

SFS5 Series AC-DC Converter Compact Miniature Type



PCB mount type



Chassis mount type

Features

- UL, CB, CE Approved
- RoHS directive compliance
- Encapsulated, compact case
- High efficiency
- Universal input
- Surface mounting technology
- 100 kHz fixed frequency
- Fixed output voltage
- Thermal shutdown(IC-Temp: 150 °C)
- Low output ripple & noise
- Isolated input-output(3kVAC)
- Over voltage protection(O.V.P.)
- Over current protection(O.C.P.)
- Output short circuit protection
- Low no-load power consumption(0.3W Max.)
- 5Years warranty

Environmental

- Operating temperature range: -10°C~70°C
- Storage temperature range: -20°C~80°C
- Humidity: 20%~90%RH
- Vibration: 10-55Hz at 10G(98m/s²), 3minutes period, 60minutes each one X, Y and Z axis
- Impact: 50G(490m/s²), 11ms, once each
- Cooling method: natural air convection

Safety (single output)

- UL (UL60950-1, CSA C 22.2 NO. 60950-1)
- UL No: E227474
- CE (EN 60950-1) / CB (IEC 60950-1)

Option

- Chassis mount type: Euro style terminal-block

Description

The SFS5 Series has universal AC input and there are 5 models with single output and 2 models with dual outputs which are all available in two different pin assignments – PCB mount or Chassis mount. Super compact size with elegant design and high reliability are achieved. CEC compliant design shows high efficiency and low no-load power consumption. A limited EMI filter is included and an additional EMI filter to input side is required to meet CISPR22-B EMI Standard.

SFS5 Series AC-DC Converter Compact Miniature Type

| Electrical specifications | | |
|---------------------------|--------------------------------|--|
| INPUT | Voltage | AC85~264V (or DC 110~340V) 50/60Hz (note) |
| | Current | 0.15A Max. @ 110VAC / 0.08A Max. @ 220VAC |
| | Frequency | 47~440Hz Max. (50~60Hz typ.) |
| | Efficiency | 75% Typ. |
| | Inrush current (at cold start) | 20A Max. @ 120VAC. / 40A Max. @ 240VAC |
| | Leakage current | 0.5mA Max. @ 110VAC / 0.75mA Max. @ 220VAC |

| | | |
|--------|------------------------------|---|
| OUTPUT | Voltage tolerance (accuracy) | ±2% Max (single and uncomplementary dual). ±3% Max (complementary dual). |
| | Ripple and noise | ±1% Typ. |
| | Line regulation | ±1% Typ. |
| | Load regulation | ±1% Typ.@output1 , ±2% Typ.@output2 |
| | Dynamic load regulation | ±3% Typ.@output1 |
| | Temperature regulation | ±1% Typ. |
| | No-load power consumption | 0.3W Max. |
| | Rising time | 100ms Max. |
| | Hold up time | 10ms Min. |

| Protection circuit | |
|-----------------------------|---|
| Over voltage protection | Clamp, 130~150% |
| Over current protection | Works at over 105% of rating & recovers automatically |
| Over temperature protection | 150°C Latching, Recovering |

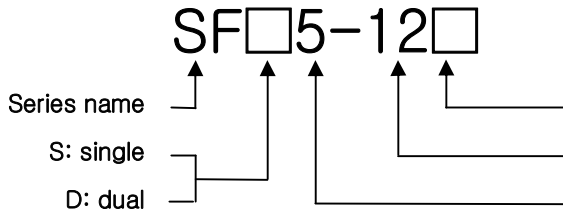
| Isolation specifications | |
|--------------------------------|------------------------|
| Isolation Resistance | DC 500V, 100MOhms Min. |
| Input-Output Isolation Voltage | AC 3KV, 1minute, 10mA. |

| General specifications | |
|------------------------|-------------------------|
| Switching frequency | 100kHz |
| Calculated MTBF | 4.5*10 ⁵ hrs |
| Weight | 40g or less |

NOTE: For cases that conform various safety specifications(UL, CSA, CE, CB etc). It require input voltage and frequency range will be 100~240Vac, 50~60Hz.

SFS5 Series AC-DC Converter Compact Miniature Type

Ordering information



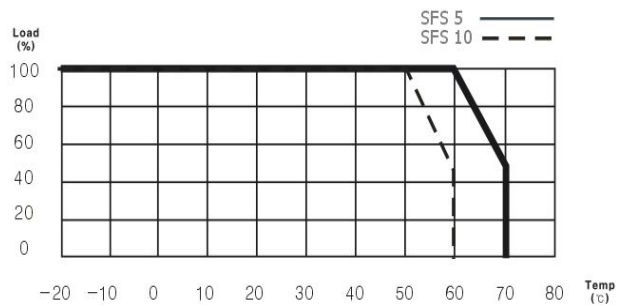
If chassis mount type, 'C' added
Output voltage
Output power

| Input | Output1 | Output2 | Maximum power | Ripple & Noise | Efficiency typical | Model number |
|-------------------------------|------------|------------|---------------|----------------|--------------------|--------------|
| AC85~264V or DC110~340V | 3.3V@1.25A | | 4.125W | 80mVp-p | 68% | SFS5-3R3 |
| | 5V@1.0A | | 5.0W | 80mVp-p | 75% | SFS5-5 |
| | 12V@0.42A | | 5.0W | 120mVp-p | 77% | SFS5-12 |
| | 15V@0.33A | | 5.0W | 150mVp-p | 77% | SFS5-15 |
| | 24V@0.21A | | 5.0W | 200mVp-p | 77% | SFS5-24 |
| | +12V@0.21A | -12V@0.21A | 5.0W | 120/120mVp-p | 72% | SFD5-1212 |
| +15V@0.17A | -15V@0.17A | 5.0W | 150/150mVp-p | 72% | SFD5-1515 | |

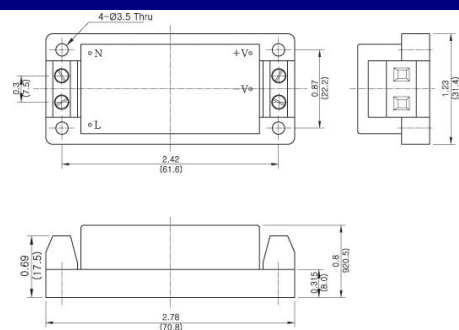
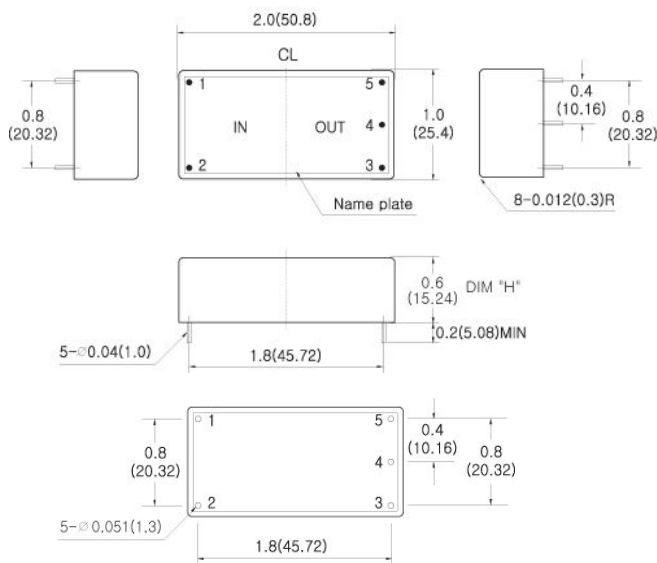
Pin assignments

- | | |
|---------------|-------------|
| Single output | Dual output |
| 1. AC(N) | 1. AC(N) |
| 2. AC(L) | 2. AC(L) |
| 3. No pin | 3. -V |
| 4. -V | 4. GND |
| 5. +V | 5. +V |

Derating curve



Dimensions



Chassis Mount Type

NOTES

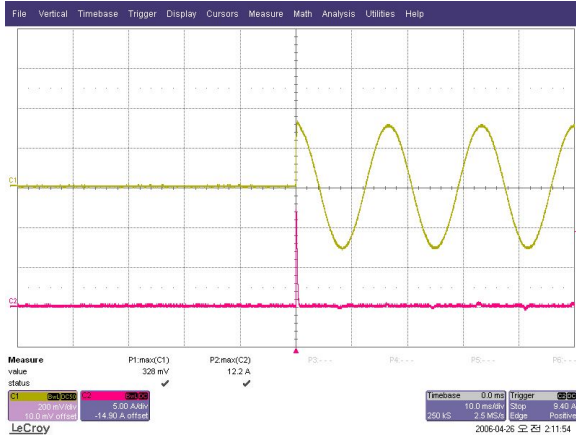
- All dimensions are inch(mm).
- Weight : 40g or less
- Case material : PBT, 94V-0 Rated
- Construction : encapsulated, Soft Pot
- Dimension "H"
0.6(15.24) for 5watt / SFS5,SFD5 version

SFS5 Series AC-DC Converter Compact Miniature Type

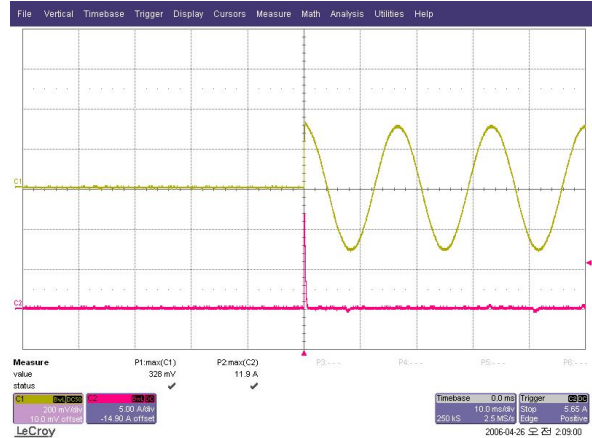
Inrush Current

TEST CONDITION

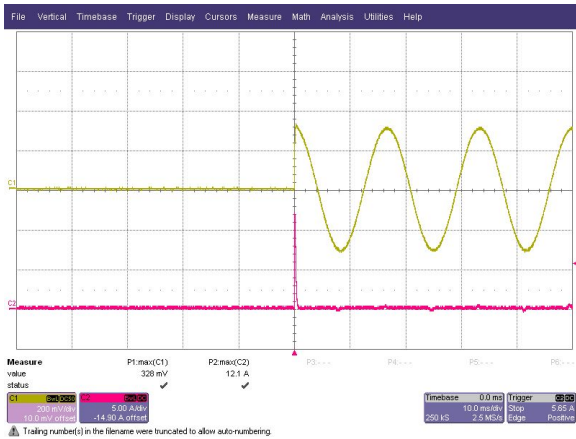
- 240Vac input
- Full load output
- PHASE 90°input start, current measure



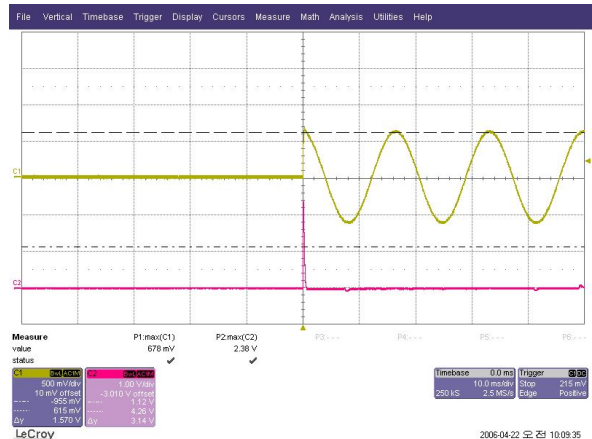
SFS5-3R3 12.2A



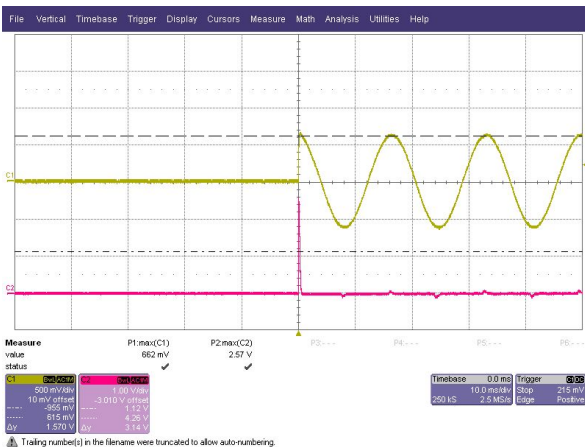
SFS5-5 11.9A



SFS5-12 12.1A



SFS5-15 11.9A



SFS5-24 12.85A

Inrush current concerns wrong to fuse, input rectifier, power-switch, circuit break and parts. It degrades the another circuit voltage and occurs system error. If you defuse inrush current. You add NTC or Inrush current limiter to external circuit.

High rating voltage input

Max20A @ 120Vac

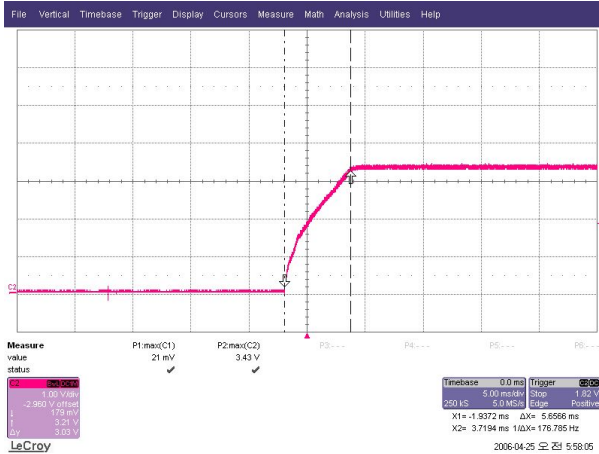
Max40A @ 240Vac

SFS5 Series AC-DC Converter Compact Miniature Type

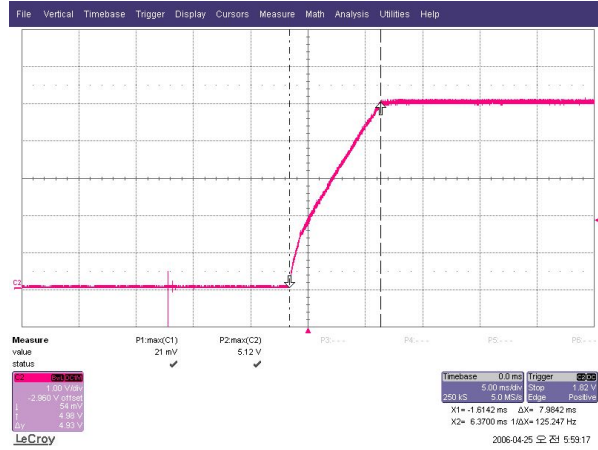
Rising Time

TEST CONDITION

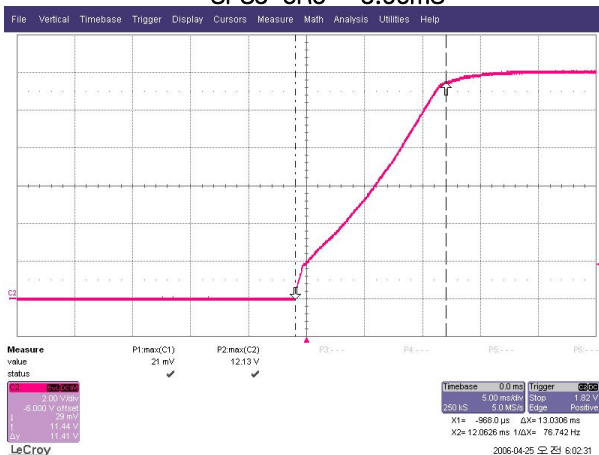
- 220Vac Input
- Full Load Output
- Output Voltage 10% ~ 90% Rising Time Measure



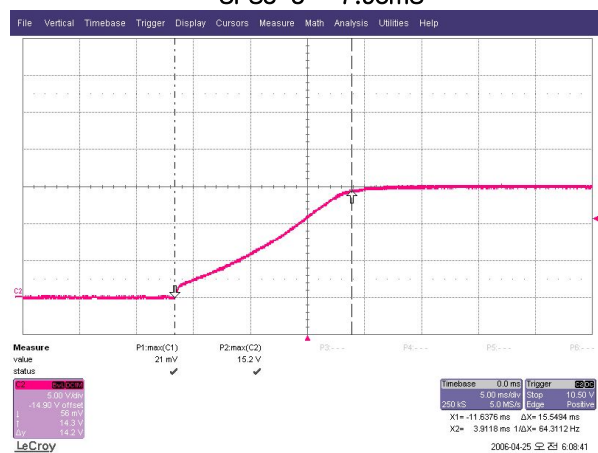
SFS5-3R3 5.66ms



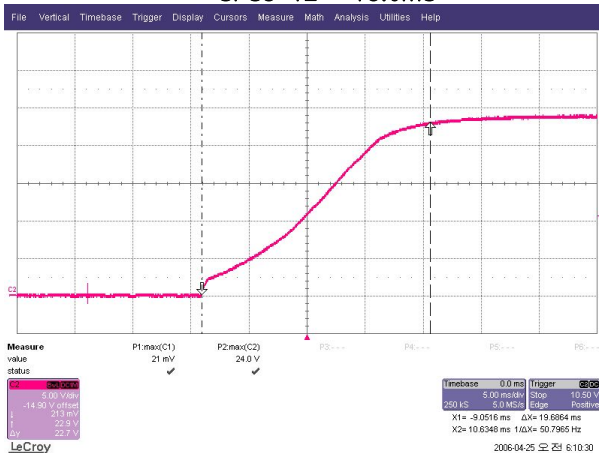
SFS5-5 7.98ms



SFS5-12 13.0ms



SFS5-15 15.6ms



SFS5-24 19.7ms

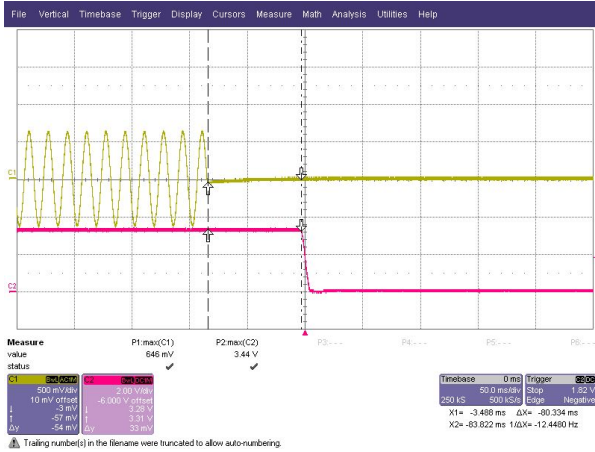
Max 100ms between output voltage 0%~90%

SFS5 Series AC-DC Converter Compact Miniature Type

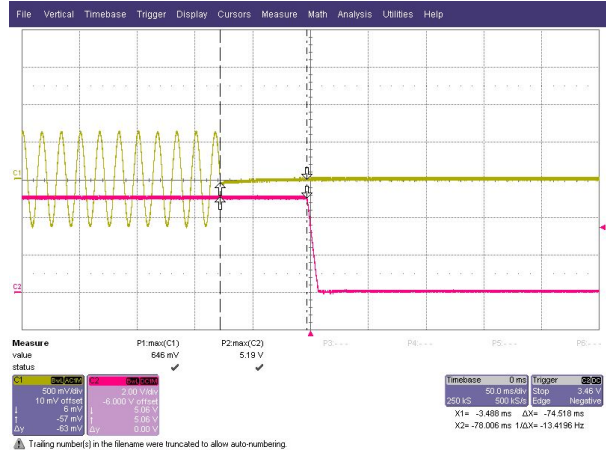
Hold up Time

TEST CONDITION

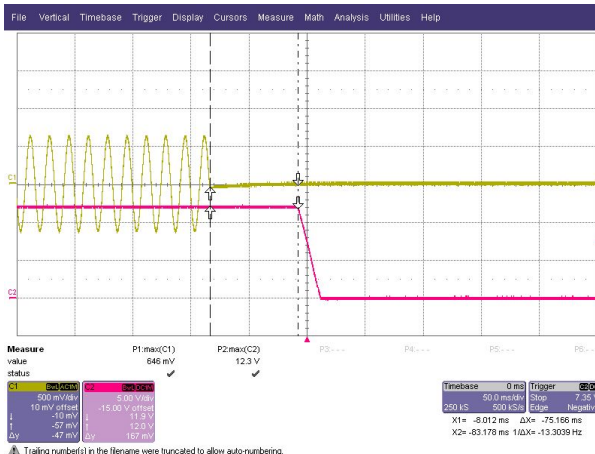
- 220Vac Input
- Full Load Output
- When Input off Phase 360°, Output Voltage off Time Measure



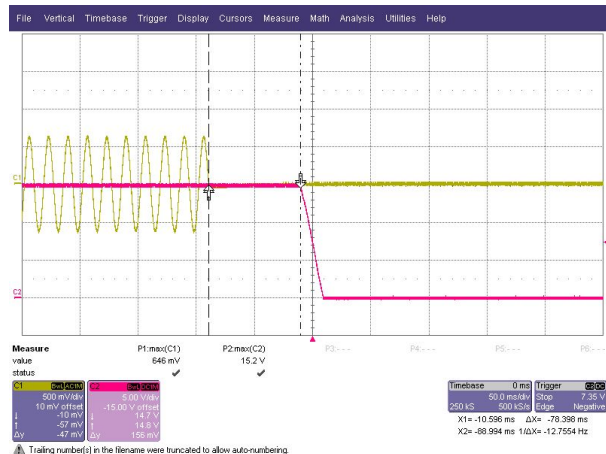
SFS5-3R3 80ms



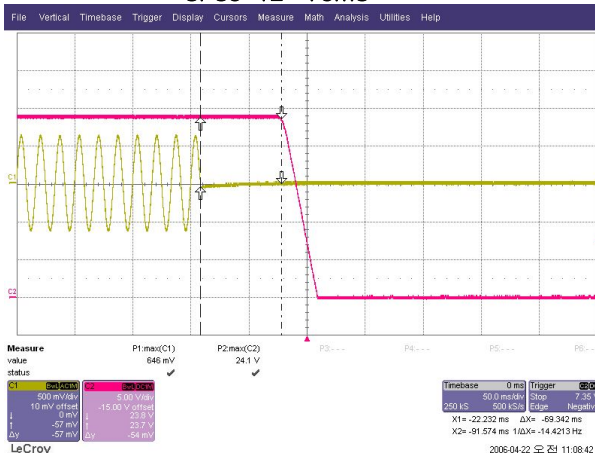
SFS5-5 75ms



SFS5-12 75ms



SFS5-15 78ms



SFS5-24 69ms

The amount of time that a power supply's output-voltage remains within the specified-voltage ranges after it's input voltage interrupts.

Low rating voltage

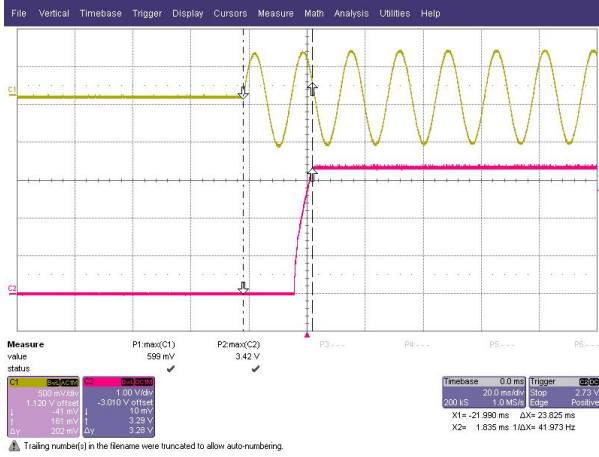
Min10ms @100Vac

SFS5 Series AC-DC Converter Compact Miniature Type

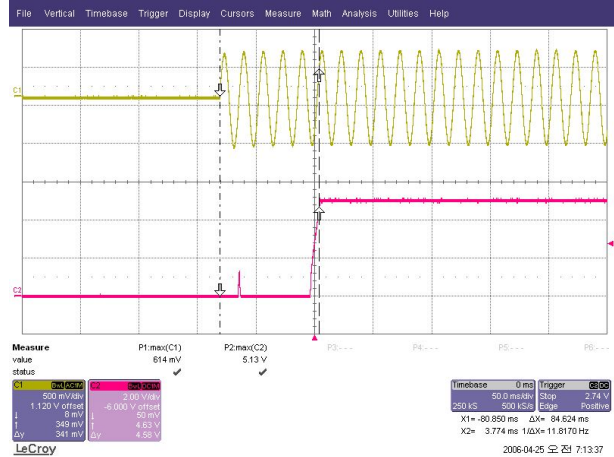
Start up Time

TEST CONDITION

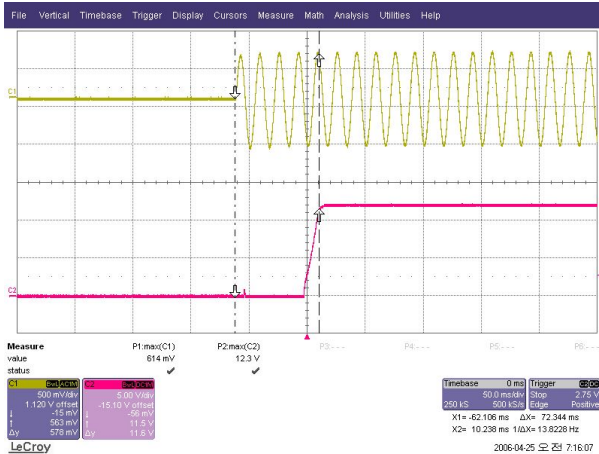
- 220Vac Input
- Full Load Output
- When Input on Phase 360°, Output Voltage 100% rise Time Measure



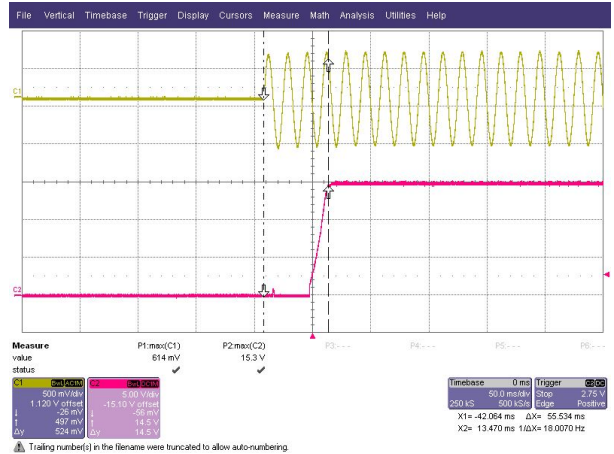
SFS5-3R3 23.8mS



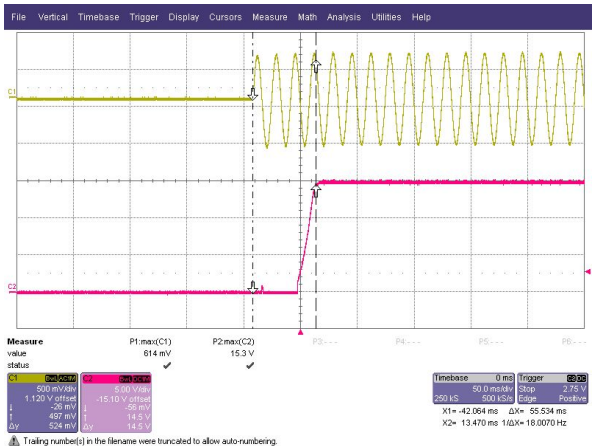
SFS5-5 84.6mS



SFS5-12 72.3mS



SFS5-15 55.5mS



SFS5-24 32.9mS

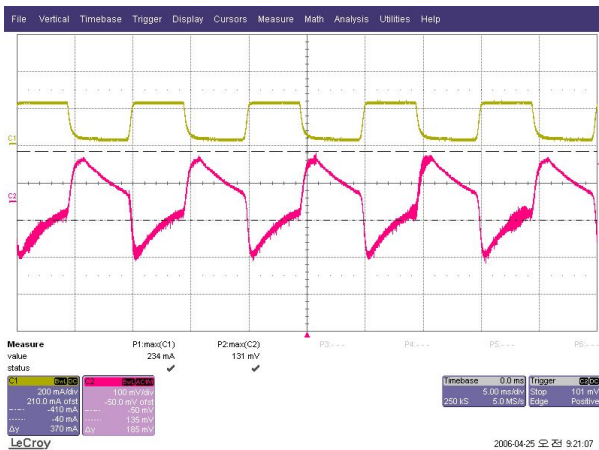
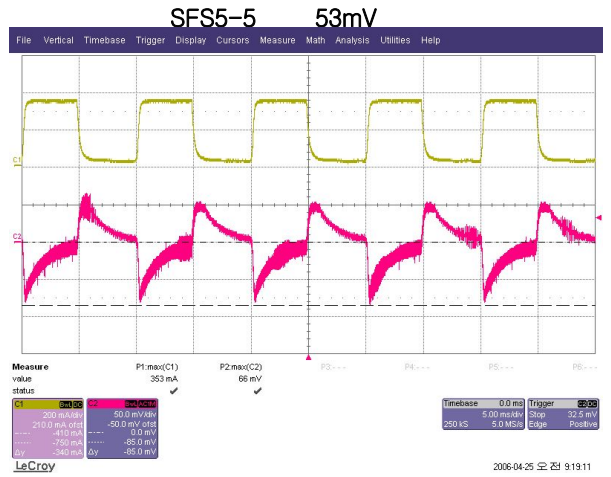
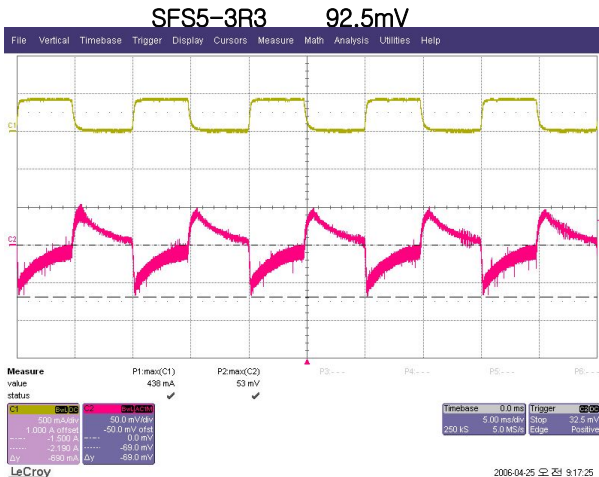
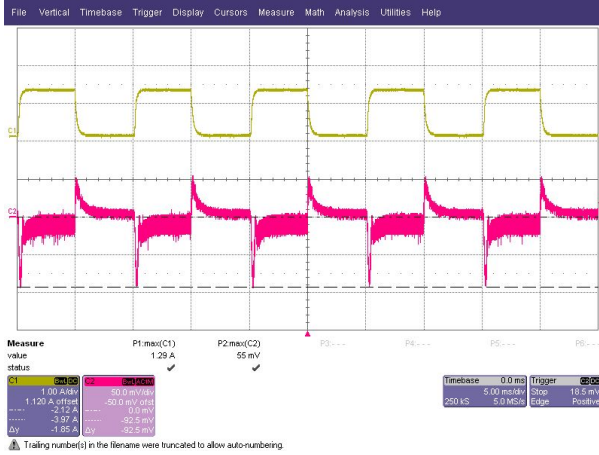
Amount of delay time and rise time. After input-voltage injects.

SFS5 Series AC-DC Converter Compact Miniature Type

Dynamic Load

TEST CONDITION

- 220Vac Input
- 0% Load ~ 100% Load Output
- Freq. : 100Hz , - Duty : 0.5



SFS5-3R3 92.5mV

SFS5-5 53mV

SFS5-12 69mV

SFS5-15 85mV

SFS5-24 135mV

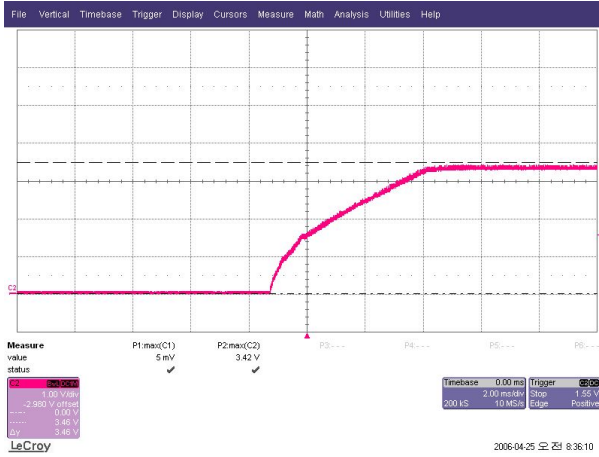
Considerate slew rate and frequency within $\pm 3\%$ output voltage value.

SFS5 Series AC-DC Converter Compact Miniature Type

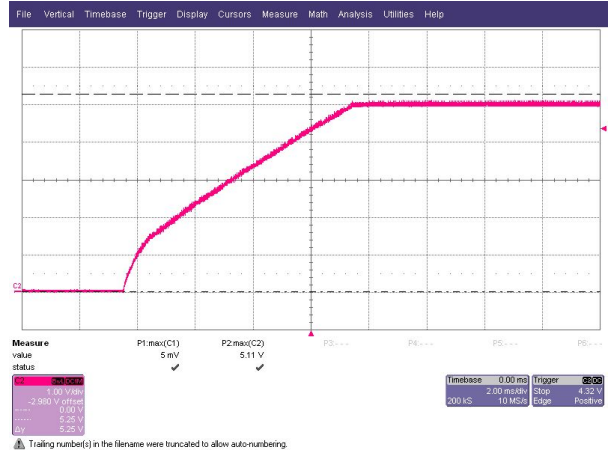
Over Shoot

TEST CONDITION

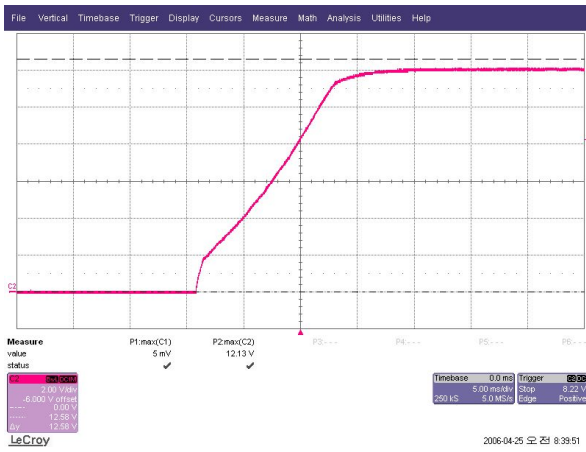
- 220Vac Input
- Full Load Output



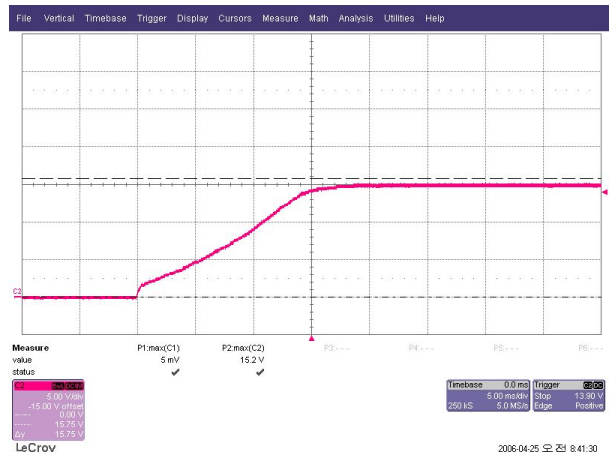
SFS5-3R3 0V



SFS5-5 0V



SFS5-12 0V



SFS5-15 0V



SFS5-24 0V

When turn-on, the output overshoot voltage shall not exceed 5% of normal Voltage value no Load or full Load connected.

SFS5 Series AC-DC Converter Compact Miniature Type

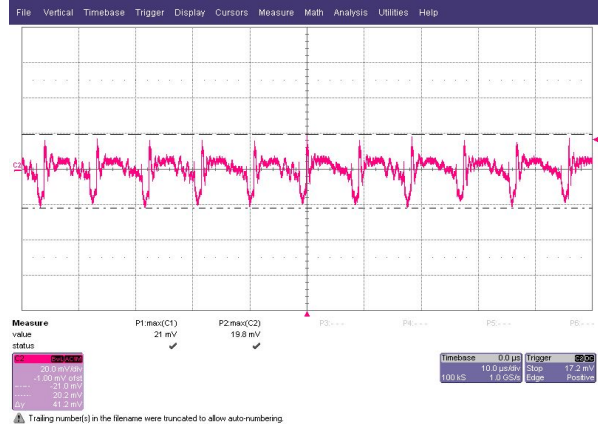
Output Ripple & Noise

TEST CONDITION

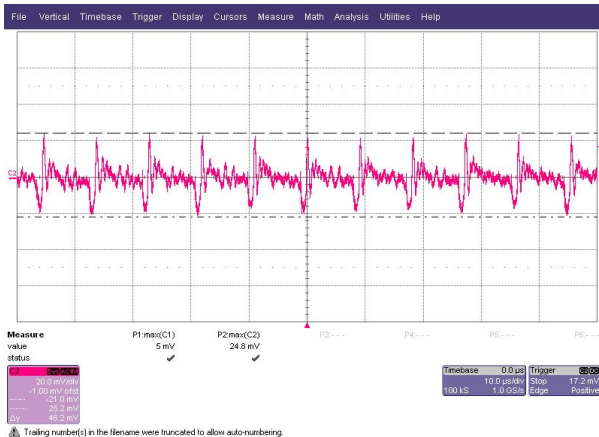
- 220Vac Input
- Full Load Output
- Ele-cap(47uF)and Ceramic-cap(104), Output Terminal



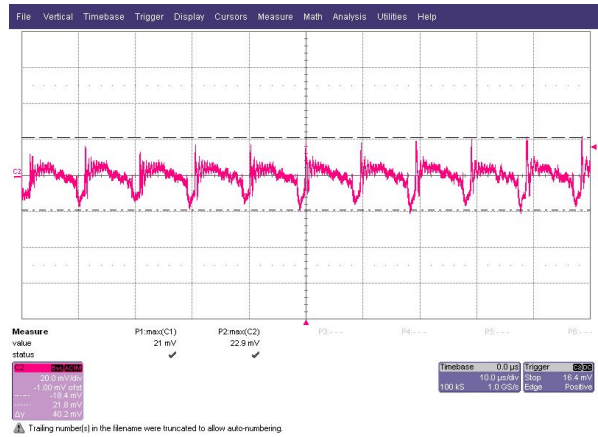
SFS5-3R3 51.6mVpp



SFS5-5 41.2mVpp



SFS5-12 46.2mVpp



SFS5-15 40.2mVpp



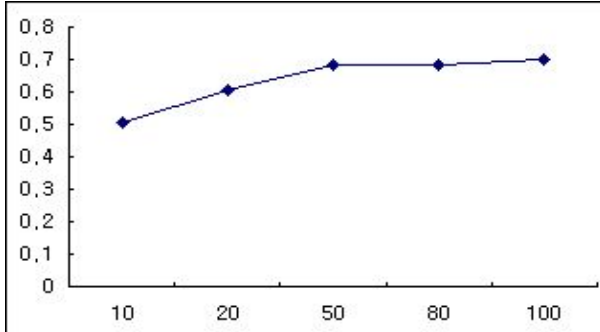
SFS5-24 74.6mVpp

*Ripple & Noise: Oscilloscope bandwidth 20MHz.

The length of the output line should be shorter than 1meter and it needs to be twisted.

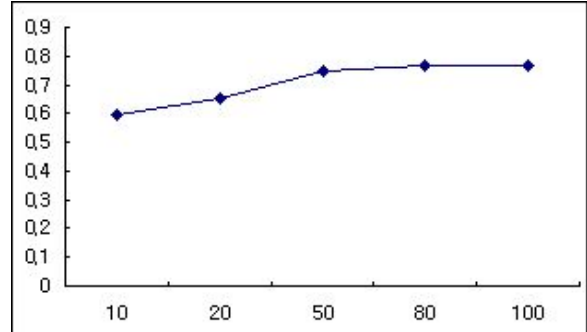
SFS5 Series AC-DC Converter Compact Miniature Type

Efficiency Curve(Load Variation)



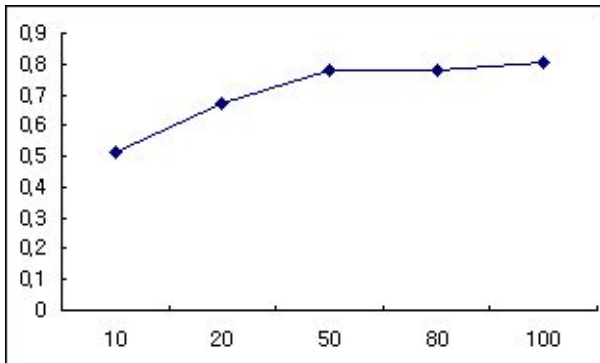
| Load(%) | 10 | 20 | 50 | 80 | 100 |
|---------|-------|-------|-------|-------|-------|
| Eff(%) | 50.8% | 60.6% | 68.2% | 68.6% | 70.0% |

SFS5 - 3R3



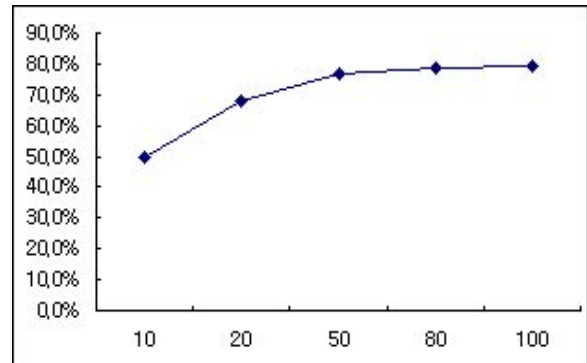
| Load(%) | 10 | 20 | 50 | 80 | 100 |
|---------|-------|-------|-------|-------|-------|
| Eff(%) | 59.5% | 65.0% | 74.6% | 76.5% | 76.8% |

SFS5 - 5



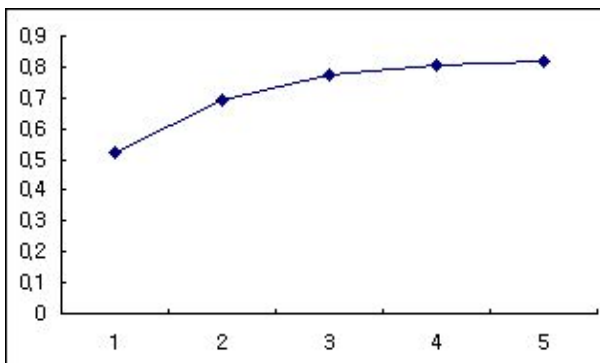
| Load(%) | 10 | 20 | 50 | 80 | 100 |
|---------|-------|-------|-------|-------|-------|
| Eff(%) | 51.4% | 66.9% | 77.7% | 77.8% | 80.2% |

SFS5 - 12



| Load(%) | 10 | 20 | 50 | 80 | 100 |
|---------|-------|-------|-------|-------|-------|
| Eff(%) | 50.0% | 68.1% | 76.5% | 78.7% | 79.5% |

SFS5 - 15



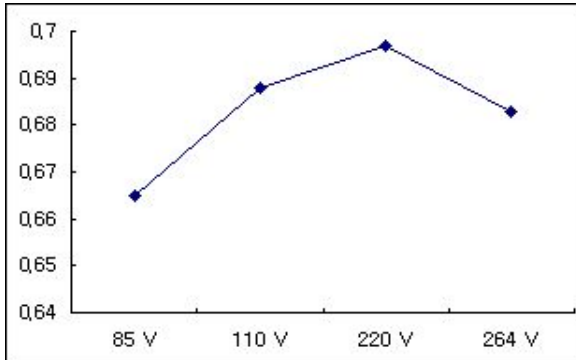
| Load(%) | 10 | 20 | 50 | 80 | 100 |
|---------|-------|-------|-------|-------|-------|
| Eff(%) | 52.1% | 69.0% | 77.5% | 80.5% | 81.6% |

SFS5 - 24

Input 220Vac, Variation of efficiency,
from minimum load to maximum load.

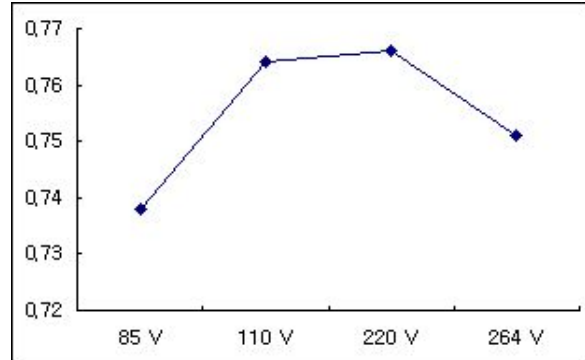
SFS5 Series AC-DC Converter Compact Miniature Type

Efficiency Curve(Input Voltage Variation)



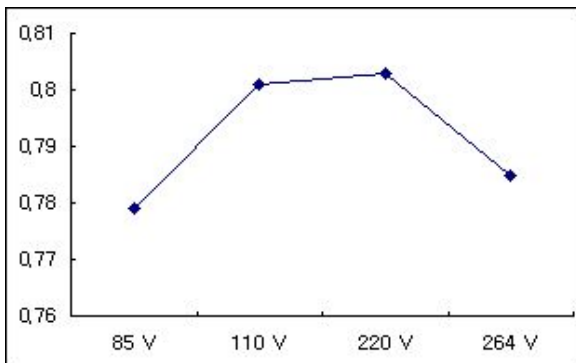
| Input (V) | 85 V | 110 V | 220 V | 264 V |
|-----------|-------|-------|-------|-------|
| Eff(%) | 66.5% | 68.8% | 69.7% | 68.3% |

SFS5 - 3R3



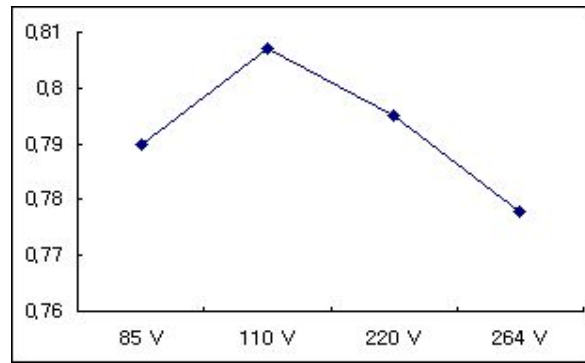
| Input (V) | 85 V | 110 V | 220 V | 264 V |
|-----------|-------|-------|-------|-------|
| Eff(%) | 73.8% | 76.4% | 76.6% | 75.1% |

SFS5 - 5



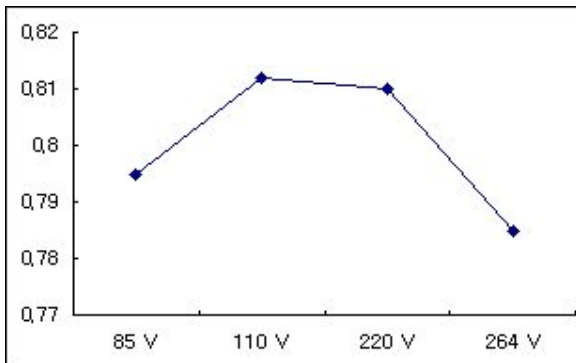
| Input (V) | 85 V | 110 V | 220 V | 264 V |
|-----------|-------|-------|-------|-------|
| Eff(%) | 77.9% | 80.1% | 80.3% | 78.5% |

SFS5 - 12



| Input (V) | 85 V | 110 V | 220 V | 264 V |
|-----------|-------|-------|-------|-------|
| Eff(%) | 79.0% | 80.7% | 79.5% | 77.8% |

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| Input (V) | 85 V | 110 V | 220 V | 264 V |
|-----------|-------|-------|-------|-------|
| Eff(%) | 79.5% | 81.2% | 81.0% | 78.5% |

SFS5 - 24

Variation of Efficiency, from Minimum input Voltage to Maximum input Voltage

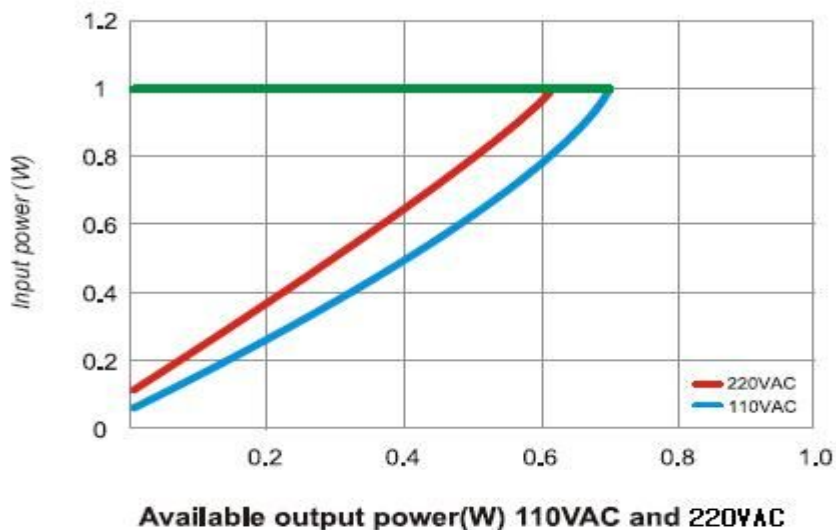
SFS5 Series AC-DC Converter Compact Miniature Type

No-Load Power Consumption

No load power consumption is the power used by a device, when it is disconnected from its load and performing no function. SFS5 series are very low no-load power consumption (single output).

| RATED OUTPUT POWER | NO-LOAD POWER CONSUMPTION | | |
|-----------------------|---------------------------|-----------------------|-----------------------|
| | PHASE 1 01.01.2001 | PHASE 2 01.01.2003 | PHASE 3 01.01.2005 |
| ≥ 0.3W and < 15W | 1.0W | 0.75W | 0.3W |
| ≥ 15W and < 50W | 1.0W | 0.75W | 0.5W |
| ≥ 50W and < 75W | 1.0W | 0.75W | 0.75W |

Source : European commission code of conduct on efficiency of external power supplies(06.15.2000)

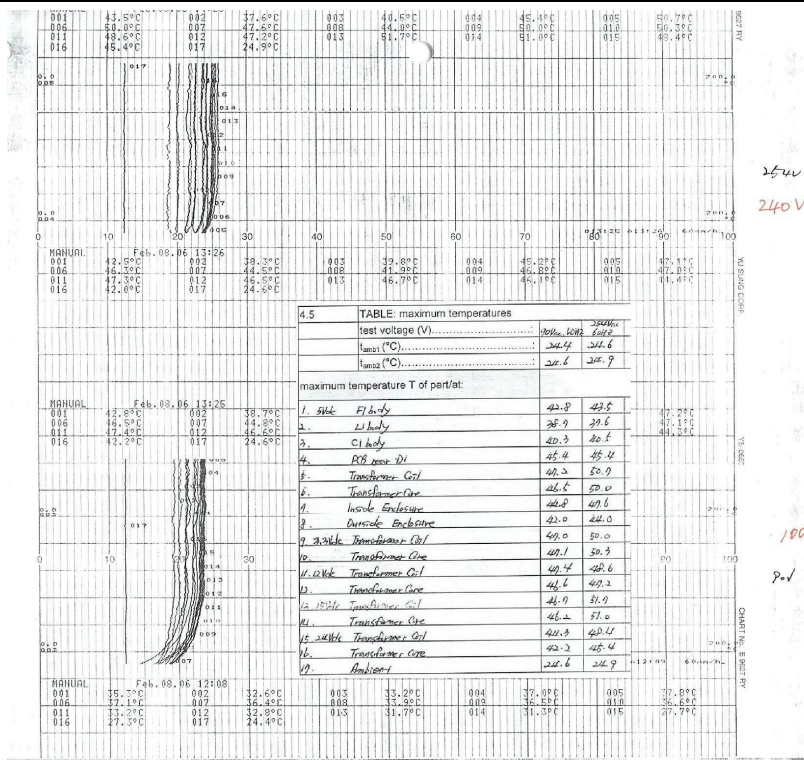


SFS5 Series AC-DC Converter Compact Miniature Type

Thermal Test

After power supply SFS5 Series was molded, and Components Thermal measurement. Operating the power supply At normal temperature. Until the temperature of components is saturated. Maximum permitted degree of components ascertains the margins. We will calculate the maximum operation degree. Degree of ambient temperature rises up and load derates.

| Test Voltage(V), 60Hz | 90VAC | Δ °C | 254VAC | Δ °C | REMARK |
|----------------------------|-------|-------------|--------|-------------|--------|
| Tamb | 24.6 | | 24.9 | | |
| Temperature T of part | | | | | |
| 1. 5Vdc F1 Body | 42.8 | 18.2 | 43.5 | 18.6 | |
| 2. L1 Body | 38.7 | 14.1 | 37.6 | 12.7 | |
| 3. C1 Body | 40.3 | 15.7 | 40.5 | 15.6 | |
| 4. D1 | 45.4 | 20.8 | 45.4 | 20.5 | |
| 5. Transformer coil | 47.2 | 22.6 | 50.7 | 25.8 | |
| 6. Transformer core | 46.5 | 21.9 | 50.0 | 25.1 | |
| 7. Inside Enclosure | 44.8 | 20.2 | 47.6 | 22.7 | |
| 8. Outside Enclosure | 42.0 | 17.4 | 44.0 | 19.1 | |
| 9. 3.3Vdc Transformer coil | 47.0 | 22.4 | 50.0 | 25.1 | |
| 10. Transformer core | 47.1 | 22.5 | 50.3 | 25.4 | |
| 11. 12Vdc Transformer coil | 47.4 | 22.8 | 48.6 | 23.7 | |
| 12. Transformer core | 46.6 | 22.0 | 47.2 | 22.3 | |
| 13. 15Vdc Transformer coil | 46.7 | 22.1 | 51.7 | 26.8 | |
| 14. Transformer core | 46.2 | 21.6 | 51.0 | 26.1 | |
| 15. 24Vdc Transformer coil | 44.3 | 19.7 | 48.4 | 23.5 | |
| 16. Transformer core | 42.2 | 17.6 | 45.4 | 20.5 | |
| 17. Ambient | 24.6 | 0.0 | 24.9 | 0.0 | |

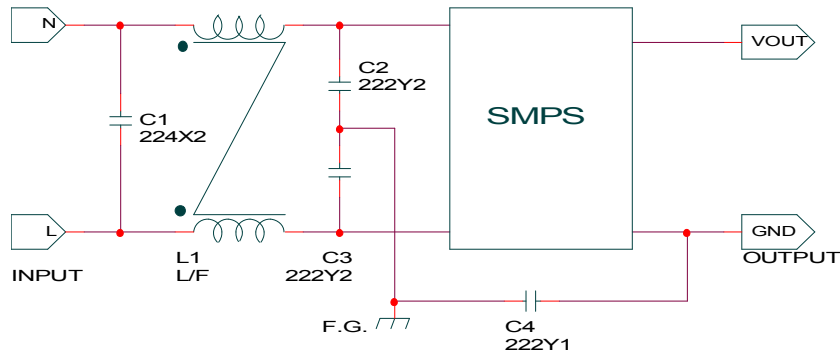


SFS5 Series AC-DC Converter Compact Miniature Type

Electro Magnetic Interference Application.

SFS5 Series are needed to reduce Electromagnetic Interference, use the external L-C noise filter at the input of the Converter.

1. Configuration



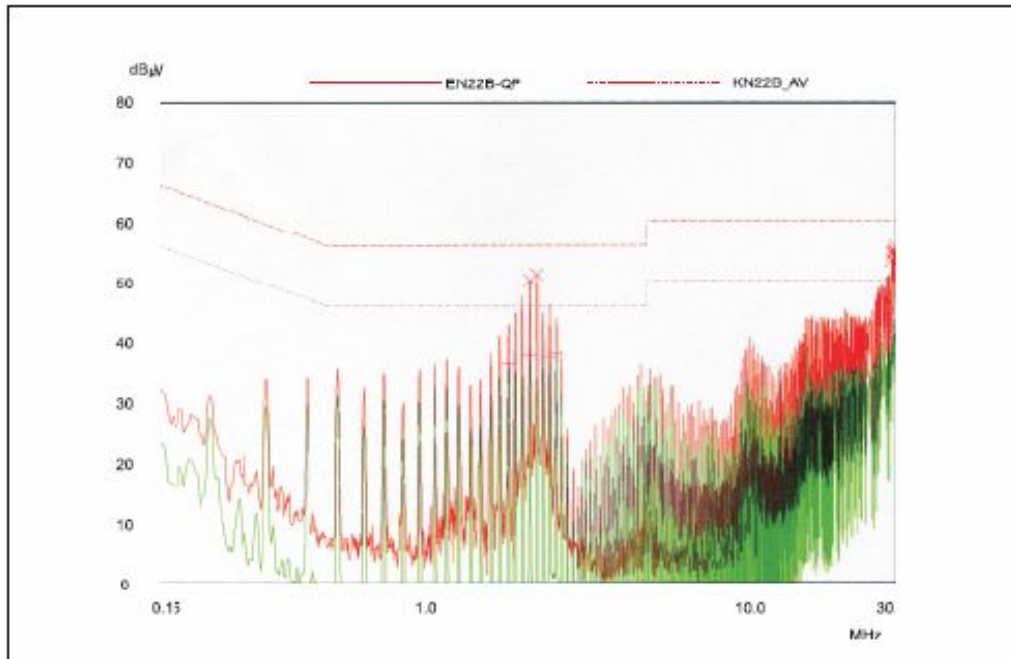
2. Components

L1 = 10~30mH Common Mode Line Filter

C1 = 220nF X2 Capacitor

C2,C3 = 2200pF Y2 Capacitor

C4 = 2200pF Y1 Capacitor



The CISPR 22 Standard @ SFS5-12

SFS5 Series AC-DC Converter Compact Miniature Type

| DRIFT | | | | | | | |
|-------|-------|------------|-------|--------|--------|--------|---------------|
| No | Time | Voltage(V) | | | | | Remarks |
| | | 3.3V | 5V | 12V | 15V | 24V | |
| | | 1.25A | 1.0 A | 0.42 A | 0.33 A | 0.21A | Vin 220VAC |
| 1. | 08:30 | 3.314 | 5.024 | 12.100 | 14.999 | 24.010 | |
| 2. | 09:00 | 3.310 | 5.022 | 12.077 | 14.996 | 23.980 | |
| 3. | 09:30 | 3.307 | 5.020 | 12.068 | 14.999 | 23.980 | |
| 4. | 10:00 | 3.304 | 5.019 | 12.067 | 15.000 | 23.990 | |
| 5. | 10:30 | 3.304 | 5.020 | 12.068 | 14.999 | 23.990 | |
| 6. | 11:00 | 3.306 | 5.020 | 12.070 | 14.999 | 23.990 | |
| 7. | 11:30 | 3.307 | 5.019 | 12.066 | 15.000 | 23.990 | |
| 8. | 12:00 | 3.306 | 5.020 | 12.068 | 14.999 | 23.990 | |
| 9. | 12:30 | 3.303 | 5.020 | 12.068 | 14.999 | 23.990 | |
| 10. | 13:00 | 3.306 | 5.020 | 12.067 | 14.998 | 23.990 | |
| 11. | 13:30 | 3.306 | 5.020 | 12.067 | 14.999 | 23.990 | |
| 12. | 14:00 | 3.304 | 5.020 | 12.062 | 14.998 | 23.990 | |
| 13. | 14:30 | 3.305 | 5.020 | 12.069 | 14.998 | 23.990 | |
| 14. | 15:00 | 3.306 | 5.020 | 12.070 | 14.997 | 23.990 | |
| 15. | 15:30 | 3.306 | 5.019 | 12.064 | 14.998 | 23.990 | |
| 16. | 16:00 | 3.305 | 5.019 | 12.068 | 14.999 | 23.990 | |
| 17. | 16:30 | 3.304 | 5.020 | 12.062 | 14.998 | 23.990 | |
| 18. | 17:00 | 3.306 | 5.020 | 12.063 | 14.998 | 23.990 | |

1. Primary Drift: (Maximum Value - Datum Value) ÷ Datum V × 10⁶ (Power On ~ 30minute)

| | | |
|------|------------|-----|
| 3.3V | 1208.45921 | PPM |
| 5 V | 398.24771 | PPM |
| 12 V | 1904.44647 | PPM |
| 15 V | 200.053348 | PPM |
| 24V | 1251.04254 | PPM |

2. Passage Drift: (Max Value - Datum Value) ÷ Datum V × 10⁶ (30Minutes ~ Until 8hours 30minutes)

| | | |
|---------------------------------|------------|------------|
| 3.3V | -2114.8036 | PPM |
| 5 V | -398.24771 | PPM |
| 12 V | -1242.0303 | PPM |
| 15 V | 266.737797 | PPM |
| 24V | 417.014178 | PPM |
| (Maximum Value - Minimum Value) | | |
| 3.3V | 0.007 | V : 0.2% |
| 5 V | 0.003 | V : 0.06% |
| 12 V | 0.015 | V : 0.125% |
| 15 V | 0.004 | V : 0.03% |
| 24V | 0.01 | V : 0.04% |

SFS5 Series AC-DC Converter Compact Miniature Type

Calculating Reliable Values of MTBF

1. Calculating method

Calculated based on part count reliability projection of MIL-HDBK-217F Individual failure rates λ_g is given to each part and MTBF (Mean Time Between Failure) is calculated by the count of each part.

<Formula>:

$$MTBF = 1 / \lambda_{\text{equip}} = 1 / \left(\sum_{i=1}^n N_i (\lambda_G \Pi Q)_i \right) * 10^6 \text{ (Hours)}$$

λ_{equip} : Total Equipment Failure Rate (Failure/10⁶Hours)

λ_G : Generic Failure Rate for The ith Generic Part (Failure/ 10⁶Hours)

ΠQ : Generic Quality Factor for The ith Generic Part ($\Pi Q=1$)

N_i : Quantity of ith Generic Part

n : Number of Different Generic Part Categories

2. MTBF Values

MTBF \approx 484,937(Hours)

| PART | Number | Failure Rate | Failure Rate*n | Remark |
|--|--------|------------------|---------------------------|----------|
| | n | $\lambda_G(F/T)$ | $\lambda_G \times n(F/T)$ | |
| Logic IC | 1 | 0.01500 | 0.01500 | Separate |
| Transistor, FET | 1 | 0.09900 | 0.09900 | Separate |
| Diode | 6 | 0.02200 | 0.13200 | |
| Voltage Regulator | 1 | 0.02400 | 0.02400 | |
| Photo-coupler | 1 | 0.07000 | 0.07000 | |
| Diode Bridge | 1 | 0.06600 | 0.19800 | *3 |
| Ele-capacitor | 3 | 0.01900 | 0.05700 | |
| Ceramic Capacitor | 1 | 0.02600 | 0.02600 | |
| MLCC | 7 | 0.05300 | 0.37100 | |
| Choke coil | 1 | 0.00022 | 0.00022 | |
| Switching trans | 1 | 0.00420 | 0.00420 | |
| Line Filter | 2 | 0.00440 | 0.00880 | |
| Resistor Chip | 7 | 0.01600 | 0.11200 | |
| Connector | 5 | 0.05200 | 0.26000 | |
| Reflow soldering | 45 | 0.00014 | 0.00630 | |
| Flow soldering | 37 | 0.00780 | 0.28860 | |
| PCB | 1 | 0.37000 | 0.37000 | SMT |
| Fuse | 1 | 0.02000 | 0.02000 | |
| Total Equipment Failure Rate $\lambda_G \times n(F/T)$ | | | 2.06212 | |
| MTBF = $10^6 / \lambda_G(F/T)$ | | | 484937.831 | |

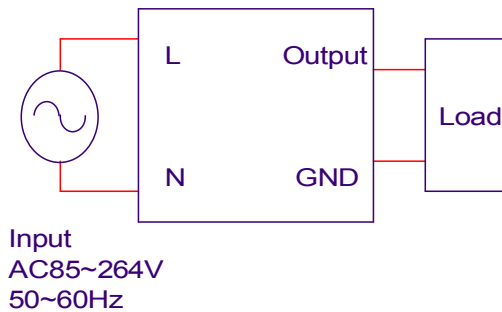
SFS5 Series AC-DC Converter Compact Miniature Type

| Reliability Specification | Standard | Remarks |
|--|---|---------|
| Dry heat | IEC60068-2-2 | |
| Cold | IEC60068-2-1 | |
| Thermal shock | IEC60068-2-14 | |
| Temperature, humidity cycle | IEC60068-2-30, IEC60068-2-38 | |
| Vibration | IEC 60068-2-6 | |
| Mechanical shock | IEC 60068-2-27 | |
| Electrostatic Discharge immunity | IEC 61000-4-2 | |
| Immunity to radio frequency EM-fields | IEC 61000-4-3 | |
| Electrical fast transient/burst immunity | IEC 61000-4-4 | |
| Surge immunity | IEC 61000-4-5 | |
| B10 Life test | B10 Life is the time by which 10% of the product population will get failed | |
| | | |
| | | |

SFS5 Series AC-DC Converter Compact Miniature Type

Instruction manual

1. Basic connection



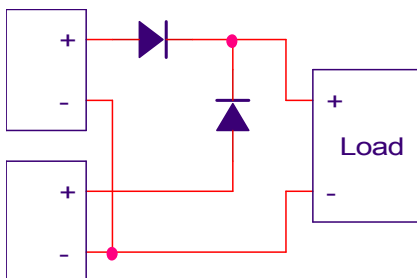
NOTE: To avoid excessive voltage drop and for improved noise, and short and thick wire should be used to connect the load. Length below 50cm & wire thickness of 4.0A/mm² are recommended for reducing wire loss when wire connection is necessary.

2. Parallel Operation

This supply can be operated the following ways.

Choose a diode in accordance with voltage, power dissipation and heat radiation.

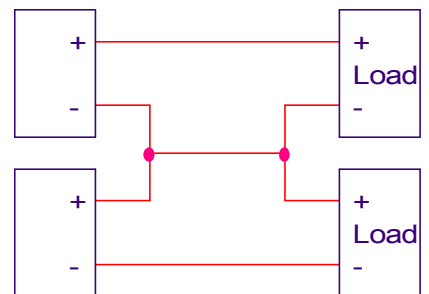
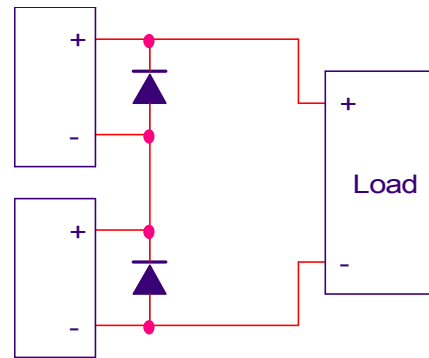
- Voltage : $V > V_o \times 3$
- Current : $I > I_o \times 3$
- Design a proper heat sink according to power loss at diode ($P_w = V_F \times I_o$)
- Use a schottky or fast recovery diode this has a low VF.



3. Series Operation

Choose a diode in accordance with voltage, power dissipation and heat radiation.

- Voltage : $V > V_o \times 3$
- Current : $I > I_o \times 3$
- Design a proper heat sink according to power loss at diode ($P_w = V_f \times I_o$).
- Use a schottky or fast recovery diode this has a low VF.



4. Over Current Protection

Output current is grown, this is mainly due to the poor coupling between the auxiliary winding and the power winding. Which prevents proper collapsing. When V_{out} goes low.

SFS5 Series AC-DC Converter Compact Miniature Type

Instruction manual

5. Over Voltage Protection

SFS series are equipped with an over-voltage protection circuit by zener diode. If zener diode is opened, Vcc rise up, it becomes possible to implement an over voltage protection. Ratch on mode. If zener diode is short, output is shorted.

It becomes possible to implement a short circuit Protection.

6. Over Temperature Protection

Temperature protection is provided by a precision analog circuit that turns the output MOSFET off when the junction temperature exceeds the thermal shutdown temperature (130°C Min. , 140°C Typ. and 70°C hysteresis). When the junction temperature cools to below the hysteretic temperature, normal operation resumes providing automatic recovery.

7. Line Regulation

Maximum line regulation is maximum output voltage change when the input volt is slowly varied with in the input voltage range.

8. Load Regulation

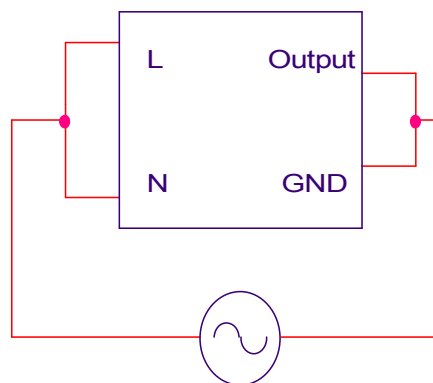
Maximum load regulation is maximum output voltage value change when varying the load current slowly within the standard output current range.

9. Isolation Resistance

The isolation resistance is more than 100MΩ at 500 VDC when tested with DC isolation between the output and the case. Make sure that during testing, the isolation tester does not produce a high pulse when the applied voltage is varied. Ensure that the tester is fully discharged after the test.

10. Withstand Voltage

SFS5 series are designed to withstand 3KVAC (10mA) 1 minute between input output for the withstand voltage test, the applied voltage must be increased gradually from zero to the testing value, and then decreased gradually at shut down. Especially stay away from use of a timer. Where a pulse of several times the applied voltage can be generated.



11. No-Load Power Consumption

No-Load power is the energy used by a device when it is disconnected from it's load and performing no function.

12. Short Circuit Protection

By permanently monitoring the feedback line activity, the IC is able to detect the presence of a short-circuit. Immediately reducing the output power for a total system protection. Once the short has disappeared, the controller resumes and goes back to normal operation.

SFS5 Series AC-DC Converter Compact Miniature Type

Instruction manual

13. Block Diagrams

Circuit topology : Flyback

Switching frequency : 100KHz(fixed)

