



## 25ACPW\_4 series

25W - Single Output AC-DC Converter - Enclosed Switching - Universal Input - Isolated

### AC-DC Converter 25 Watt

- ⊕ 85 - 305VAC or 100 - 430VDC input voltage
- ⊕ Accepts AC or DC input (dual-use of same terminal)
- ⊕ Operating ambient temperature range: -30 °C to +70°C
- ⊕ Up to 88% efficiency
- ⊕ No-load power consumption < 0.5W
- ⊕ High I/O isolation test voltage up to 4000VAC
- ⊕ Output short circuit, over-current, over-voltage protection
- ⊕ Over-voltage Class III (designed to meet EN61558)
- ⊕ Operating altitude up to 5000m

The 25ACPW\_4 is one of GAPTEC's enclosed AC-DC switching power supply. It features universal AC input and at the same time accepts DC input voltage, cost-effective, low no load power consumption, high efficiency and high reliability. These converters offer excellent EMC performance and meet IEC/EN61000-4, CISPR32/EN55032, IEC/UL/EN62368, GB4943 standards and they are widely used in areas of industrial, LED, street light control, electricity, security, telecommunications, smart home etc.



Common specifications					
Item	Test conditions	Min	Typ	Max	Units
Short circuit protection	Recovery time <5s after the short circuit disappear.	Hiccup, continuous, self-recovery			
Operating temperature		-30		+70	°C
Storage temperature		-40		+85	°C
Storage humidity	Non-condensing			95	%RH
Operating humidity	Non-condensing	20		90	%RH
Switching Frequency			65		kHz
Power derating	• -30°C to -25°C / 85VAC - 100VAC	6.0			%/°C
	• -40°C to +70°C/3.3V	1.33			%/°C
	• +50°C to +70°C				%/°C
	5/12/15/24/48V	2.0			%/°C
	•85VAC - 100VAC	1.33			%/VAC
	•277VAC - 305VAC	0.72			%/VAC
Safety standard	IEC/UL62368-1, GB4943.1, IS13252 (Part1) safety approved & EN62368-1, BS EN 62368-1 (Report)				
Safety class	CLASS I				
MTBF	MIL-HDBK-217F@25°C	>450,000 h			
Case Material	Metal (AL5052, SGCC)				
Dimensions	80.00 x 55.00 x 25.00 mm				
Weight	115g TYP.				
Cooling Method	Free air convection				

Output specifications					
Item	Test conditions	Min	Typ	Max	Units
Output voltage accuracy	Full load range				
	• 3.3V		±3.0		%
	• 5V		±2.0		%
	• 12V/15V/24V/48V		±1.0		%
Line regulation	Rated load				
	• 3.3V/5V		±0.5	±1	%
	• 12V/15V/24V/48V		±0.5		%
Load regulation	0% - 100% load				
	• 3.3V/5V		±1.0	±2	%
	• 12V/15V/24V/48V		±0.5	±1	%
Ripple & noise*	20MHz bandwidth; peak-to-peak value				
	• 3.3V/5V/12V/15V/24			100	mV
	• 48V			120	mV
Temperature coefficient			±0.03		%/°C
Minimum load		0			%
Stand-by power consumption	230VAC				
	• 3.3V/5V/12V/15V/24			0.3	W
	• 48V			0.5	W
Start-up Delay Time			300		ms
Hold-up time	• 115VAC		8		ms
	• 230VAC		60		ms

\*The "Tip and barrel method" is used for ripple and noise test, output parallel 47uF electrolytic capacitor and 0.1uF ceramic capacitor, please refer to Enclosed Switching Power Supply Application Notes for specific information.

**Example:**  
**25ACPW\_24S4**  
**25 = 25Watt; AC = AC-DC; P = series; W= wide-input (2:1);**  
**24 = 24 Vout; S = single output, 4 = 4kVAC isolation**

#### Note:

1. Unless otherwise specified, parameters in this datasheet were measured under the conditions of Ta = 25°C, humidity <75%RH with nominal input voltage and rated output load;
2. The ambient temperature derating of 3.5°C /1000m is needed for operating altitude greater than 2000m;
3. All index testing methods in this datasheet are based on our company corporate standards
4. In order to improve the efficiency at high input voltage, there will be audible noise generated, but it does not affect product performance and reliability;
5. We can provide product customization service,.
6. Products are related to laws and regulations: see "Features" and"EMC";
7. The out case needs to be connected to the earth of system when the terminal equipment in operating;
8. Our products shall be classified according to ISO14001 and related environmental laws and regulations, and shall be handled by qualified units;
9. The power supply is considered a component which will be installed into a terminal equipment. All EMC tests should be confirmed with the final equipment.

Input specifications					
Item	Test conditions	Min	Typ	Max	Units
Input Voltage Range	• AC input	85		305	VAC
	• DC input	100		430	VDC
Input frequency		47		63	Hz
Input current	• 115VAC			0.6	A
	• 230VAC			0.34	A
Inrush current (Cold start)	• 115VAC		20		A
	• 230VAC		40		A
Leakage current	277VAC	<0.5mA			
Hot plug	Unavailable				

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Protection specifications	
Over-current protection	110%-300% I <sub>o</sub> , self-recovery
Over-voltage protection**	<ul style="list-style-type: none"> <li>• 3.3V ≤ 6.75VDC</li> <li>• 5V ≤ 7.75VDC</li> <li>• 12V ≤ 16.2VDC</li> <li>• 15V ≤ 20.25VDC</li> <li>• 24V ≤ 32.4VDC</li> <li>• 48V ≤ 60.0VDC</li> </ul>

\*Output voltage hiccup, self-recovery

Isolation specifications					
Item	Test conditions	Min	Typ	Max	Units
Isolation Test	Electric strength test for 1min., leakage current <10mA				
	• Input - ↓	2000			VAC
	• Input - output	4000			VAC
	• Output - ↓ (<5mA)	1250			VAC
Insulation Resistance	At 500VDC				
	• Input - ↓	100			MΩ
	• Input - output	100			MΩ
	• Output - ↓	100			MΩ

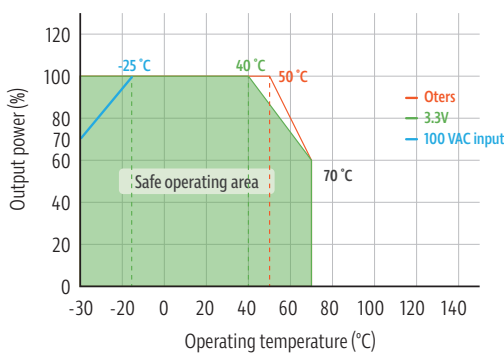
EMC specifications					
Emissions	CE	CISPR32/EN55032	CLASS B		
Emissions	RE	CISPR32/EN55032	CLASS B		
Immunity	ESD	IEC/EN61000-4-2	Contact ±6KV/Air ±8KV		perf. Criteria A
Immunity	RS	EC/EN61000-4-3	10V/m		perf. Criteria A
Immunity	EFT	IEC/EN61000-4-4	±2KV		perf. Criteria A
Immunity	Surge	IEC/EN61000-4-5	line to line ±1KV/line to ground ±2KV		perf. Criteria A
Immunity	CS	IEC/EN61000-4-6	10Vr.m.s		perf. Criteria A
Immunity	Voltage dips, short interruptions and voltage variations immunity	IEC/EN61000-4-11	0%,70%		perf. Criteria B

## Product Selection Guide

Approval	Model	Output Power [W]	Nominal Output Voltage and Current [Vo/Io]	Output Voltage Adjustable Range (V)	Efficiency at 220VAC [% , typ]	Capacitive Load (μF, max.)
UL	25ACPW_03S4	19.8	3.3V/6A	2.85-3.6	78	5000
UL	25ACPW_05S4	25	5V/5A	4.5-5.5	81	4000
UL	25ACPW_12S4	25.2	12V/2.1A	10.8-13.2	85	3000
UL	25ACPW_15S4	25.5	15V/1.7A	13.5-16.5	86	2000
UL	25ACPW_24S4	26.4	24V/1.1A	22-27.6	87	1000
UL	25ACPW_48S4	27.36	48V/0.57A	42-54	88	500

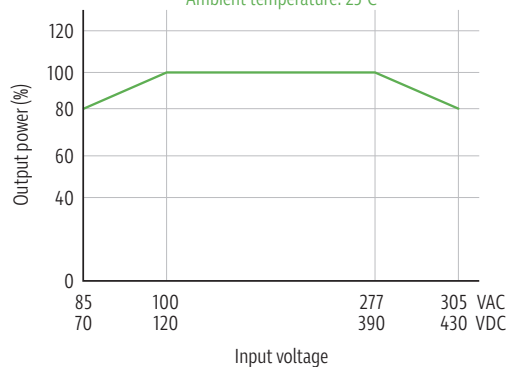
## Product Characteristic Curve

Temperature derating graph



Input voltage derating curve

Ambient temperature: 25°C



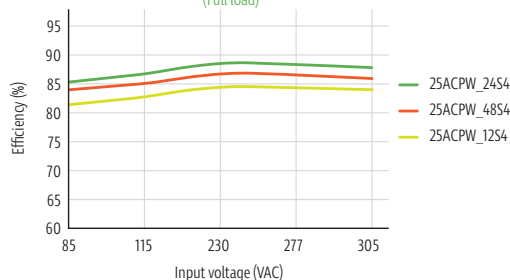
Note:

① With an AC input between 85-100V/277-305VAC and a DC input between 100-120VDC/390-430VDC, the output power must be derated as per temperature derating curves;

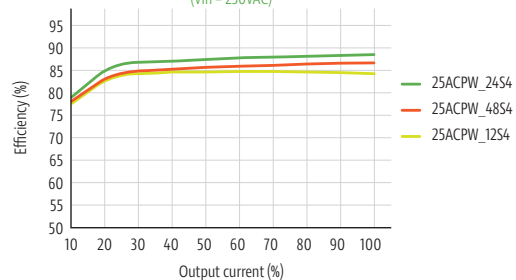
② This product is suitable for applications using natural air cooling; for applications in closed environment please consult factory or one of our FAE.

## Efficiency

Efficiency vs input voltage (Full load)



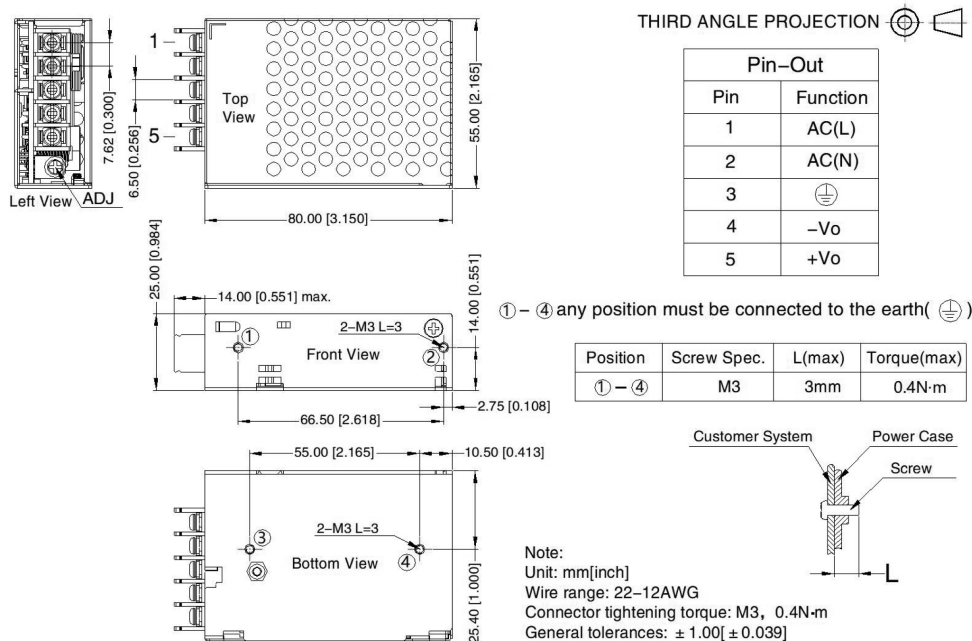
Efficiency vs output load (Vin = 230VAC)



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### Dimensions and Recommended Layout - Conformal coating



### Dimensions and Recommended Layout - Terminal With Protective Cover

