ACP-HCS2-24S20

DC/DC Converter , ACP-HCS2 Series

Features

- Package Type: SIP6
- Operating Temperature Range: -40℃ - +105℃
- Isolation Voltage: 3000VAC
- High Efficiency Up to: 90%
- Compliant with Standard: International Standard Pin Method
- Fields of Application: Electricity, Industrial Control, Communication, Internet of Things, Automotive

Appearance

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Revision Table

Date	Revision	Content	By
2025/7/12	0.1	First Draft	Devin

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Selection Guide

Part No.	Input Voltage (VDC)	Output		Full Load Efficiency% (Min./Typ.)	Capacitive Load Max. (µF)
	Nominal (Range)	Voltage (VDC)	Current Max.(mA)		
ACP-HCS2-24S20	24 (21.6-26.4)	20	100	86 / 89	560

Input Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Input Current (Full Load/No Load)	24VDC Input	--	104/4	--/15	mA
Reflected Ripple Current		--	15	--	
Impulse Voltage	24VDC Input	- 0.7	--	30	VDC
Input Filter		Capacitance Filter			
Hot Plug		Unavailable			

Environmental performance may vary according to the integration method or final integration scenario.

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General Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Insulation Voltage	Input-output, test time 1 minute, leakage current less than 1mA	3000	--	--	VDC
Insulation Resistance	Input-output, insulated voltage 500VDC	1000	--	--	MΩ
Isolation Capacitance	Input-output, 100KHz/0.1V	--	20	--	pF
Operating Temperature	Derating when operating temperature≥85℃, (See Figure 2)	-40	--	105	℃
Storage Temperature		-55	--	125	
Case Temperature Rise	Ta=25℃，nominal input，output load	--	25	--	
Storage Humidity	Non-condensing	--	--	95	%RH
Pin welding can withstand the highest temperature	Soldering spot is 1.5mm away from case for 10 seconds	--	--	300	℃
Switching Frequency	Full load, nominal input voltage	--	220	--	kHz
MTBF	MIL-HDBK-217F@25℃	>3500Kh			

Mechanical Specifications

Case Material	Black plastic; flame-retardant and heat-resistant（UL94V-0）
Package Dimensions	19.56 x 10.10 x 7.05 mm
Weight	2.02 g （Typ.）
Cooling Method	Free air convection

EMC Specifications

EMI	CE		CISPR32/EN55032 CLASS B（The recommended circuit is shown in Figure 4）	
	RE		CISPR32/EN55032 CLASS B（The recommended circuit is shown in Figure 4）	
EMS	ESD	HCS2-xxDxx	IEC/EN61000-4-2 Contact ±6KV	perf. Criteria B
		HCS2-xxSxx	IEC/EN61000-4-2 Contact ±8KV	perf. Criteria B

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Typical Characteristic Curves

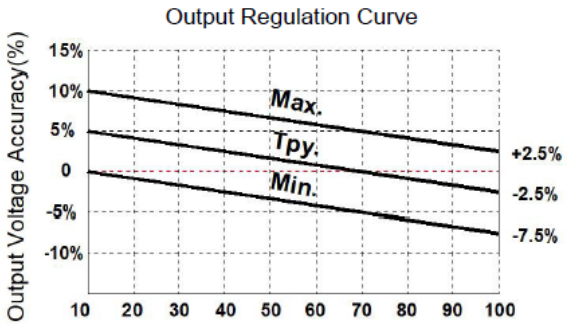


Figure 1

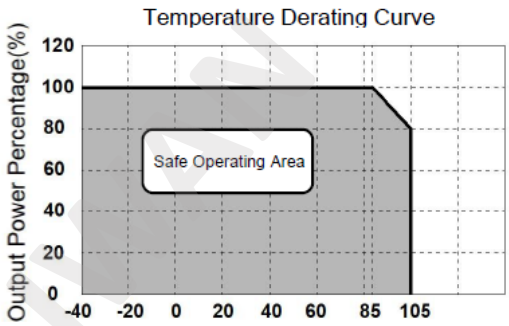
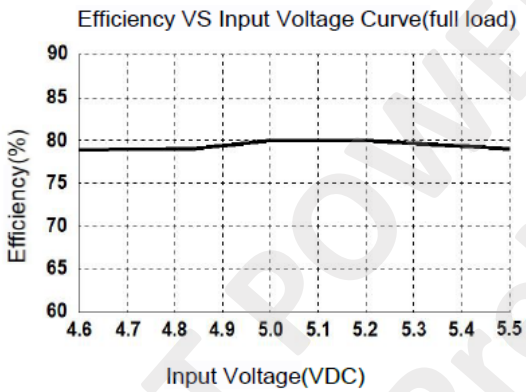
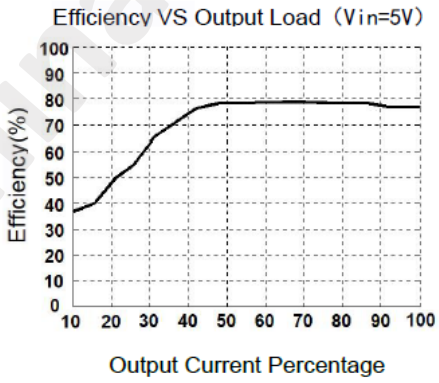


Figure 2





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Circuit Design and Application

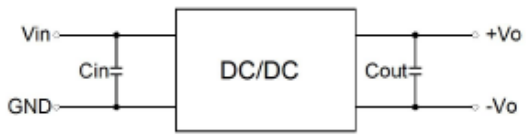

Figure 3

Recommended Capacitive Load Value Table					
Vin (VDC)	Cin (μF)	Single output voltage Vo(VDC)	Cout (μF)	Double output voltage Vo(VDC)	Cout (μF)
5	4.7	3.3/5	10	±3.3/±5	4.7
9/12	2.2	9/12	2.2	±9/±12	1
15	2.2	15/24	1	±15/±24	0.47
24	1	--	--	--	--

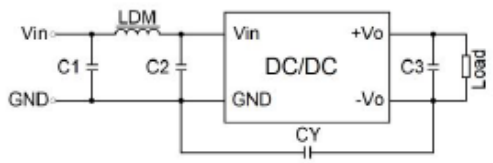

Figure 4

EMI Recommended Parameter Table		
EMI	C1/C2	4.7μF/50V
	CY	1nF/2KV
	C3	Refer to the Cout parameter in Figure 3
	LDM	6.8μH

1.Typical applications

To further reduce input and output ripple, a capacitor filtering network can be connected at the input and output terminals.The application circuit is shown in Figure 3.However, care should be taken to select a suitable filter capacitor. If the capacitance is too large, it is likely to cause start-up problems. For each output, the recommended capacitive load values are shown in "Recommended Capacitive Load Value Table" for safe and reliable operation.

2.EMC typical recommended circuit

See Figure 4

3.Output load requirements

In order to ensure that the module can work efficiently and reliably, the minimum output load should not be less than 10% of the rated load when used. If the power required is really small, connect a resistor in parallel to the output end (the sum of the power consumed by the resistance and the power actually used is greater than or equal to 10% of the rated power).

Note：

1.The input voltage cannot exceed the specified range value, otherwise permanent and irreparable damage may be caused ;

2. Unless otherwise specified,the parameters in this datasheet were measured at 25℃, humidity 40%~75%, input nominal voltage and output pure resistance mode under full load;

3. All index test methods are based on our company's enterprise standards;

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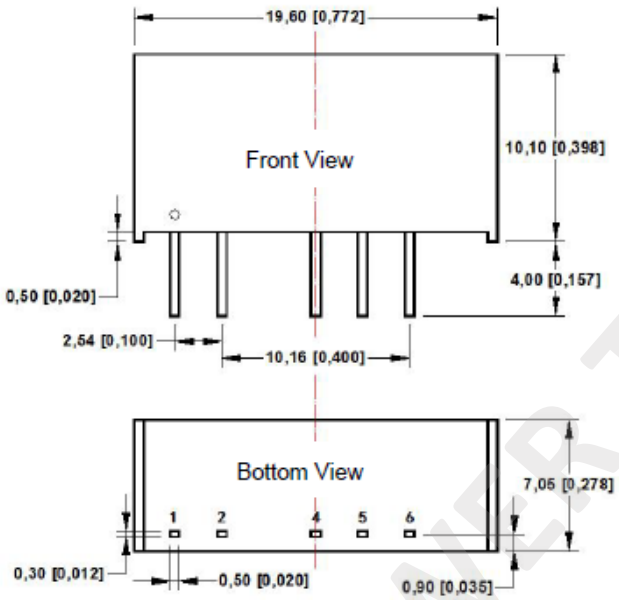
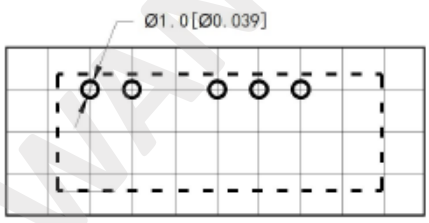
Dimensions and Recommended Layout

Dimensions	PCB Printing Layout & Pin Definition Table





Note: The grid distance is 2.54mm*2.54mm

Pin	Function (single)	Function (double)
1	Vin	Vin
2	GND	GND
4	-Vo	-Vo
5	No Pin	COM
6	+Vo	+Vo

Note:
Unit: mm[inch]
Pin section tolerances:±0.10[±0.004]
General tolerances:±0.50[±0.020]

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