



# Test Report: LRS-150F-5

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150W 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

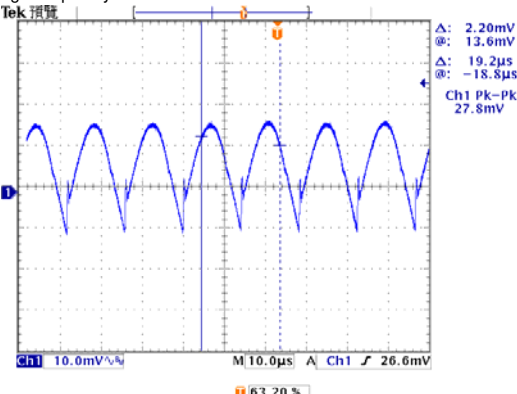
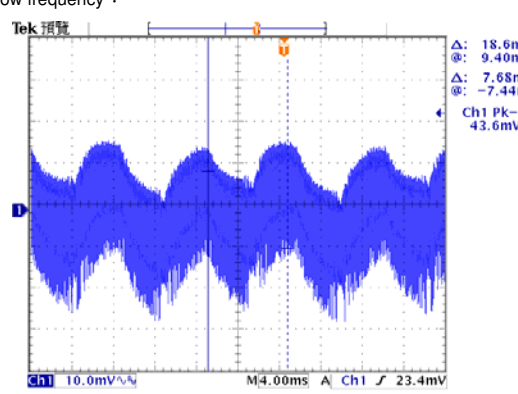
E.M.C. Test

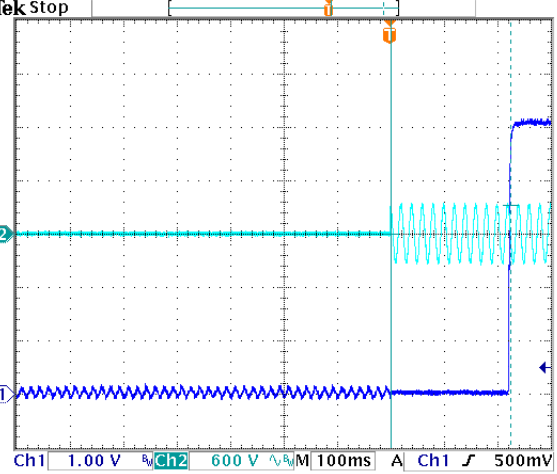
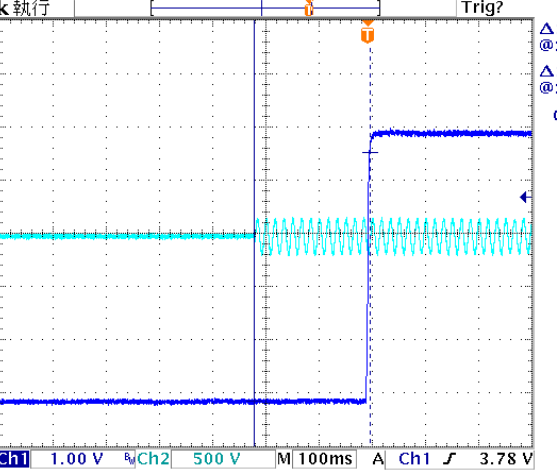
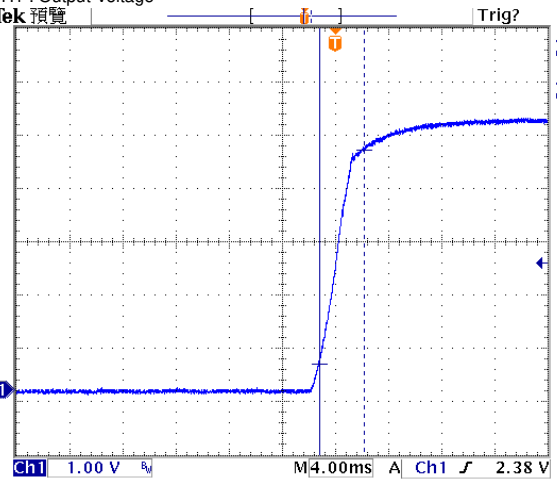
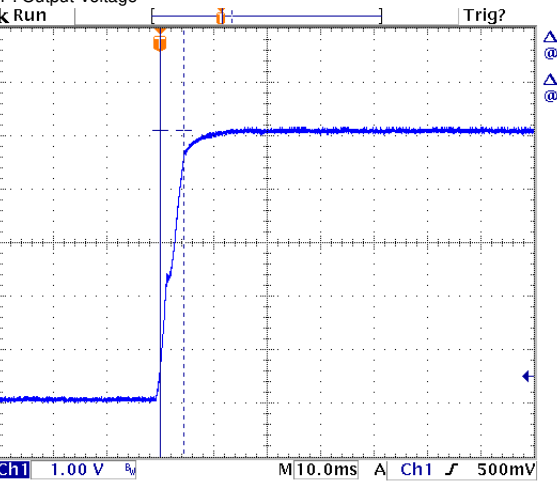
## ■ RELIABILITY TEST

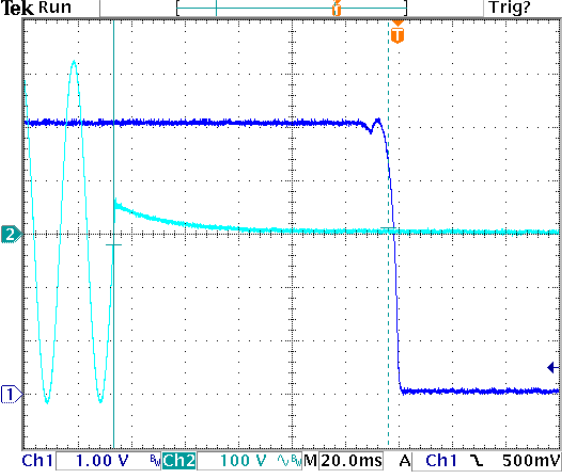
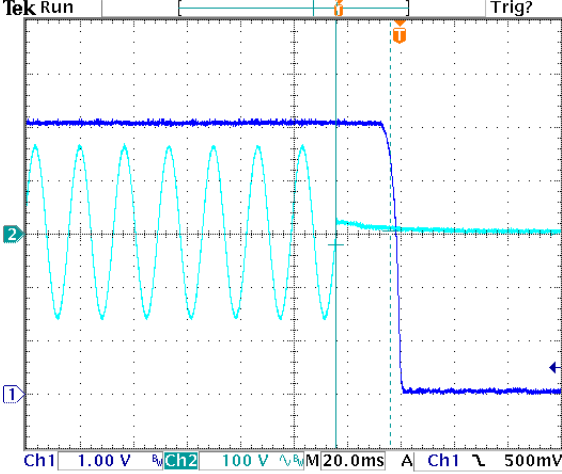
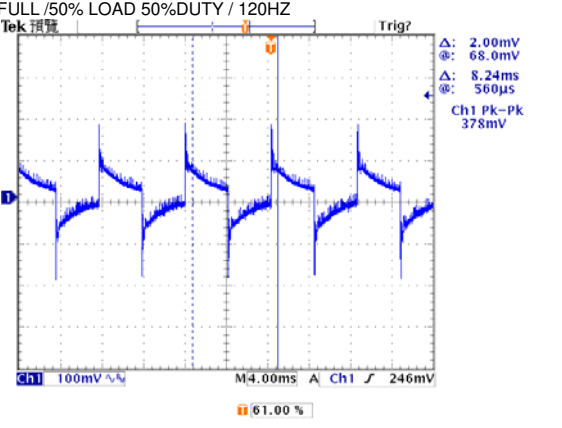
ENVIRONMENT TEST

## DESIGN VERIFY TEST

### OUTPUT FUNCTION TEST

| N<br>O                                                                                                                                                                                                                                                                                                                                                                                                                                                         | TEST ITEM                        | SPECIFICATION                | TEST CONDITION                                                               | RESULT                                   |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|------------------------------|------------------------------------------------------------------------------|------------------------------------------|
| 1                                                                                                                                                                                                                                                                                                                                                                                                                                                              | OUTPUT VOLTAGE<br>ADJUST RANGE   | CH1: 4.5 V~ 5.5 V            | I/P : 230 VAC<br>I/P : 115 VAC<br>O/P : MIN LOAD<br>Ta : 25℃                 | 4.29V~5.77V/230VAC<br>4.29V~5.77V/115VAC |
| 2                                                                                                                                                                                                                                                                                                                                                                                                                                                              | OUTPUT VOLTAGE(Max)<br>TOLERANCE | V1: 2 %~ -2 %                | I/P: 100VAC /264VAC<br>O/P:FULL/ MIN. LOAD<br>Ta:25℃                         | V1: 0.2%~-0.2%                           |
| 3                                                                                                                                                                                                                                                                                                                                                                                                                                                              | LINE REGULATION (Max)            | V1: 0.5 %~ -0.5 %            | I/P: 100VAC~ 264VAC<br>O/P:FULL LOAD<br>Ta:25℃                               | V1: 0%~0%                                |
| 4                                                                                                                                                                                                                                                                                                                                                                                                                                                              | LOAD REGULATION(Max)             | V1: 1 %~ -1 %                | I/P: 230VAC<br>O/P:FULL ~MIN LOAD<br>Ta:25℃                                  | V1: 0.2%~-0.2%                           |
| 5                                                                                                                                                                                                                                                                                                                                                                                                                                                              | OVER/UNDERSHOOT TEST             | < ±10%                       | I/P: 230VAC<br>O/P:FULL LOAD<br>Ta:25℃                                       | <10%                                     |
| 6                                                                                                                                                                                                                                                                                                                                                                                                                                                              | RIPPLE & NOISE(Max )             | V1: 100 mVp-p                | I/P:230VAC<br>O/P:FULL LOAD<br>Ta:25℃                                        | V1: 43.6mVp-p                            |
| <div> <div> <p>high frequency :</p>  <p>Δ: 2.20mV<br/>@: 13.6mV<br/>Δ: 19.2μs<br/>@: -18.8μs<br/>Ch1 Pk-Pk 27.8mV</p> <p>63.20 %</p> </div> <div> <p>low frequency :</p>  <p>Δ: 18.6mV<br/>@: 9.40mV<br/>Δ: 7.68ms<br/>@: -7.44ms<br/>Ch1 Pk-Pk 43.6mV</p> <p>61.40 %</p> </div> </div> |                                  |                              |                                                                              |                                          |
| 7                                                                                                                                                                                                                                                                                                                                                                                                                                                              | SET UP TIME(Max)                 | 230VAC/500ms<br>115VAC/500ms | I/P : 230 VAC<br>I/P : 115 VAC<br>O/P : FULL LOAD<br>Ta : 25℃                | 230VAC/224ms<br>115VAC/218ms             |
| INPUT=230VAC/50HZ @ FULL LOAD<br>CH1 : Output Voltage CH2 : AC Input Voltage                                                                                                                                                                                                                                                                                                                                                                                   |                                  |                              | INPUT=115VAC/60HZ @ FULL LOAD<br>CH1 : Output Voltage CH2 : AC Input Voltage |                                          |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                  |                                       |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|
|                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <p>Tek Stop</p>  <p> <math>\Delta</math>: 324 V<br/> <math>@</math>: 0.00 V<br/> <math>\Delta</math>: 224ms<br/> <math>@</math>: 0.00 s         </p> <p>Ch1 1.00 V Ch2 600 V M 100ms A Ch1 500mV</p> <p>70.00 %</p> | <p>Tek 執行</p>  <p> <math>\Delta</math>: 4.68 V<br/> <math>@</math>: -60.0mV<br/> <math>\Delta</math>: 218ms<br/> <math>@</math>: -216ms<br/>           Ch1 峰-峰 5.22 V         </p> <p>Ch1 1.00 V Ch2 500 V M 100ms A Ch1 3.78 V</p> <p>69.40 %</p>                             |                                       |
| <p>8</p> <p>RISE TIME (Max)</p>                                                                                                                                                                                                                                                                                                                                                                                                                         | <p>230VAC/30ms<br/>115VAC/30ms</p>                                                                                                                                                                                                                                                                   | <p>I/P : 230 VAC<br/>I/P : 115 VAC<br/>O/P : FULL LOAD<br/>Ta : 25°C</p>                                                                                                                                                                                                                                                                                         | <p>230VAC/3.36ms<br/>115VAC/4.4ms</p> |
| <p>INPUT=230VAC/50HZ @ FULL LOAD</p> <p>CH1 : Output Voltage</p> <p>Tek 預覽</p>  <p> <math>\Delta</math>: 4.02 V<br/> <math>@</math>: 480mV<br/> <math>\Delta</math>: 3.36ms<br/> <math>@</math>: -1.32ms<br/>           Ch1 峰-峰 5.24 V<br/>           Ch1 最大 5.12 V<br/>           Ch1 最小 -120mV         </p> <p>Ch1 1.00 V M 4.00ms A Ch1 2.38 V</p> <p>60.20 %</p> |                                                                                                                                                                                                                                                                                                      | <p>INPUT=115VAC/60HZ @ FULL LOAD</p> <p>CH1 : Output Voltage</p> <p>Tek Run</p>  <p> <math>\Delta</math>: 0.00 V<br/> <math>@</math>: 5.10 V<br/> <math>\Delta</math>: 4.40ms<br/> <math>@</math>: 0.00 s         </p> <p>Ch1 1.00 V M 10.0ms A Ch1 500mV</p> <p>30.00 %</p> |                                       |
| <p>9</p> <p>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/103ms<br/>115VAC/20.4ms</p> |
| <p>INPUT=230VAC/50HZ @ FULL LOAD</p> <p>CH1 : Output Voltage CH2 : AC Input Voltage</p>                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                      | <p>INPUT=115VAC/60HZ @ FULL LOAD</p> <p>CH1 : Output Voltage CH2 : AC Input Voltage</p>                                                                                                                                                                                                                                                                          |                                       |

|    |                                                                                                                                                                                                                         |                                                                                                                               |                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                        |
|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|    |  <p> <math>\Delta</math>: 32.0 V<br/> <math>@</math>: -20.0 V<br/> <math>\Delta</math>: 103ms<br/> <math>@</math>: -107ms         </p> |                                                                                                                               |  <p> <math>\Delta</math>: 26.0 V<br/> <math>@</math>: -20.0 V<br/> <math>\Delta</math>: 20.4ms<br/> <math>@</math>: -24.4ms         </p> |                                                                                                                                                                                                                                                        |
| 10 | DYNAMIC LOAD<br><br>FULL /50% LOAD 50%DUTY / 120HZ                                                                                                                                                                      | V1: 1000 mVp-p<br><br>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 | 378mVp-p<br>336mVp-p                                                                                                                                                                                                       |  <p> <math>\Delta</math>: 2.00mV<br/> <math>@</math>: 68.0mV<br/> <math>\Delta</math>: 8.24ms<br/> <math>@</math>: 560μs<br/>           Ch1 Pk-Pk 378mV         </p> |
| 11 | TRANSIENT RECOVERY TIME                                                                                                                                                                                                 | V1: 1000 mVp-p<br><500us                                                                                                      | I/P: 230VAC<br>O/P:40% LOAD CHANGE<br>50%DUTY/120HZ 1.25A/us                                                                                                                                                               | 243mVp-p<br>0 us                                                                                                                                                                                                                                       |

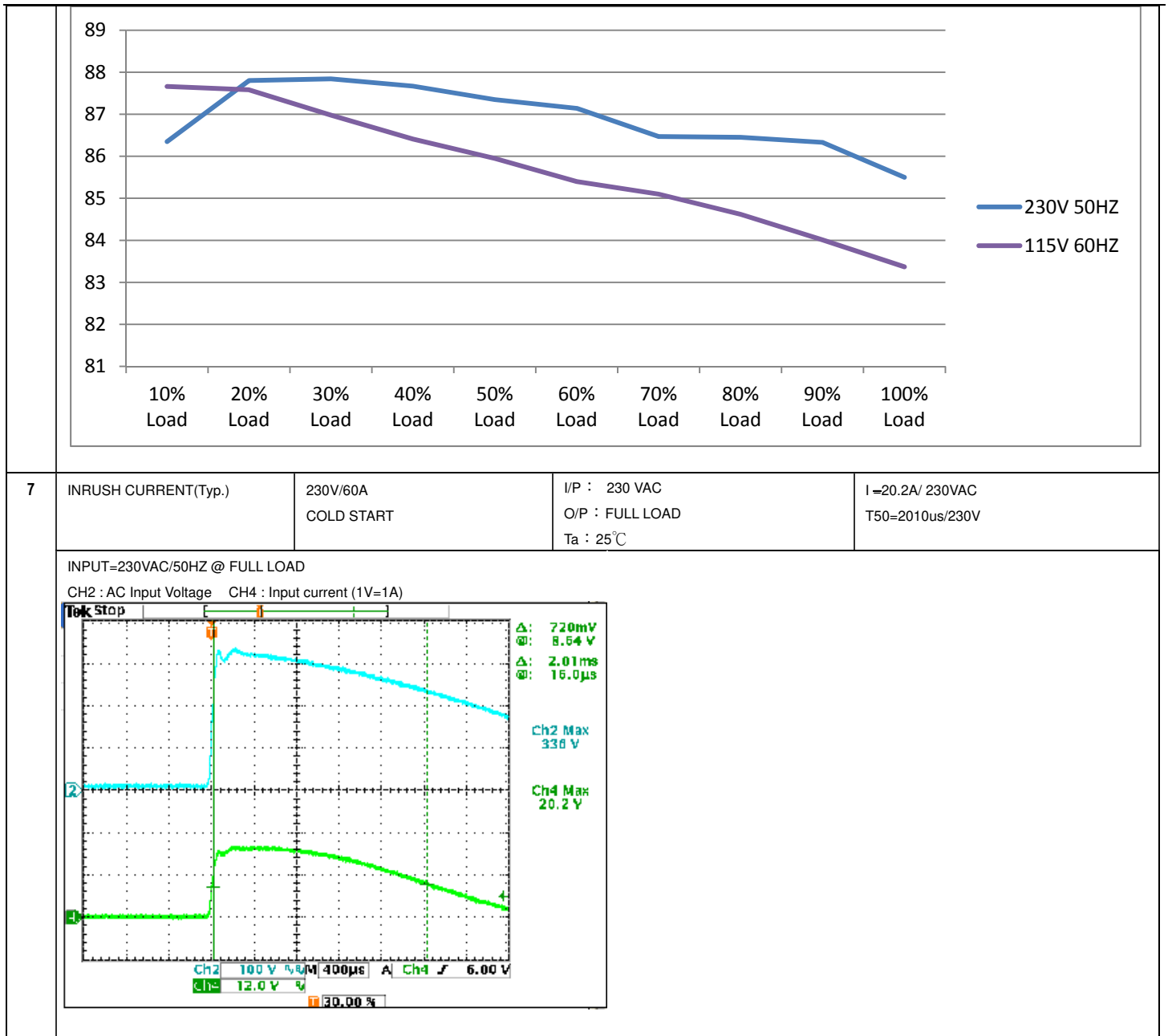


# 150W Single Output Switching Power Supply

## LRS-150F series

### INPUT FUNCTION TEST

| NO | TEST ITEM             | SPECIFICATION            | TEST CONDITION                                                                                                                                                                                                                                                 | RESULT                                |
|----|-----------------------|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|
| 1  | INPUT VOLTAGE RANGE   | 85VAC~264VAC             | I/P:TESTING<br>O/P:FULL LOAD<br>Ta:25°C                                                                                                                                                                                                                        | 63V~264V                              |
|    |                       |                          | I/P:<br>(1)LOW-LINE-3V=82 V<br>HIGH-LINE+15%=300 V<br>O/P:FULL/MIN LOAD<br>(PLEASE CHECK DERATING CURVE)<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:100 VAC ~264 VAC<br>O/P:FULL~MIN LOAD<br>Ta:25°C                                                                                                                                                                                                           | TEST: OK                              |
| 3  | INPUT CURRENT (Typ.)  | 230V/ 1.6A<br>115V/ 2.8A | I/P : 230 VAC<br>I/P : 115 VAC<br>O/P : FULL LOAD<br>Ta : 25°C                                                                                                                                                                                                 | I =0.948A/ 230VAC<br>I =1.78A/ 115VAC |
| 4  | LEAKAGE CURRENT       | < 0.75mA / 240 VAC       | I/P : 240 VAC<br>O/P : Min LOAD<br>Ta : 25°C                                                                                                                                                                                                                   | L-FG : 0.47mA<br>N-FG : 0.47mA        |
| 5  | NO LOAD CONSUMPTION   | < 0.5W                   | I/P : 115VAC                                                                                                                                                                                                                                                   | < 0.298W                              |
|    |                       |                          | I/P : 230VAC<br>O/P : NO LOAD<br>Ta : 25°C                                                                                                                                                                                                                     | < 0.430W                              |
| 6  | EFFICIENCY(Typ.)      | 85%                      | I/P:230 VAC<br>O/P:FULL LOAD<br>Ta:25°C                                                                                                                                                                                                                        | 85.51%                                |
|    | EFFICIENCY vs LOAD    |                          |                                                                                                                                                                                                                                                                |                                       |



## PROTECTION FUNCTION TEST

| NO | TEST ITEM            | SPECIFICATION | TEST CONDITION                                                      | RESULT                                                                                                                                                |
|----|----------------------|---------------|---------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1  | OVER LOAD PROTECTION | 110%~ 140 %   | I/P: 264VAC<br>I/P: 230VAC<br>I/P: 100VAC<br>O/P: TESTING<br>Ta:25℃ | 122.7%/ 264VAC<br>124.5%/ 230VAC<br>127.7%/100VAC<br><br>PROTECTION TYPE :<br>Hiccup mode, recovers automatically<br>after fault condition is removed |



# 150W Single Output Switching Power Supply

## LRS-150F series

|   |                             |                                        |                                                                       |                                                                                                                      |
|---|-----------------------------|----------------------------------------|-----------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|
| 2 | OVER VOLTAGE PROTECTION     | 5.75V~6.75V                            | I/P: 264VAC<br>I/P: 230VAC<br>I/P: 85VAC<br>O/P: MIN LOAD<br>Ta: 25°C | 6.17V/ 264VAC<br>6.14V/ 230VAC<br>8.18V/ 85VAC<br>PROTECTION TYPE :<br>Shut down o/p voltage, re-power on to recover |
| 3 | OVER TEMPERATURE PROTECTION | NO DAMAGE                              | I/P: 264VAC<br>I/P: 85VAC<br>O/P: FULL LOAD                           | O.T.P. Active<br>PROTECTION TYPE :<br>Shut down o/p voltage, re-power on to recover                                  |
| 4 | SHORT PROTECTION            | SHORT EVERY OUTPUT<br>1 HOUR NO DAMAGE | I/P: 264VAC<br>I/P: 85VAC<br>O/P: FULL LOAD<br>Ta: 25°C               | NO DAMAGE<br>PROTECTION TYPE :<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) <b>Peak Voltage</b> | Q1 Rated<br>: 13A/600V                                           | I/P: High-Line +3V = 267V<br>AC ON/OFF<br>VDS:<br>O/P: (1) Full Load<br>(2) Output Short<br>(3) Dynamic Load 100% Load/<br>Min. Load 50%Duty/120Hz<br>(4) 0%→400% Load.<br>I/P: Low-Line -3V = 97V<br>O/P: (1) Full Load<br>(2) Output Short<br>(3) Dynamic Load 100% Load/<br>Min. Load 50%Duty/120Hz<br>(4) 0%→400% Load.<br>Ta: 25°C | VDS:<br>(1) 588V<br>(2) 564V<br>(3) 590V<br>(4) 590V<br><br>VDS:<br>(1) 350V<br>(2) 328V<br>(3) 358V<br>(4) 350V |
| 2  | Diode <b>Peak Voltage</b>                                  | Q101 Rated<br>: 95A/ 60 V                                        | I/P: High-Line +3V = 267 V<br>AC ON/OFF<br>O/P: (1) Full Load<br>(2) Output Short<br>(3) Dynamic Load 100% Load/<br>Min. Load 50%Duty/120Hz<br>(4) 0%→400% Load.<br>(5). NO LOAD<br>Ta: 25°C                                                                                                                                            | Q101:<br>VDS:<br>(1) 44.0V<br>(2) 43.4V<br>(3) 44.0V<br>(4) 44.6V<br>(5) 44.6V                                   |
| 3  | Input Capacitor Voltage                                    | C5 Rated:<br>: 120 $\mu$ /400 V<br>105 °C                        | 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) 364V<br>(2) 368V<br>(3) 370V                                                                                 |
| 4  | Control IC Voltage Test                                    | PWM IC U1 Rated<br>: 28V<br>10.5V(MIN.)<br><br>O/P IC U100 Rated | I/P: High-Line +3V = 267 V<br>AC ON/OFF<br>O/P(1) FULL LOAD<br>(2) Output Short<br>(3) O.L.P<br>(4) O.V.P.                                                                                                                                                                                                                              | 1. 14.4V<br>2. 19.4V<br>3. 21.8V<br>4. 18.0V<br>5. 14.4V                                                         |

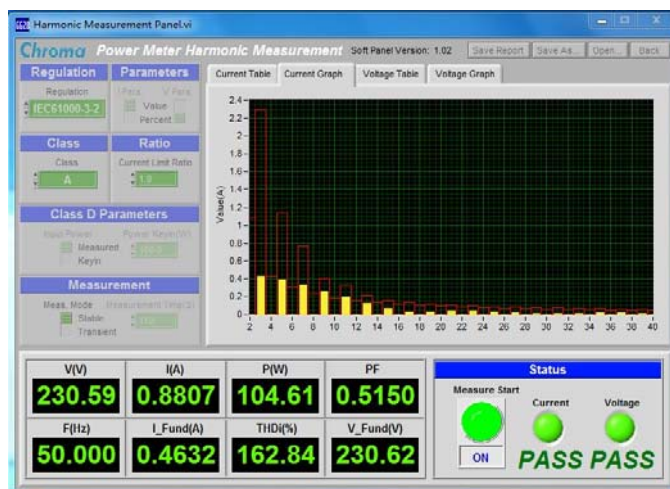
|  |  |                     |                                        |                                                          |
|--|--|---------------------|----------------------------------------|----------------------------------------------------------|
|  |  | .1: 24V<br>8V(MIN.) | (5)NO LOAD VR 下限.LOW<br>LINE<br>Ta:25℃ | 1. 15.2V<br>2. 11.6V<br>3. 16.6V<br>4. 14.8V<br>5. 11.8V |
|--|--|---------------------|----------------------------------------|----------------------------------------------------------|

## SAFETY TEST

| NO | TEST ITEM            | SPECIFICATION                                                       | TEST CONDITION                                                                 | RESULT                                                            |
|----|----------------------|---------------------------------------------------------------------|--------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1  | WITHSTAND VOLTAGE    | I/P-O/P: 4KVAC/min<br>I/P-FG :2KVAC/min<br>O/P-FG:1.25KVAC/min      | I/P-O/P: 4.4 KVAC/min<br>I/P-FG: 2.4 KVAC/min<br>O/P-FG:1.5 KVAC/min<br>Ta:25℃ | I/P-O/P:3.44 mA<br>I/P-FG: 3.91mA<br>O/P-FG: 3.23m A<br>NO DAMAGE |
| 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℃               | 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℃                                                           | 28mΩ                                                              |

## E.M.C TEST

| NO | TEST ITEM | SPECIFICATION          | TEST CONDITION                           | RESULT |
|----|-----------|------------------------|------------------------------------------|--------|
| 1  | HARMONIC  | EN61000-3-2<br>CLASS A | I/P:230VAC/50HZ<br>O/P:80%LOAD<br>Ta:25℃ | PASS   |







# 150W Single Output Switching Power Supply

## LRS-150F series

|   |                                             |                                                       |                                                          |                               |
|---|---------------------------------------------|-------------------------------------------------------|----------------------------------------------------------|-------------------------------|
|   |                                             |                                                       |                                                          |                               |
| 2 | CONDUCTION                                  | EN55022<br>CLASS B                                    | I/P : 230 VAC (50HZ)<br>O/P : FULL/50% LOAD<br>Ta : 25°C | PASS<br>Test by certified Lab |
| 3 | RADIATION                                   | EN55022<br>CLASS B                                    | I/P : 230 VAC (50HZ)<br>O/P : FULL LOAD<br>Ta : 25°C     | PASS<br>Test by certified Lab |
| 4 | 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                    |
| 5 | E.F.T                                       | EN61000-4-4<br>INDUSTRY<br>INPUT : 2KV                | I/P : 230 VAC/50HZ<br>O/P : FULL LOAD<br>Ta : 25°C       | CRITERIA A                    |
| 6 | SURGE                                       | IEC61000-4-5<br>INDUSTRY<br>L-N : 2KV<br>L,N-PE : 4KV | I/P : 230 VAC/50HZ<br>O/P : FULL LOAD<br>Ta : 25°C       | CRITERIA A                    |
| 7 | Test by certified Lab & Test Report Prepare |                                                       |                                                          |                               |

## RELIABILITY TEST

### ENVIRONMENT TEST

| NO | TEST ITEM                                                         | SPECIFICATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | TEST CONDITION                                                    | RESULT        |    |          |                         |                       |   |    |       |       |   |    |       |       |   |    |       |       |   |     |       |       |   |     |       |       |   |      |       |       |   |      |       |       |   |     |       |       |   |       |       |       |    |    |       |        |    |     |       |       |    |    |       |       |
|----|-------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|---------------|----|----------|-------------------------|-----------------------|---|----|-------|-------|---|----|-------|-------|---|----|-------|-------|---|-----|-------|-------|---|-----|-------|-------|---|------|-------|-------|---|------|-------|-------|---|-----|-------|-------|---|-------|-------|-------|----|----|-------|--------|----|-----|-------|-------|----|----|-------|-------|
| 1  | TEMPERATURE RISE TEST                                             | <div>MODEL : LRS-150F-5</div> <div>1. ROOM AMBIENT BURN-IN : 2 HRS</div> <div>I/P : 230VAC O/P : FULL LOAD Ta=27.2℃</div> <div>2. HIGH AMBIENT BURN-IN : 2 HRS</div> <div>I/P : 230VAC O/P : FULL LOAD Ta=40.6℃</div> <table><tr><th>NO</th><th>Position</th><th>ROOM AMBIENT Ta= 27.2 ℃</th><th>HIGH AMBIENT Ta=40.6℃</th></tr><tr><td>1</td><td>D6</td><td>81.6℃</td><td>93.0℃</td></tr><tr><td>2</td><td>C6</td><td>67.0℃</td><td>75.0℃</td></tr><tr><td>3</td><td>Q1</td><td>83.3℃</td><td>95.6℃</td></tr><tr><td>4</td><td>C35</td><td>73.0℃</td><td>83.2℃</td></tr><tr><td>5</td><td>BD1</td><td>78.9℃</td><td>87.5℃</td></tr><tr><td>6</td><td>Q100</td><td>75.1℃</td><td>87.4℃</td></tr><tr><td>7</td><td>C106</td><td>83.7℃</td><td>95.0℃</td></tr><tr><td>8</td><td>LF1</td><td>58.8℃</td><td>69.0℃</td></tr><tr><td>9</td><td>RTH10</td><td>74.2℃</td><td>83.3℃</td></tr><tr><td>10</td><td>R7</td><td>87.2℃</td><td>101.4℃</td></tr><tr><td>11</td><td>R14</td><td>75.7℃</td><td>87.8℃</td></tr><tr><td>12</td><td>T1</td><td>82.8℃</td><td>92.7℃</td></tr></table> |                                                                   |               | NO | Position | ROOM AMBIENT Ta= 27.2 ℃ | HIGH AMBIENT Ta=40.6℃ | 1 | D6 | 81.6℃ | 93.0℃ | 2 | C6 | 67.0℃ | 75.0℃ | 3 | Q1 | 83.3℃ | 95.6℃ | 4 | C35 | 73.0℃ | 83.2℃ | 5 | BD1 | 78.9℃ | 87.5℃ | 6 | Q100 | 75.1℃ | 87.4℃ | 7 | C106 | 83.7℃ | 95.0℃ | 8 | LF1 | 58.8℃ | 69.0℃ | 9 | RTH10 | 74.2℃ | 83.3℃ | 10 | R7 | 87.2℃ | 101.4℃ | 11 | R14 | 75.7℃ | 87.8℃ | 12 | T1 | 82.8℃ | 92.7℃ |
| NO | Position                                                          | ROOM AMBIENT Ta= 27.2 ℃                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | HIGH AMBIENT Ta=40.6℃                                             |               |    |          |                         |                       |   |    |       |       |   |    |       |       |   |    |       |       |   |     |       |       |   |     |       |       |   |      |       |       |   |      |       |       |   |     |       |       |   |       |       |       |    |    |       |        |    |     |       |       |    |    |       |       |
| 1  | D6                                                                | 81.6℃                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 93.0℃                                                             |               |    |          |                         |                       |   |    |       |       |   |    |       |       |   |    |       |       |   |     |       |       |   |     |       |       |   |      |       |       |   |      |       |       |   |     |       |       |   |       |       |       |    |    |       |        |    |     |       |       |    |    |       |       |
| 2  | C6                                                                | 67.0℃                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 75.0℃                                                             |               |    |          |                         |                       |   |    |       |       |   |    |       |       |   |    |       |       |   |     |       |       |   |     |       |       |   |      |       |       |   |      |       |       |   |     |       |       |   |       |       |       |    |    |       |        |    |     |       |       |    |    |       |       |
| 3  | Q1                                                                | 83.3℃                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 95.6℃                                                             |               |    |          |                         |                       |   |    |       |       |   |    |       |       |   |    |       |       |   |     |       |       |   |     |       |       |   |      |       |       |   |      |       |       |   |     |       |       |   |       |       |       |    |    |       |        |    |     |       |       |    |    |       |       |
| 4  | C35                                                               | 73.0℃                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 83.2℃                                                             |               |    |          |                         |                       |   |    |       |       |   |    |       |       |   |    |       |       |   |     |       |       |   |     |       |       |   |      |       |       |   |      |       |       |   |     |       |       |   |       |       |       |    |    |       |        |    |     |       |       |    |    |       |       |
| 5  | BD1                                                               | 78.9℃                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 87.5℃                                                             |               |    |          |                         |                       |   |    |       |       |   |    |       |       |   |    |       |       |   |     |       |       |   |     |       |       |   |      |       |       |   |      |       |       |   |     |       |       |   |       |       |       |    |    |       |        |    |     |       |       |    |    |       |       |
| 6  | Q100                                                              | 75.1℃                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 87.4℃                                                             |               |    |          |                         |                       |   |    |       |       |   |    |       |       |   |    |       |       |   |     |       |       |   |     |       |       |   |      |       |       |   |      |       |       |   |     |       |       |   |       |       |       |    |    |       |        |    |     |       |       |    |    |       |       |
| 7  | C106                                                              | 83.7℃                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 95.0℃                                                             |               |    |          |                         |                       |   |    |       |       |   |    |       |       |   |    |       |       |   |     |       |       |   |     |       |       |   |      |       |       |   |      |       |       |   |     |       |       |   |       |       |       |    |    |       |        |    |     |       |       |    |    |       |       |
| 8  | LF1                                                               | 58.8℃                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 69.0℃                                                             |               |    |          |                         |                       |   |    |       |       |   |    |       |       |   |    |       |       |   |     |       |       |   |     |       |       |   |      |       |       |   |      |       |       |   |     |       |       |   |       |       |       |    |    |       |        |    |     |       |       |    |    |       |       |
| 9  | RTH10                                                             | 74.2℃                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 83.3℃                                                             |               |    |          |                         |                       |   |    |       |       |   |    |       |       |   |    |       |       |   |     |       |       |   |     |       |       |   |      |       |       |   |      |       |       |   |     |       |       |   |       |       |       |    |    |       |        |    |     |       |       |    |    |       |       |
| 10 | R7                                                                | 87.2℃                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 101.4℃                                                            |               |    |          |                         |                       |   |    |       |       |   |    |       |       |   |    |       |       |   |     |       |       |   |     |       |       |   |      |       |       |   |      |       |       |   |     |       |       |   |       |       |       |    |    |       |        |    |     |       |       |    |    |       |       |
| 11 | R14                                                               | 75.7℃                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 87.8℃                                                             |               |    |          |                         |                       |   |    |       |       |   |    |       |       |   |    |       |       |   |     |       |       |   |     |       |       |   |      |       |       |   |      |       |       |   |     |       |       |   |       |       |       |    |    |       |        |    |     |       |       |    |    |       |       |
| 12 | T1                                                                | 82.8℃                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 92.7℃                                                             |               |    |          |                         |                       |   |    |       |       |   |    |       |       |   |    |       |       |   |     |       |       |   |     |       |       |   |      |       |       |   |      |       |       |   |     |       |       |   |       |       |       |    |    |       |        |    |     |       |       |    |    |       |       |
| 2  | OVER LOAD BURN-IN TEST                                            | NO DAMAGE<br>1 HOUR ( MIN )                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | I/P : 230 VAC<br>O/P : 118% 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= -30 ℃              | TEST : OK     |    |          |                         |                       |   |    |       |       |   |    |       |       |   |    |       |       |   |     |       |       |   |     |       |       |   |      |       |       |   |      |       |       |   |     |       |       |   |       |       |       |    |    |       |        |    |     |       |       |    |    |       |       |
| 4  | HIGH HUMIDITY<br>HIGH TEMPERATURE<br>HIGH VOLTAGE<br>TURN ON TEST | AFTER 12 HOURS<br>IN CHAMBER ON<br>CONTROL 40 ℃<br>NO DAMAGE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | I/P : 272 VAC<br>O/P : FULL LOAD<br>Ta= 40 ℃<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%/℃ (0~40℃) |    |          |                         |                       |   |    |       |       |   |    |       |       |   |    |       |       |   |     |       |       |   |     |       |       |   |      |       |       |   |      |       |       |   |     |       |       |   |       |       |       |    |    |       |        |    |     |       |       |    |    |       |       |
| 6  | STORAGE TEMPERATURE TEST                                          | 1. Thermal shock Temperature : -40℃~ +85℃<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            |    |          |                         |                       |   |    |       |       |   |    |       |       |   |    |       |       |   |     |       |       |   |     |       |       |   |      |       |       |   |      |       |       |   |     |       |       |   |       |       |       |    |    |       |        |    |     |       |       |    |    |       |       |



# 150W Single Output Switching Power Supply

## LRS-150F series

|    |                             |                                                                                                                                                                                                                                                                              |                                                               |
|----|-----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------|
| 7  | THERMAL SHOCK TEST          | 1. Thermal shock Temperature : -30℃~ 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)<br>(6) Ta : 25℃                                                                        | TEST : OK                                                     |
| 9  | CAPACITOR<br>LIFE CYCLE     | SUPPOSE C105 IS THE MOST CRITICAL COMPONENT<br>(1) I/P : 230VAC O/P : FULL LOAD Ta= 25 ℃ LIFE TIME<br>(2) I/P : 230VAC O/P : FULL LOAD Ta=40 ℃ LIFE TIME<br>(3) I/P : 230VAC O/P : 75% LOAD Ta= 40 ℃ LIFE TIME<br>(4) I/P : 230VAC O/P : 50% LOAD Ta= 40 ℃ LIFE TIME         | (1) 70605HRS<br>(2) 35768HRS<br>(3) 88914HRS<br>(4) 158118HRS |
| 10 | MTBF                        | MIL-HDBK-217F<br><br>TOTAL FAILURE RATE : 648.6KHRS                                                                                                                                                                                                                          |                                                               |
| 11 | DMTBF/Accelerated Life Test | Demonstration Mean Time Between Failure (Expected Life): Above 30,000 hours @ TA 50℃                                                                                                                                                                                         |                                                               |

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

2007/3/20 A50-S014