



Test Report: RSDH-150-48

150W High Reliable 250~1500Vdc Ultra Wide Input
DC-DC Converter

■ DESIGN VERIFY TEST

Output Function Test

Input Function Test

Protection Function Test

Control Function Test

Component Stress Test

■ SAFETY & E.M.C. TEST

Safety Test

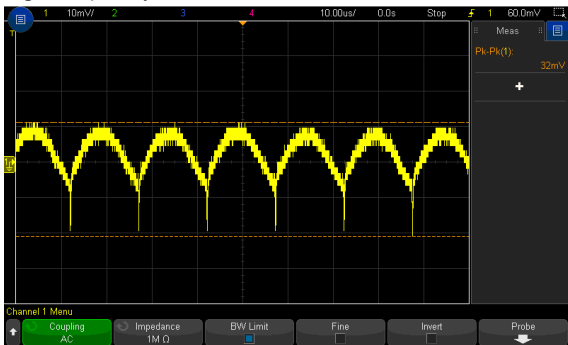
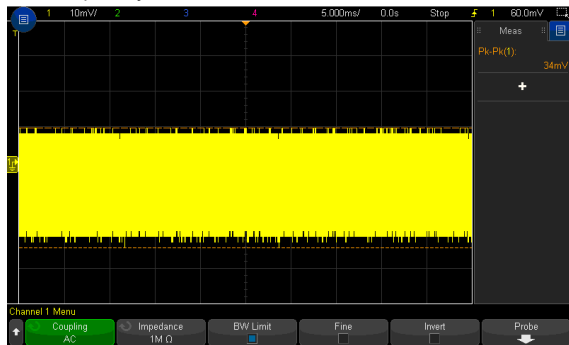
E.M.C. Test

■ RELIABILITY TEST

ENVIRONMENT TEST

DESIGN VERIFY TEST

OUTPUT FUNCTION TEST

| NO | TEST ITEM | SPECIFICATION | TEST CONDITION | RESULT |
|----|-----------------------------------|---|---|--|
| 1 | OUTPUT VOLTAGE ADJUST RANGE | CH1: 48V~ 58V | I/P : 800 VDC O/P : MIN LOAD Ta : 25°C | 46.43V~ 59.21V/ 800 VDC |
| 2 | OUTPUT VOLTAGE TOLERANCE (Max) | V1: -1.0%~ +1.0% | I/P: 1500VDC / 250 VDC O/P:FULL/ MIN. LOAD Ta:25°C | V1: -0.0499%~0.032% |
| 3 | LINE REGULATION (Max) | V1: -0.5%~+0.5 % | I/P: 1500VDC / 250 VDC O/P:FULL LOAD Ta:25°C | V1: 0.00%~ 0.032% |
| 4 | LOAD REGULATION (Max) | V1: -0.5%~ +0.5% | I/P: 800VDC O/P:FULL ~MIN LOAD Ta:25°C | V1: -0.0499%~0.017% |
| 5 | OVER/UNDERSHOOT TEST | < ±5% | I/P: 800 VDC O/P:FULL LOAD Ta:25°C | TEST: 1.30% |
| 6 | RIPPLE & NOISE (Max) | V1: 300mVp-p | I/P: 800 VDC O/P:FULL LOAD Ta:25°C | V1: 34mVp-p |
| | | high frequency : | low frequency : | |
| | |  |  | |
| 7 | DYNAMIC LOAD | V1: 4800mVp-p | I/P: 800VDC O/P: (1)FULL /MIN LOAD 50%DUTY / 120HZ (2)FULL /MIN LOAD 50%DUTY / 1KHZ (3)FULL /MIN LOAD 50%DUTY / 500HZ (4)FULL /MIN LOAD 50%DUTY / 3KHZ (5)FULL /MIN LOAD 50%DUTY / 8KHZ (6)FULL /MIN LOAD 50%DUTY / | (1) 860mVp-p (2) 596mVp-p (3) 566mVp-p (4) 357mVp-p (5) 153mVp-p (6) 164mVp-p |

| | | | |
|---------------------------------|---------------------------------|---------------------------------|---|
| | | 10KHZ Ta:25°C | |
| FULL /50% LOAD 50%DUTY / 120KHZ | | FULL /50% LOAD 50%DUTY / 1KHZ | |
| | | | |
| FULL /50% LOAD 50%DUTY / 3KHZ | | FULL /50% LOAD 50%DUTY / 500KHZ | |
| | | | |
| FULL /50% LOAD 50%DUTY / 10KHZ | | FULL /50% LOAD 50%DUTY / 8KHZ | |
| | | | |
| 8 | EXTERNAL CAPACITANCE LOAD(Max.) | 1000uF | I/P : 800VDC O/P : TESTING LOAD Ta : 25°C |
| | | | TEST: <u>OK</u> |

INPUT FUNCTION TEST

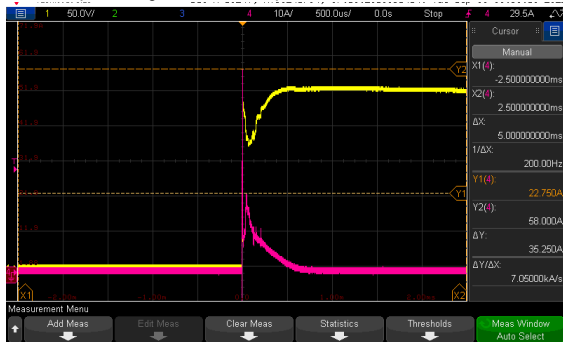
| NO | TEST ITEM | SPECIFICATION | TEST CONDITION | RESULT |
|----|---------------------|------------------|--|---|
| 1 | INPUT VOLTAGE RANGE | 250VDC~ 1500 VDC | I/P: TESTING O/P:FULL LOAD Ta:25°C | 233.54V~ 1400 V/FULL LOAD 234.31V~ 1500 V/80% LOAD 234.20V~ 1500 V/40% LOAD |



| | | | | |
|---|---------------------|---|--|---|
| | | | <p>I/P: LOW-LINE-0.2= 249.8V HIGH-LINE+3V= 1503V O/P:FULL/MIN LOAD (PLEASE CHECK DERATING CURVE) ON: 30 Sec . OFF: 30 Sec 10MIN (POWER ON/OFF NO DAMAGE)</p> | <p>TEST: <u>OK</u></p> |
| 2 | EFFICIENCY(TYP) | <p>90%/300VDC 92%/800VDC 88%/1500VDC</p> | <p>I/P: 300VDC (80% LOAD) I/P: 800VDC I/P: 1500VDC (80% LOAD) O/P:FULL LOAD Ta:25°C</p> | <p>92.80%/300VDC 93.69%/800VDC 90.02%/1500VDC</p> |
| 3 | INRUSH CURRENT(TYP) | <p>70A/250VDC 200A/800VDC 300A/1500VDC COLD START</p> | <p>I/P: 250VDC (40% LOAD) I/P: 800VDC I/P: 1500VDC (80% LOAD) O/P:FULL LOAD Ta:25°C</p> | <p>I = 22.75A/ 250VDC I = 77.875A/ 800VDC I = 151.950A/ 1500VDC</p> |

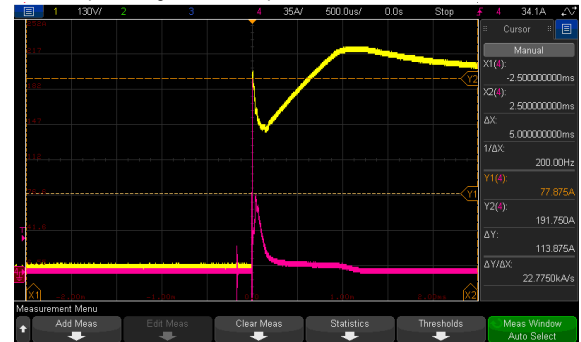
INPUT=250VDC @ TEST LOAD

CH1: DC Input Voltage CH4: Input current



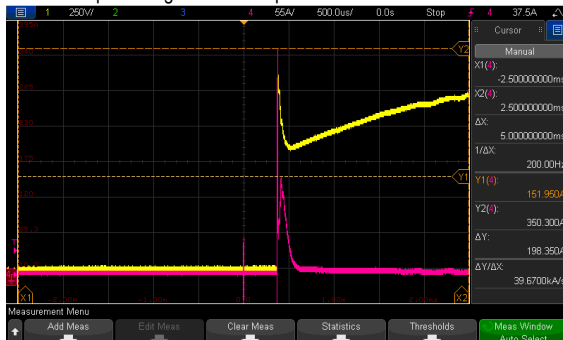
INPUT=800VDC @ FULL LOAD

CH1: DC Input Voltage CH4: Input current



INPUT=1500VDC @ TEST LOAD

CH1: DC Input Voltage CH4: Input current



PROTECTION FUNCTION TEST

| NO | TEST ITEM | SPECIFICATION | TEST CONDITION | RESULT |
|----|----------------------|------------------------------------|-------------------------------|---------------------------------------|
| 1 | OVER LOAD PROTECTION | 105 %~ 135 % RATED OUTPUT POWER | I/P: 1400 VDC I/P: 800 VDC | 119.38%/ 1400 VDC 120.31%/ 800 VDC |



| | | | | |
|----|--------------------------------|--|---|---|
| | | Protection type : Hiccup mode when output voltage<55%, recovers automatically after condition is removed; Constant current limiting, recovers automatically after fault condition is removed within 55% ~ 100% rated output voltage | I/P: 320 VDC O/P:TESTING Ta:25°C | 119.34%/ 320 VDC PROTECTION TYPE : Hiccup mode when output voltage<55%, recovers automatically after condition is removed; Constant current limiting, recovers automatically after fault condition is removed within 55% ~ 100% rated output voltage |
| 2 | OVER VOLTAGE PROTECTION | CH: 62V~70V Protection type : Hiccup mode, recovers automatically after fault condition is removed | I/P: 1500VDC I/P: 800VDC I/P: 250VDC O/P:MIN LOAD Ta:25°C | 63.3V/ 1500 VDC 63.3V/ 800 VDC 63.3V/ 250 VDC PROTECTION TYPE : Hiccup mode, recovers automatically after fault condition is removed |
| 3 | OVER TEMPERATURE PROTECTION | SPEC: NO DAMAGE Protection type : Hiccup mode, recovers automatically after fault condition is removed | I/P: 250VDC I/P: 1500VDC O/P:FULL LOAD | O.T.P. Active PROTECTION TYPE : Hiccup mode, recovers automatically after fault condition is removed |
| 4 | SHORT PROTECTION | SHORT EVERY OUTPUT 1 HOUR NO DAMAGE Hiccup mode , recovers automatically after fault condition is removed | I/P: 250VDC I/P: 1500VDC O/P: FULL LOAD Ta:25°C | NO DAMAGE PROTECTION TYPE : Hiccup mode , recovers automatically after fault condition is removed * |
| 5 | DC INPUT UNDER VOLTAGE LOCKOUT | Under voltage protection range: 200 ~ 225Vdc , Under voltage release range:225 ~ 246.5Vdc | I/P:TESTING O/P: TEST LOAD Ta:25°C | NO DAMAGE Under voltage protection range TEST: <u>215.63</u> Vdc , Under voltage release range TEST: <u>234.27</u> Vdc , |
| 6. | DC INPUT REVERSE POLARITY | By internal Bridge Diode, no damage, recovers automatically after fault condition removed | I/P: 1500 VDC O/P: FULL LOAD Ta:25°C | TEST: <u>OK</u> NO DAMAGE, recovers automatically after fault condition is removed * |

COMPONENT STRESS TEST

| N | TEST ITEM | SPECIFICATION | TEST CONDITION | RESULT |
|---|--|---------------------------------------|---|--|
| 1 | PWM Transistor (D to S) or (C to E) Peak Voltage | Q1/Q2/Q3/Q4 Rated: 17 A/ 650 V | DC ON/OFF I/P:High-Line +3V = 1503V VDS: O/P: (1)Full Load | Q1 Q3 VDS: VDS: (1) 502V (1) 510V (2) 546V (2) 570V |



| | | | | | |
|---|-------------------------|--|--|--|---|
| | | | <p>(2)Output Short (3)Dynamic Load Full Load/ Min. Load 90%Duty/1KHz (4)Dynamic Load Full Load/ Min. Load 90%Duty/3KHz (5)Dynamic Load Full Load/ Min. Load 90%Duty/5KHz (6)Dynamic Load 100% Load/ Min. Load 50%Duty/120Hz (7)0%→400% Load. Ta:25°C</p> | <p>(3) 522V (4) 510V (5) 498V (6) 514V (7) 530V</p> <p>Q2 VDS: (1) 494V (2) 562V (3) 498V (4) 494V (5) 494V (6) 498V (7) 546V</p> | <p>(3) 526V (4) 526V (5) 518V (6) 530V (7) 554V</p> <p>Q4 VDS: (1) 522V (2) 534V (3) 538V (4) 526V (5) 526V (6) 534V (7) 534V</p> |
| 2 | Diode Peak Voltage | <p>Q100 Rated: 20 A/ 600V</p> | <p>DC ON/OFF I/P:High-Line +3V =1503 V Vo=Vmax O/P: (1)Full Load (2)Output Short (3)Dynamic Load Full Load/ Min. Load 90%Duty/1KHz (4)Dynamic Load Full Load/ Min. Load 90%Duty/3KHz (5)Dynamic Load Full Load/ Min. Load 90%Duty/5KHz (6)Dynamic Load 100% Load/ Min. Load 50%Duty/120Hz (7)0%→400% Load. (8).NO LOAD Vo= Vnormal O/P: (1)Full Load Ta:25°C</p> | <p>Q100: Vo=Vmax VDS: (1) 481V (2) 585V (3) 486V (4) 486V (5) 486V (6) 481V (7) 554V (8) 481V</p> <p>Vo= Vnormal (1) 476V</p> | |
| 3 | Input Capacitor Voltage | <p>C5/C7/C9/C18 Rated: 68μ / 400 V</p> | <p>I/P:High-Line +3V =1503V O/P: (1)Full Load input on/off (2) Min load input on /Off (3)Full Load /Min load Change (4)Full load continue Ta:25°C</p> | <p>C5 (1)384V (2)380V (3)376V (4)376V</p> <p>C7 (1)380V (2)380V (3)376V (4)376V</p> <p>C9 (1)388V (2)384V (3)376V (4)376V</p> <p>C18 (1)384V (2)384V (3)376V (4)376V</p> | |
| 4 | Control IC Voltage Test | <p>PWM IC U1 Rated 8.3V~ 28 V I/P IC U4 Rated 6.5V~ 30 V IC U200 Rated</p> | <p>DC ON/OFF I/P:High-Line +3V =1503 V O/P(1)FULL LOAD (2) Output Short (3)O.L.P</p> | <p>U1/U4: (1) 17.0V (2) 17.0V (3) 17.0V (4) 17.0V</p> | |



| | | | | |
|---|--------------------------|--|---|--|
| | | 3.5V~ 36V | (4)O.V.P. (5)NO LOAD VRmin(LOW LINE) Ta:25°C | (5) 17.0V U200: (1) 16.8V (2) 16.8V (3) 16.8V (4) 31.5V (5) 16.6V |
| 5 | Clamp Diode Peak Voltage | D1 / D2 / D3/ D4 Rated : 1000V /1 A | I/P : High-Line +3V =1503V DC ON/OFF O/P : (1) Dynamic Load 90%Duty/1KHz (2)Full load continue Ta : 25°C | D1: D2: (1) 453V (1) 445V (2) 449V (2) 441V D3: D4: (1) 445V (1) 445V (2) 441V (2) 445V |

SAFETY TEST

| NO | TEST ITEM | SPECIFICATION | TEST CONDITION | RESULT |
|----|----------------------|---|--|--|
| 1 | WITHSTAND VOLTAGE | I/P-O/P:4KVAC/min I/P-FG: 3.75 KVAC/min O/P-FG: 2KVAC/min | I/P-O/P: 4.4 KVAC/min I/P-FG: 4.125 KVAC/min O/P-FG: 2.4 KVAC/min Ta:25°C | I/P-O/P:8.16 mA I/P-FG: 5.72mA O/P-FG: 5.38mA NO DAMAGE |
| 2 | ISOLATION RESISTANCE | I/P-O/P:500VDC>100MΩ | I/P-O/P: 600 VDC Ta:25°C | I/P-O/P: 9999MΩ NO DAMAGE |
| 3 | GROUNDING CONTINUITY | FG(PE) TO CHASSIS OR TRACE < 100 mΩ | 40A / 2min Ta:25°C | 1mΩ |

E.M.C TEST

| NO | TEST ITEM | SPECIFICATION | TEST CONDITION | RESULT |
|----|------------|---|---|-------------------------------|
| 1 | RADIATION | EN55032 CLASS A | I/P: 400 VDC/800VDC O/P:FULL LOAD Ta:25°C | PASS Test by certified Lab |
| 2 | CONDUCTION | EN55032 CLASS A | I/P: 400 VDC/800VDC O/P:FULL LOAD Ta:25°C | PASS Test by certified Lab |
| 3 | E.S.D | EN61000-4-2 Level 3 8KV air Level 2 4KV contact , | I/P: 400 VDC/800VDC O/P:FULL LOAD Ta:25°C | CRITERIA A |
| 4 | E.F.T | EN61000-4-4 INPUT: 2KV | I/P: 400 VDC/800VDC O/P:FULL LOAD Ta:25°C | CRITERIA A |
| 5 | SURGE | IEC61000-4-5 Vin+~Vin- :2KV Vin~FG:4KV | I/P: 400 VDC/800VDC O/P:FULL LOAD Ta:25°C | CRITERIA A |



| | |
|---|---|
| 6 | Test by certified Lab & Test Report Prepare Any contradictions of the test results, please refer to the latest EMC test report |
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■ RELIABILITY TEST

ENVIRONMENT TEST

| NO | TEST ITEM | SPECIFICATION | TEST CONDITION | RESULT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|----|-----------------------|---|------------------------|---|----|----------|------------------------|------------------------|---|----|--------|--------|---|------|--------|--------|---|-----|--------|--------|---|-----|--------|--------|---|-----|--------|--------|---|-----|--------|--------|---|-----|--------|--------|---|-----|--------|--------|---|----|--------|--------|----|----|--------|--------|----|-----|--------|--------|----|------|--------|--------|----|----|--------|--------|----|----|--------|--------|----|----|--------|--------|----|----|--------|--------|----|----|--------|--------|----|----|--------|--------|----|----|--------|--------|----|-----|--------|--------|----|--------|--------|---------|----|-------|--------|--------|----|-------|--------|--------|----|------|--------|--------|----|-----|--------|--------|----|------|--------|--------|
| 1 | TEMPERATURE RISE TEST | MODEL : RSDH-150-48 1. ROOM AMBIENT BURN-IN : 2 HRS I/P : 800 VDC O/P : FULL LOAD Ta= 25 °C 2. HIGH AMBIENT BURN-IN : 2 HRS I/P : 800 VDC O/P : FULL LOAD Ta= 55 °C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | <table border="1"> <thead> <tr> <th>NO</th> <th>Position</th> <th>ROOM AMBIENT Ta= 25 °C</th> <th>HIGH AMBIENT Ta= 55 °C</th> </tr> </thead> <tbody> <tr><td>1</td><td>C1</td><td>48.2°C</td><td>73.9°C</td></tr> <tr><td>2</td><td>RTH3</td><td>52.6°C</td><td>77.4°C</td></tr> <tr><td>3</td><td>C11</td><td>51.9°C</td><td>77.9°C</td></tr> <tr><td>4</td><td>LF3</td><td>51.4°C</td><td>77.4°C</td></tr> <tr><td>5</td><td>R84</td><td>53.3°C</td><td>79.1°C</td></tr> <tr><td>6</td><td>BD1</td><td>54.4°C</td><td>81.0°C</td></tr> <tr><td>7</td><td>BD2</td><td>57.7°C</td><td>83.6°C</td></tr> <tr><td>8</td><td>R50</td><td>59.9°C</td><td>86.6°C</td></tr> <tr><td>9</td><td>C9</td><td>55.3°C</td><td>81.5°C</td></tr> <tr><td>10</td><td>C5</td><td>53.0°C</td><td>79.2°C</td></tr> <tr><td>11</td><td>C12</td><td>50.7°C</td><td>77.2°C</td></tr> <tr><td>12</td><td>ZNR6</td><td>52.9°C</td><td>79.3°C</td></tr> <tr><td>13</td><td>Q9</td><td>55.3°C</td><td>81.6°C</td></tr> <tr><td>14</td><td>D2</td><td>57.0°C</td><td>83.7°C</td></tr> <tr><td>15</td><td>U4</td><td>55.9°C</td><td>82.9°C</td></tr> <tr><td>16</td><td>D4</td><td>59.0°C</td><td>85.7°C</td></tr> <tr><td>17</td><td>T3</td><td>58.1°C</td><td>84.3°C</td></tr> <tr><td>18</td><td>T3</td><td>56.9°C</td><td>83.2°C</td></tr> <tr><td>19</td><td>U1</td><td>60.8°C</td><td>87.2°C</td></tr> <tr><td>20</td><td>C78</td><td>60.0°C</td><td>86.5°C</td></tr> <tr><td>21</td><td>T1coil</td><td>75.5°C</td><td>101.5°C</td></tr> <tr><td>22</td><td>T1ore</td><td>70.3°C</td><td>96.2°C</td></tr> <tr><td>23</td><td>LF100</td><td>53.0°C</td><td>80.9°C</td></tr> <tr><td>24</td><td>TSW1</td><td>62.2°C</td><td>89.0°C</td></tr> <tr><td>25</td><td>C56</td><td>55.3°C</td><td>82.2°C</td></tr> <tr><td>26</td><td>U200</td><td>53.6°C</td><td>81.2°C</td></tr> </tbody> </table> | NO | Position | ROOM AMBIENT Ta= 25 °C | HIGH AMBIENT Ta= 55 °C | 1 | C1 | 48.2°C | 73.9°C | 2 | RTH3 | 52.6°C | 77.4°C | 3 | C11 | 51.9°C | 77.9°C | 4 | LF3 | 51.4°C | 77.4°C | 5 | R84 | 53.3°C | 79.1°C | 6 | BD1 | 54.4°C | 81.0°C | 7 | BD2 | 57.7°C | 83.6°C | 8 | R50 | 59.9°C | 86.6°C | 9 | C9 | 55.3°C | 81.5°C | 10 | C5 | 53.0°C | 79.2°C | 11 | C12 | 50.7°C | 77.2°C | 12 | ZNR6 | 52.9°C | 79.3°C | 13 | Q9 | 55.3°C | 81.6°C | 14 | D2 | 57.0°C | 83.7°C | 15 | U4 | 55.9°C | 82.9°C | 16 | D4 | 59.0°C | 85.7°C | 17 | T3 | 58.1°C | 84.3°C | 18 | T3 | 56.9°C | 83.2°C | 19 | U1 | 60.8°C | 87.2°C | 20 | C78 | 60.0°C | 86.5°C | 21 | T1coil | 75.5°C | 101.5°C | 22 | T1ore | 70.3°C | 96.2°C | 23 | LF100 | 53.0°C | 80.9°C | 24 | TSW1 | 62.2°C | 89.0°C | 25 | C56 | 55.3°C | 82.2°C | 26 | U200 | 53.6°C | 81.2°C |
| NO | Position | ROOM AMBIENT Ta= 25 °C | HIGH AMBIENT Ta= 55 °C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | C1 | 48.2°C | 73.9°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | RTH3 | 52.6°C | 77.4°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | C11 | 51.9°C | 77.9°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | LF3 | 51.4°C | 77.4°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | R84 | 53.3°C | 79.1°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | BD1 | 54.4°C | 81.0°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | BD2 | 57.7°C | 83.6°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | R50 | 59.9°C | 86.6°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | C9 | 55.3°C | 81.5°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | C5 | 53.0°C | 79.2°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 11 | C12 | 50.7°C | 77.2°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12 | ZNR6 | 52.9°C | 79.3°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 13 | Q9 | 55.3°C | 81.6°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 14 | D2 | 57.0°C | 83.7°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 15 | U4 | 55.9°C | 82.9°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 16 | D4 | 59.0°C | 85.7°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 17 | T3 | 58.1°C | 84.3°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 18 | T3 | 56.9°C | 83.2°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 19 | U1 | 60.8°C | 87.2°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 20 | C78 | 60.0°C | 86.5°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 21 | T1coil | 75.5°C | 101.5°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 22 | T1ore | 70.3°C | 96.2°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 23 | LF100 | 53.0°C | 80.9°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 24 | TSW1 | 62.2°C | 89.0°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 25 | C56 | 55.3°C | 82.2°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 26 | U200 | 53.6°C | 81.2°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |



150W High Reliable 250~1500Vdc Ultra Wide
Input DC-DC Converter

RSDH-150 series

| | | | NO | Position | ROOM AMBIENT Ta= 25 °C | HIGH AMBIENT Ta= 55 °C |
|----|---|---|---|----------------------|------------------------|------------------------|
| | | | 27 | C108 | 54.4°C | 81.4°C |
| 28 | C107 | 54.9°C | 81.6°C | | | |
| 29 | C116 | 50.2°C | 76.3°C | | | |
| 30 | Q4 | 58.6°C | 86.2°C | | | |
| 31 | Q3 | 57.4°C | 84.9°C | | | |
| 32 | Q2 | 56.8°C | 84.0°C | | | |
| 33 | Q1 | 57.6°C | 84.1°C | | | |
| 34 | R54 | 59.5°C | 86.7°C | | | |
| 35 | Q100 | 63.5°C | 91.3°C | | | |
| 36 | Q101 | 62.6°C | 89.4°C | | | |
| 37 | R96 | 61.6°C | 88.4°C | | | |
| 38 | R232 | 57.2°C | 84.3°C | | | |
| 39 | D10 | 54.8°C | 82.1°C | | | |
| 40 | Q200 | 55.6°C | 82.8°C | | | |
| 41 | D200 | 56.0°C | 83.4°C | | | |
| 43 | Q70 | 61.7°C | 88.5°C | | | |
| 2 | OVER LOAD BURN-IN TEST | NO DAMAGE 1 HOUR (MIN) | I/P : 800 VDC O/P : 115.38%LOAD Ta : 25°C | TEST : OK | | |
| 3 | LOW TEMPERATURE TURN ON TEST | TURN ON AFTER 2 HOUR | I/P : 300 VDC / 1500 VDC O/P : 100%LOAD Ta= -5 °C O/P : 50%LOAD Ta= -45 °C | TEST : OK | | |
| 4 | HIGH HUMIDITY HIGH TEMPERATURE HIGH VOLTAGE TURN ON TEST | AFTER 12 HOURS IN CHAMBER ON CONTROL 55 °C/95 %R.H NO DAMAGE | I/P : 1503 VDC O/P : FULL LOAD Ta= 55 °C HUMIDITY= 95 %R.H | TEST : OK | | |
| 5 | TEMPERATURE COEFFICIENT | ± 0.03 %/°C(0~55°C) | I/P : 800 VDC O/P : FULL LOAD | ± 0.008 %/°C(0~55°C) | | |
| 6 | STORAGE TEMPERATURE TEST | -40~80°C | 1. Thermal shock Temperature : -45°C~ +90°C 2. Temperature change rate : 25°C / MIN 3. Dwell time low and high temperature : 30 MIN/EACH 4. Total test cycle : 10 CYCLE 5. Input/Output condition : STATIC | | | |
| 7 | THERMAL SHOCK TEST | -40~55°C | 1. Thermal shock Temperature : -45°C~ +55°C 2. Temperature change rate : 25°C / MIN 3. Dwell time low and high temperature : 30 MIN/EACH 4. Total test cycle : 16 CYCLE 5. Input/Output condition : 15cycle: 800VDC / FULL LOAD DC ON 3sec/DC OFF 1sec TEST 1cycle: 800VDC / FULL LOAD Burn In Test | | | |



| | | | |
|----|--------------------------|---|---|
| 8 | VIBRATION TEST | 10 ~ 500Hz, 3G 10min./1cycle, 60min. each along X, Y, Z axes | 1 Carton & 1 Set (1) Waveform : Sine Wave (2) Frequency : 10~500Hz (3) Sweep Time : 10min/sweep cycle (4) Acceleration : 4G (5) Test Time : 180min in each axis (X.Y.Z) (6) Ta : 25°C |
| 9 | CAPACITOR LIFE CYCLE | SUPPOSE C108 IS THE MOST CRITICAL COMPONENT (1) I/P : 800VDC O/P : FULL LOAD Ta= 25 °C LIFE TIME (2) I/P : 800VDC O/P : FULL LOAD Ta= 55 °C LIFE TIME (3) I/P : 800VDC O/P : 75% LOAD Ta= 55 °C LIFE TIME (4) I/P : 800VDC O/P : 50% LOAD Ta= 55 °C LIFE TIME | (1) 440130.4HRS (2) 70121.6HRS (3) 87991.6HRS (4) 124171HRS |
| 10 | MTBF | Conducted by Parts Stress Analysis Prediction 1924.7K hrs min. Telcordia SR-332 (Bellcore) ; 285.9K hrs min. MIL-HDBK-217F (25°C) | |
| 11 | Ongoing Reliability Test | I/P : 800VDC O/P : FULL LOAD TA=50°C Demonstration Mean Time Between Failure : 30000 hours | |

| TEST RESULT | TESTER | REVIEW | APPROVAL |
|-------------|--------|--------|----------|
| PASS | Yuwei | Liutt | Wangdz |

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