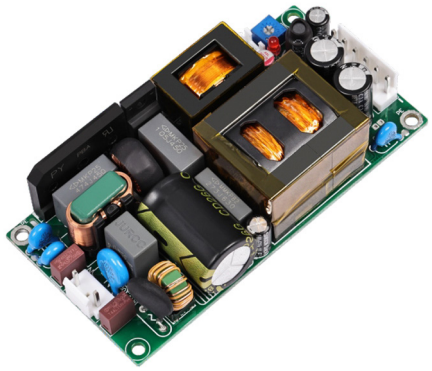
TPS-GSH225S Series

Single Output Open Frame Power Supply



Features

- Input voltage: 100-264VAC/141-370VDC
- Operating temperature: -25°C to +70°C
- With fan(13CFM): 225W
- Natural cooling: 140W
- Compact size: 4' x 2' x 1' inches
- Fan power supply: 12V±25%
- Active PFC function
- 4000VAC high isolation voltage
- High reliability and long lifespan: 3-year warranty
- Protection: Input undervoltage, output short circuit, overcurrent, overvoltage, overtemperature

The TPS-GSH225Sxx series is a 225W output, AC or DC input switch-mode power supply. It supports an input voltage range of 100-264VAC or 141-370VDC, and provides output voltages of 12V, 19V, 24V, 36V, and 48V. With an efficiency of up to 94%, it can operate stably in environments ranging from -25°C to +70°C. This series has comprehensive protection features.

Specifications

Model	Cooling Method	Output Power*	Rated Output Voltage/ Current(Vo/Io)	Voltage Ripple (Max.)	Adjustable Voltage Range ADJ(V)	Efficiency (230VAC, %/Typ.)*	Max Capacitive Load at Room Temperature
TPS-GSH225S-12V	Natural	140W	12V/11.67A	60mVp-p	11.4-12.8	93	10000μF
	13CFM	225W	12V/18.75A				
TPS-GSH225S-19V	Natural	140W	19V/7.36A	100mVp-p	18-20.9	93.6	6000μF
	13CFM	225W	19V/11.84A				
TPS-GSH225S-24V	Natural	140W	24V/5.83A	100mVp-p	22.8-27	94.5	5000μF
	13CFM	225W	24V/9.4A				
TPS-GSH225S-36V	Natural	140W	36V/3.88A	100mVp-p	34.2-39.6	94	4000μF
	13CFM	225W	36V/6.25A				
TPS-GSH225S-48V	Natural	140W	48V/2.91A	100mMp-p	45.6-54	94.6	2000μF
	13CFM	225W	48V/4.7A				

Notes

1. *Under any steady-state conditions, the total output power must not exceed the rated total power. When adjusting the output voltage upwards, the total output power must not exceed the rated output power. If the output voltage is adjusted to exceed the rated voltage by 5%, the output power must be reduced to 80% of the rated power. When adjusting the output voltage downwards, the output current must not exceed the rated output current.
2. *Efficiency test conditions: 25°C ambient temperature, 230VAC input. When testing full-load efficiency, the fan should be powered by an external power source, and the fan's power consumption should not be included in the input power calculation.
3. *In the case of AC input, L/N are not polarized; for DC input, L is the positive terminal and N is the negative terminal.

Input

Item	Test condition		Min.	Typ.	Max.	Unit
Input voltage	AC input		100	-	264	VAC
	DC input		141	-	370	VDC
Frequency			50	-	60	Hz
Input current	115VAC		-	-	2.5	A
	230VAC		-	-	1.2	
Power factor	115VAC	Full Load	>0.98	-	-	-
	230VAC		>0.95	-	-	-
Leakage current	240VAC		<0.1mA;Single fault condition <0.5mA			
Inrush current	cold start：120VAC		-	40	-	A
	cold start：240VAC		-	70	-	
Touch current	240VAC		-	-	0.25	mA
No-load power consumption			-	-	0.5	W

Output

Item	Test condition		Min.	Typ.	Max.	Unit
Output accuracy*	Full load		-	±1	-	%
Line regulation	Rated load		-	±0.5	-	
Load regulation	0%-100% load		-	±1	-	
Start-up time			-	0.5	-	S
Rise time			-	10	-	ms
Hold time	Full load	115VAC	-	10	-	
		230VAC	-	10	-	
Fan Auxiliary Power (Fan)	12V/19V/24V/36V/48V		provides 12V/0.5A output with a voltage accuracy of ±5% for the fan			
Notes	1. *Unless otherwise specified, all typical values are measured under a 230VAC input and a 25°C ambient temperature. 2. *"Ripple and noise testing method: Parallel a 0.1uF ceramic capacitor and a 47uF electrolytic capacitor at the output.					

Protection

Input undervoltage protection	12V/19V/24V/36V/48V	68-82VAC
Output short circuit protection		Hiccup mode, auto recovery after fault removed
Overcurrent protection		110%~180% of rated output current, hiccup mode, auto recovery
Overvoltage protection		110%-125% of rated output voltage, shutdown and restart for recovery
Overtemperature protection		Output shutdown, auto recovery after temperature decreases

General Characteristics

Item		Test condition			Min.	Typ.	Max.	Unit
Input voltage	Input-Output	1min, leakage current<10m A			4000	-	-	VAC
	Input-⏚				1500	-	-	
	Output-⏚				1500	-	-	
Isolation resistance	Input-⏚	Environment：25±5°C 500VDC			50	-	-	MQ
	Output-⏚				50	-	-	
Insulation grade	Input-Output				2×MOPP	-	-	-
	Input-⏚				1×MOPP	-	-	-
	Output-⏚				1×MOPP	-	-	-
Operating temperature					-25	-	+70	°C
Storage temperature					-40	-	+85	
Storage humidity		non-condensing			10	-	95	%RH
Operating humidity					20	-	90	
Output power derating		Working temperature derating	Natural cooling	+45°C to +70°C	2.0	-	-	%/°C
			13CFM	+50°C to +70°C	2.5	-	-	
				-25°C to -30°C	2.0	-	-	
		Input voltage derating	95VAC-115VAC		1.0	-	-	%/VAC
Safety standards		12V/19V/24V/36V/48V			Compliant with IEC61558-1, ES60601-1(3.1version), CAN/CSA-C22.2 No.60601-1:14-EditioB, EN60601-1-2 dition4			
Safety class					CLASS Ⅰ(with PE, requires connection to PE) /CLASS without PE)			
Warranty		Ambient temperature：<50°C			3 years			

Physical Properties

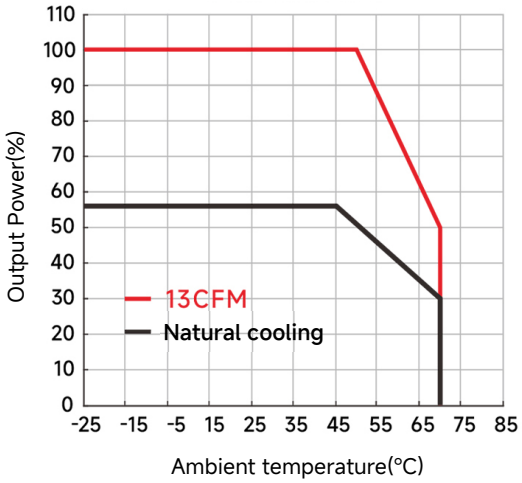
Product appearance	Open-frame type
Dimensions	Standard: 101.6×50.8×25.4mm
	With aluminum plate: 101.6×50.8×28.1mm
Weight	Standard: 165±10g
	With Aluminum plate: 200±10g
Cooling method*	Natural cooling/13CFM
Note: The cooling method and power derating refer to the product characteristic curve.	

EMC Characteristics

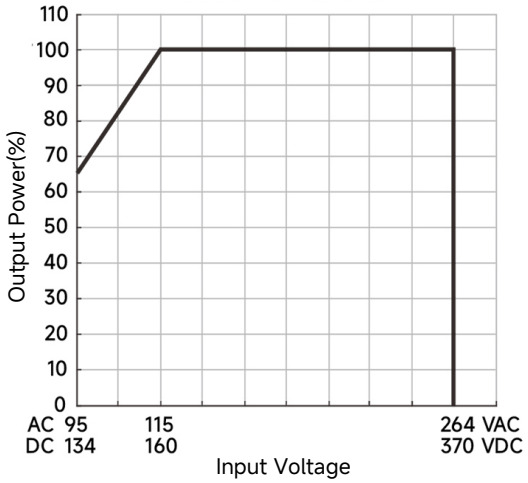
Electromagnetic Interference(EMI)*	Conducted Emissions	CISPR32/EN55032 CLASS B	
	Radiated Emissions	CISPR32/EN55032(I CLASS B, II CLASS A)	
	Current Harmonic	IEC/EN61000-3-22 CLASS A and CLASS D	
Electromagnetic Susceptibility (EMS)	Electrostatic Discharge	IEC/EN61000-4-2 Contact ±8KV /Air ±15KV	Cperf.CriteriaA
	Radiated susceptibility	EC/EN61000-4-3 10V/m	perf.CriteriaA
	Electrical Fast Transient/burst transients	IEC/EN61000-4-4 ±4KV	pert.Criteria[4]
	Surge Immunity	IEC/EN61000-4-5 ±2KV/ ±4KV	perf.CriteriaA
	Conducted Immunity	IEC/EN61000-4-610Vr.m.s	perf.CriteriaA
	Voltage Dips, Short Interruptions, and Voltage Variations Immunity	IEC/EN61000-4-110%,70%	perf.CriteriaB
Notes	1. * The power supply should be considered as a part of the system. All EMC tests should be conducted by installing the sample on a metal plate (thickness: 1mm, dimensions: 360mm × 360mm). EMC confirmation should be conducted in conjunction with the terminal equipment. 2. Class I products require PE (connection to PE), Class II products do not require PE.		

Product Characteristic Curves

Temperature Derating Curve

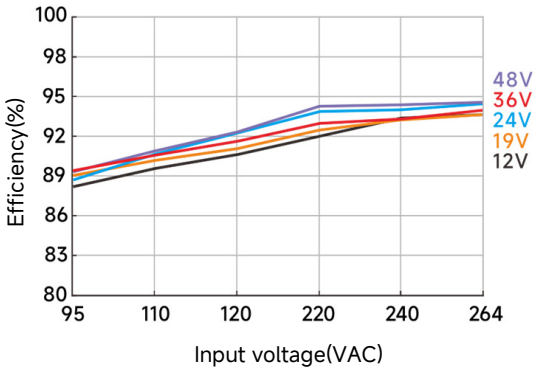


Input Voltage Derating Curve

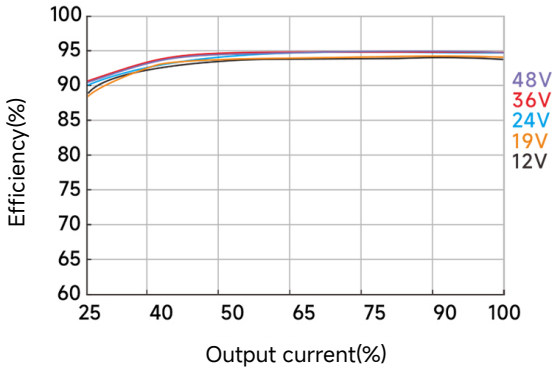


Note: For input voltage ranges of 95-115VAC, input voltage derating should be applied in addition to temperature derating.

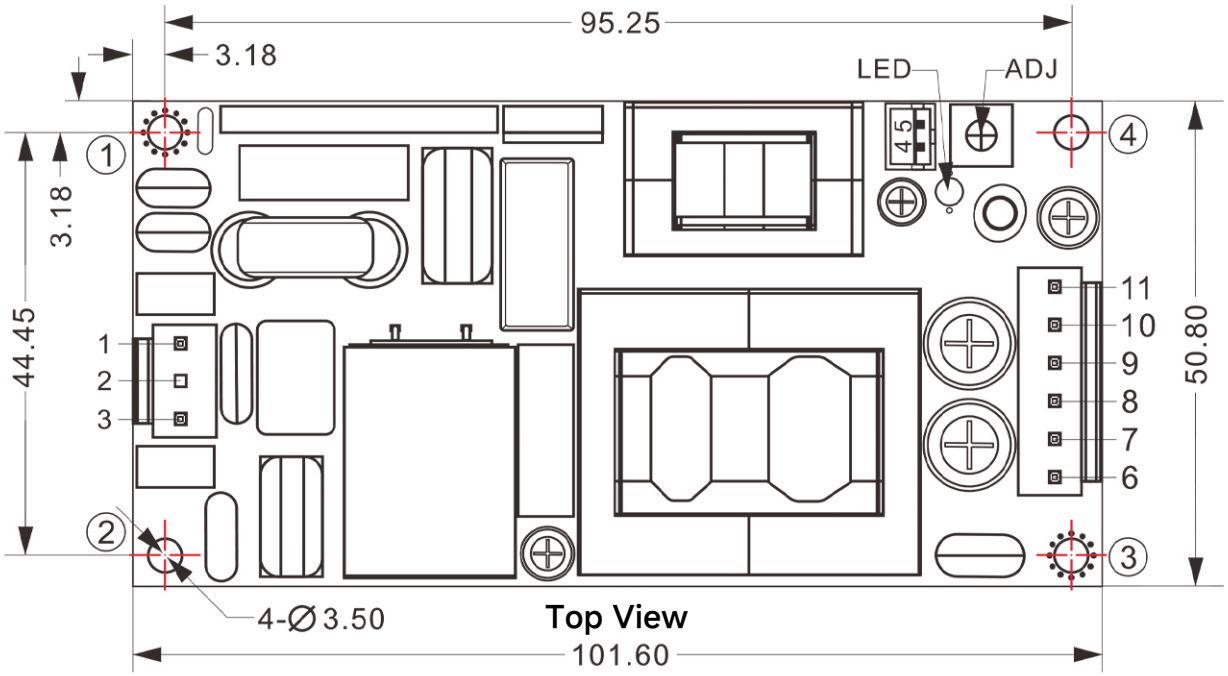
Efficiency vs. Input Voltage (Full Load)



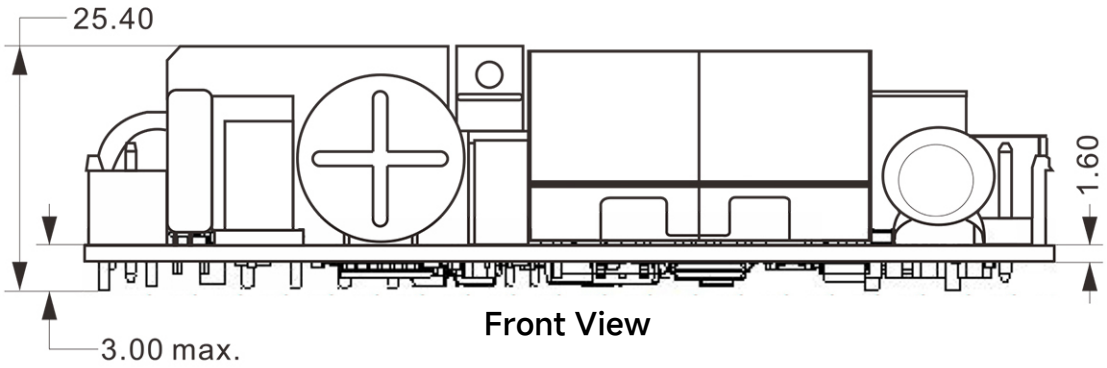
Efficiency vs. Output Load(Vin=230VAC)



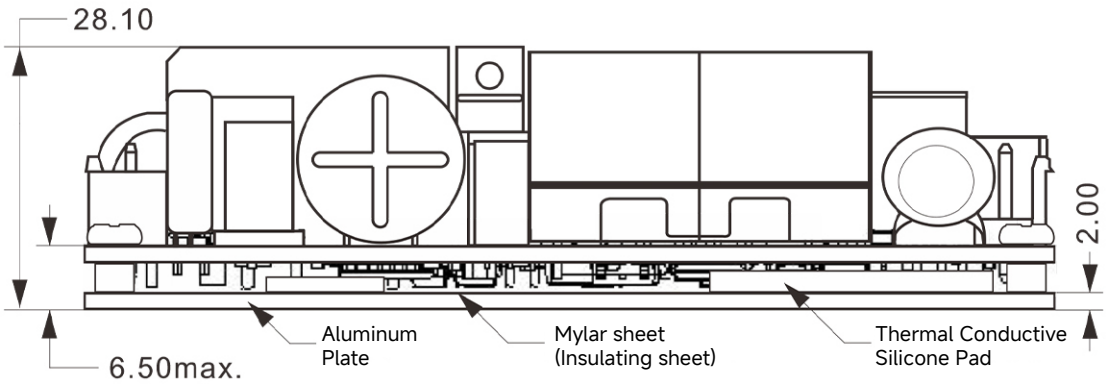
Dimensions(mm)



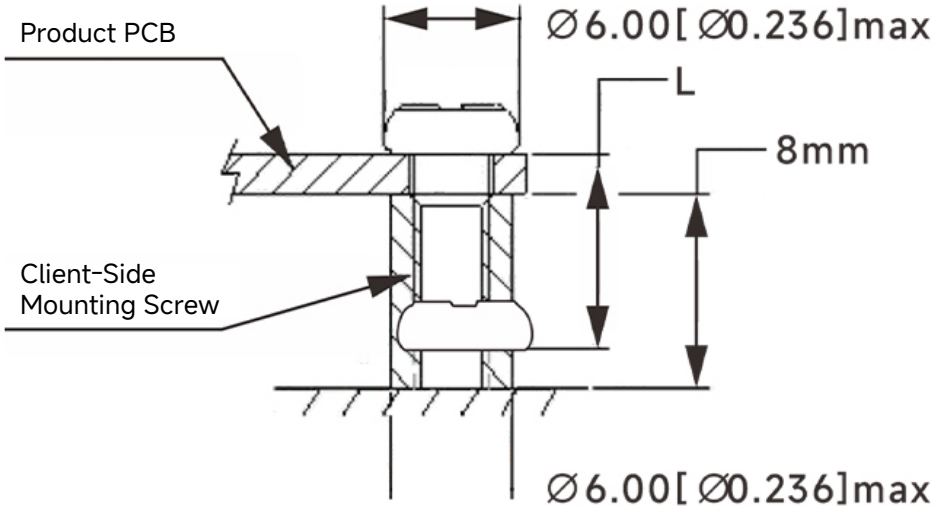
Top View



Front View



Optional Accessory with Aluminum Plate-Front View



Mounting Position	Screw Specification	L (Recommended)	Torque (Max)
1-4	M3	6mm	0.4N · m

Pin Position

Pin	Function	Product Connector	Client-Side Connector
1	AC(N)/DC-	JST B3P-VH or equivalent	Connector: JST VHR Connector Terminal: JSTSVH-21T-P1.1 or equivalent
2	NC		
3	AC(L)/DC+		
4	Fan-	JST B3B-PH-K-S or equivalent	Connector: JS Connector: JST VHR Connector Terminal: JST SVH-21T-P1.1 or equivalent
5	Fan+		
6, 7, 8	Vo	JST 6P-VH	Connector: JST VHR 21T-P1.1 or equivalent
9, 10, 11	+o		

1. Units: mm [inch] ADJ: Output Adjustable Resistance
2. Dimension Tolerance: ±0.5mm
3. Please do not use the fan power supply to power other devices.
4. The layout and reference numbers for power supply are for reference only, based on the actual physical product.
5. Reserve a safe distance of 10mm between the edge of the PCB and the Client-Side Reserved Parts.