

Features



- Industry standard full-brick package and footprint
2.4"×2.28"×0.50"
- High efficiency: 82% typical
- Output Over-current protection
- Output Short-circuit protection
- Low output noise & ripple
- Baseplate operating temperature: -25°C to 40°C
- UL60950-1/ EN60950-1 Certified
- RoHS (2002/95/EC) compliant

Options:

- RoHS compliant

Numbering Convention

HDR – 090 96 D C G
 ① ② ③ ④ ⑤ ⑥

No	Features	Descriptions
①	Product Series	Half-brick -Baseplate Series
②	Typical Output Power	90 – Output Power: 90W
③	Typical Output Voltage	Vo1 –Output Voltage: 96V
		Vo2–Output Voltage: 30V
④	Number of Outputs	D – Double Output
⑤	Typical Input Voltage	48 –Input Voltage: 48V
⑥	RoHS feature	G – lead-free products, RoHS6

1. Description

The HDR-09096DCG power modules are molded packaged DC-DC converters in an industry half-brick package & footprint and equipped with an option of aluminum baseplate. The converters can provide two isolated outputs: 95V/0.3A and 30V/2A. The converters have all components surface mounted, and provide high power density.

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

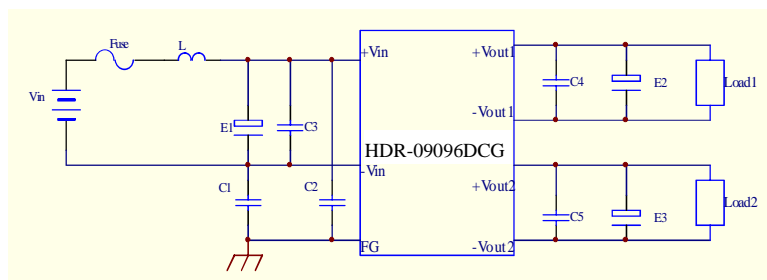
Parameter		Test Condition	Min	Typ	Max	Unit
2.1 Input Specifications						
Typical Input Voltage(V _{inom})		—		48		Vdc
Input Voltage Range		—	40	—	60	Vdc
2.2 Output Specifications						
Vo1 Output Voltage Set-point (V _{o1nom})		V _{inom} ,I _{o1nom}	94	95	96	Vdc
Vo2 Output Voltage Set-point (V _{o2nom})		V _{inom} ,I _{o2nom}	29.7	30	30.3	Vdc
I _{o1} Typical Load (I _{o1nom})		—		0.3		A
I _{o2} Typical Load (I _{o2nom})		—		2		A
Vo1 Line Regulation (V _{o1v})		V _{imin} -V _{imax} ,I _{o1nom}	—	—	±0.5	%Vo1
Vo2 Line Regulation (V _{o2v})		V _{imin} -V _{imax} ,I _{o2nom}	—	—	±0.5	%Vo2
Vo1 Load Regulation (V _{o1l})		10%-100%I _{o1nom} ,V _{inom}	—	—	±0.5	%Vo1
Vo2 Load Regulation (V _{o2l})		10%-100%I _{o2nom} ,V _{inom}	—	—	±0.5	%Vo2
Output Over-current protection		V _{inom} , Vo1	0.33		0.5	A
		V _{inom} , Vo2	2.2		3.4	A
Output Short-circuit protection		Vo2: Short-circuit Protection	Hiccup, Auto-recovery (Vo2 operates normally when Vo1 is in short-circuits)			—
Dynamic Load Response	Peak Deviation	25%-50%-25%I _{o1/2nom} 50%-75%-50%I _{o1/2nom}	—	—	±5%Vo1/2	V
	Settling Time	ΔI _o /Δt 2.5A/μS,V _{inom}	—	—	200	μs
Output Ripple & Noise (P-to-P)		V _{inom} , 20MHz, externally add a 47μF capacitor to Vo1, and add a 100μF capacitor to Vo2	—	—	200	mV
External Output Capacitance (C _o)		Vo1	0	—	470	μF
		Vo2	0		1000	μF
2.3 General Specifications						
Temperature Coefficient (T _{coeff})		—			±0.1	%/°C
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	1250			Vdc

Isolation Resistance (R_{ISO})	—	50	—	—	MΩ
Parameter	Test Condition	Min	Typ	Max	Unit
Storage Temperature (T_{st})	—	-55		+125	
Operating Temperature	Case (Baseplate) Temp.	-25	—	+105	°C
	Ambient Temp. (T_a)	-25	—	+40	
Relative Humidity	(40±2) °C, No dew	—	—	90	%RH
Cooling	—	Heat sink or Force-air Cooling			
Over-temperature Protection	—	+105°C (Auto-recovery: 10°C lower than threshold)			
MTBF	Bellcore TR332	1×10 ⁶ h			
RoHS	RoHS (2002/95/EC)				

Note: There are two sets of PWM circuits in the module, the PWM circuit of V_{o1} is powered by the self-powered circuit of V_{o2} , so it is required to ensure $I_{o1} \geq 50mA$ and V_{o1} at full load; and when V_{o1} is in short-circuits, V_{o1} still works.

3. Basic Application Circuit and Considerations

3.1 Typical Application



C1, C2: 2kV, 1000pF; optional for no EMC requirements.

L: 10μH, optional for no EMC requirements.

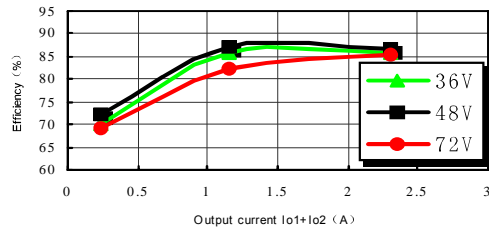
C3, C4: 0.1μF/200V; C5: 0.1μF/100V.

E1, E2: 47μF/200V; E3: 100μF/100V Fuse: 7.5A (recommended)

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

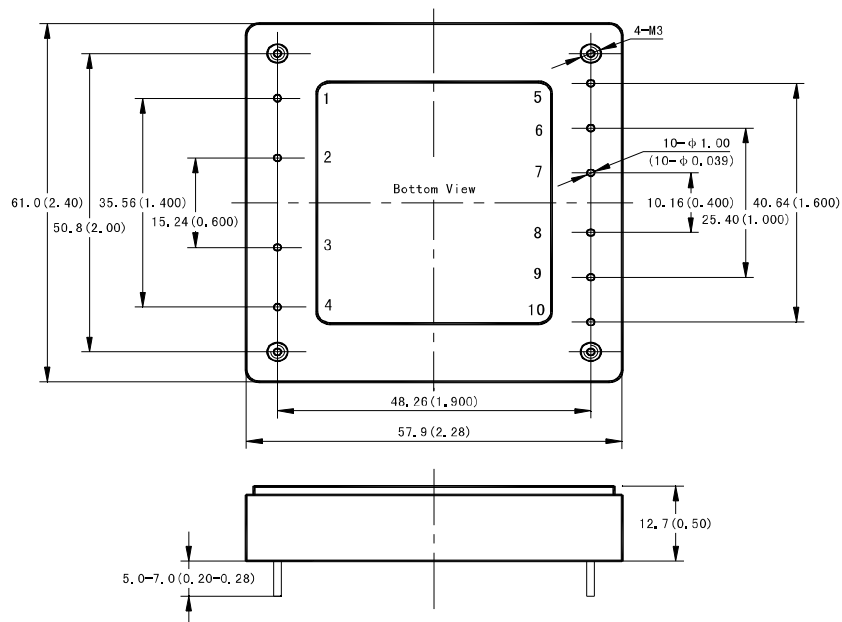
3.3 Output short-circuit protection mode is hiccup, automatic recovery, but it is not recommended to make the module operate in this mode for long time.

4 Efficiency Curve



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	10
Symbol	-Vin	FG	NP	+Vin	+Vo1	-Vo1	NP	+Vo2	-Vo2	NP
Definition	Negative input	Frame Ground	Non-Pin	Positive input	95V Positive output	95V Negative output	Non-Pin	30V Positive output	30V Negative output	Non-Pin