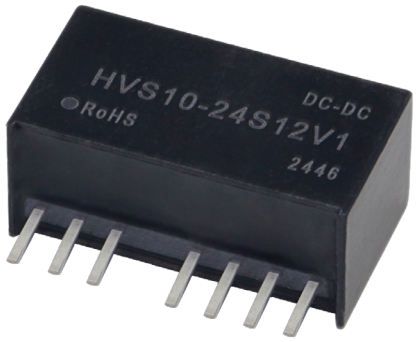
TPS-HVS10 Series
DCDC Converter



Product Feature

- Package Type: SIP8
- Operating Temperature Range: -40°C - +85°C
- Isolation Voltage: 1500VDC
- 4:1 Wide Input Voltage Range
- High efficiency up to 88%
- With the input undervoltage protection,output short circuit protection and output overcurrent protection mechanism
- Fields of application: industry, industrial control, instrumentation, communication, rail transit, etc

Selection Guide

Part No.	Input Voltage (VDC)		Output Voltage (VDC)	Output Current Max. (mA)	Full Load Efficiency% (Min./Typ.)	Capacity load Max. (μF)
	Nominal(Range)	Maximum				
TPS-HVS1024S03	24 (9-36)	40	3.3	2400/0	83/85	2200
TPS-HVS1024S05			5	2000/0	86/88	2200
TPS-HVS1024S06			6	1667/0	86/88	1500
TPS-HVS1024S09			9	1111/0	86/88	680
TPS-HVS1024S10			10	1000/0	86/88	680
TPS-HVS1024S12			12	833/0	86/88	470
TPS-HVS1024S15			15	667/0	86/88	330
TPS-HVS1024S24			24	417/0	86/88	220
TPS-HVS1024D15			±15	±330/0	86/88	#100
TPS-HVS1048S05	48 (18-75)	80	5	2000/0	85/87	2200

Each Output

Input Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Input voltage (full load/no load)	24VDC nominal input series, nominal input voltage	3.3VDC Output	--	389/25	398/45	mA
		5VDC Output	--	474/25	485/45	
		Other Output	--	474/9	485/18	
Reflected Ripple Current			--	50	--	
Impulse Voltage	24VDC Nominal input Series		-0.7	--	50	VDC
Starting Voltage	24VDC Nominal input Series		--	--	9	
Input Under voltage Protection	24VDC Nominal input Series		5.5	6.5	--	
Input Filter			Capacitance Filter			
Hot Plug			Unavailable			
CTRL	Module off		0-1.2V turn off			
	Module on		No connect or 3.5-12V on			

Output Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Output Voltage Accuracy	5% - 100% Load		--	±1.5	±2	%
Linear Regulation	Full load, Input voltage from low limit to high limit		--	±0.25	±0.5	
Load Regulation	5% - 100% Load		--	±0.5	±1.0	
Transient Recovery Time	25% load step change		--	0.3	0.5	ms
Transient Response Deviation		3.3VDC、5VDC	--	±5	±8	%
		Other Output	--	±3	±5	
Temperature Coeffcient	Full Load		--	--	±0.03	%/°C
Ripple & Noise	20MHZ Bandwidth,5% - 100% Load		--	75	150	mVp-p
Overcurrent Protection	Input Voltage Range		110	160	230	%Io
Short-circuit Protection			Continuous, Self-Recovery			

General Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Insulation Voltage	Input-output, test time 1 minute, leakage current less than 1mA	1500	--	--	VDC
Insulation Resistance	Input-output, insulated voltage 500VDC	1000	--	--	MΩ
Isolation Capacitance	Input-output, 100KHz/0.1V	--	1000	--	pF
Operating Temperature	See Figure 1	-40	--	+85	°C
Storage Temperature		-55	--	+125	
Storage Humidity	Non-condensing	5	--	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	250	300	400	KHz
MTBF	MIL-HDBK-217F@25°C	>1000Kh			

Mechanical Specifications

Case Material	Black plastic; flame-retardant and heat-resistant（UL 94V-0 rated）
Package Dimensions	Package Dimensions 22.00 * 12.00 * 9.50 mm
Weight	Weight 4.8g (Typ.)
Cooling Method	Cooling Method Free air convection

EMC Characteristics

EMI	CE	CISPR32/EN55032 CLASS B (The recommended circuit is shown in Figure 3-②)	
	RE	CISPR32/EN55032 CLASS B (The recommended circuit is shown in Figure 3-②)	
EMS	ESD	IEC/EN61000-4-2 Contact±4KV	Perf. Criteria B
	RS	IEC/EN61000-4-3 10V/m	Perf. Criteria A
	EFT	IEC/EN61000-4-4 ±2KV(The recommended circuit is shown in Figure 3-①)	Perf. Criteria B
	Surge	IEC/EN61000-4-5 line to line±2KV(The recommended circuit is shown in Figure 3-①)	Perf. Criteria B
	CS	IEC/EN61000-4-6 3 Vr.m.s	Perf. Criteria A

Typical Characteristic Curves

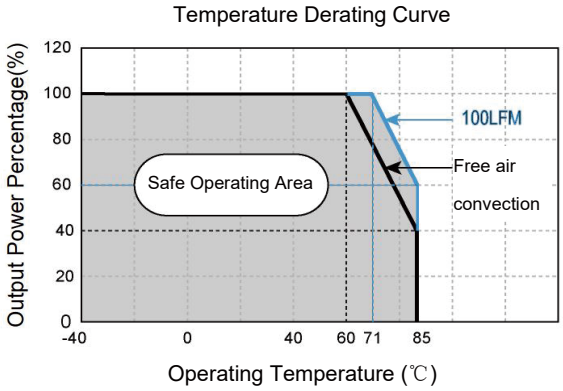
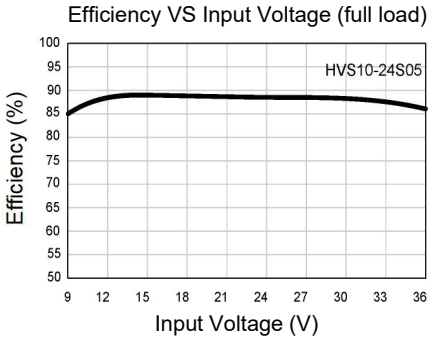
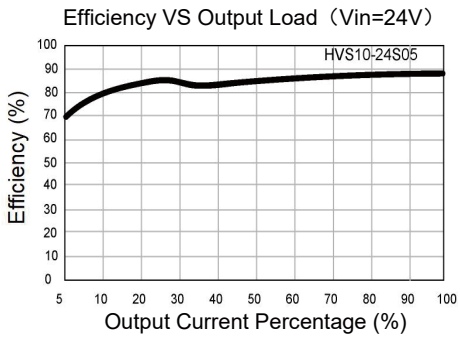


Figure 1





Circuit Design and Application

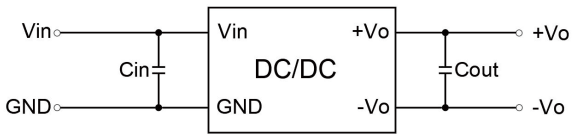


Figure 2

Recommended Capacitive Load Value Table

Cin	Vout	Cout
47μF/100V	3.3/5/9	22μF/16V
	12/15	22μF/25V
	24	22μF/50V

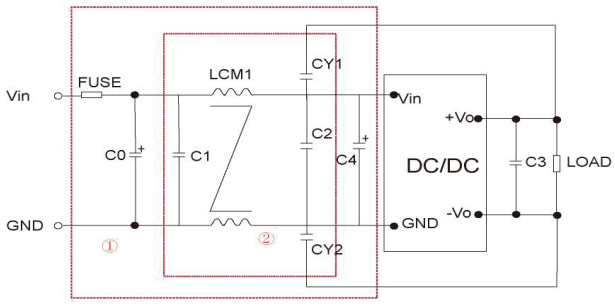


Figure 3

EMI Recommended Parameter Table

Model	Vin:24V
FUSE	Select according to the actual inputcurrent of the customer
C0、C4	330uF150V
Ch、C2	10μF/50V
LCM1	470μH
C3	Refer to the Cout parameter in Figure 2
CY1、CY2	1nf/2000VDC

Note: Part 1 in Figure 3 is for EMC testing; The second part is used for EMI filtering, which can be selected according to the demand

Note

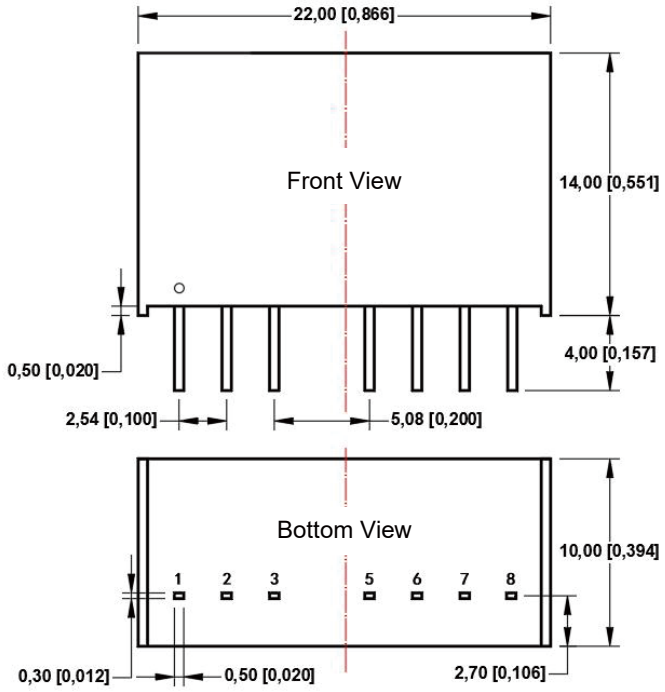
1.The input voltage cannot exceed the specified range value, otherwise permanent and irreparable damage may be caused ;

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.pecific needs can be directly contact our technical personnel.

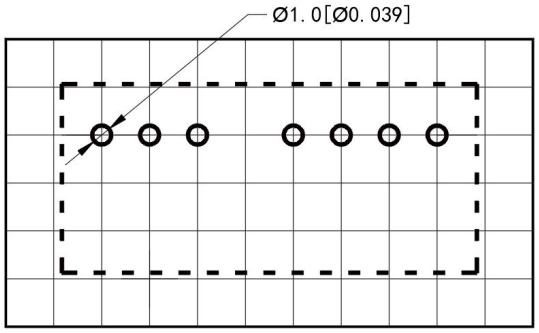
Dimensions and Recommended Layout

- Dimensions



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

- PCB Printing Layout&Pin Definition Table



Pin	Function(single)	Function(double)
1	GND	GND
2	Vin	Vin
3	CTRL	CTRL
5	NC	NC
6	+Vo	+Vo
7	-Vo	COM
8	NC	-Vo

NC: Pin to be isolated from circuity