



# Test Report: LRS-200-4.2

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200W Single Output Switching Power Supply

## ■ DESIGN VERIFY TEST

Output Function Test

Input Function Test

Protection Function Test

Component Stress Test

## ■ SAFETY & E.M.C. TEST

Safety Test

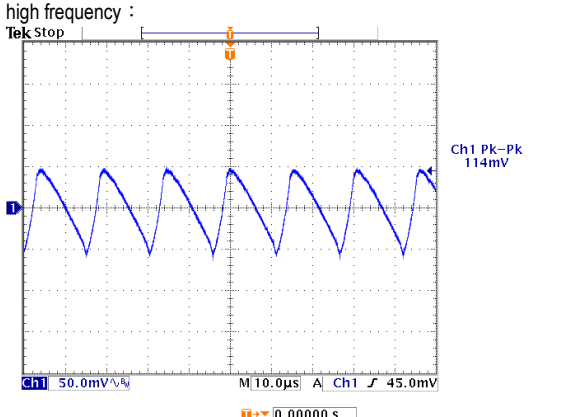
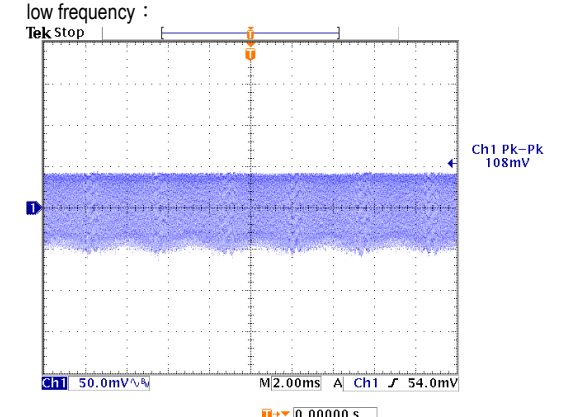
E.M.C. Test

## ■ RELIABILITY TEST

ENVIRONMENT TEST

## DESIGN VERIFY TEST

### OUTPUT FUNCTION TEST

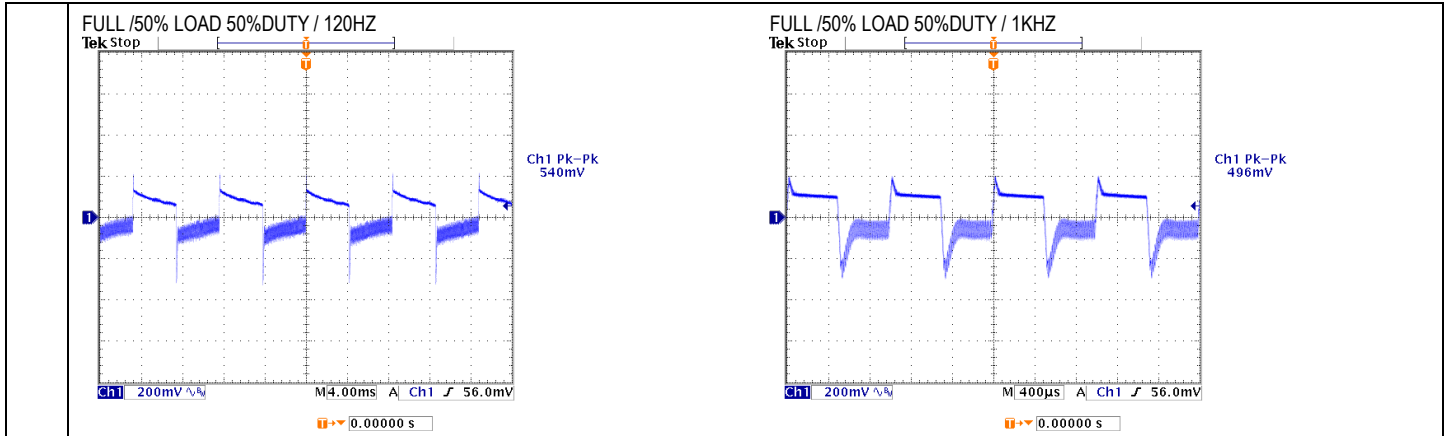
| NO | TEST ITEM                        | SPECIFICATION  | TEST CONDITION   | RESULT                                       |
|----|----------------------------------|--|--|--|
| 1  | OUTPUT VOLTAGE<br>ADJUST RANGE   | CH1: 3.6~4.4V  | I/P: 230 VAC<br>I/P: 115 VAC<br>O/P: MIN LOAD<br>Ta: 25°C  | 3.464V~4.679V/230VAC<br>3.471V~4.677V/115VAC |
| 2  | OUTPUT VOLTAGE(Max)<br>TOLERANCE | V1: -4%~4%   | I/P: 100VAC /264VAC<br>O/P:FULL/ MIN. LOAD<br>Ta:25°C      | V1:- 0.24%~ 0.24%                            |
| 3  | LINE REGULATION (Max)            | V1: -0.5%~ 0.5%  | I/P: 100VAC~ 264VAC<br>O/P:FULL LOAD<br>Ta:25°C            | V1: -0.24%~0.24%                             |
| 4  | LOAD REGULATION(Max)             | V1:-2.5%~ 2.5%   | I/P: 230VAC<br>O/P:FULL ~MIN LOAD<br>Ta:25°C               | V1:- 0.0%~ 0%                                |
| 5  | OVER/UNDERSHOOT TEST             | < ±5%  | I/P: 230VAC<br>O/P:FULL LOAD<br>Ta:25°C                    | <5%  |
| 6  | RIPPLE & NOISE(Max)              | V1: 150mVp-p   | I/P:230VAC<br>O/P:FULL LOAD<br>Ta:25°C                     | V1: 114mVp-p                                 |
|    |                                  | <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>high frequency :</p>  </div> <div style="text-align: center;"> <p>low frequency :</p>  </div> </div> |  |  |
| 7  | SET UP TIME(Max)                 | 230VAC/1300ms<br>115VAC/ 1300ms  | I/P: 230 VAC<br>I/P: 115 VAC<br>O/P: FULL LOAD<br>Ta: 25°C | 230VAC/ 968ms<br>115VAC/ 1058ms              |



200W Single Output Switching Power Supply

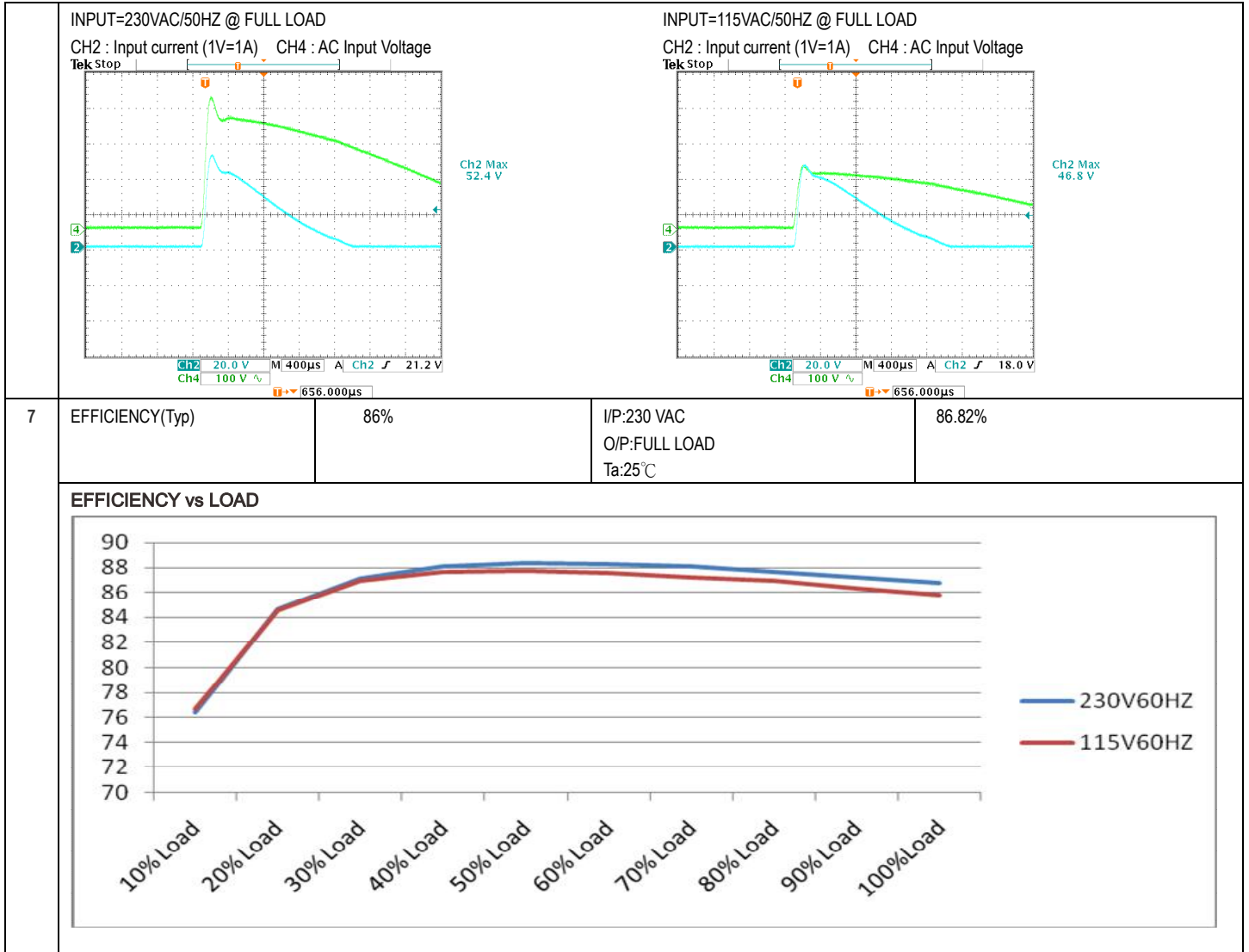
LRS-200series

|                            |  |  |  |
|----------------------------|--|--|--|
|                            | <p>INPUT=230VAC/50HZ @ FULL LOAD<br/>CH1 : Output Voltage CH4 : AC Input Voltage</p> | <p>INPUT=115VAC/60HZ @ FULL LOAD<br/>CH1 : Output Voltage CH4 : AC Input Voltage</p>                               |  |
| <p>8 RISE TIME (Max)</p>   | <p>230VAC/ 50ms<br/>115VAC/ 50ms</p>   | <p>I/P: 230 VAC<br/>I/P: 115 VAC<br/>O/P: FULL LOAD<br/>Ta: 25°C</p>   | <p>230VAC/ 1.60ms<br/>115VAC/1.60ms</p>  |
|                            | <p>INPUT=230VAC/50HZ @ FULL LOAD<br/>CH1 : Output Voltage</p>                        |  | <p>INPUT=115VAC/60HZ @ FULL LOAD<br/>CH1 : Output Voltage</p>                        |
| <p>9 HOLD UP TIME(Typ)</p> | <p>230VAC/ 16ms<br/>115VAC/ 12ms</p>   | <p>I/P: 230 VAC<br/>I/P: 115 VAC<br/>O/P: FULL LOAD<br/>Ta: 25°C</p>   | <p>230VAC/34.4ms<br/>115VAC/ 29.6ms</p>  |
|                            | <p>INPUT=230VAC/50HZ @ FULL LOAD<br/>CH1 : Output Voltage CH4 : AC Input Voltage</p> |  | <p>INPUT=115VAC/60HZ @ FULL LOAD<br/>CH1 : Output Voltage CH4 : AC Input Voltage</p> |
| <p>10 DYNAMIC LOAD</p>     | <p>V1: 840mVp-p</p>  | <p>I/P: 230VAC<br/>O/P:<br/>(1)FULL /50% LOAD 50%DUTY / 120HZ<br/>(2)FULL /50% LOAD 50%DUTY / 1KHZ<br/>Ta:25°C</p> | <p>540mVp-p<br/>496mVp-p</p>   |



### INPUT FUNCTION TEST

| NO | TEST ITEM             | SPECIFICATION                        | TEST CONDITION   | RESULT                               |
|----|-----------------------|--------------------------------------|--|--------------------------------------|
| 1  | INPUT VOLTAGE RANGE   | 180VAC~264VAC                        | I/P:TESTING<br>O/P:FULL LOAD<br>Ta:25°C  | 130V~264V                            |
|    |                       |                                      | I/P:<br>(1)LOW-LINE-3V=167 V<br>HIGH-LINE+15%=300 V<br>O/P:FULL/MIN LOAD<br>ON: 30 Sec OFF: 30 Sec 10MIN<br>(2)230Vac<br>ON: 0.5 Sec OFF: 0.5 Sec 20MIN<br>(3)230Vac<br>ON:3Sec OFF:3Sec 12HOURS<br>( POWER ON/OFF NO DAMAGE ) | TEST:OK                              |
| 2  | INPUT FREQUENCY RANGE | 47HZ ~63 HZ<br>NO DAMAGE             | I/P:170 VAC ~264 VAC<br>O/P:FULL~MIN LOAD<br>Ta:25°C   | TEST: OK                             |
| 3  | INPUT CURRENT (Typ)   | 230V/ 2.2A<br>115V/ 4A               | I/P: 230 VAC<br>I/P: 115 VAC<br>O/P: FULL LOAD<br>Ta: 25°C   | I =1.71A/ 230VAC<br>I =3.16A/ 115VAC |
| 4  | LEAKAGE CURRENT       | < 2 mA / 240 VAC                     | I/P: 240 VAC<br>O/P: Min LOAD<br>Ta: 25°C  | L-FG: 0.433mA<br>N-FG: 0.433mA       |
| 5  | NO LOAD CONSUMPTION   | < 0.75 W                             | I/P: 115VAC<br>I/P: 230VAC<br>O/P: NO LOAD<br>Ta: 25°C   | < 0.55W<br>< 0.47 W                  |
| 6  | INRUSH CURRENT(Typ)   | 230V/ 60A<br>115V/ 60A<br>COLD START | I/P: 230 VAC<br>I/P: 115 VAC<br>O/P: FULL LOAD<br>Ta: 25°C   | I =52.4A/ 230VAC<br>I =46.8A/ 115VAC |



### PROTECTION FUNCTION TEST

| NO | TEST ITEM                   | SPECIFICATION | TEST CONDITION  | RESULT  |
|----|-----------------------------|---------------|---|---|
| 1  | OVER LOAD PROTECTION        | 110 %~ 140 %  | I/P: 230VAC<br>I/P: 115VAC<br>O/P: TESTING<br>Ta:25°C   | 128.27%/ 230VAC<br>127.87%/115VAC<br>Hiccup mode, recovers automatically after fault condition is removed |
| 2  | OVER VOLTAGE PROTECTION     | CH:4.6V~5.4V  | 5.1V/ 230VAC<br>5.2V/115VAC<br>O/P: MIN LOAD<br>Ta:25°C | Hiccup mode, recovers automatically after fault condition is removed                                      |
| 3  | OVER TEMPERATURE PROTECTION | NO DAMAGE     | I/P: 230 VAC<br>O/P: FULL LOAD                          | O.T.P.Active<br>Hiccup mode, recovers automatically after fault condition is removed                      |



|   |                  |  |  |   |
|---|------------------|--|--|---|
| 4 | SHORT PROTECTION | SHORT EVERY OUTPUT<br>1 HOUR NO DAMAGE | I/P: 264VAC<br>O/P: FULL LOAD<br>Ta:25°C | NO DAMAGE<br>Hiccup mode, recovers automatically after fault condition is removed |
|---|------------------|--|--|---|

### COMPONENT STRESS TEST

| NO | TEST ITEM   | SPECIFICATION  | TEST CONDITION   | RESULT   |
|----|---|--|--|--|
| 1  | PWM Transistor<br>(D to S) or (C to E) Peak Voltage | Q 1 Rated<br>12 A/500V                               | I/P:High-Line +3V =267V<br>O/P: (1)Full Load Turn on<br>(2)Dynamic Load Full Load/<br>Min. Load 90%Duty/5KHz<br>(3)Dynamic Load 100% Load/<br>Min. Load 50%Duty/120Hz<br>Ta:25°C | (1)438V<br>(2)444V<br>(3)448V                                      |
| 2  | Diode Peak Voltage                                  | Q102 Rated<br>120A/40V<br><br>Q103 Rated<br>120A/40V | I/P:High-Line +3V =267 V<br>O/P: (1)Full Load input on/off<br>(2)Output Short<br>Ta:25°C   | Q102:<br>(1)35.4V<br>(2)33.4V<br><br>Q103:<br>(1)30.0V<br>(2)29.4V |
| 3  | Input Capacitor Voltage                             | C5 Rated:<br>330 $\mu$ / 200V                        | I/P:High-Line +3V =267 V<br>O/P: (1)Full Load input on/off<br>(2) Min load input on /Off<br>(3)Full Load /Min load Change<br>Ta:25°C   | (1)178V<br>(2)177V<br>(3)180V                                      |
| 4  | Control IC Voltage Test                             | PWM IC U1 Rated<br>28 V (MAX.)<br>10V (MIN.)         | I/P:High-Line +3V =267 V<br>O/P: (1)Full Load input on/off<br>(2) Output short<br>(3)No load VR (min)<br>Ta:25°C   | U1<br>(1) 21.6V<br>(2) 19.5V<br>(3) 20.7V                          |

### SAFETY TEST

| NO | TEST ITEM         | SPECIFICATION   | TEST CONDITION  | RESULT   |
|----|-------------------|---|---|--|
| 1  | WITHSTAND VOLTAGE | I/P-O/P: 3KVAC/min<br>I/P-FG :2KVAC/min<br>O/P-FG:0.5KVAC/min | I/P-O/P: 3.6 KVAC/min<br>I/P-FG: 2.4 KVAC/min<br>O/P-FG:0.6 KVAC/min<br>Ta:25°C | I/P-O/P:2.2 mA<br>I/P-FG: 2.45mA<br>O/P-FG: 2.75m A<br>NO DAMAGE |



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LRS-200series

|   |                      |   |   |  |
|---|----------------------|---|---|--|
| 2 | ISOLATION RESISTANCE | I/P-O/P:500VDC>100MΩ<br>I/P-FG: 500VDC>100MΩ<br>O/P-FG:500VDC>100MΩ | I/P-O/P: 500 VDC<br>I/P-FG: 500 VDC<br>O/P-FG: 500 VDC<br>Ta:25°C | I/P-O/P: 9999MΩ<br>I/P-FG: 9999MΩ<br>O/P-FG: 9999MΩ<br>NO DAMAGE |
| 3 | GROUNDING CONTINUITY | FG(PE) TO CHASSIS<br>OR TRACE < 100 mΩ                              | 40A / 2min<br>Ta:25°C   | 20 mΩ  |

E.M.C TEST

| NO | TEST ITEM                                   | SPECIFICATION                                      | TEST CONDITION                                | RESULT     |
|----|---|--|---|------------|
| 1  | E.S.D                                       | EN61000-4-2<br>INDUSTRY<br>AIR:8KV / Contact:4KV   | I/P: 230 VAC/50HZ<br>O/P:FULL LOAD<br>Ta:25°C | CRITERIA A |
| 2  | E.F.T                                       | EN61000-4-4<br>INDUSTRY<br>INPUT: 2KV              | I/P: 230VAC/50HZ<br>O/P:FULL LOAD<br>Ta:25°C  | CRITERIA A |
| 3  | SURGE                                       | IEC61000-4-5<br>INDUSTRY<br>L-N :2KV<br>L,N-PE:4KV | I/P: 230VAC/50HZ<br>O/P:FULL LOAD<br>Ta:25°C  | CRITERIA A |
| 4  | Test by certified Lab & Test Report Prepare |  |   |            |

RELIABILITY TEST

ENVIRONMENT TEST

| NO | TEST ITEM             | SPECIFICATION  | TEST CONDITION          | RESULT   |    |          |                          |                         |   |    |        |        |   |      |        |        |   |     |        |        |   |     |        |        |   |      |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |    |        |        |    |    |        |        |    |     |        |        |    |     |        |        |    |        |        |         |    |        |        |        |    |     |        |        |    |      |        |         |    |      |        |         |    |      |        |        |    |      |        |        |
|----|-----------------------|--|-------------------------|--|----|----------|--------------------------|-------------------------|---|----|--------|--------|---|------|--------|--------|---|-----|--------|--------|---|-----|--------|--------|---|------|--------|--------|---|----|--------|--------|---|----|--------|--------|---|----|--------|--------|---|----|--------|--------|----|----|--------|--------|----|-----|--------|--------|----|-----|--------|--------|----|--------|--------|---------|----|--------|--------|--------|----|-----|--------|--------|----|------|--------|---------|----|------|--------|---------|----|------|--------|--------|----|------|--------|--------|
| 1  | TEMPERATURE RISE TEST | MODEL: LRS-200-5<br>1. ROOM AMBIENT BURN-IN: 2 HRS<br>I/P: 230VAC O/P: FULL LOAD Ta=24.7°C<br>2. HIGH AMBIENT BURN-IN: 2 HRS<br>I/P: 230VAC O/P: FULL LOAD Ta=40.1°C |                         |  |    |          |                          |                         |   |    |        |        |   |      |        |        |   |     |        |        |   |     |        |        |   |      |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |    |        |        |    |    |        |        |    |     |        |        |    |     |        |        |    |        |        |         |    |        |        |        |    |     |        |        |    |      |        |         |    |      |        |         |    |      |        |        |    |      |        |        |
|    |                       |  |                         | <table border="1"> <thead> <tr> <th>NO</th> <th>Position</th> <th>ROOM AMBIENT Ta= 24.7 °C</th> <th>HIGH AMBIENT Ta=40.1 °C</th> </tr> </thead> <tbody> <tr><td>1</td><td>U1</td><td>63.9°C</td><td>76.7°C</td></tr> <tr><td>2</td><td>U100</td><td>71.1°C</td><td>82.8°C</td></tr> <tr><td>3</td><td>LF1</td><td>55.4°C</td><td>69.6°C</td></tr> <tr><td>4</td><td>BD1</td><td>59.2°C</td><td>72.1°C</td></tr> <tr><td>5</td><td>ZNR5</td><td>59.0°C</td><td>73.0°C</td></tr> <tr><td>6</td><td>C5</td><td>59.2°C</td><td>73.3°C</td></tr> <tr><td>7</td><td>C6</td><td>57.7°C</td><td>71.9°C</td></tr> <tr><td>8</td><td>T2</td><td>62.2°C</td><td>76.2°C</td></tr> <tr><td>9</td><td>Q1</td><td>66.7°C</td><td>82.4°C</td></tr> <tr><td>10</td><td>Q2</td><td>66.9°C</td><td>82.6°C</td></tr> <tr><td>11</td><td>D11</td><td>63.2°C</td><td>77.8°C</td></tr> <tr><td>12</td><td>D10</td><td>65.3°C</td><td>82.2°C</td></tr> <tr><td>13</td><td>T1coil</td><td>95.4°C</td><td>109.3°C</td></tr> <tr><td>14</td><td>T1core</td><td>78.2°C</td><td>91.8°C</td></tr> <tr><td>15</td><td>C36</td><td>61.7°C</td><td>76.6°C</td></tr> <tr><td>16</td><td>RTH3</td><td>88.5°C</td><td>102.7°C</td></tr> <tr><td>17</td><td>L100</td><td>90.2°C</td><td>104.4°C</td></tr> <tr><td>18</td><td>C106</td><td>79.7°C</td><td>95.5°C</td></tr> <tr><td>19</td><td>C201</td><td>67.8°C</td><td>80.2°C</td></tr> </tbody> </table> | NO | Position | ROOM AMBIENT Ta= 24.7 °C | HIGH AMBIENT Ta=40.1 °C | 1 | U1 | 63.9°C | 76.7°C | 2 | U100 | 71.1°C | 82.8°C | 3 | LF1 | 55.4°C | 69.6°C | 4 | BD1 | 59.2°C | 72.1°C | 5 | ZNR5 | 59.0°C | 73.0°C | 6 | C5 | 59.2°C | 73.3°C | 7 | C6 | 57.7°C | 71.9°C | 8 | T2 | 62.2°C | 76.2°C | 9 | Q1 | 66.7°C | 82.4°C | 10 | Q2 | 66.9°C | 82.6°C | 11 | D11 | 63.2°C | 77.8°C | 12 | D10 | 65.3°C | 82.2°C | 13 | T1coil | 95.4°C | 109.3°C | 14 | T1core | 78.2°C | 91.8°C | 15 | C36 | 61.7°C | 76.6°C | 16 | RTH3 | 88.5°C | 102.7°C | 17 | L100 | 90.2°C | 104.4°C | 18 | C106 | 79.7°C | 95.5°C | 19 | C201 | 67.8°C | 80.2°C |
| NO | Position              | ROOM AMBIENT Ta= 24.7 °C   | HIGH AMBIENT Ta=40.1 °C |  |    |          |                          |                         |   |    |        |        |   |      |        |        |   |     |        |        |   |     |        |        |   |      |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |    |        |        |    |    |        |        |    |     |        |        |    |     |        |        |    |        |        |         |    |        |        |        |    |     |        |        |    |      |        |         |    |      |        |         |    |      |        |        |    |      |        |        |
| 1  | U1                    | 63.9°C   | 76.7°C                  |  |    |          |                          |                         |   |    |        |        |   |      |        |        |   |     |        |        |   |     |        |        |   |      |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |    |        |        |    |    |        |        |    |     |        |        |    |     |        |        |    |        |        |         |    |        |        |        |    |     |        |        |    |      |        |         |    |      |        |         |    |      |        |        |    |      |        |        |
| 2  | U100                  | 71.1°C   | 82.8°C                  |  |    |          |                          |                         |   |    |        |        |   |      |        |        |   |     |        |        |   |     |        |        |   |      |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |    |        |        |    |    |        |        |    |     |        |        |    |     |        |        |    |        |        |         |    |        |        |        |    |     |        |        |    |      |        |         |    |      |        |         |    |      |        |        |    |      |        |        |
| 3  | LF1                   | 55.4°C   | 69.6°C                  |  |    |          |                          |                         |   |    |        |        |   |      |        |        |   |     |        |        |   |     |        |        |   |      |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |    |        |        |    |    |        |        |    |     |        |        |    |     |        |        |    |        |        |         |    |        |        |        |    |     |        |        |    |      |        |         |    |      |        |         |    |      |        |        |    |      |        |        |
| 4  | BD1                   | 59.2°C   | 72.1°C                  |  |    |          |                          |                         |   |    |        |        |   |      |        |        |   |     |        |        |   |     |        |        |   |      |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |    |        |        |    |    |        |        |    |     |        |        |    |     |        |        |    |        |        |         |    |        |        |        |    |     |        |        |    |      |        |         |    |      |        |         |    |      |        |        |    |      |        |        |
| 5  | ZNR5                  | 59.0°C   | 73.0°C                  |  |    |          |                          |                         |   |    |        |        |   |      |        |        |   |     |        |        |   |     |        |        |   |      |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |    |        |        |    |    |        |        |    |     |        |        |    |     |        |        |    |        |        |         |    |        |        |        |    |     |        |        |    |      |        |         |    |      |        |         |    |      |        |        |    |      |        |        |
| 6  | C5                    | 59.2°C   | 73.3°C                  |  |    |          |                          |                         |   |    |        |        |   |      |        |        |   |     |        |        |   |     |        |        |   |      |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |    |        |        |    |    |        |        |    |     |        |        |    |     |        |        |    |        |        |         |    |        |        |        |    |     |        |        |    |      |        |         |    |      |        |         |    |      |        |        |    |      |        |        |
| 7  | C6                    | 57.7°C   | 71.9°C                  |  |    |          |                          |                         |   |    |        |        |   |      |        |        |   |     |        |        |   |     |        |        |   |      |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |    |        |        |    |    |        |        |    |     |        |        |    |     |        |        |    |        |        |         |    |        |        |        |    |     |        |        |    |      |        |         |    |      |        |         |    |      |        |        |    |      |        |        |
| 8  | T2                    | 62.2°C   | 76.2°C                  |  |    |          |                          |                         |   |    |        |        |   |      |        |        |   |     |        |        |   |     |        |        |   |      |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |    |        |        |    |    |        |        |    |     |        |        |    |     |        |        |    |        |        |         |    |        |        |        |    |     |        |        |    |      |        |         |    |      |        |         |    |      |        |        |    |      |        |        |
| 9  | Q1                    | 66.7°C   | 82.4°C                  |  |    |          |                          |                         |   |    |        |        |   |      |        |        |   |     |        |        |   |     |        |        |   |      |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |    |        |        |    |    |        |        |    |     |        |        |    |     |        |        |    |        |        |         |    |        |        |        |    |     |        |        |    |      |        |         |    |      |        |         |    |      |        |        |    |      |        |        |
| 10 | Q2                    | 66.9°C   | 82.6°C                  |  |    |          |                          |                         |   |    |        |        |   |      |        |        |   |     |        |        |   |     |        |        |   |      |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |    |        |        |    |    |        |        |    |     |        |        |    |     |        |        |    |        |        |         |    |        |        |        |    |     |        |        |    |      |        |         |    |      |        |         |    |      |        |        |    |      |        |        |
| 11 | D11                   | 63.2°C   | 77.8°C                  |  |    |          |                          |                         |   |    |        |        |   |      |        |        |   |     |        |        |   |     |        |        |   |      |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |    |        |        |    |    |        |        |    |     |        |        |    |     |        |        |    |        |        |         |    |        |        |        |    |     |        |        |    |      |        |         |    |      |        |         |    |      |        |        |    |      |        |        |
| 12 | D10                   | 65.3°C   | 82.2°C                  |  |    |          |                          |                         |   |    |        |        |   |      |        |        |   |     |        |        |   |     |        |        |   |      |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |    |        |        |    |    |        |        |    |     |        |        |    |     |        |        |    |        |        |         |    |        |        |        |    |     |        |        |    |      |        |         |    |      |        |         |    |      |        |        |    |      |        |        |
| 13 | T1coil                | 95.4°C   | 109.3°C                 |  |    |          |                          |                         |   |    |        |        |   |      |        |        |   |     |        |        |   |     |        |        |   |      |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |    |        |        |    |    |        |        |    |     |        |        |    |     |        |        |    |        |        |         |    |        |        |        |    |     |        |        |    |      |        |         |    |      |        |         |    |      |        |        |    |      |        |        |
| 14 | T1core                | 78.2°C   | 91.8°C                  |  |    |          |                          |                         |   |    |        |        |   |      |        |        |   |     |        |        |   |     |        |        |   |      |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |    |        |        |    |    |        |        |    |     |        |        |    |     |        |        |    |        |        |         |    |        |        |        |    |     |        |        |    |      |        |         |    |      |        |         |    |      |        |        |    |      |        |        |
| 15 | C36                   | 61.7°C   | 76.6°C                  |  |    |          |                          |                         |   |    |        |        |   |      |        |        |   |     |        |        |   |     |        |        |   |      |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |    |        |        |    |    |        |        |    |     |        |        |    |     |        |        |    |        |        |         |    |        |        |        |    |     |        |        |    |      |        |         |    |      |        |         |    |      |        |        |    |      |        |        |
| 16 | RTH3                  | 88.5°C   | 102.7°C                 |  |    |          |                          |                         |   |    |        |        |   |      |        |        |   |     |        |        |   |     |        |        |   |      |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |    |        |        |    |    |        |        |    |     |        |        |    |     |        |        |    |        |        |         |    |        |        |        |    |     |        |        |    |      |        |         |    |      |        |         |    |      |        |        |    |      |        |        |
| 17 | L100                  | 90.2°C   | 104.4°C                 |  |    |          |                          |                         |   |    |        |        |   |      |        |        |   |     |        |        |   |     |        |        |   |      |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |    |        |        |    |    |        |        |    |     |        |        |    |     |        |        |    |        |        |         |    |        |        |        |    |     |        |        |    |      |        |         |    |      |        |         |    |      |        |        |    |      |        |        |
| 18 | C106                  | 79.7°C   | 95.5°C                  |  |    |          |                          |                         |   |    |        |        |   |      |        |        |   |     |        |        |   |     |        |        |   |      |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |    |        |        |    |    |        |        |    |     |        |        |    |     |        |        |    |        |        |         |    |        |        |        |    |     |        |        |    |      |        |         |    |      |        |         |    |      |        |        |    |      |        |        |
| 19 | C201                  | 67.8°C   | 80.2°C                  |  |    |          |                          |                         |   |    |        |        |   |      |        |        |   |     |        |        |   |     |        |        |   |      |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |    |        |        |    |    |        |        |    |     |        |        |    |     |        |        |    |        |        |         |    |        |        |        |    |     |        |        |    |      |        |         |    |      |        |         |    |      |        |        |    |      |        |        |



200W Single Output Switching Power Supply

LRS-200series

|    |   |   |   |                   |       |       |    |      |       |       |    |      |       |       |    |      |       |       |  |
|----|---|---|---|-------------------|-------|-------|----|------|-------|-------|----|------|-------|-------|----|------|-------|-------|--|
|    |   | <table border="1"> <tr> <td>20</td> <td>L101</td> <td>77.6℃</td> <td>89.7℃</td> </tr> <tr> <td>21</td> <td>Q101</td> <td>77.2℃</td> <td>91.9℃</td> </tr> <tr> <td>22</td> <td>Q103</td> <td>69.3℃</td> <td>83.5℃</td> </tr> <tr> <td>23</td> <td>Q104</td> <td>64.7℃</td> <td>78.9℃</td> </tr> </table> | 20  | L101              | 77.6℃ | 89.7℃ | 21 | Q101 | 77.2℃ | 91.9℃ | 22 | Q103 | 69.3℃ | 83.5℃ | 23 | Q104 | 64.7℃ | 78.9℃ |  |
| 20 | L101  | 77.6℃   | 89.7℃   |                   |       |       |    |      |       |       |    |      |       |       |    |      |       |       |  |
| 21 | Q101  | 77.2℃   | 91.9℃   |                   |       |       |    |      |       |       |    |      |       |       |    |      |       |       |  |
| 22 | Q103  | 69.3℃   | 83.5℃   |                   |       |       |    |      |       |       |    |      |       |       |    |      |       |       |  |
| 23 | Q104  | 64.7℃   | 78.9℃   |                   |       |       |    |      |       |       |    |      |       |       |    |      |       |       |  |
| 2  | OVER LOAD BURN-IN TEST  | NO DAMAGE<br>1 HOUR ( MIN )   | I/P: 230 VAC<br>O/P: 125 % LOAD<br>Ta: 25℃                      | TEST: OK          |       |       |    |      |       |       |    |      |       |       |    |      |       |       |  |
| 3  | LOW TEMPERATURE<br>TURN ON TEST                                   | TURN ON AFTER 2 HOUR  | I/P: 264VAC/100VAC<br>O/P: 100 % LOAD<br>Ta= -25 ℃              | TEST: OK          |       |       |    |      |       |       |    |      |       |       |    |      |       |       |  |
| 4  | HIGH HUMIDITY<br>HIGH TEMPERATURE<br>HIGH VOLTAGE<br>TURN ON TEST | AFTER 12 HOURS<br>IN CHAMBER ON<br>CONTROL 50 ℃<br>NO DAMAGE  | I/P: 272 VAC<br>O/P: FULL LOAD<br>Ta= 50 ℃<br>HUMIDITY= 95 %R.H | TEST: OK          |       |       |    |      |       |       |    |      |       |       |    |      |       |       |  |
| 5  | TEMPERATURE<br>COEFFICIENT  | ± 0.03 %/℃ (0~50℃)  | I/P: 230 VAC<br>O/P: FULL LOAD                                  | ±0.008%/℃ (0~50℃) |       |       |    |      |       |       |    |      |       |       |    |      |       |       |  |
| 6  | STORAGE TEMPERATURE TEST  | 1. Thermal shock Temperature : -45℃~ +90℃<br>2. Temperature change rate : 25℃ / MIN<br>3. Dwell time low and high temperature : 30 MIN/EACH<br>4. Total test cycle : 5 CYCLE<br>5. Input/Output condition : STATIC  |   | OK                |       |       |    |      |       |       |    |      |       |       |    |      |       |       |  |
| 7  | THERMAL SHOCK TEST  | 1. Thermal shock Temperature : -25℃~ 70℃<br>2. Temperature change rate : 25℃ / MIN<br>3. Dwell time low and high temperature : 30 MIN/EACH<br>4. Total test cycle : 10 CYCLE<br>5. Input/Output condition : 230VAC/Full Load AC ON/OFF TEST<br>turn on 58sec ; turn off 2sec                            |   | OK                |       |       |    |      |       |       |    |      |       |       |    |      |       |       |  |
| 8  | VIBRATION TEST  | 1 Carton & 1 Set<br>(1) Waveform: Sine Wave<br>(2) Frequency: 10~500Hz<br>(3) Sweep Time: 10min/sweep cycle<br>(4) Acceleration: 5G<br>(5) Test Time: 60min in each axis (X.Y.Z)  |   | TEST: OK          |       |       |    |      |       |       |    |      |       |       |    |      |       |       |  |





200W Single Output Switching Power Supply

**LRS-200series**

|    |                             |   |  |
|----|-----------------------------|---|--|
|    |                             | (6) Ta: 25°C  |  |
| 9  | CAPACITOR LIFE CYCLE        | <p>SUPPOSE C106 IS THE MOST CRITICAL COMPONENT</p> <p>(1) I/P: 230VAC O/P: FULL LOAD Ta= 25 °C LIFE TIME</p> <p>(2) I/P: 230VAC O/P: FULL LOAD Ta=40 °C LIFE TIME</p> <p>(3) I/P: 230VAC O/P: 75% LOAD Ta= 40 °C LIFE TIME</p> <p>(4) I/P: 230VAC O/P: 50% LOAD Ta= 40 °C LIFE TIME</p> | <p>(1) 65146HRS</p> <p>(2) 22444HRS</p> <p>(3) 81836HRS</p> <p>(4) 207180HRS</p> |
| 10 | MTBF                        | <p>MIL-HDBK-217F</p> <p>TOTAL FAILURE RATE: 347.5KHRS</p>   |  |
| 11 | DMTBF/Accelerated Life Test | <p>Demonstration Mean Time Between Failure (Expected Life): Above 30,000 hours @ TA 50°C</p>  |  |

| TEST RESULT | TESTER | APPROVAL |
|-------------|--------|----------|
| PASS        | FRANK  | WANGDZ   |