



Options:

- RoHS

Features

- Industry standard half-brick package and footprint
2.40"×2.28"×0.50"
- High efficiency: 88% typical
- Low output noise and ripple
- Remote sense
- Over-temperature protection
- Output over-current/voltage protection
- Output voltage adjustment: ±10%
- Baseplate operating temperature: 100°C
- UL60950-1/ EN60950-1 Certified
- RoHS (2002/95/EC) complaint

Numbering Convention

HSR – L 100 1 S C – T G
 ① ② ③ ④ ⑤ ⑥ ⑦ ⑧

No	Features	Descriptions
①	Product Series	Half-brick
②	Remote on/off Logic	L – Negative Logic
		H or Default – Positive Logic
③	Typical Output Power	100 – Output Power: 100W
④	Typical Output Voltage	1 – Output Voltage: 5.0V
⑤	Number of Outputs	S – Single Output
⑥	Typical Input Voltage	C – Input Voltage: 48V
⑦	Model suffix	'-T' : output voltage adjustment
⑧	RoHS feature	G5 – RoHS5
		G – lead-free, RoHS6

1. Description

The power modules are DC-DC converters in an industry half-brick package and footprint equipped with an aluminum board, and can provide up to 5V_{DC} output voltage and 100W output power. The converters feature wide input voltage range, high efficiency, excellent thermal performance and high input-output isolation voltage, and are well suited for telecommunication, industrial automation and test equipments, etc.

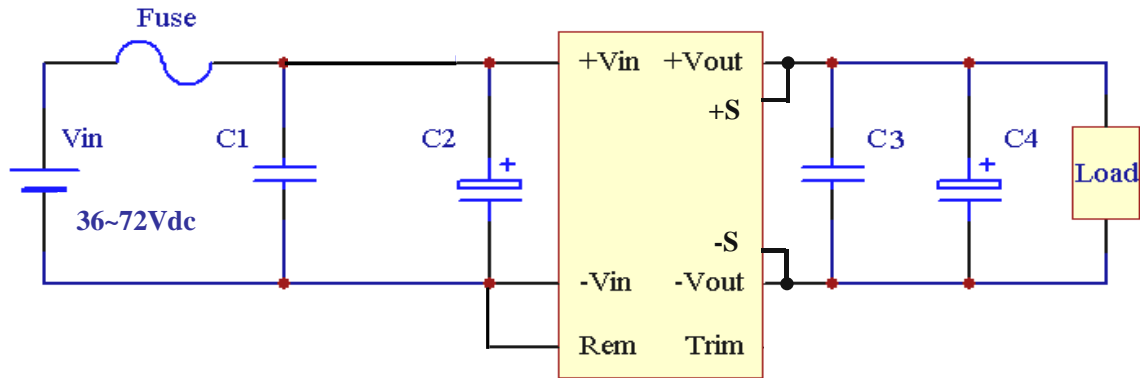
2. Technical Specifications (Unless otherwise stated, all specifications are typical at nominal input voltage, full load, and 25 °C)

Parameter	Test Condition	Min	Typ	Max	Unit	
2.1 Absolute Maximum Ratings						
Input Voltage (Vi)	Non-operating, continuous	0	—	80	Vdc	
Input Transient Voltage (Vit)	100ms	—	—	100	Vdc	
Max Output Power (Pomax)	allowable operating conditions	—	—	100	W	
2.2 Input Specifications						
Typical Input Voltage (Vinom)	—	—	48	—	Vdc	
Input Voltage Range	—	36	—	72	Vdc	
Input Under-voltage Protection	Ionom	30	—	35	Vdc	
Input Under-voltage Recovery Point	Ionom	31	—	36	Vdc	
Max Input Current (Iimax)	Vimin, Ionom,	—	—	3.4	A	
No-load Input Current (Iio)	Vinom, Io=0	—	—	85	mA	
Quiescent Input Current (Iiof)	Vinom, remote output shutdown	—	—	20	mA	
Remote on/off	On	Low level (reference to -Vin, 0~0.4V or open circuit)				
	Off	High level (reference to -Vin, 3.6V~24V or shorted to -Vin)				
2.3 Output Specifications						
Output Voltage Set-point (Vonom)	Vinom, Ionom	4.95	5.00	5.05	Vdc	
Typical Load (Ionom)	—	—	—	20	A	
Output Current Range (Io)	Po≤100W	0	—	20	A	
Output Voltage Trim Range (Voadj)	Io≤Ionom, Po≤100W	-10	—	+15	%	
Output Over-voltage Protection	Protection Mode	—			Auto-recovery	—
	Protection Range	Po≤Pomax	6.0	—	7.0	Vdc
Line Regulation (Vov)	Vimin-Vimax, Ionom	—	—	±0.2	%Vo	
Load Regulation (Vol)	Vinom	—	—	±0.5	%Vo	
Output Over-current Protection	Protection Mode	—			Clamp-on, Auto-recovery	—
	Threshold	—	22	—	28	A
Output Short-circuit Protection	Protection Mode	—			Hiccup, Auto-recovery	—
Dynamic Load Response	Peak Deviation	25%-50%-25%Ionom	—	—	250	mV
	Settling Time	50%-75%-50%Ionom 2.5A/μs, 1ms	—	—	200	μs
Output Ripple and Noise (Vrp)	Vinom, 20MHz	—	—	100	mV	

Parameter	Test Condition	Min	Typ	Max	Unit	
External Output Capacitance (Co)		0	—	6800	μF	
Turn-on/off Peak Deviation	V _{inom} , I _{onm}	—	—	±10	%V _o	
2.4 Safety Specifications						
Isolation voltage	Input to output	Leak Current≤1mA, 1min	1500	—	—	Vdc
	Input to Case	Leak Current≤1mA, 1min	1050	—	—	Vdc
	Output to Case	Leak Current≤1mA, 1min	500	—	—	Vdc
Isolation Resistance (RISO)	500 Vdc	50	—	—	MΩ	
Safety Certificate	EN60950-1 Recognized					
2.5 Reliability						
Vibration Test (sine)	Frequency: 10~55Hz Amplitude: 0.35mm Acceleration: 50m/s ² Cycle: X,Y,Z 30min each axis	After being tested, no damage to the converter and its components, the appearance, output voltage and output ripple and noise (p-p) meet the data sheet requirements.				
Impact Test (half-sine)	Peak Acceleration: 300m/s ² Duration: 6ms 6 times for three perpendicular directions	After being tested, no damage to the converter and its components, the appearance, output voltage and output ripple and noise (p-p) meet the data sheet requirements.				
MTBF (MIL-HDBK-217F)	—	2×10 ⁵ h	—	—	—	
2.6 Environmental Specifications						
Relative Humidity	(40±2) °C, No dew	—	—	90	%RH	
Cooling	—	Natural Convection Cooling				
Operating Baseplate Temperature	—	-25	—	85	°C	
Storage Temperature (Tst)	—	-40	—	125	°C	
2.7 General Specifications						
Switching Frequency	—	—	260	—	k Hz	
Weight	—	—	80	—	g	
Temperature Coefficient (Tcoeff)	—	—	—	±0.02	%/°C	
Over-temperature protection	—	105°C±5°C (baseplate temperature, Auto-recovery)				
Efficiency (η)	V _{inom} , I _{onm}	86	88	—	%	
RoHS	2002/95/EC directive					

3. Basic Application Circuit and Considerations

3.1 Typical Application



Note: Fuse -7A

C1 - 1 μ F/100V (Ceramic capacitor) C2 - 47 μ F/100V (Electrolytic Capacitor, Low ESR)
 C3 - 1 μ F/25V (Ceramic capacitor) C4 - 10000 μ F/25V (Tantalum capacitor, Low ESR)

With EMC requirements, add common-mode/differential-mode filter circuits to input and output.

3.2 Output will be on when the Rem is at high level or when the Rem keeps open circuit; Output will be off when the Rem is at low level or connected to -Vin.

3.3 Input Voltage up to 80Vdc for long time or reverse input polarity would cause the module damaged.

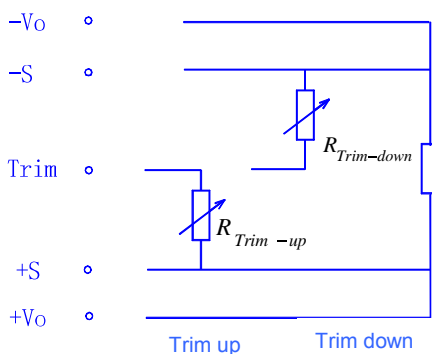
3.4 Output short-current protection mode is hiccup, automatic recovery. But it is not recommend to keep the module operate in this state for long time.

3.5 Output Trim: Exceed the maximum output power (trim up) or the maximum output current (trim down) may cause the converter operates abnormally. The output voltage shall not exceed 5.75V (trim up) or be lower than 4.5V (trim down), or the converter can't work well. See "4. Output Voltage Adjustment (Trim)" for details.

3.6 Remote Sense: when the wires between output and load is a bit longer, using remote sense to ensure that the load voltage is equal to the rated voltage; +S, -S shall be directly connected +Load and -Load respectively. When use no remote sense, short +S to +Vout and short -S to -Vout.

4 Output Voltage Adjustment (Trim)

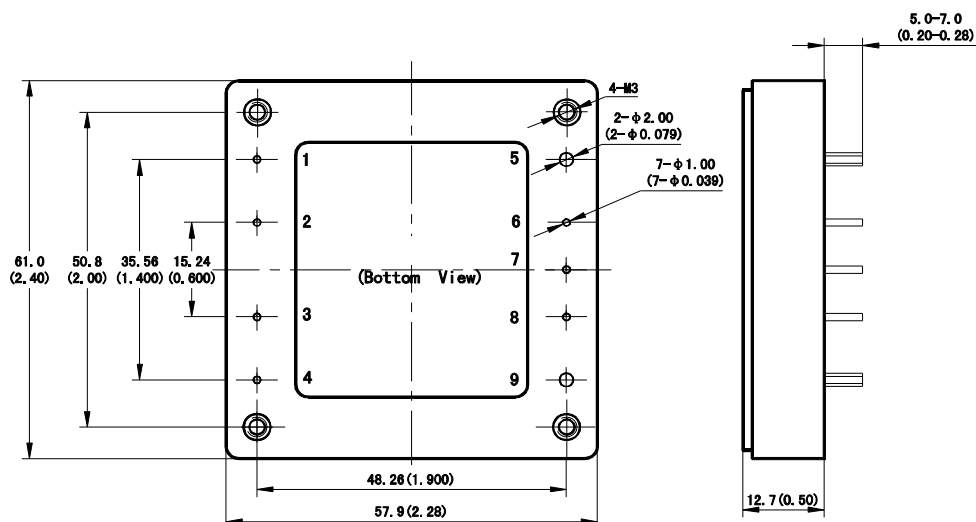
4.1 Output Trim Circuit



5 Dimensions and Pin definition

5.1 Dimensions

Unit: mm (inch) Tolerances: .X±0.5; .XX±0.13 (.XX±0.02); .XXX ±0.005)



5.2 Pin Definition

No	1	2	3	4	5	6	7	8	9
Symbol	-Vin	FG	Rem	+Vin	-Vout	-S	Trim	+ S	+Vout
Definition	Negative input	FG	Remote	Positive input	Negative output	Negative Remote Sense	Trim	Positive Remote Sense	Positive output