB110120-S-P-B200V0	40-160	110	12	16.7	200	89
SHB110240-S-P-B200V0	40-160	110	24	8.33	200	89
SHB110280-S-P-B200V0	40-160	110	28	7.14	200	88
SHB110480-S-P-B200V0	40-160	110	48	4.16	200	88
SHB110120-S-P-B300V0	40-160	110	12	25	300	89
SHB110240-S-P-B300V0	40-160	110	24	12.5	300	89
SHB110280-S-P-B300V0	40-160	110	28	10.7	300	89
SHB110480-S-P-B300V0	40-160	110	48	6.25	300	89
SHB300120-S-P-B200V0	200-400	300	12	16.7	200	88
SHB300240-S-P-B200V0	200-400	300	24	8.33	200	88
SHB300120-S-P-B300V0	200-400	300	12	25	300	88
SHB300240-S-P-B300V0	200-400	300	24	12.5	300	88

Electrical Specifications

Input Specifications

Typical @ Ta=+25°C under nominal line voltage conditions unless noted.

Parameter	Notes and Conditions	Min.	Typ	Max.	Unit
Transient Input Voltage Ranges	SHB018 models(100ms Max)			50	VDC
	SHB024 models(100ms Max)			50	
	SHB110 models(100ms Max)			180	
	SHB300 models(100ms Max)			450	
Operating Input Voltage Ranges	SHB018 models	9	18	36	VDC
	SHB024 models	18	24	36	
	SHB110 models	40	110	160	
	SHB300 models	200	300	400	
Under-Voltage Lockout Start Up Voltage	SHB018 models			9	VDC
	SHB024 models			18	
	SHB110 models			40	
	SHB300 models			200	
Under-Voltage Lockout Shutdown Voltage	SHB018 models		8		VDC
	SHB024 models		17		
	SHB110 models		38		
	SHB300 models		195		
Input Current	See model selection guide, Standby mode (OFF,UVLO)5mA				
Enable Function Input	Positive logic	ON	Open or 8 ~ 20		VDC
		OFF	Short or 0 ~ 1.2		
	Negative logic	ON	Short or 0 ~ 1.2		VDC
		OFF	Open or 8 ~ 20		

Output Specifications

Parameter	Notes and Conditions	Min.	Typ	Max.	Unit
Output Voltage Accuracy	V _{NOM} 50% Load			±1.5	%
Line Regulation	Low line to High line			±0.3	%
Load Regulation	10% to 100% load			±0.5	%
Output Ripple and Noise Voltage	Bandwidth 20MHz and with 1uF MLCC Output Capacitor		1.5		%V _{pk-pk}
Temperature Coefficient				±0.04	% / °C
Transient Recovery Time	25% load step change		800		µSec.
Transient Peak Deviation	ΔI _o /Δt=2.5A/us		±2		%V _o
Start-Up time	When use Enable Function		20		mSec.
Trimming Output Voltage	V _{NOM} 10% Load		±10		%
Over voltage protection	V _{NOM} 10% Load		120		%
Output Power Protection	V _{NOM}		120		%

General Specifications

Parameter	Notes and Conditions	Min.	Typ	Max.	Unit
Switching Frequency	V _{NOM}	150		330	kHz
Storage Temperature Range	All models	-60		125	°C
Operating Case Temperature	All models	-45		100	°C
Over temperature Protection	All models, Auto. Recovery		110		
Isolation Voltage Input to Output	All models, 1 Minute	2250			VDC
Isolation Resistance Input to Output	All models, 500VDC, At 70%RH	100			MΩ
Isolation Capacitance Input to Output	All models		1500		pF
Humidity (non condensing)	All models			95	%
Calculated MTBF	BellCore-TR-332@ 50°C G.B		1.5		M HR
Thermal Shock	Environmental Engineering Experimental tests	MIL-STD-810F			
Vibration		MIL-STD-810F			
Drop		MIL-STD-810F			
Weight			117		g (oz.)
Dimensions	2.4" x 2.42" x 0.6" (61 x 61.36 x 15.2mm)				
Case Material	Aluminum				
Potting Material	Silicone				

Standards Compliance

Parameter	Standard	Test Conditions	Performance Criteria
Environmental Compliance	Reach; RoHS		PASS
EMI	EN55022		Class A/ Class B
ESD	EN61000-4-2	±4 kV Air Discharge ±4 kV Contact Discharge	Crit. A
Radiated Immunity	EN61000-4-3	Level 2, 3 V/m	Crit. A
Fast Transient	EN61000-4-4	±2 kV Applied	Crit. A
Surge	EN61000-4-5	±2 kV Applied	Crit. A
Conducted Immunity	EN61000-4-6	Level 2, 3 V rms	Crit. A

The modules meet EN55022 Class A and Class B standard with external components.

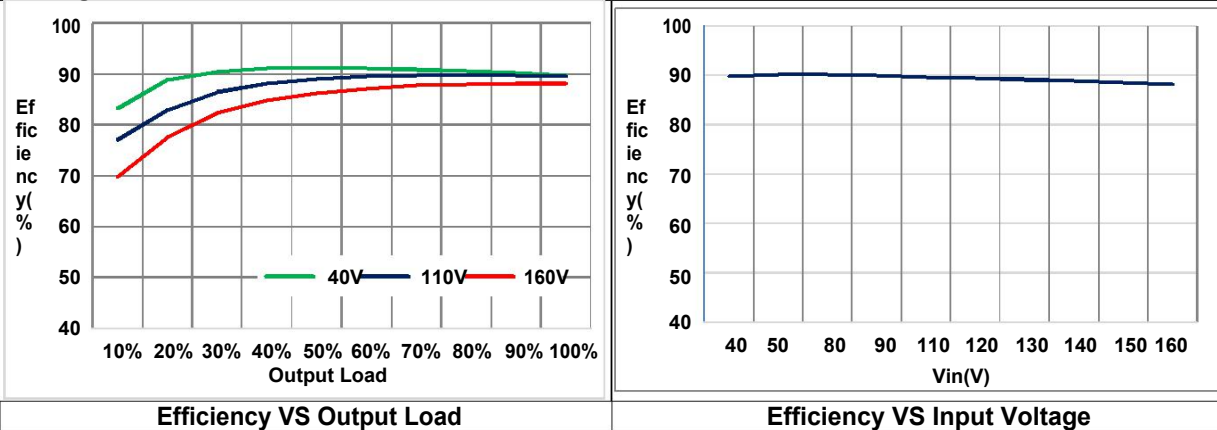
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Characteristic Curves

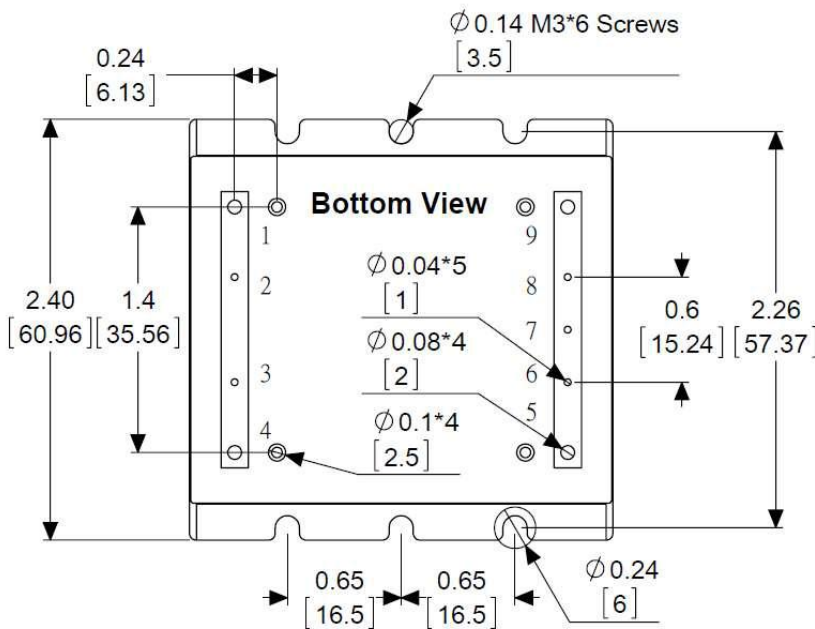
Testing conditions are at typical input, Ta=+25°C, full load (horizontal mount) Unless otherwise indicated

Efficiency Curves

The figures of SHB110120-S-P-B200



Mechanical Drawing & Pin Assignments



Pin#	Function
1	-Vin
2	NC
3	Enable
4	+Vin
5	+Vout
6	+Sense
7	Trim
8	-Sense
9	-Vout

Note:
 Pins Material: Copper alloy
 Pins Plating: Gold
 All dimension in inch[mm]
 Tolerance: .XX±0.02[.X±0.5]