



■ Features :

- 2:1 wide input range
- Protections: Short circuit / Overload / Over voltage / Over temperature
- 1500VDC I/O isolation
- Cooling by free air convection
- 100% full load burn-in test
- 24V and 48V input voltage design refer to LVD
- 2 years warranty

c us (for SD-200C-24 type only) **CB** (for D type only)

SPECIFICATION

| MODEL | | SD-200B | | | | SD-200C | | | | |
|-----------------------|--|--|------------|--------------|------------|---------------|------------|--------------|------------|--|
| OUTPUT | DC VOLTAGE | 5V | 12V | 24V | 48V | 5V | 12V | 24V | 48V | |
| | RATED CURRENT | 34A | 16.7A | 8.4A | 4.2A | 40A | 16.7A | 8.4A | 4.2A | |
| | CURRENT RANGE | 0 ~ 34A | 0 ~ 16.7A | 0 ~ 8.4A | 0 ~ 4.2A | 0 ~ 40A | 0 ~ 16.7A | 0 ~ 8.4A | 0 ~ 4.2A | |
| | RATED POWER | 170W | 200.4W | 201.6W | 201.6W | 200W | 200.4W | 201.6W | 201.6W | |
| | RIPPLE & NOISE (max.) Note.2 | 100mVp-p | 120mVp-p | 150mVp-p | 200mVp-p | 100mVp-p | 120mVp-p | 150mVp-p | 200mVp-p | |
| | VOLTAGE ADJ. RANGE | 4.5 ~ 5.5VDC | 11 ~ 16VDC | 23 ~ 30VDC | 43 ~ 53VDC | 4.5 ~ 5.5VDC | 11 ~ 16VDC | 23 ~ 30VDC | 43 ~ 53VDC | |
| | VOLTAGE TOLERANCE Note.3 | ±2.0% | ±1.0% | ±1.0% | ±1.0% | ±2.0% | ±1.0% | ±1.0% | ±1.0% | |
| | LINE REGULATION | ±0.5% | ±0.5% | ±0.5% | ±0.5% | ±0.5% | ±0.5% | ±0.5% | ±0.5% | |
| | LOAD REGULATION | ±1.0% | ±1.0% | ±1.0% | ±1.0% | ±1.0% | ±1.0% | ±1.0% | ±1.0% | |
| SETUP, RISE TIME | 300ms, 50ms at full load | | | | | | | | | |
| INPUT | VOLTAGE RANGE | B:19 ~ 36VDC | | C:36 ~ 72VDC | | D:72 ~ 144VDC | | | | |
| | EFFICIENCY (Typ.) | 79% | 82% | 85% | 86% | 81% | 84% | 86% | 86% | |
| | DC CURRENT (Typ.) | 10.8A/24V | 10.6A/24V | 10.4A/24V | 10.4A/24V | 5.4A/48V | 5.2A/48V | 6.7A/48V | 5A/48V | |
| | INRUSH CURRENT (Typ.) | C:45A/48VDC | | D:45A/96VDC | | | | | | |
| PROTECTION | OVERLOAD | 105 ~ 135% rated output power Protection type : Shut down o/p voltage, re-power on to recover | | | | | | | | |
| | OVER VOLTAGE | 5.75 ~ 6.75V | 16.8 ~ 20V | 31.5 ~ 37.5V | 53 ~ 65V | 5.75 ~ 6.75V | 16.8 ~ 20V | 31.5 ~ 37.5V | 53 ~ 65V | |
| | OVER TEMPERATURE | 95°C ±5°C (100°C ±5°C for SD-200B-12 only) TSW1 detect on main power transistor Protection type : Shut down o/p voltage, recovers automatically after temperature goes down | | | | | | | | |
| ENVIRONMENT | WORKING TEMP. | -20 ~ +60°C (Refer to output load derating curve) | | | | | | | | |
| | WORKING HUMIDITY | 20 ~ 90% RH non-condensing | | | | | | | | |
| | STORAGE TEMP., HUMIDITY | -40 ~ +85°C, 10 ~ 95% RH | | | | | | | | |
| | TEMP. COEFFICIENT | ±0.03%/°C (0 ~ 50°C) | | | | | | | | |
| | VIBRATION | 10 ~ 500Hz, 2G 10min./1cycle, 60min. each along X, Y, Z axes | | | | | | | | |
| SAFETY & EMC (Note 4) | SAFETY STANDARDS | UL60950-1 approved (for SD-200C-24 type only), IEC60950-1 CB approved by TUV (for D type only) | | | | | | | | |
| | WITHSTAND VOLTAGE | I/P-O/P:1.5KVAC I/P-FG:1.5KVAC O/P-FG:0.5KVAC | | | | | | | | |
| | ISOLATION RESISTANCE | I/P-O/P, I/P-FG, O/P-FG:100M Ohms / 500VDC / 25°C / 70% RH | | | | | | | | |
| | EMI CONDUCTION & RADIATION | Compliance to EN55022 (CISPR22) Class B | | | | | | | | |
| | EMS IMMUNITY | Compliance to EN61000-4-2,3,4,6,8; ENV50204, light industry level, criteria A | | | | | | | | |
| OTHERS | MTBF | 218.2K hrs min. MIL-HDBK-217F (25°C) | | | | | | | | |
| | DIMENSION | 215*115*50mm (L*W*H) | | | | | | | | |
| | PACKING | 1.1Kg; 12pcs/14.4Kg/0.92CUFT | | | | | | | | |
| NOTE | <ol style="list-style-type: none"> 1. All parameters NOT specially mentioned are measured at 24,48,96VDC input, rated load and 25°C of ambient temperature. 2. Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1uf & 47uf parallel capacitor. 3. Tolerance : includes set up tolerance, line regulation and load regulation. 4. The power supply is considered a component which will be installed into a final equipment. The final equipment must be re-confirmed that it still meets EMC directives. | | | | | | | | | |



■ Features :

- 2:1 wide input range
- Protections: Short circuit / Overload / Over voltage / Over temperature
- 1500VDC I/O isolation
- Cooling by free air convection
- 100% full load burn-in test
- 24V and 48V input voltage design refer to LVD
- 2 years warranty

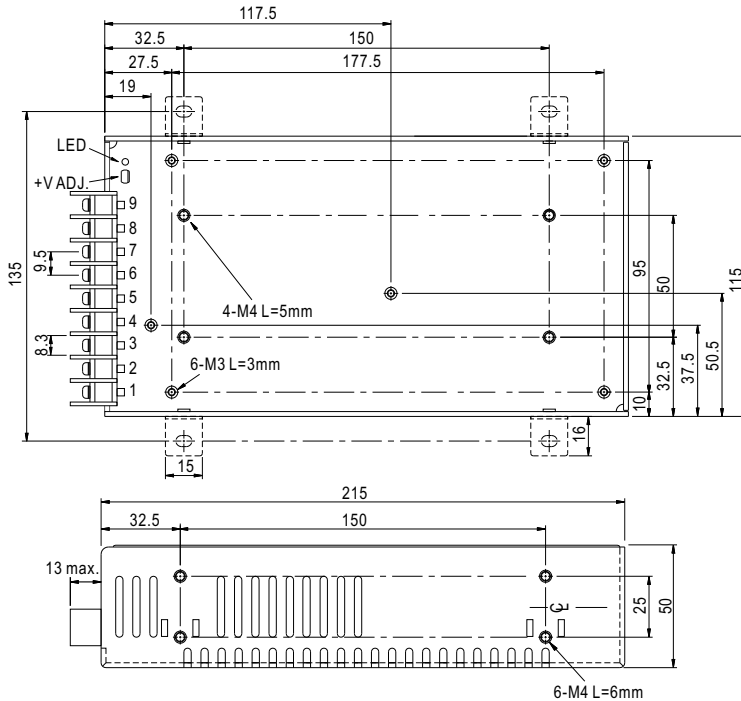
CB (for D type only) **CE**

SPECIFICATION

| MODEL | | SD-200D | | | |
|-----------------------|--|---|------------|--------------|------------|
| OUTPUT | DC VOLTAGE | 5V | 12V | 24V | 48V |
| | RATED CURRENT | 40A | 16.7A | 8.4A | 4.2A |
| | CURRENT RANGE | 0 ~ 40A | 0 ~ 16.7A | 0 ~ 8.4A | 0 ~ 4.2A |
| | RATED POWER | 200W | 200.4W | 201.6W | 201.6W |
| | RIPPLE & NOISE (max.) Note.2 | 100mVp-p | 120mVp-p | 150mVp-p | 200mVp-p |
| | VOLTAGE ADJ. RANGE | 4.5 ~ 5.5VDC | 11 ~ 16VDC | 23 ~ 30VDC | 43 ~ 53VDC |
| | VOLTAGE TOLERANCE Note.3 | ±2.0% | ±1.0% | ±1.0% | ±1.0% |
| | LINE REGULATION | ±0.5% | ±0.5% | ±0.5% | ±0.5% |
| | LOAD REGULATION | ±1.0% | ±1.0% | ±1.0% | ±1.0% |
| SETUP, RISE TIME | 300ms, 50ms at full load | | | | |
| INPUT | VOLTAGE RANGE | B:19 ~ 36VDC C:36 ~ 72VDC D:72 ~ 144VDC | | | |
| | EFFICIENCY (Typ.) | 82% | 82% | 84% | 90% |
| | DC CURRENT (Typ.) | 3.5A/96V | 3.5A/96V | 3.5A/96V | 3.5A/96V |
| | INRUSH CURRENT (Typ.) | C:45A/48VDC D:45A/96VDC | | | |
| PROTECTION | OVERLOAD | 105 ~ 135% rated output power Protection type : Shut down o/p voltage, re-power on to recover | | | |
| | OVER VOLTAGE | 5.75 ~ 6.75V | 16.8 ~ 20V | 31.5 ~ 37.5V | 53 ~ 65V |
| | OVER TEMPERATURE | 85°C ±5°C (TSW1) detect on main power transistor Protection type : Shut down o/p voltage, recovers automatically after temperature goes down | | | |
| ENVIRONMENT | WORKING TEMP. | -20 ~ +60°C (Refer to output load derating curve) | | | |
| | WORKING HUMIDITY | 20 ~ 90% RH non-condensing | | | |
| | STORAGE TEMP., HUMIDITY | -40 ~ +85°C, 10 ~ 95% RH | | | |
| | TEMP. COEFFICIENT | ±0.03%/°C (0 ~ 50°C) | | | |
| | VIBRATION | 10 ~ 500Hz, 2G 10min./1cycle, 60min. each along X, Y, Z axes | | | |
| SAFETY & EMC (Note 4) | SAFETY STANDARDS | IEC60950-1 CB approved by TUV (for D type only) | | | |
| | WITHSTAND VOLTAGE | I/P-O/P:1.5KVAC I/P-FG:1.5KVAC O/P-FG:0.5KVAC | | | |
| | ISOLATION RESISTANCE | I/P-O/P, I/P-FG, O/P-FG:100M Ohms / 500VDC / 25°C / 70% RH | | | |
| | EMI CONDUCTION & RADIATION | Compliance to EN55022 (CISPR22) Class B | | | |
| OTHERS | EMS IMMUNITY | Compliance to EN61000-4-2,3,4,6,8; ENV50204, light industry level, criteria A | | | |
| | MTBF | 218.2K hrs min. MIL-HDBK-217F (25°C) | | | |
| | DIMENSION | 215*115*50mm (L*W*H) | | | |
| | PACKING | 1.1Kg; 12pcs/14.4Kg/0.92CUFT | | | |
| NOTE | <ol style="list-style-type: none"> 1. All parameters NOT specially mentioned are measured at 24,48,96VDC input, rated load and 25°C of ambient temperature. 2. Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1uf & 47uf parallel capacitor. 3. Tolerance : includes set up tolerance, line regulation and load regulation. 4. The power supply is considered a component which will be installed into a final equipment. The final equipment must be re-confirmed that it still meets EMC directives. | | | | |

Mechanical Specification

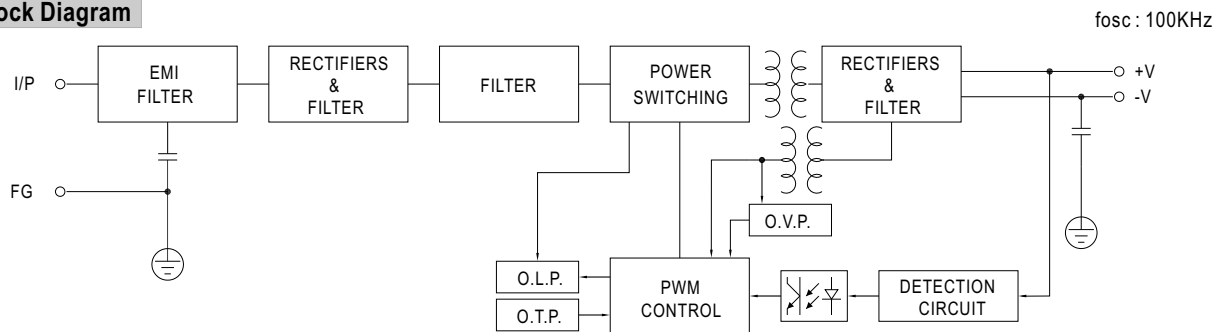
Case No. 912H Unit:mm



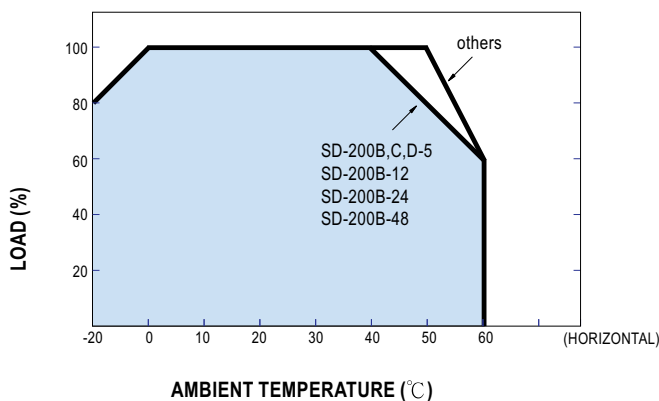
Terminal Pin No. Assignment :

| Pin No. | Assignment | Pin No. | Assignment |
|---------|-------------|---------|--------------|
| 1 | DC INPUT V+ | 4,5,6 | DC OUTPUT V- |
| 2 | DC INPUT V- | 7,8,9 | DC OUTPUT V+ |
| 3 | FG \perp | | |

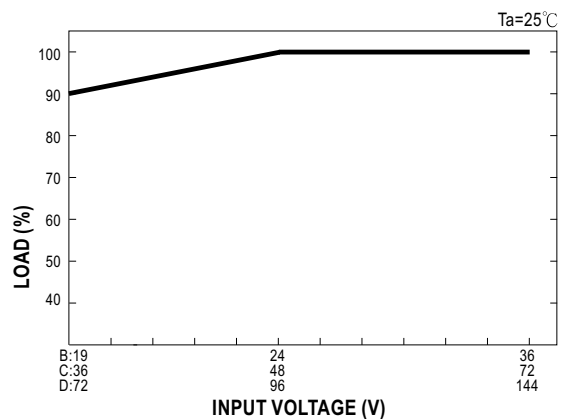
Block Diagram



Derating Curve



Static Characteristics



MODEL : SD-200D-24

OUTPUT FUNCTION TEST

| NO | TEST ITEM | SPECIFICATION | TEST CONDITION | RESULT | VERDICT |
|----|-----------------------------|-------------------------|--|---------------------|---------|
| 1 | RIPPLE & NOISE | V1: 150 mVp-p (Max) | I/P: 96 VDC O/P:FULL LOAD Ta:25°C | V1: 21 mVp-p (Max) | P |
| 2 | OUTPUT VOLTAGE ADJUST RANGE | CH1:23 V- 30 V | I/P: 96 VDC O/P:MIN LOAD Ta:25°C | 22.13V- 33.01 V | P |
| 3 | OUTPUT VOLTAGE TOLERANCE | V1: 1 %- -1 % (Max) | I/P:96 VDC / 144 VDC O/P:FULL/ MIN LOAD Ta:25°C | V1: 0.05 %- -0.05 % | P |
| 4 | LINE REGULATION | V1: 0.5 %- -0.5 % (Max) | I/P:96 VDC / 144 VDC O/P:FULL LOAD Ta:25°C | V1: 0.03 %- -0.03 % | P |
| 5 | LOAD REGULATION | V1: 1 %- -1 % (Max) | I/P: 96 VDC O/P:FULL -MIN LOAD Ta:25°C | V1: 0.03 %- -0.03 % | P |
| 6 | SET UP TIME | 300 ms (Max) | I/P: 96 VDC O/P:FULL LOAD Ta:25°C | 43 ms | P |
| 7 | RISE TIME | 50 ms (Max) | I/P: 96 VDC O/P:FULL LOAD Ta:25°C | 18 ms | P |
| 8 | OVER/UNDERSHOOT TEST | < ±5% | I/P: 96 VDC O/P:FULL LOAD Ta:25°C | TEST: <5 % | P |
| 9 | DYNAMIC LOAD | V1: 2400 mVp-p | I/P: 96 VDC O/P:FULL /Min LOAD 90%DUTY/1KHZ Ta:25°C | 124 mVp-p | P |

INPUT FUNCTION TEST

| NO | TEST ITEM | SPECICATION | TEST CONDITION | RESULT | VERDICT |
|----|---------------------|--------------------------|---|--------------|---------|
| 1 | INPUT VOLTAGE RANGE | 72VDC - 144 VDC | I/P: TESTING O/P: FULL LOAD Ta: 25°C | 52 V ~ 144 V | P |
| | | | I/P: LOW-LINE -0.2V = 71.8 V HIGH-LINE +5% = 151.2 V O/P: FULL/MIN LOAD ON: 30 Sec . OFF: 30 Sec 10MIN (AC POWER ON/OFF NO DAMAGE) | TEST: OK | |
| 2 | EFFICIENCY | 84 % (TYP) | I/P: 96 VDC O/P: FULL LOAD Ta: 25°C | 84.9 % | P |
| 3 | INPUT CURRENT | 2.4A (TYP) | I/P: 96 VDC O/P: FULL LOAD Ta: 25°C | I = 2.3 A | P |
| 4 | INRUSH CURRENT | 45 A (TYP) COLD START | I/P: 96 VDC O/P: FULL LOAD Ta: 25°C | I = 34 A | P |

PROTECTION FUNCTION TEST

| NO | TEST ITEM | SPECICATION | TEST CONDITION | RESULT | VERDICT |
|----|-----------------------------|--|---|---|---------|
| 1 | OVER LOAD PROTECTION | 105 % ~ 135 % | I/P: 96 VDC O/P: TESTING Ta: 25°C | 122 % Shunt down Re-power ON | P |
| 2 | OVER VOLTAGE PROTECTION | CH1: 31.5 V ~ 37.5 V | I/P: 96 VDC O/P: MIN LOAD Ta: 25°C | 36.3 V Shunt down Re- power ON | P |
| 3 | OVER TEMPERATURE PROTECTION | SPEC: 85 ± 5 °C O.T.P. NO DAMAGE | I/P: 96 VDC O/P: FULL LOAD | O.T.P. Active Shut down o/p voltage , recovers automatically after temperature goes down | P |
| 4 | SHORT PROTECTION | SHORT EVERY OUTPUT 1 HOUR NO DAMAGE | I/P: 96 VDC O/P: FULL LOAD Ta: 25°C | NO DAMAGE Shunt down Re-power ON | P |



SAFETY TEST

| NO | TEST ITEM | SPECIFICATION | TEST CONDITION | RESULT | VERDICT |
|----|----------------------|---|--|---|---------|
| 1 | WITHSTAND VOLTAGE | I/P-O/P: 1.5 KVAC/min I/P-FG: 1.5 KVAC/min O/P-FG: 0.5 KVAC/min | I/P-O/P: 1.8 KVAC/min I/P-FG: 1.8 KVAC/min O/P-FG: 0.6 KVAC/min Ta:25°C | I/P-O/P: 4.48 mA I/P-FG: 4.75 mA O/P-FG: 6.54 mA NO DAMAGE | P |
| 2 | ISOLATION RESISTANCE | I/P-O/P:500VDC>100MΩ I/P-FG: 500VDC>100MΩ O/P-FG:500VDC>100MΩ | I/P-O/P: 500 VDC I/P-FG: 500 VDC O/P-FG: 500 VDC Ta:25°C | I/P-O/P: 3G Ω I/P-FG: 3G Ω O/P-FG: 3G Ω NO DAMAGE | P |
| 3 | GROUNDING CONTINUITY | FG(PE) TO CHASSIS OR TRACE < 100 mΩ | 40 A / 2min Ta:25°C | 11 mΩ | P |
| 4 | APPROVAL | TUV: Certificate NO : UL: File NO : | | | N/A |

E.M.C TEST

| NO | TEST ITEM | SPECIFICATION | TEST CONDITION | RESULT | VERDICT |
|----|---|--|---|-------------------------------|---------|
| 1 | RADIATION | EN55022 CLASS B | I/P: 96 VDC O/P:FULL LOAD Ta:25°C | PASS Test by certified Lab | P |
| 2 | E.S.D | EN61000-4-2 INDUSTRY AIR:8KV / Contact:4KV | I/P: 96 VDC O/P:FULL LOAD Ta:25°C | CRITERIA A | P |
| 3 | E.F.T | EN61000-4-4 INDUSTRY INPUT: 2KV | I/P: 96 VDC O/P:FULL LOAD Ta:25°C | CRITERIA A | P |
| 4 | Test by certified Lab & Test Report Prepare | | | | |



M.T.B.F & LIFE CYCLE CALCULATION

| NO | TEST ITEM | SPECICATION | TEST CONDITION | RESULT | VERDICT |
|----|-------------------------|--|----------------|--------|---------|
| 1 | CAPACITOR LIFE CYCLE | SUPPOSE C 111 IS THE MOST CRITICAL COMPONENT I/P: 96VDC O/P:FULL LOAD Ta= 25 °C LIFE TIME= 263682 HRS I/P: 96VDC O/P:FULL LOAD Ta= 50 °C LIFE TIME= 561172 HRS | | | P |
| 2 | MTBF | MIL-HDBK-217F NOTICES2 PARTS COUNT TOTAL FAILURE RATE: 218.2K HRS | | | P |

COMPONENT STRESS TEST

| NO | TEST ITEM | SPECICATION | TEST CONDITION | RESULT | VERDICT |
|----|---|--------------------------------------|--|--|---------|
| 1 | Power Transistor (D to S) or (C to E) Peak Voltage | Q 1 Rated IRFP460A : 500 V 20 A | I/P:High-Line +3V = 147 VDC O/P: (1)Full Load Turn on (2) Full Load (3)Output Short Ta:25°C | (1) 138 V (2) 307 V (3) 307 V | P |
| 2 | Diode Peak Voltage | D 100 Rated S20LC20U : 200 V 20 A | I/P:High-Line +3V = 147 VDC O/P: (1)Full Load Turn on (2) Full Load (3)Output Short Ta:25°C | (1) 140 V (2) 176 V (3) 179 V | P |
| 3 | Input Capacitor Voltage | C 8 Rated : 470u / 200 V / 85°C | I/P:High-Line +3V = 147 VDC O/P: (1)Full Load Turn on /Off (2) Min load Turn on /Off (3)Full Load /Min load Change Ta:25°C | (1) 149 V (2) 149 V (3) 149 V | P |
| 4 | Control IC Voltage Test | U 1 Rated SG3525 : 35 V | I/P:High-Line +3V = 147 VDC O/P: (1)Full Load Turn on /Off (2) Min load Turn on /Off (3)Full Load /Min load Change Ta:25°C | (1) 14.2 V (2) 14.2 V (3) 14.2 V | P |

| DATE | SAMPLE | TEST RESULT | TESTER | APPROVAL |
|------------|----------------------------|-------------|---------------|----------|
| 2004/6/7 | RD SMAPLE | PASS | VINCENT TSENG | MAX LIN |
| 2004/8/20 | PRODUCT SMAPLE A407A22 | PASS | VINCENT TSENG | MAX LIN |
| 2004/9/13 | PRODUCT SMAPLE W0408C30 | PASS | VINCENT TSENG | MAX LIN |
| 2004/11/25 | PRODUCT SMAPLE W0411A24 | PASS | VINCENT TSENG | MAX LIN |

2003/12/12 A50-F023