



Test Report: RSDH-150-32

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

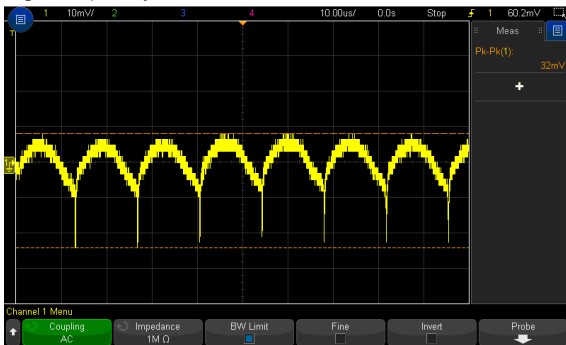
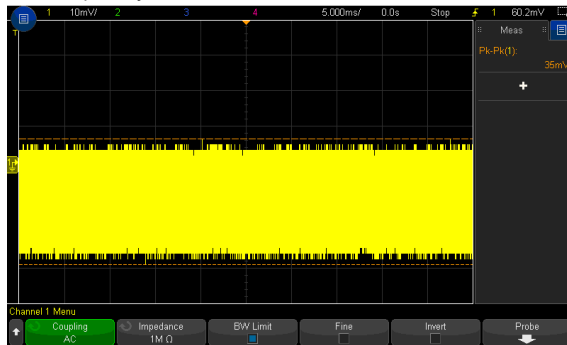
E.M.C. Test

■ RELIABILITY TEST

ENVIRONMENT TEST

DESIGN VERIFY TEST

OUTPUT FUNCTION TEST

| NO | TEST ITEM | SPECIFICATION | TEST CONDITION | RESULT |
|----|-----------------------------------|---|---|--|
| 1 | OUTPUT VOLTAGE ADJUST RANGE | CH1: 30V~36V | I/P : 800 VDC O/P : MIN LOAD Ta : 25°C | 28.929V~37.58V/800VDC |
| 2 | OUTPUT VOLTAGE TOLERANCE (Max) | V1: -1.0%~+1.0% | I/P: 1500VDC / 250 VDC O/P:FULL/ MIN. LOAD Ta:25°C | V1: -0.106%~0.072% |
| 3 | LINE REGULATION (Max) | V1: -0.5%~+0.5 % | I/P: 1500VDC / 250 VDC O/P:FULL LOAD Ta:25°C | V1: -0.078%~0.072% |
| 4 | LOAD REGULATION (Max) | V1: -1.5%~+1.5% | I/P: 800VDC O/P:FULL ~MIN LOAD Ta:25°C | V1: -0.106%~0.047% |
| 5 | OVER/UNDERSHOOT TEST | < ±5% | I/P: 800 VDC O/P:FULL LOAD Ta:25°C | TEST: 0.794% |
| 6 | RIPPLE & NOISE (Max) | V1: 240mVp-p | I/P: 800 VDC O/P:FULL LOAD Ta:25°C | V1: 35mVp-p |
| | | high frequency : | low frequency : | |
| | |  |  | |
| 7 | DYNAMIC LOAD | V1: 3200mVp-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) 980mVp-p (2) 517mVp-p (3) 546mVp-p (4) 343mVp-p (5) 265mVp-p (6) 281mVp-p |

| | | | |
|--------------------------------|---------------------------------|--------------------------------|---|
| | | 10KHZ Ta:25°C | |
| FULL /50% LOAD 50%DUTY / 120HZ | | FULL /50% LOAD 50%DUTY / 1KHZ | |
| | | | |
| FULL /50% LOAD 50%DUTY / 3KHZ | | FULL /50% LOAD 50%DUTY / 500HZ | |
| | | | |
| FULL /50% LOAD 50%DUTY / 10KHZ | | FULL /50% LOAD 50%DUTY / 8KHZ | |
| | | | |
| 8 | EXTERNAL CAPACITANCE LOAD(Max.) | 2000uF | I/P : 800VDC O/P : TESTING LOAD Ta : 25°C |
| | | | TEST: <u>OK</u> |

INPUT FUNCTION TEST

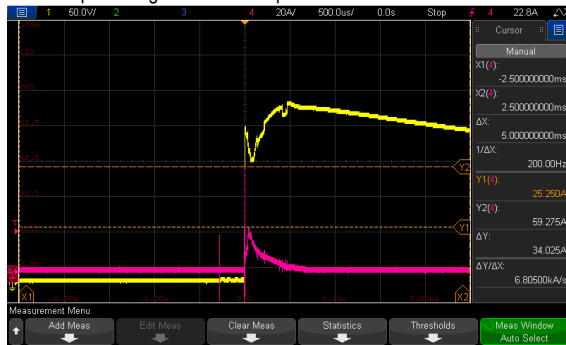
| NO | TEST ITEM | SPECIFICATION | TEST CONDITION | RESULT |
|----|---------------------|------------------|--|---|
| 1 | INPUT VOLTAGE RANGE | 250VDC~ 1500 VDC | I/P: TESTING O/P:FULL LOAD Ta:25°C | 234.24V~ 1400 V/FULL LOAD 233.11V~ 1500 V/80% LOAD 233.67V~ 1500 V/40% LOAD |



| | | | | |
|---|---------------------|---|--|---|
| | | | <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>88%/300VDC 91%/800VDC 87%/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>91.45%/300VDC 92.36%/800VDC 89.03%/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 =25.25A/ 250VDC I = 83.75A/ 800VDC I = 165.0A/ 1500VDC</p> |

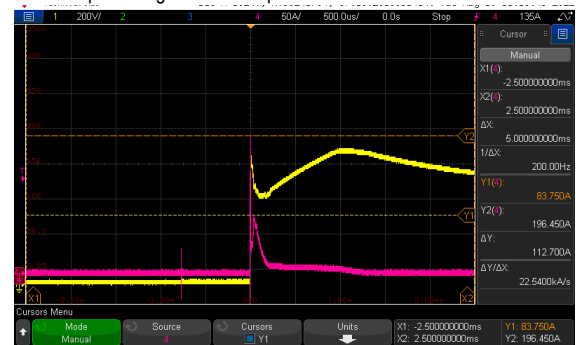
INPUT=250VDC @ TEST LOAD

CH1: DC Input Voltage CH4: Input current



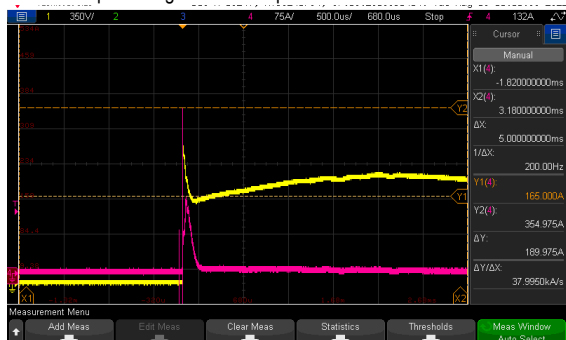
INPUT=800VDC @ FULL LOAD

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 | 119.57%/ 1400 VDC 121.49%/ 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 | 120.85% / 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: 40V~48V 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 | 43.9V / 1500 VDC 43.7V / 800 VDC 43.9V / 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>215.64</u> Vdc , Under voltage release range TEST: <u>236.22</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

| NO | 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 (2) Output Short (3) Dynamic Load Full Load/ | Q1 Q3 VDS: VDS: (1) 509V (1) 505V (2) 541V (2) 525V (3) 521V (3) 509V (4) 505V (4) 505V |



| | | | | | |
|---|-------------------------|--|--|--|---|
| | | | <p>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>(5) 513V (6) 500V (7) 537V</p> <p>Q2 VDS: (1) 500V (2) 537V (3) 500V (4) 492V (5) 496V (6) 492V (7) 517V</p> | <p>(5) 500V (6) 500V (7) 529V</p> <p>Q4 VDS: (1) 513V (2) 541V (3) 521V (4) 509V (5) 509V (6) 509V (7) 529V</p> |
| 2 | Diode Peak Voltage | Q100 Rated: 20 A/ 600V | <p>DC ON/OFF I/P:High-Line +3V =1503V 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: VDS: Vo=Vmax (1) 304V (2) 300V (3) 303V (4) 303V (5) 303V (6) 303V (7) 303V (8) 305V</p> <p>Vo=Vnormal (1) 298V</p> | |
| 3 | Input Capacitor Voltage | C5/C7/C9/C18 Rated: 68μ / 400V | <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)384V (3)376V (4)376V</p> <p>C7 (1)384V (2)384V (3)376V (4)376V</p> <p>C9 (1)384V (2)384V (3)380V (4)380V</p> <p>C18 (1)384V (2)384V (3)376V (4)376V</p> | |
| 4 | Control IC Voltage Test | PWM IC U1 Rated 8.3V~ 28 V I/P IC U4 Rated 6.5V~ 30 V IC U200 Rated 3.5V~ 36V | <p>DC ON/OFF I/P:High-Line +3V =1503 V O/P(1)FULL LOAD (2) Output Short (3)O.L.P (4)O.V.P. (5)NO LOAD VRmin(LOW</p> | <p>U1/U4: (1) 16.9V (2) 17.1V (3) 16.9V (4) 16.9V (5) 16.9V</p> | |



| | | | | |
|---|--------------------------|--|--|--|
| | | | LINE) Ta:25°C | U200: (1) 22.1V (2) 22.1V (3) 22.1V (4) 33.8V (5) 20.1V |
| 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: (1) 460V (2) 464V D2: (1) 460V (2) 464V D3: (1) 464V (2) 464V D4: (1) 472V (2) 468V |

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: 1.8 KVAC/min Ta:25°C | I/P-O/P: 8.7mA I/P-FG: 7.12mA 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 | | | |



■ RELIABILITY TEST

ENVIRONMENT TEST

| NO | TEST ITEM | SPECIFICATION | TEST CONDITION | RESULT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|----|-----------------------|---|------------------------|---|----|----------|------------------------|------------------------|---|----|--------|--------|---|------|--------|--------|---|-----|--------|--------|---|-----|--------|--------|---|-----|--------|--------|---|-----|--------|--------|---|-----|--------|--------|---|-----|--------|--------|---|----|--------|--------|----|----|--------|--------|----|-----|--------|--------|----|------|--------|--------|----|----|--------|--------|----|----|--------|--------|----|----|--------|--------|----|----|--------|--------|----|----|--------|--------|----|----|--------|--------|----|----|--------|--------|----|-----|--------|--------|----|--------|--------|---------|----|--------|--------|---------|----|------|--------|--------|----|-----|--------|--------|----|-----|--------|--------|----|------|--------|--------|
| 1 | TEMPERATURE RISE TEST | MODEL : RSDH-150-32 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>45.7°C</td><td>74.9°C</td></tr> <tr><td>2</td><td>RTH3</td><td>53.5°C</td><td>80.1°C</td></tr> <tr><td>3</td><td>C11</td><td>50.8°C</td><td>78.6°C</td></tr> <tr><td>4</td><td>LF3</td><td>52.0°C</td><td>80.3°C</td></tr> <tr><td>5</td><td>R84</td><td>54.9°C</td><td>82.9°C</td></tr> <tr><td>6</td><td>BD1</td><td>56.6°C</td><td>84.7°C</td></tr> <tr><td>7</td><td>BD2</td><td>59.4°C</td><td>86.9°C</td></tr> <tr><td>8</td><td>R50</td><td>62.6°C</td><td>91.1°C</td></tr> <tr><td>9</td><td>C9</td><td>57.1°C</td><td>85.3°C</td></tr> <tr><td>10</td><td>C5</td><td>54.6°C</td><td>82.9°C</td></tr> <tr><td>11</td><td>C12</td><td>51.8°C</td><td>80.2°C</td></tr> <tr><td>12</td><td>ZNR5</td><td>54.9°C</td><td>83.1°C</td></tr> <tr><td>13</td><td>Q9</td><td>57.2°C</td><td>86.1°C</td></tr> <tr><td>14</td><td>D2</td><td>60.2°C</td><td>89.3°C</td></tr> <tr><td>15</td><td>U4</td><td>58.1°C</td><td>86.9°C</td></tr> <tr><td>16</td><td>D4</td><td>61.0°C</td><td>90.0°C</td></tr> <tr><td>17</td><td>T3</td><td>59.6°C</td><td>88.2°C</td></tr> <tr><td>18</td><td>T3</td><td>59.5°C</td><td>88.0°C</td></tr> <tr><td>19</td><td>U1</td><td>63.0°C</td><td>91.3°C</td></tr> <tr><td>20</td><td>C78</td><td>61.5°C</td><td>89.8°C</td></tr> <tr><td>21</td><td>T1coil</td><td>74.5°C</td><td>103.4°C</td></tr> <tr><td>22</td><td>T1core</td><td>72.0°C</td><td>101.1°C</td></tr> <tr><td>23</td><td>TSW1</td><td>61.8°C</td><td>90.8°C</td></tr> <tr><td>24</td><td>TC4</td><td>51.9°C</td><td>80.5°C</td></tr> <tr><td>25</td><td>C56</td><td>58.3°C</td><td>86.9°C</td></tr> <tr><td>27</td><td>U200</td><td>57.1°C</td><td>85.9°C</td></tr> </tbody> </table> | NO | Position | ROOM AMBIENT Ta= 25 °C | HIGH AMBIENT Ta= 55 °C | 1 | C1 | 45.7°C | 74.9°C | 2 | RTH3 | 53.5°C | 80.1°C | 3 | C11 | 50.8°C | 78.6°C | 4 | LF3 | 52.0°C | 80.3°C | 5 | R84 | 54.9°C | 82.9°C | 6 | BD1 | 56.6°C | 84.7°C | 7 | BD2 | 59.4°C | 86.9°C | 8 | R50 | 62.6°C | 91.1°C | 9 | C9 | 57.1°C | 85.3°C | 10 | C5 | 54.6°C | 82.9°C | 11 | C12 | 51.8°C | 80.2°C | 12 | ZNR5 | 54.9°C | 83.1°C | 13 | Q9 | 57.2°C | 86.1°C | 14 | D2 | 60.2°C | 89.3°C | 15 | U4 | 58.1°C | 86.9°C | 16 | D4 | 61.0°C | 90.0°C | 17 | T3 | 59.6°C | 88.2°C | 18 | T3 | 59.5°C | 88.0°C | 19 | U1 | 63.0°C | 91.3°C | 20 | C78 | 61.5°C | 89.8°C | 21 | T1coil | 74.5°C | 103.4°C | 22 | T1core | 72.0°C | 101.1°C | 23 | TSW1 | 61.8°C | 90.8°C | 24 | TC4 | 51.9°C | 80.5°C | 25 | C56 | 58.3°C | 86.9°C | 27 | U200 | 57.1°C | 85.9°C |
| NO | Position | ROOM AMBIENT Ta= 25 °C | HIGH AMBIENT Ta= 55 °C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | C1 | 45.7°C | 74.9°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | RTH3 | 53.5°C | 80.1°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | C11 | 50.8°C | 78.6°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | LF3 | 52.0°C | 80.3°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | R84 | 54.9°C | 82.9°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | BD1 | 56.6°C | 84.7°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | BD2 | 59.4°C | 86.9°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | R50 | 62.6°C | 91.1°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | C9 | 57.1°C | 85.3°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | C5 | 54.6°C | 82.9°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 11 | C12 | 51.8°C | 80.2°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12 | ZNR5 | 54.9°C | 83.1°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 13 | Q9 | 57.2°C | 86.1°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 14 | D2 | 60.2°C | 89.3°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 15 | U4 | 58.1°C | 86.9°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 16 | D4 | 61.0°C | 90.0°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 17 | T3 | 59.6°C | 88.2°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 18 | T3 | 59.5°C | 88.0°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 19 | U1 | 63.0°C | 91.3°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 20 | C78 | 61.5°C | 89.8°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 21 | T1coil | 74.5°C | 103.4°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 22 | T1core | 72.0°C | 101.1°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 23 | TSW1 | 61.8°C | 90.8°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 24 | TC4 | 51.9°C | 80.5°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 25 | C56 | 58.3°C | 86.9°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 27 | U200 | 57.1°C | 85.9°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |



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

RSDH-150 series

| | | | | ROOM AMBIENT Ta= 25 °C | HIGH AMBIENT Ta= 55 °C |
|---|---|--|----------|---|------------------------|
| | | NO | Position | | |
| | | 28 | LF100 | 56.9°C | 86.0°C |
| | | 29 | C108 | 58.0°C | 86.9°C |
| | | 30 | C107 | 58.5°C | 87.9°C |
| | | 31 | Q1 | 59.1°C | 88.3°C |
| | | 32 | Q2 | 60.4°C | 89.7°C |
| | | 33 | Q3 | 60.4°C | 89.7°C |
| | | 34 | Q4 | 59.9°C | 88.9°C |
| | | 35 | R45 | 61.9°C | 90.7°C |
| | | 36 | Q101 | 67.2°C | 95.9°C |
| | | 37 | R231 | 60.7°C | 89.6°C |
| | | 38 | Q100 | 67.2°C | 96.7°C |
| | | 39 | R96 | 65.7°C | 94.4°C |
| | | 40 | D10 | 58.1°C | 86.9°C |
| | | 41 | C116 | 51.7°C | 80.3°C |
| | | 42 | Q10 | 56.0°C | 84.8°C |
| | | 43 | Q70 | 64.0°C | 92.4°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 | ± 0.009 %/°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: 600 VDC / FULL LOAD DC ON 3sec/DC OFF 1sec TEST 1cycle: 600 VDC / 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 C107 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) 350003HRS (2) 46566.6HRS (3) 66252.2HRS (4) 101181HRS |
| 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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