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SFX Form Factor

SST-ST45SF

A new SFX form factor milestone

Support standard SFX form factor and ATX via included bracket
450W continuous power output at 50℃ operating temperature rated for 24/7 operation
80 PLUS Bronze level efficiency (82%~85% efficiency at 20%~100% loading)
Class-leading single +12V rail with 36A
Silent running 80mm fan with 18dBA minimum
Single PCI-E 8pin and dual PCI-E 6pin connectors support
Active PFC

SPECIFICATION

SFX Form Factor
SST-ST45SF
450W Switching Power Supply
Active PFC Circuit
Full Range Input

1.GENERAL DESCRIPTION AND SCOPE

This is the specification of Model SST-ST45SF; AC-line powered switching power supply with active PFC (Power Factor Correction) circuit, meet EN61000-3-2 and with Full Range Input features.

The specification below is intended to describe as detailedly as possible the functions and performance of the subject power supply. Any comment or additional requirements to this specification from our customers will be highly appreciated and treated as a new target for us to approach.

2. REFERENCE DOCUMENTS

The subject power supply will meet the EMI requirements and obtain main safety approvals

as following:

2.1. EMI REGULATORY

- FCC Part 15 Subpart J, Class 'B' 115 Vac operation.
- CISPR 22 Class 'B' 230 Vac operation.

3. INPUT ELECTRICAL SPECIFICATIONS

3.1. AC INPUT

Parameter	Min.	Nom.(1)	Max	Unit
Vin (115VAC)	90	115	135	VAC rms
Vin (230VAC)	180	230	265	VAC rms
Vin Frequency	47	--	63	HZ

◆Nominal voltages for test purposes are considered to be within ±1.0V of nominal.

3.2. INRUSH CURRENT

Maximum inrush current from power-on (with power on at any point on the AC sine) and including, but not limited to, three line cycles, shall be limited to a level below the surge rating of the input line cord, AC switch if present, bridge rectifier, fuse, and EMI filter components. Repetitive ON/OFF cycling of the AC input voltage should not damage the power supply or cause the input fuse to blow.

3.3. INPUT LINE CURRENT & POWER FACTOR (P.F.)

(At Full load)

AC input	Input line current	P.F.@ Full Load	P.F.@ Pin=75W
115V	< 5.5Amps – rms	> 0.95	> 0.8
230V	< 3Amps – rms	> 0.9	> 0.65

3.4. EFFICIENCY

Loading	Voltage	Full load	Typical load	Light load
Required Minimum Efficiency	115V	>82%	>85%	>82%
Required Minimum Efficiency	230V	>84%	>87%	>84%

◆Minimum Efficiency for test purposes are considered to be within ±1.0% of nominal.

4 . OUTPUT ELECTRICAL REQUIREMENTS

4.1. OUTPUT VOLTAGE AND CURRENT RATING

Output	MINIMUM LOAD	NORMAL LOAD	MAXIMUM LOAD	PEAK LOAD	LOAD REG	LINE REG	MAXIMUM LOAD
+3.3V	0.1A	10.5A	21A		±5%	±1%	70mV P-P
+5V	0.2A	11A	22A		±5%	±1%	70mV P-P
+12V	0.6A	18A	36A		±5%	±1%	140mV P-P
-12V	0A	0.25A	0.5A		±10%	±1%	140mV P-P
+5VSB	0A	1.25A	2.5A	3A	±5%	±1%	70mV P-P

(1) +3.3V & 5V total output not exceed 120W.
(2)Total output continuous shall not exceed 450W watts.
(3)5Vsb Peak current is 3A(less then 500m Sec.), minimum voltage during peak is > 4.5Vdc. Voltages and ripple are measured at the load side of mating connectors with a 0.1 uF monolithic ceramic capacitor paralleled by a 10 uF electrolytic capacitor across the measuring terminals.

4.2. LOAD CAPACITY SPECIFICATIONS

The cross regulation defined as follows, the voltage regulation limits DC include DC Output ripple & noise.

LOAD	+3.3V	+5V	+12V	-12V	+5VSB
Condition_1	X	X	X	X	2.5A
Condition_2	0.1A	0.2A	0.6A	0A	0A
Condition_3	0.1A	0.2A	0.6A	0.5A	0A
Condition_4	1A	10A	18A	0.1A	0.1A
Condition_5	2A	2A	36A	0.1A	0.1A
Condition_6	1A	14A	2A	0.1A	0.1A
Condition_7	3A	22A	26A	0.5A	1.5A
Condition_8	18A	2A	2A	0A	0.1A
Condition_9	21A	10A	26A	0.5A	1.5A

4.3. HOLD-UP TIME (@Typical Load of Table. 1)

115V / 60Hz : 17 m Sec. Minimum.
230V / 50Hz : 17 m Sec. Minimum.

The output voltage will remain within specification, in the event that the input power is removed or interrupted, for the duration of one cycle of the input frequency. The interruption may occur at any point in the AC voltage cycle. The power good signal shall remain high during this test.

4.4. OUTPUT RISE TIME

(10% TO 95% OF FINAL OUTPUT VALUE, @FULL LOAD)

115V-rms or 230V-rms	+ 3.3Vdc : 20ms Maximum + 5Vdc : 20ms Maximum + 12Vdc : 20ms Maximum + 5Vsb : 20ms Maximum - 12Vdc : 20ms Maximum

4.5. OVER VOLTAGE PROTECTION

Voltage Source	Protection Point
+3.3V	3.76V-4.8V
+5V	5.6V-7.0V
+12V	13.0V-16.5V

4.6. OVER-CURRENT PROTECTION

OUTPUT VOLTAGE	Max. over current limit
+3.3V	60A
+5V	48A
+12V1	45A

4.7. SHORT CIRCUIT PROTECTION

Output short circuit is defined to be a short circuit load of less than 0.1 ohm.

In the event of an output short circuit condition on +3.3V, +5V, +12V or–12V output, the power supply will shutdown and latch off without damage to the power supply. The power supply shall return to normal operation after the short circuit has been removed and the power switch has been turned off for no more than 2 seconds.

4.8. POWER SIGNAL

POWER GOOD @ 115/230V,FULL LOAD	100 –500mSec.
POWER FAIL @115/230V,FULL LOAD	1 mSec. minimum

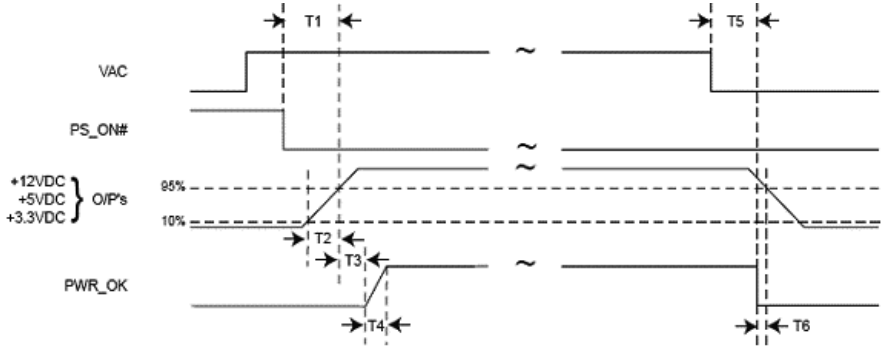

Figure:
T1: Power-on time shall be less than 500 ms (T1 < 500 ms).
T2: Rise time : 0.1 ms to 20 ms (0.1 ms ≤T2 ≤20 ms).
T3: Power-ok delay time: 100 ms < T3 < 500 ms
T4: Power-ok rise time: T4 ≤10 ms
T5 + T6: AC loss to output hold-up time :T5 + T6 ≥17 ms

5. FAN NOISE REQUIREMENTS

5.1.The subject power supply is cooled by a self-contained, 80mm×15mm, 12VDC fan.

6. ENVIRONMENTAL REQUIREMENTS

The power supply will be compliant with each item in this specification for the following Environmental conditions.

6.1. TEMPERATURE RANGE

Operating	+10 to +50 deg. C
Storage	-20 to +80 deg. C

6.2. HUMIDITY

Operating	5 –95% RH, Non-condensing
Storage	5 –95% RH, Non-condensing

6.3. VIBRATION

The subject power supply will withstand the following imposed conditions without experiencing non-recoverable failure or deviation from specified output characteristics.

Vibration Operating – Sine wave excited, 0.25 G maximum acceleration, 10-250 Hz swept at one octave / min. Fifteen minute dwell at all resonant points, where resonance is defined as those exciting frequencies at which the device under test experiences excursions two times large than non-resonant excursions.

Plane of vibration to be along three mutually perpendicular axes.

6.4. GROUND LEAKAGE CURRENT

The power supply ground leakage current shall be less than 3.5 mA.

6.5. DIELECTRIC STRENGTH

Primary to Frame Ground : 1800 Vac for 1 sec.
Primary to Secondary : 1800Vac for 1 sec

6.6. INSULATION RESISTANCE

Primary to Frame Ground : 20 Meg.ohms Minimum
Primary to Secondary : 20 Meg.ohms Minimum

7. MECHANICAL REQUIREMENTS

7.1 Physical Dimension

125 mm (W) × 63.5 mm (H) × 100mm (D)

7.2 Connectors

M/B 24PIN connector

	Signal	Pin	Pin	Signal	
Orange	+3.3V	13	1	+3.3V	Orange
Orange	+3.3Vsense	13	2	+3.3V	Orange
Blue	-12VDC	14	3	COM	Black
Black	COM	15	4	+5VDC	Red
Green	PS-ON	16	5	COM	Black
Black	COM	17	6	+5VDC	Red
Black	COM	18	7	COM	Black
Black	COM	19	8	PWRGOOD	Grey
White	N/C	20	9	5Vsb	Purple
Red	+5VDC	21	10	+12V	Yellow
Red	+5VDC	22	11	+12V	Yellow
Red	+5Vsense	22	12	+3.3V	Orange
Red	+5VDC	23			
Black	COM	24			

EPS 12V 8PIN connector

	Signal	Pin	Pin	Signal	
Yellow	+12V	5	1	COM	Black
Yellow	+12V	6	2	COM	Black
Yellow	+12V	7	3	COM	Black
Yellow	+12V	8	4	COM	Black

ATX 12V 4PIN (4+4PIN EPS 12V in split mode)

	Signal	Pin	Pin	Signal	
Black	GND	1	3	+12V	Yellow
Black	GND	2	4	+12V	Yellow

4PIN peripheral connector (HDD) **4PIN floppy connector (FDD)**

	Signal	Pin	Pin	Signal	
Yellow	+12V	1	1	+5VDC	Red
Black	COM	2	2	COM	Black
Black	COM	3	3	COM	Black
Red	+5VDC	4	4	+12V	Yellow

SATA connector

	Signal	Pin
Orange	+3.3V	5
Black	COM	4
Red	+5V	3
Black	COM	2
Yellow	+12V	1

8PIN PCI Express connector

	Signal	Pin	Pin	Signal	
Yellow	+12V	1	5	COM	Black
Yellow	+12V	2	6	COM	Black
Yellow	+12V	3	7	COM	Black
Black sense1	COM	4	8	COM	Black

6PIN PCI Express connector

	Signal	Pin	Pin	Signal	
Yellow	+12V	1	4	COM	Black
Yellow	+12V	2	5	COM	Black
Yellow	+12V	3	6	COM	Black

To be valid, this sheet must be filled out by
your salesperson at the time of purchase.

Store :
Purchaser :
Purchase date :
Model No. :
Serial No. :