



SILVERSTONE[®]
Designing Inspiration

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Gemini Series

Always up reliability and redundancy

ST50GF / ST42GF

- Industry-leading reliability
- 500+500W watts maximum output power (ST50GF)
- 420+420W watts maximum output power (ST42GF)
- High efficiency with 80Plus Silver certification (ST50GF)
- High efficiency with 80Plus bronze certification (ST42GF)
- 1+1 redundant configuration
- PS2 mini redundant power
- Hot swappable design
- Power fault Alarm signals
- Durable zinc-plated surface
- Convenient pull-out handle bars

SPECIFICATION

SilverStone GEMINI
 SST-ST50GF
 SST-ST42GF
 Mini Redundant Switching Power Supply
 With Active PFC
 500W+500W
 420W+420W

1. Input Requirements

1-1. Input Voltage

The power supply shall be operated at universal input voltage defined in the following table.

Input Voltage	MIN	NOM	MAX
Voltage	90	100-240	264

1-2. Frequency

The input frequency range is from 47Hz to 63Hz.

1-3. Inrush Current

The max inrush current is 100A for 115/230VAC.

1-3-1. Cold Start

Conditions	Limits
115/230VAC, full load. 25°C ambient.	No component over stress or damage should occur to the power supply. Input fuse shall not blow.

1-3-2. Warm Start

Conditions	Limits
Turn off at 132/264VAC full load for 1 sec then turn on at the peak of the input voltage cycle at 25°C ambient.	No component over stress or damage should occur to the power supply. Input fuse shall not blow.

1-4. AC Input Current

SST-ST50GF

AC Input	MAX	Units
115V	8	AMPS
230V	4	AMPS

SST-ST42GF

AC Input	MAX	Units
115V	7	AMPS
230V	3	AMPS

1-5. Efficiency

The power supply efficiency typical > 82% at 115V , full load.

1-6. Leakage current

3.5mA max, At 240Vac/60Hz.

2. Output Requirements

2-1. Output Regulations

Output Voltage	Range	MIN	Nominal	MAX	Units
+5V	±5%	+4.75	+5.00	+5.25	Volts
+12V	±5%	+11.40	+12.00	+12.60	Volts
-12V	±10%	-10.80	-12.00	-13.20	Volts
+3.3V	±5%	+3.135	+3.30	+3.465	Volts
+5Vsb	±5%	+4.75	+5.00	+5.25	Volts

Note:

1. The above voltage range should also include ripple and noise.
2. The output voltage should be measured at the terminals of output connector.

2-2. DC Load Requirements

SST-ST50GF

Output Voltage	MIN	NOM	MAX	Units
+5V	1.0	12.5	25	AMPS
+12V	1.0	20	40	AMPS
-12V	0	0.4	0.8	AMPS
+3.3V	1.0	12.5	25	AMPS
+5Vsb	0.1	1.75	3.5	AMPS

Note :

1. The maximum continuous total DC output power shall not exceed 500 Watts.
2. The maximum continuous combined load on +5V and +3.3V outputs shall not exceed 170 Watts.
3. The maximum continuous combined load on +5V, +3.3V and +12V, outputs shall not exceed 488 Watts.

SST-ST42GF

Output Voltage	MIN	NOM	MAX	Units
+5V	1.0	12.5	25	AMPS
+12V	1.0	16.5	33	AMPS
-12V	0	0.4	0.8	AMPS
+3.3V	1.0	12.5	25	AMPS
+5Vsb	0.1	1.75	3.5	AMPS

Note :

1. The maximum continuous total DC output power shall not exceed 420 Watts.
2. The maximum continuous combined load on +5V and +3.3V outputs shall not exceed 150 Watts.
3. The maximum continuous combined load on +5V, +3.3V and +12V, outputs shall not exceed 404 Watts.

2-3. Cross Regulation

The DC loads shall remain within the ranges specified in 2-2 DC Load Requirements and the DC output voltages also shall remain within the regulation ranges specified in 2-1 Output Regulation when measured at the load end of the output connectors.

SST-ST50GF

	+5V	+3.3V	+12V	-12V	-5VSB
1	1	25	15	0.8	0.1
2	25	1	15	0.8	0.1
3	2	2	37	0.8	0.1

SST-ST42GF

	+5V	+3.3V	+12V	-12V	-5VSB
1	1	25	10	0.8	0.1
2	25	1	10	0.8	0.1
3	2	2	30	0.8	0.1

2-4. +5V standby voltage

The +5Vsb is on whenever the AC power is present.

2-5. DC Output Voltage Ripple and Noise

Output Voltage	Ripple & Noise Max	Units
+5V	50	mv
+12V	120	mv
-12V	120	mv
+3.3V	50	mv
+5Vsb	50	mv

Note :

1. The measurements should be made by crossing a 10uF/ electrolytic and a 0.1uF ceramic disk capacitors at each output with measuring bandwidth from DC to 20 MHz. If ambient temperature is under 20°C or over 30°C, the AC input should be nominal input.

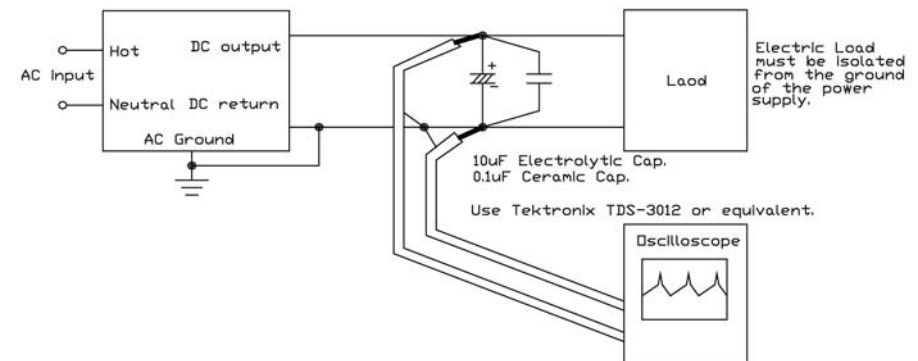


Figure 1. Differential Noise Test Setup

2-6. Total Output Power

SST-SG50GF

MAX	Units
500	Watts

SST-ST42GF

MAX	Units
420	Watts

2-7. Remote ON/OFF Control

The power supply outputs shall be enabled with an active-low TTL signal.

When TTL signal is low, the DC outputs are to be enabled.

When TTL signal is high or open circuited, the DC outputs are to be disabled.

Electronic means or a mechanical switch may activate the TTL signal.

After the TTL signal is active high, must wait for 3 seconds before active low again.

2-8. Power Sequence

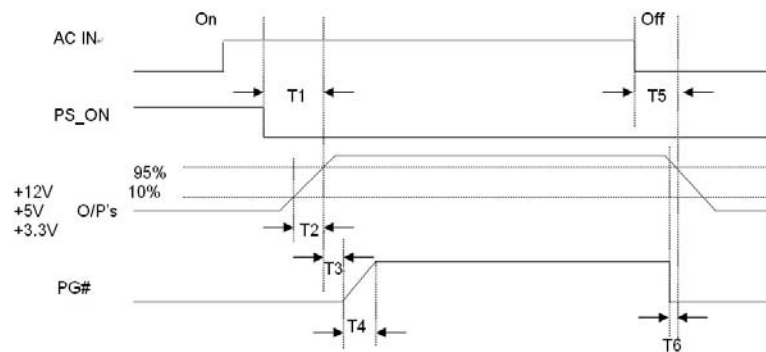


FIGURE 2. Power Sequence

2-9. Power On Time (T1)

MAX	Units
600	ms

2-10. Rise Time (T2)

MAX	Units
100	ms

2-11. Power Good Delay Time (T3)

MIN	MAX	Units
100	500	ms

The test environment is 25°C condition @ nominal input. see 1-1

2-12. Power Good Rise Time (T4)

MAX	Units
100	ms

2-13. Hold Up Time (T5)

MIN	Units
16	ms

The test environment is 25°C & full load condition @ nominal input.

2-14. Power Fail Signal (T6)

Power good signal shall go to a down level 1ms before +5V output voltage falls below the regulation limits during PS-ON signal pull high.

MIN	Units
1	ms

2-15. Initial Delay Time

MAX	Units
1000	ms

3. Protections

3-1. Over Voltage Protection

When the DC outputs (+5V, +12V, +3.3V) have over voltage condition, the power supply shall provide latch mode over voltage protection.

DC output	Max	Unit
+12V	16.0	V
+5V	7.0	V
+3.3V	4.5	V

3-2. Short Circuit Protection

A short circuit placed to ground shall cause no damage or power supply shall be shutdown. (The contact resistance is 0.05 ohm when the outputs short circuit.)

3-3. Protection Reset

When the power supply latches into shutdown condition due to a fault on an +5V,+3.3V,+12V, output (OVP, UVP,OCP), the protection shall reset after the fault has been removed, use remote on/off control or recycle the AC power again for a typical of 5 seconds.

3-4. Over Shoot

Any output overshoot at turn on shall be less than 15% of the nominal output value (with resistive load) as described in sec. 2.1.

3-5. Over Power Protection

At 115/230Vac input the power supply will shut down all DC output within max 150% of full load.

3-6. Over Current Protection

Max.160% for +5V,+12V,+3.3V dc output rail.

4. Environment

4-1. Operation/Storage Temperature Range

Operation : 0°C to 50°C(nominal input)

Storage : -20°C to 60°C

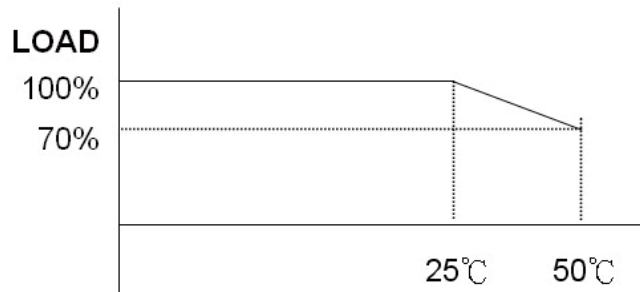


FIGURE 3. Operation/Storage Temperature Range

4-2. Humidity (none condensing)

Operation: 20% to 90% RH (nominal input)

Storage : 5% to 95% RH

5. Safety

5-1. UL 60950-1

5-2. BSMI (CNS14336:94)

5-3. TUV EN 60950-1:2006+A11

5-4. CB

6. EMI Requirements

6-1.CE

6-2. BSMI (CNS13438:95)

6-3. FCC part 15 sub part J class B at system load

6-4. CISPR 22 CLASS B

7. Dielectric Voltage Withstand (HI-POT)

The power supply shall withstand for 3 seconds without breakdown the application of an 1800Vac-supply voltage applied between both input line and chassis (10mA AC Cutoff current). Isolating transformers shall similarly withstand 4242Vdc applied between both primary and secondary windings for a minimum of one minute.

8. PFC

Active Power Factor Correction, complies with EN 61000-3-2: 1995+A1+A2:1998, Class D.

9. Electrostatic Discharge (ESD)

Comply with IEC 61000-4-2.

10. EFT/ Burst

Comply with IEC 61000-4-4.

11. Surge

Comply with IEC 61000-4-5.

12. Burn-In

Applying 115 Vac \pm 10 % or 230 Vac \pm 10% input voltage and maximum load (80%) for this product in 40 \pm 5°C chamber.

13. M.T.B.F.

The power supply shall have a minimum mean time between failure greater than 100,000 hours Minimum (Without Cooling Fan) at continuous operation of 100% load and an ambient temperature of 25°C.

14. Redundant Output Signal:

SIGNAL	WIRE COLOR	OUTPUT	FUNCTION (STATE)
RST	WHITE /WHITE	S . W	ALARM RESET
M-G	GREEN/BLACK	LED (GREEN)	MODEL OK
M-F	RED	(RED)	MODEL N.G
TTL	BLUE/BLACK	Du Pont PIN	EXTERNAL CONTROL
R/C	PURPLE/BLACK		REMOTE CONTROL

15. Dimension

15-1. Dimension (W x H x D) : 150mm(5.90") x 86mm(3.38")x 193mm(7.59")

15-2. Connectors

M/B 24PIN connector

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

EPS 12V 8PIN

	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

	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

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