



Product Feature

- Package Type: SIP6
- Operating temperature range: -40°C - +85°C
- Isolation voltage: 1500VDC
- High efficiency up to: 82%,
- Compliant with standard: International standard pin method
- Fields of application: power, industrial control, etc

Product selection table

Part No.	Input Voltage (VDC)	Output			Full Load Efficiency% (Min./Typ.)	Capacitive Load (μF) Max.
	Nominal (Range)	Voltage (VDC)	Current Min.(mA)	Current Max.(mA)		
TPS-HCIS105S03	5 (4.75-5.52)	3.3	0	250	67	2400
TPS-HCIS105S05		5	0	200	70	2400
TPS-HCIS105S12		12	0	84	71	560
TPS-HCIS105S15		15	0	67	72	560
TPS-HCIS105S24		24	0	41	73	100
TPS-HCIS109S09	9 (8.55-9.45)	9	0	111	72	1000
TPS-HCIS112S03	12 (11.4-12.6)	3.3	0	250	67	2400
TPS-HCIS112S05		5	0	200	70	2400
TPS-HCIS112S12		12	0	84	72	560
TPS-HCIS124S03	24 (22.8-25.2)	3.3	0	250	67	2400
TPS-HCIS124S05		5	0	200	72	2400
TPS-HCIS124S12		12	0	83	73	560

Input Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Input Current (full load/no load)	5VDC Input	--	286/15	305/--	mA
	9VDC Input	--	153/12	170/--	
	12VDC Input	--	115/8	121/--	
	24VDC Input	--	59/4	65/--	
Reflected Ripple Current		--	15	--	
Input Filter		Capacitance Filter			
Hot Plug		Unavailable			

Output Specifications

Item	Operating Conditions		Min.	Typ .	Max .	Unit
Output Voltage Accuracy			--	--	± 3	%
Linear Regulation Rate	Input Voltage Variation $\pm 1\%$		--	--	± 0.25	
Load Regulation Rate	10% - 100% load	3.3VDC output	--	--	± 3	%
		Others output	--	--	± 2	
Ripple & Noise	20MHz Bandwidth (peak-peak)	24VDC output	--	50	120	mV
		Others output	--	30	80	
Temperature Drift Coefficient	100% load		--	± 0.02	--	%/°C
Short-Circuit Protection			Continuous, Self-Recovery			

General Specifications

Item	Operating Conditions		Min.	Typ .	Max .	Unit
Insulation Voltage	Input-output, test time 1 minute, leakage currentless than 1mA		1500	--	--	VDC
Insulation Resistance	Input-output, insulated voltage 500VDC		1000	--	--	M Ω
Isolation Capacitance	Input-output, 100KHz/0.1V		--	20	--	pF
Operating Temperature	Derating when operating temperature > 85°C, (See Figure 2)		-40	--	85	°C
Storage Temperature			-55	--	125	°C
Case Temperature Rise	Ta=25°C, nominal input, output load		--	25	--	°C
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	°C
Switching Frequency	Full load, nominal input voltage		--	220	--	kHz
MTBF	MIL-HDBK-217F@25°C		>3500kh			

Mechanical Specifications

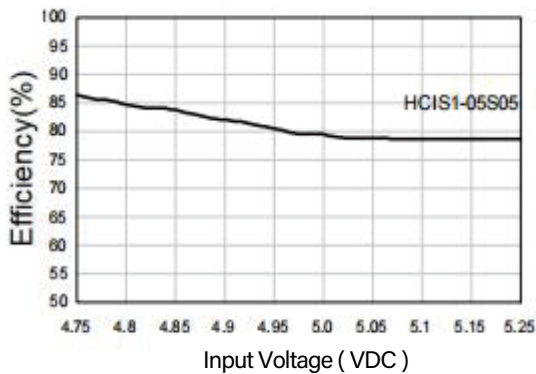
Case Material	Black plastic; flame-retardant and heat-resistant (UL94V-0 rated)				
Package Dimensions	19.60 x 6.00 x 10.10 mm				
Weight	2.1g (Typ.)				
Cooling Method	Free air convection				

EMC Specifications

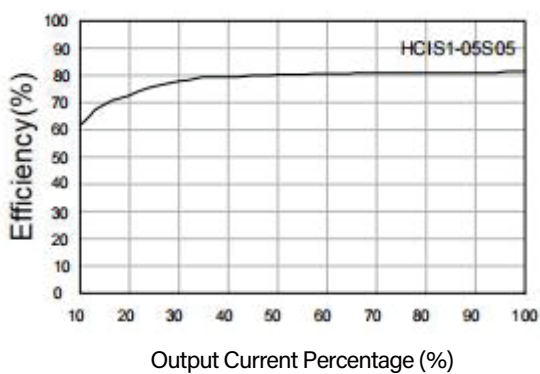
EMI	CE	CISPR32/EN55032 CLASS B (The recommended circuit is shown in Figure 3)			
	RE	CISPR32/EN55032 CLASS B (The recommended circuit is shown in Figure 3)			
EMS	ESD	IEC/EN61000-4-2 Contact ± 6 KV Air ± 8 KV			Perf. Criteria B

Typical Characteristic Curves

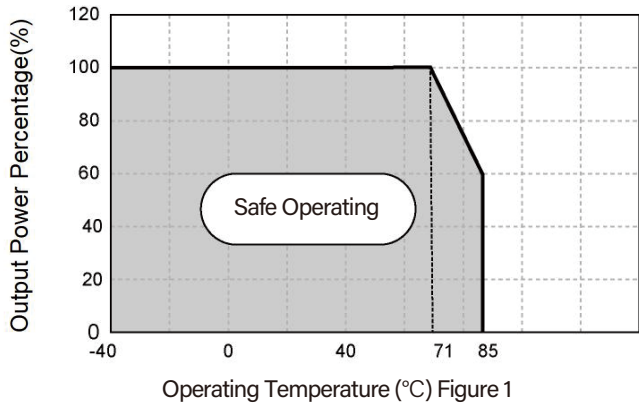
Efficiency VS Input Voltage Curve (full load)



Efficiency VS Output Load (Vin=5V)



Temperature Derating Curve



Typical Circuit Design and Application

Application circuit (Figure 2)

Recommended Capacitive Load Value Table

Vin (VDC)	Cin (μF)	Vo (VDC)	Cout (μF)
5VDC	4.7μF/16V	3.3/15	10
12/15VDC	2.2	9/12	2.2
24VDC	1.0	15/24	1.0

EMC Recommended Circuit (Figure 3)

EMI Recommended Parameter Table

Input Voltage 5VDC	Output Voltage (VDC)		5/9/12/15	24
	EMI	C1/C2	4.7μF/50V	
		CY	--	1nF/2KV
		C3	Refer to the Cout parameter in Figure 2	
		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.

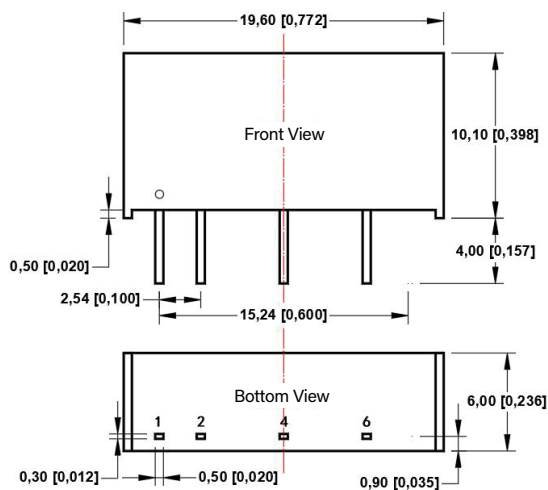
2. EMC typical recommended circuit See Figure 3

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).

Dimensions and Recommended Layout

Dimensions



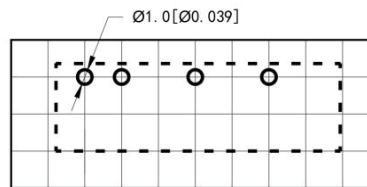
Note:

Unit: mm[inch]

Pin section tolerances: ± 0.10 [0.004]

General tolerances: $+0.50$ [0.020]

PCB Printing Layout & Pin Definition Table



Grid size: 2.54*2.54mm

Pin Definition Table

Pin	1	2	4	6
Function	V _{in}	GDN	-V _o	+V _o

Note:

- The input voltage should not exceed the specified range value, otherwise it may cause permanent and irreparable damage;
- It is recommended to use at a load of over 5%. If the load is below 5%, the ripple index of the product may exceed the specifications, but it does not affect the reliability of the product;
- Suggested dual output module load imbalance: $\leq \pm 5\%$. If it exceeds $\pm 5\%$, it cannot be guaranteed that the product performance meets all performance indicators in this manual;
- The maximum capacitive load is tested within the input voltage range and under full load conditions;
- Unless otherwise specified, all indicators in this manual are measured at Ta=25°C, humidity<75% RH, nominal input voltage, and output rated load;
- All indicator testing methods in this manual are based on our company's corporate standards;
- Our company can provide product customization, and specific requirements can be directly contacted by our technical personnel;
- Product specifications are subject to change without prior notice.