

Specifications

Ratings, Characteristics, and Functions

Item		Power ratings		15 W			30 W		
		Output voltage		5 V	12 V	24 V	5 V	12 V	24 V
Efficiency (Typical)		230 VAC input	77%		80%	79%	82%	86%	
Input	Voltage *1		100 to 240 VAC, 90 to 350 VDC (allowable range: 85 to 264 VAC)						
	Frequency *1		50/60 Hz (47 to 450 Hz)						
	Current (Typical)	115 VAC input	0.32 A	0.3 A	0.31 A	0.5 A	0.57 A	0.58 A	
		230 VAC input	0.2 A	0.21 A	0.2 A	0.32 A	0.37 A	0.36 A	
	Power factor (Typical)	230 VAC input	0.42			0.43	0.42	0.43	
	Harmonic current emissions		Conforms to EN61000-3-2						
	Leakage current (Typical)	115 VAC input	0.14 mA			0.13 mA			
		230 VAC input	0.25 mA			0.24 mA			
	Inrush current (Typical) *2	115 VAC input	16 A						
		230 VAC input	32 A						
Output	Voltage adjustment range *3		−10% to 15% (with V.ADJ) (guaranteed)						
	Ripple *4	at 20 MHz (Typical)	60 mV	50 mV	30 mV	30 mV	30 mV	30 mV	
	Input variation influence		0.5% max. (at 85 to 264 VAC input, 100% load)						
	Load variation Influence (Rated Input voltage)		3.0% max. (5 V), 2.0% max. (12 V), 1.5% max. (24 V), at 0% to 100% load						
	Temperature variation influence		0.05%/°C max.						
	Start up time (Typical) *2	115 VAC input	530 ms	520 ms	580 ms	550 ms	550 ms	600 ms	
		230 VAC input	330 ms	400 ms	400 ms	430 ms	490 ms	480 ms	
	Hold time (Typical) *2	115 VAC input	28 ms	29 ms	32 ms	33 ms	36 ms	23 ms	
230 VAC input		134 ms	138 ms	134 ms	177 ms	170 ms	154 ms		
Additional functions	Overload protection *2		121% to 160% of rated load current (130% typ value)						
	Overvoltage protection *2		Yes *5						
	Power Boost		120% of rated current (Refer to Engineering Data)						
	Parallel operation		Yes (Refer to Engineering Data)						
	Series operation		Possible for up to two Power Supplies (with external diode)						
Others	Ambient operating temperature		−40 to 70°C (Refer to Engineering Data)						
	Storage temperature		−40 to 85°C						
	Ambient operating humidity		0% to 95% (Storage humidity: 0% to 95%)						
	Dielectric strength (detection current: 20 mA)		3.0 kVAC for 1 min. (between all inputs and outputs)						
			2.0 kVAC for 1 min. (between all inputs and PE terminal)						
			1.0 kVAC for 1 min. (between all outputs and PE terminal)						
	Insulation resistance		100 MΩ min. (between all outputs and all inputs/ PE terminals) at 500 VDC						
	Vibration resistance		10 to 55 Hz, 0.375-mm single amplitude for 2 h each in X, Y, and Z directions						
			10 to 150 Hz, 0.35-mm single amplitude (5 G max.) for 80 min. each in X, Y, and Z directions						
	Shock resistance		150 m/s², 3 times each in ±X, ±Y, and ±Z directions						
Output indicator		Yes (color: green), lighting from 80% to 90% or more of rated voltage							
	EMI	Conducted Emission	Conforms to EN 61204-3 EN55011 Class B and based on FCC Class A						
		Radiated Emission	Conforms to EN 61204-3 EN55011 Class B						
	EMS		Conforms to EN 61204-3 high severity levels						
	Approved Standards		UL Listed: UL 508 (Listing, Class2 Output: Per UL 1310) UL UR: UL 60950-1 (Recognition) ANSI/ISA 12.12.01 cUL: CSA C22.2 No.107.1 (Class2 Output: Per CSA C22.2 No.223) cUR: CSA C22.2 No.60950-1 EN/VDE: EN 50178, EN 60950-1 Lloyd's standards						
			SELV (EN 60950-1/EN 50178/UL 60950-1), PELV (EN 60204-1, EN 50178), Safety of Power Transformers (EN 61558-2-16) EN 50274 for Terminal parts						
			Degree of protection		IP20 by EN/IEC 60529				
			SEMI		F47-0706 (200 to 240 VAC)				
Weight		150 g				195 g			

*1. Do not use an inverter output for the Power Supply. Inverters with an output frequency of 50/60 Hz are available, but the rise in the internal temperature of the Power Supply may result in ignition or burning.

*2. For a cold start at 25°C. Refer to *Engineering Data* on page 11 for details.

*3. If the output voltage adjuster (V. ADJ) is turned, the voltage will increase by more than +15% of the voltage adjustment range. When adjusting the output voltage, confirm the actual output voltage from the Power Supply and be sure that the load is not damaged.

*4. A characteristic when the ambient operating temperature is between -25 to 70°C.

*5. To reset the protection, turn OFF the input power for three minutes or longer and then turn it back ON.

Power ratings			60 W		120 W	
Item	Output voltage		12 V	24 V	24 V	
Efficiency (Typical)		230 VAC input	85%	88%	89%	
Input	Voltage *1		100 to 240 VAC, 90 to 350 VDC (allowable range: 85 to 264 VAC)			
	Frequency *1		50/60 Hz (47 to 450 Hz)		50/60 Hz (47 to 63 Hz)	
	Current (Typical)	115 VAC input	1.0 A	1.1 A	1.3 A	
		230 VAC input	0.6 A	0.7 A		
	Power factor (Typical)	230 VAC input	0.46	0.45	0.94 (with PFC)	
	Harmonic current emissions		Conforms to EN61000-3-2			
	Leakage current (Typical)	115 VAC input	0.16 mA		0.24 mA	
		230 VAC input	0.30 mA		0.38 mA	
	Inrush current (Typical) *2	115 VAC input	16 A			
		230 VAC input	32 A			
Output	Voltage adjustment range *3		–10% to 15% (with V.ADJ) (guaranteed)			
	Ripple *4	at 20 MHz (Typical)	150 mV	50 mV	150 mV	
	Input variation influence		0.5% max. (at 85 to 264 VAC input, 100% load)			
	Load variation Influence (Rated Input voltage)		2.0% max. (12 V), 1.5% max. (24 V), at 0% to 100% load			
	Temperature variation influence		0.05%/°C max.			
	Start up time (Typical) *2	115 VAC input	570 ms	650 ms	790 ms	
		230 VAC input	430 ms	500 ms	750 ms	
		Hold time (Typical) *2	115 VAC input	26 ms	25 ms	42 ms
230 VAC input			139 ms	129 ms	42 ms	
Additional functions	Overload protection *2		121% to 160% of rated load current, (130% typ value)		121% to 160% of rated load current, (125% typ value)	
	Overvoltage protection *2		Yes *5			
	Power Boost		120% of rated current (Refer to Engineering Data)			
	Parallel operation		Yes (Refer to Engineering Data)			
	Series operation		Possible for up to two Power Supplies (with external diode)			
Others	Ambient operating temperature		–40 to 70°C (Refer to Engineering Data)			
	Storage temperature		–40 to 85°C			
	Ambient operating humidity		0% to 95% (Storage humidity: 0% to 95%)			
	Dielectric strength (detection current: 20 mA)		3.0 kVAC for 1 min. (between all inputs and outputs)			
			2.0 kVAC for 1 min. (between all inputs and PE terminal)			
			1.0 kVAC for 1 min. (between all outputs and PE terminal)			
	Insulation resistance		100 MΩ min. (between all outputs and all inputs/ PE terminals) at 500 VDC			
	Vibration resistance		10 to 55 Hz, 0.375-mm single amplitude for 2 h each in X, Y, and Z directions			
			10 to 150 Hz, 0.35-mm single amplitude (5 G max.) for 80 min. each in X, Y, and Z directions			
	Shock resistance		150 m/s ² , 3 times each in ±X, ±Y, and ±Z directions			
	Output indicator		Yes (color: green), lighting from 80% to 90% or more of rated voltage			
		EMI	Conducted Emission	Conforms to EN 61204-3 EN 55011 Class B and based on FCC Class A		
			Radiated Emission	Conforms to EN 61204-3 EN 55011 Class B		
	EMS		Conforms to EN 61204-3 high severity levels			
	Approved Standards		UL Listed: UL 508 (Listing, For 60 W only Class2 Output: Per UL 1310) UL UR: UL 60950-1 (Recognition) ANSI/ISA 12.12.01 cUL: CSA C22.2 No.107.1 (For 60 W only Class2 Output: Per CSA C22.2 No.223) cUR: CSA C22.2 No.60950-1 EN/VDE: EN 50178, EN 60950-1 Lloyd's standards			
Fulfilled Standards		SELV (EN 60950-1/EN 50178/UL 60950-1), PELV(EN 60204-1, EN 50178), Safety of Power Transformers (EN 61558-2-16) EN 50274 for Terminal parts				
Degree of protection		IP20 by EN/IEC 60529				
SEMI		F47-0706 (200 to 240 VAC)				
Weight		260 g		620 g		

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