Switching Power Supplies

PS5R-V Series

STANDARDS COMPLIANCE

Applicable Standards	Mark	File No. or Organization
UL508 UL1310[1] ANSI/ISA 12.12.01 CSA C22.2 No.107.1 CSA C22.2 No.213 CSA C22.2 No.223[1]	c UL us LISTED	UL/c-UL Listed File No. E467154, E177168
EN60950-1 EN50178 EN61204-3 EN50581	TÜV	TÜV SÜD[2]
	CE	EU Low Voltage Directive EMC Directive RoHS Directive
SEMI F47	—	EPRI

Note 1: PS5R-VB/VC/VD/VE only
Note 2: EN60950-1, EN50178 only

POWER SUPPLY PART NUMBERS

Output Capacity	Part Number	Input Voltage	Output Voltage	Output Current
10W	PS5R-VB05	100 to 240V AC (Voltage range: 85 to 264V AC / 100 to 370V DC)	5V	2.0A
15W	PS5R-VB12		12V	1.3A
	PS5R-VB24		24V	0.65A
30W	PS5R-VC12		12V	2.5A
	PS5R-VC24		24V	1.3A
60W	PS5R-VD24		24V	2.5A
90W	PS5R-VE24		24V	3.75A
120W	PS5R-VF24		24V	5.0A
240W	PS5R-VG24		24V	10.0A

Part Number Structure

PS5R - V □ □

Output Voltage
05: 5V[3]
12: 12V[4]
24: 24V

Output Capacity
B: 10W/15W
C: 30W
D: 60W
E: 90W
F: 120W
G: 240W

Note 3: PS5R-VB only
Note 4: PS5R-VB/VC only
Use only for interpreting part numbers.
Do not use for developing part numbers.

PRODUCT DESCRIPTION

DIN-rail mount switching power supplies with global approvals for both industrial and hazardous locations

KEY FEATURES

- Compact size preserves panel space
- Slim size (width):
  22.5mm (10W/15W/30W)
  36mm (60W/90W)
  46mm (120W)
  60mm (240W)
- Universal Voltage Input:
  85-264V AC/100-370V DC
- Wide operating temperature range
- Spring-up terminals accept ring & fork terminals
- Approved for use in Class I Division 2 hazardous locations
- Can be installed in 6 directions
- 10W ~ 90W meet NEC Class 2 output ratings
- Overcurrent protection with auto-reset
- Meets SEMI F47 Sag Immunity (208V AC input)
- RoHS compliant
- Five-year factory warranty

SPECIFICATIONS

Model		5V DC output	PS5R-VB05	-	-		-	
		12V DC output	PS5R-VB12	PS5R-VC12	-		-	
		24V DC output	PS5R-VB24	PS5R-VC24	PS5R-VD24	PS5R-VE24	PS5R-VF24	PS5R-VG24
Output Capacity			15W (5V Model is 10W)	30W	60W	90W	120W	240W
Input	Rated Input Voltage (Single-phase two-wire)[1]		100 to 240V AC (Voltage range: 85 to 264V AC/100 to 370V DC) (Load ≤ 80% at 100-105V DC)					
	Frequency		50/60 Hz					
	Input Current (Typ.)	100V AC	5V: 0.25A 12V, 24V: 0.35A	0.7A	1.3A	1.1A	1.4A	2.7A
		230V AC	5V: 0.14A 12V, 24V: 0.19A	0.3A	0.8A	0.6A	0.7A	1.2A
	Inrush Current (Typ.) (Ta=25°C, cold start)	100V AC	18A					14A
		230V AC	45A				41A	30A
	Leakage Current	120V AC	0.5mA max.					
		230V AC	1.0mA max.					
	Efficiency (Typ.) (at rated output)[2]	100V AC	5V: 77%, 12V: 82%, 24V: 84%	12V: 83%, 24V: 85%	86%	88%		89%
		230V AC	5V: 73%, 12V: 80%, 24V: 81%	12V: 85%, 24V: 87%	86%	89%		90%
	Power Factor (Typ.)	100V AC	—	—	—	0.99		
		230V AC	—	—	—	0.86	0.92	0.96
Output	Rated Voltage/Current		5V/2.0A[3], 12V/1.3A, 24V/0.65A	12V/2.5A, 24V/1.3A	24V/2.5A	24V/3.75A	24V/5A	24V/10A
	Adjustable Voltage Range		±10%			±5%	±10%	
	Output Holding Time (Typ.) (at rated output)	100V AC	5V: 53ms, 12V: 34ms, 24V: 36ms	12V: 13ms, 24V: 15ms	13ms	20ms	30ms	
		230V AC	5V: 330ms 12V: 215ms 24V: 230ms	12V: 110ms 24V: 110ms	105ms	30ms	33ms	40ms
	Start Time (at rated input and output)		500ms max.	600 ms max.	800 ms max.		700 ms max.	800 ms max.
	Rise Time (at rated input and output)		5V, 12V: 200ms max. 24V: 250ms max.	200ms max.				
	Regulation	Input Fluctuation	0.4% max.					
		Load Fluctuation	5V: 2.5% max. 12V, 24V: 1.0% max.	1.0% max.				
		Temperature Change	0.05%/oC max. (-10 to +65°C)	12V: 0.05%/°C max. (-10 to +50°C) 24V: 0.05%/°C max. (-10 to +55°C)	0.05%/°C max. (-10 to +55°C)	0.05%/°C max. (-10 to +50°C)	0.05%/°C max. (-25 to +55°C)	0.05%/°C max. (-25 to +50°C)
		Ripple (including noise)	5V: 8% p-p max. (-25 to -10°C) 12V: 6% p-p max. (-25 to -10°C) 24V: 4% p-p max. (-25 to -10°C)	12V: 6% p-p max. (-25 to -10°C) 24V: 4% p-p max. (-25 to -10°C)	4% p-p max. (-25 to -10°C)			
			5V: 5% p-p max. (-10 to +0°C) 12V: 2.5% p-p max. (-10 to +0°C) 24V: 1.5% p-p max. (-10 to +0°C)	12V: 2.5% p-p max. (-10 to +0°C) 24V: 1.5% p-p max. (-10 to +0°C)	1.5% p-p max. (-10 to +0°C)			
			5V: 2.5% p-p max. (0 to +65°C) 12V: 1.5% p-p max. (0 to +65°C) 24V: 1% p-p max. (0 to +65°C)	12V: 1.5% p-p max. (0 to +50°C) 24V: 1% p-p max. (0 to +55°C)	1% p-p max. (0 to +55°C)	1% p-p max. (0 to +50°C)	1% p-p max. (0 to +55°C)	1% p-p max. (0 to +50°C)
Overcurrent Protection			105% min. (auto reset)			101% min. (auto reset)	105% min. (auto reset)	
Operation Indicator			LED (green)					
Dielectric Strength	Between input and output terminals		3,000V AC, 1 minute					
	Between input and ground terminals		2,000V AC, 1 minute					
	Between output and ground terminals		500V AC, 1 minute					
Insulation Resistance			Between input and output terminals: 100MΩ min. (500V DC megger) Between input and ground terminals: 100MΩ min. (500V DC megger)					
Operating Temperature[4] (No freezing)			-25 to +75°C	-25 to +70°C		-25 to +65°C		
Operating Humidity			20 to 90% RH (no condensation)					
Storage Temperature (No freezing)			-25 to +75°C					
Storage Humidity			20 to 90% RH (no condensation)					
Vibration Resistance			10 to 55Hz, amplitude 0.375mm, 2 hours each in 3 axes (when used with BNL6 end clips)		10 to 55Hz, amplitude 0.33mm, 2 hours each in 3 axes (when used with BNL6 end clips) 10 to 55Hz, amplitude 0.375mm, 2 hours each in 3 axes (when used with BNL8 end clips)		10 to 55Hz, amplitude 0.21mm, 2 hours each in 3 axes (when used with BNL6 end clips) 10 to 55Hz, amplitude 0.375mm, 2 hours each in 3 axes (when used with BNL8 end clips)	10 to 55 Hz, amplitude 0.375mm, 2 hours each in 3 axes (when used with part no. BNL6 mounting clips)
Shock Resistance			300 m/s^2 (30G), 3 times each in 6 directions					
Expected Life[5]			8 years minimum (at the rated input, 50% load, operating temperature +40°C, standard mounting direction)					
EMC	EMI		EN61204-3 (Class B)					
	EMS		EN61204-3 (industrial)					
Safety Standards			UL508 (Listing), UL1310 Class 2, ANSI/ISA-12.12.01 CSA C22.2 No. 107.1, 213, 223 EN60950-1, EN50178				UL508 (Listing) ANSI/ISA-12.12.01 CSA C22.2 No. 107.1, 213 EN60950-1, EN50178	
Other Standard			SEMI F47 (at 208V AC input only)					
Degree of Protection			IP20 (EN60529)					
Dimensions (mm)			90H × 22.5W × 95D		95H × 36W × 108D		115H × 46W × 121D	125H × 60W × 125D
Weight (approx.)			140g	150g	260g	310g	470g	960g
Terminal Screw			M3.5					

At normal temperature and humidity unless otherwise specified.
Note 1: DC input voltage is not subject to safety standards. When using on DC input, connect a fuse to the input terminal for DC input protection.
Note 2: Under stable state.
Note 3: PS5R-VB05 (5V DC/2.0A) is 10W (Up to 3.0A at Ta = 0 to 40°C. Not subject to safety standards above 2.0A.)
Note 4: See the output derating curves on page 3.
Note 5: Calculation of the expected life is based on the actual life of the aluminum electrolytic capacitor. The expected life depends on operating conditions.