

**The HBQ SERIES** is a new line of isolated DC/DC converters in the industry standard quarter brick format.

Shindengen's design offers high efficiency (up to 91%) and excellent reliability. Typical applications include:

48V TELECOM  
NETWORKING  
DATACOM

## FEATURES

3.3v and 5.0v output voltage  
Up to 30A output current  
Quarter brick size (2.3" x 1.45")  
Up to 91% efficiency  
100 Watts  
Safety Approvals - UL/C-UL 60950  
- TUV EN60950

## MODEL NUMBER DETAIL

Ex: [ H B Q 3 R 3 3 0 0 N ]  
① ② ③ ④ ⑤

- ① "HB" = DC/DC part number within Shindengen
- ② "Q" = Quarter brick
- ③ "3R3" = 3.3V output (ex: "5R0" = 5.0V)
- ④ "300" = 30.0A (ex: "200" = 20.0A)
- ⑤ "N" = Negative logic for on/off control (ex: "P" = positive logic for on/off control)

## ELECTRICAL CHARACTERISTICS

SPECIFICATION	MARK	HBQ3.3V30A	HBQ5V20A	REMARKS
Operating Input Voltage Range	$V_i$	36-75 (48 Typical)		
Maximum Input Current	$I_{imax}$	3.5A		
Inrush Current Transient Rating	$I_{2t}$	.01A2s		
Input Reflected-Ripple Current	$I_i$	10mA		Requires external input filter
Input Voltage Ripple Rejection		(82dB)		
Output Voltage		3.3V	5.0V	
Output Voltage Set Point	$V_o$ set	3.267V min 3.3V typical 3.333V max.	4.95V Min. 5.00 typical 5.05V max.	
Total Output Voltage Range		3.2V min 3.4V max	4.85V min 5.15V max	
Output Voltage Regulation				
Over Line		+/- 2 mV min. +/-5 mV max.	-/-2 mV min. +/-10 mV max	
Over Load		+/- 2 mV min. +/-7 mV max.	-/-2 mV min. +/-10 mV max	
Over Temperature		+/-20 mV min. +/-50 mV max.	+/-30mV min +/-75 mV max	
Output Voltage Ripple and Noise		50mV p-p  100mV p-p		1uF Ceramic Capacitor 10uF Tantalum Capacitor (ESR=100M ohm) 20Mhz
Output Current (Max)		30A	20A	
Output DC Current-Limited Inception		31A min. 36A typical 39A max.	21A min. 24A typical 26A max.	$V_o=90\% V_o$ nominal
Efficiency		90%	91%	$T_a=25$ deg. C, $V_i=48v$ , $I_o=max$
Switching Frequency		330kHz	400kHz	
Dynamic Response Output Voltage Current Transient				
Load Change from 50% $I_o$ to 75% $I_o$		200mV	200mV	Delta $I_o/\Delta t=5A/1\mu s$  Load Capacity: 470uF
Setting Time		400us	300us	
Load Change from 75% $I_o$ to 50% $I_o$		200mV	200mV	
Setting Time		400us	300us	
EMI Class based on FCC part 15 subpart B with external filter				

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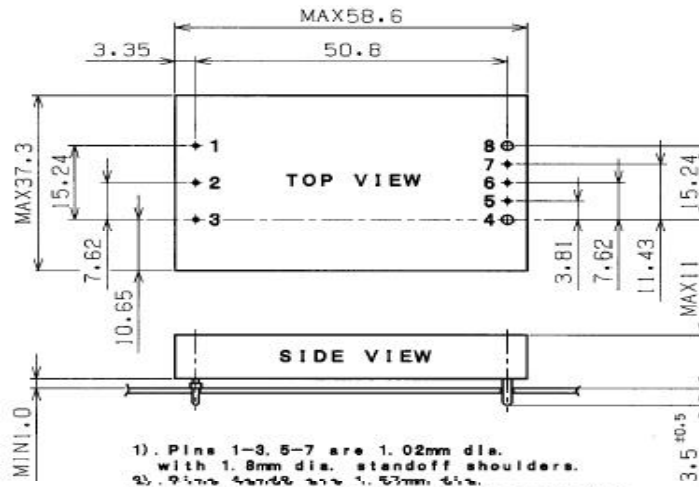
## ISOLATION CHARACTERISTICS

SPECIFICATION	MARK	HBQ3.3V30A	HBQ5V20A	REMARKS
Isolation Voltage		1500V		
Isolation Resistance		10 M ohm		
Isolation Capacitance	li	5000pf		

## FEATURE CHARACTERISTICS

SPECIFICATION	MARK	HBQ3.3V30A	HBQ5V20A	REMARKS
Remote Control				
On/Off Control—On-State Control	V/off	0-1.2V		
	I/off	1.0mA		
On/Off Control—Off-State Control	V/on	15V		
	I/on	50uA		
Turn-on Time		15ms max	8ms max	10%Vo to 90% Vo Io=100%Io
Output Voltage Adjustment				
Output Voltage Remote Sense Range		.5V		
Output Voltage Trim Range		90-110%		%Vo, nom.
Output Over-Voltage Protection		3.96Vmin.	6.0Vmin.	
		4.62V max.	7.0V max.	
Over-Temperature Shutdown		115 deg. C		
Operating Temperature Range: -40 to 85 degrees C				

## DIMENSIONS



- 1). Pins 1-3, 5-7 are 1.02mm dia. with 1.8mm dia. standoff shoulders.
- 2). Pin 6 length is 1.53mm dia.
- 3). Other pin extension lengths available.

Pin No.	Name	Function
1	V <sub>in</sub> (+)	Positive input voltage
2	ON/OFF	TTL input to turn converter on and off, referenced to V <sub>in</sub> (-) . with internal pull up.
3	V <sub>in</sub> (-)	Negative input voltage
4	V <sub>out</sub> (-)	Negative output voltage
5	SENSE (-)	Negative remote sense <sup>1</sup>
6	TRIM	Output voltage trim <sup>2</sup>
7	SENSE (+)	Positive remote sense <sup>3</sup>
8	V <sub>out</sub> (+)	Positive output voltage

**Notes:**

1. Pin5 must be connected to V<sub>out</sub> (-) at load.
2. Leave Pin6 open for normal output voltage.
3. Pin7 must be connected to V<sub>out</sub> (+) at load.

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