



Test Report: RST-10000-36

10000W Single Output Power Supply

DESIGN VERIFY TEST

Output Function Test

Input Function Test

Protection Function Test

Control Function Test

Component Stress Test

SAFETY & E.M.C. TEST

Safety Test

E.M.C. Test

RELIABILITY TEST

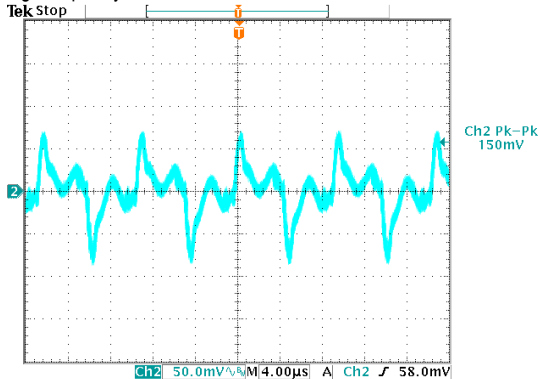
ENVIRONMENT TEST

OUTPUT FUNCTION TEST

| NO | TEST ITEM | SPECIFICATION | TEST CONDITION | RESULT |
|----|-----------------------------|-----------------------|---|--|
| 1 | OUTPUT VOLTAGE ADJUST RANGE | CH1:35 V~43.2 V | I/P:230VAC(Δ) I/P:400VAC(Y) O/P:MIN. LOAD Ta:25°C | 34.11V~44.80V/230VAC(Δ) 34.11V~44.80V/400VAC(Y) |
| 2 | OUTPUT VOLTAGE TOLERANCE | V1: -1%~ 1% (Max) | I/P: 196VAC /305VAC(Δ) I/P:340VAC /530VAC(Y) O/P: FULL LOAD / MIN. LOAD Ta:25°C | V1:0 %~-0.28%(Δ) V1:0 %~-0.28%(Y) |
| 3 | LINE REGULATION | V1: -0.5%~ 0.5% (Max) | I/P: 196VAC~ 305VAC(Δ) I/P: 340VAC~ 530VAC(Y) O/P: FULL LOAD / MIN. LOAD Ta:25°C | V1: 0%~ 0%(Δ) V1: 0%~ 0%(Y) |
| 4 | LOAD REGULATION | V1: -0.5%~ 0.5% (Max) | I/P: 230VAC(Δ) I/P:400VAC(Y) O/P:FULL ~MIN LOAD Ta:25°C | V1:-0.03%~0.25%(Δ) V1:-0.03 %~-0.25 %(Y) |
| 5 | RIPPLE & NOISE | V1: 200mVp-p (Max) | I/P:230VAC(Δ) I/P:400VAC(Y) O/P:FULL LOAD Ta:25°C | V1: 153mVp-p(Δ) V1: 149mVp-p(Y) |

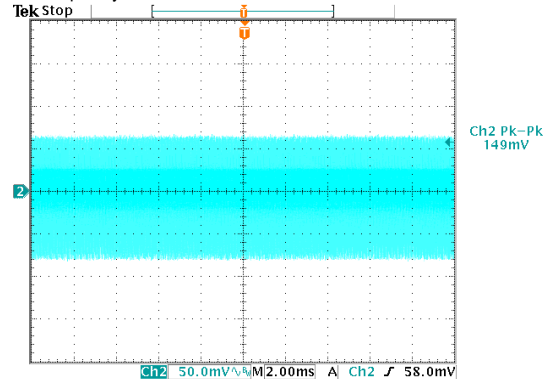
INPUT=400VAC @ FULL LOAD

high frequency :



INPUT=400VAC @ FULL LOAD

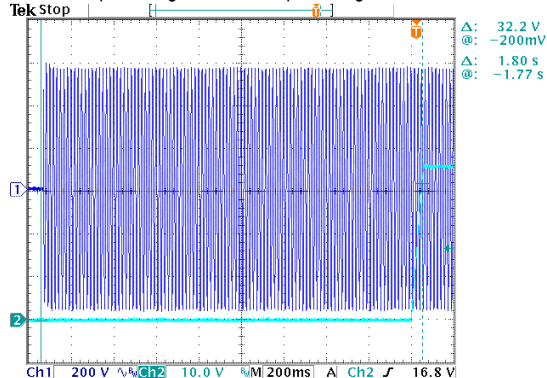
low frequency :



| | | | | |
|---|-------------|--|---|---|
| 6 | SET UP TIME | 230VAC/ 2200ms (Max) 400VAC/ 2200ms (Max) | I/P: 230VAC(Δ) I/P:400VAC(Y) O/P:FULL LOAD Ta:25°C | 230VAC(Δ) /1790ms 400VAC (Y) /1800ms |
|---|-------------|--|---|---|

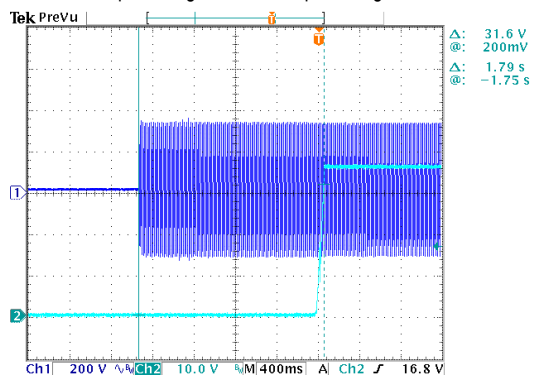
INPUT=400VAC @ FULL LOAD

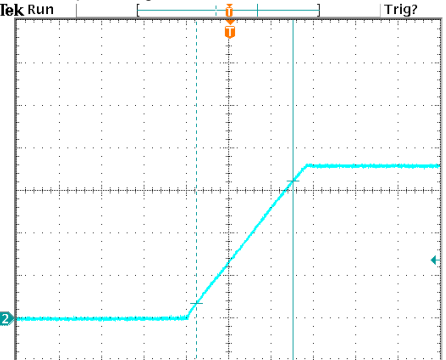
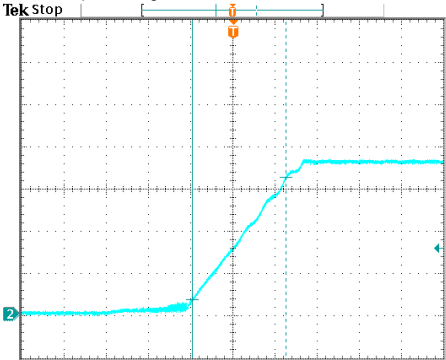
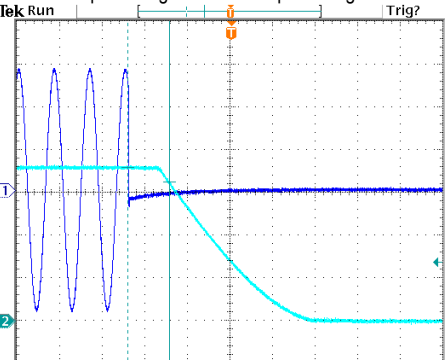
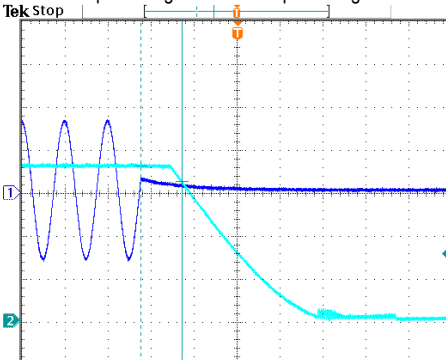
CH1 : AC Input Voltage CH2 : Output Voltage

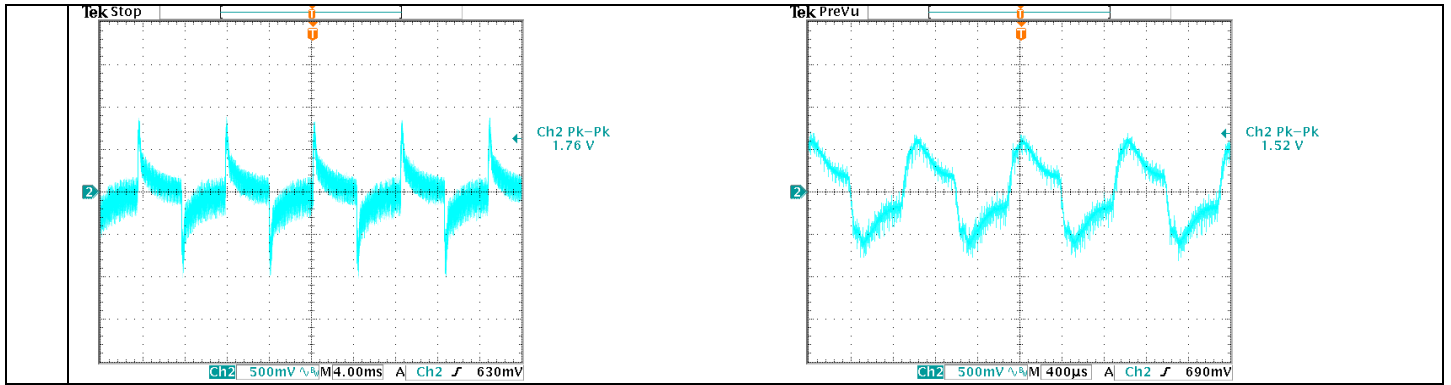


INPUT=230VAC @ FULL LOAD

CH1 : AC Input Voltage CH2 : Output Voltage



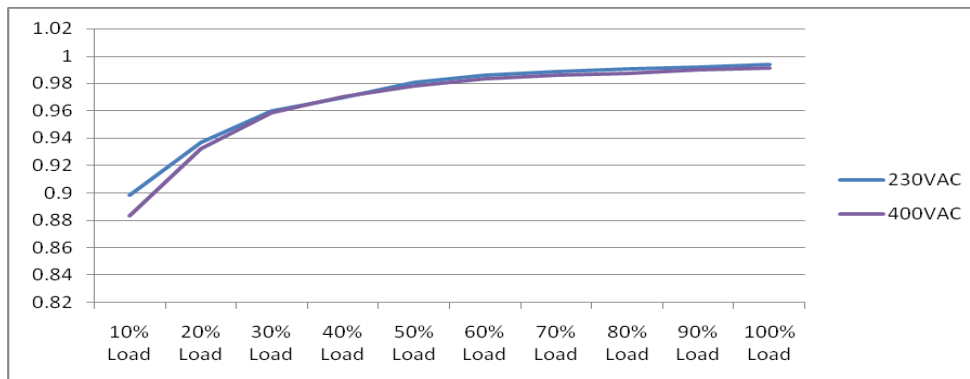
| | | | | |
|--|----------------------|---|---|--|
| 7 | RISE TIME | 230VAC/ 80ms (Max) 400VAC/ 80ms (Max) | I/P: 230VAC(Δ) I/P:400VAC(Y) O/P:FULL LOAD Ta:25°C | 230VAC(Δ)/ 44.4ms 400VAC(Y)/ 45.6ms |
| <p>INPUT=400VAC @ FULL LOAD</p> <p>CH2 : Output Voltage</p>  | | <p>INPUT=230VAC @ FULL LOAD</p> <p>CH2 : Output Voltage</p>  | | |
| 8 | HOLD UP TIME | 230VAC/20ms Typ)75%LOAD 230VAC/14ms (Typ) | I/P: 230VAC(Δ) I/P:230VAC(Δ) O/P:FULL LOAD Ta:25°C | 230VAC(Δ)/ 30ms75%load 230VAC(Δ)/ 19.2ms100%load |
| <p>INPUT=400VAC @ FULL LOAD</p> <p>CH1 : AC Input Voltage CH2 : Output Voltage</p>  | | <p>INPUT=230VAC @ FULL LOAD</p> <p>CH1 : AC Input Voltage CH2 : Output Voltage</p>  | | |
| 9 | OVER/UNDERSHOOT TEST | < ±5% | I/P: 230VAC(Δ) I/P:400VAC(Y) O/P:FULL LOAD Ta:25°C | <1.67%/230VAC(Δ) <1.67 % /400VAC(Y) |
| 10 | DYNAMIC LOAD | V1:3600 mVp-p | I/P: 400VAC(Y) / 230VAC(Δ) O/P: (1) FULL /50% LOAD 50%DUTY / 120HZ (2) FULL /50% LOAD 50%DUTY / 1KHZ Ta:25°C | (1):1760mVp-p@400VAC 1760mVp-p @230VAC (2):1520mVp-p@400VAC 1600mVp-p @230VAC |
| (1).400VAC FULL /50% LOAD 50%DUTY / 120HZ | | (2).400VAC FULL /50% LOAD 50%DUTY / 1KHZ | | |



INPUT FUNCTION TEST

| NO | TEST ITEM | SPECIFICATION | TEST CONDITION | RESULT |
|----|-----------------------|--|--|--|
| 1 | INPUT VOLTAGE RANGE | 3Phase 3 Wire 196VAC~305VAC 3Phase 4 Wire 340VAC~530VAC | I/P: TESTING O/P: FULL LOAD Ta: 25°C | 193.2 V~305V(Δ) 328.7 V~530V(Y) |
| | | | I/P: (1) LOW-LINE-3V=193(Δ) / 337V(Y) HIGH-LINE+5V=305(Δ) / 535V(Y) O/P: FULL/MIN LOAD ON: 30 Sec OFF: 30 Sec 10MIN (2) 230(Δ)/400Vac(Y) ON: 0.5 Sec OFF: 0.5 Sec 20MIN (3) 230(Δ)/400Vac(Y) ON: 3Sec OFF: 3Sec 12HOURS (AC POWER ON/OFF NO DAMAGE) | TEST: OK |
| 2 | INPUT FREQUENCY RANGE | 47HZ ~63 HZ NO DAMAGE | I/P: 196 VAC ~305 VAC(Δ)/340~530VAC(Y) O/P: FULL-MIN LOAD Ta: 25°C | TEST: OK |
| 3 | POWER FACTOR(TYP) | 0.95 / 230VAC(Δ) 0.95 / 400VAC(Y) | I/P: 230 VAC(Δ) I/P: 400VAC(Y) O/P: FULL LOAD Ta: 25°C | PF=0.993/230VAC(Δ) PF= 0.99/400VAC(Y) |

P.F vs LOAD



| | | | | |
|---|------------------|-----|---|---------------------------------------|
| 4 | EFFICIENCY (TYP) | 90% | I/P: 230 VAC(Δ) I/P: 400VAC(Y) O/P: FULL LOAD Ta: 25°C | 90.34%/230VAC (Δ) 90.52%/400VAC(Y) |
|---|------------------|-----|---|---------------------------------------|

EFFICIENCY vs LOAD

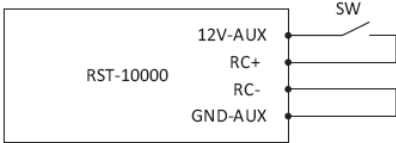
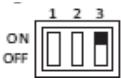
| | | | | |
|---|---|--|---|---|
| | | | | |
| 5 | INPUT CURRENT (Typ) | 230V (3Φ Δ)/ 30A 400V(3Φ Y)/ 18A | I/P: 230 VAC(Δ) I/P:400VAC(Y) O/P:FULL LOAD Ta:25°C | I =28.24 A/ 230VAC(Δ) I =15.67A/ 400VAC(Y) |
| 6 | INRUSH CURRENT(Typ) | 230V/150 A 400V/100 A COLD START | I/P:230VAC(Δ) I/P:400VAC (Y) O/P:FULL LOAD Ta:25°C | I =106A/230 VAC (Δ) I =68.5A/ 400VAC (Y) |
| | <p>INPUT=400VAC @ FULL LOAD</p> <p>CH1 : AC Input Voltage CH2 : Input current</p> | | <p>INPUT=230VAC @ FULL LOAD</p> <p>CH1 : AC Input Voltage CH2 : Input current</p> | |
| 7 | LEAKAGE CURRENT | <7mA /305V (Δ) | I/P:305VAC(Δ) O/P:NO LOAD Ta:25°C | R-FG:2.4mA S-FG:2.4mA T-FG:2.4mA R,S,T, -V(+):2mA R,S,T-V(-): 2mA |


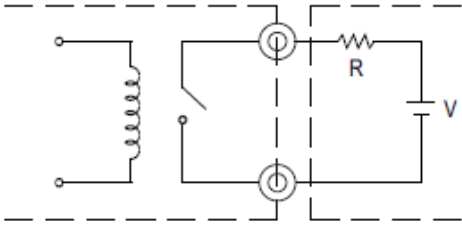
PROTECTION FUNCTION TEST

| NO | TEST ITEM | SPECIFICATION | TEST CONDITION | RESULT |
|----|----------------------|---------------|---|---|
| 1 | OVER LOAD PROTECTION | 100%~112% | I/P: 230VAC(Δ) I/P:400VAC(Y) O/P:TESTING Ta:25°C | 104.5%/230VAC(Δ) 104.8%/400VAC(Y) User adjustable continuous constant current limiting or constant current limiting with delay shutdown after 5 seconds, re-power on to recover |

| | | | | |
|---|-----------------------------|--|---|--|
| 2 | OVER VOLTAGE PROTECTION | 45V~50.4V | I/P: 230VAC(Δ) I/P:400VAC(Y) O/P: MIN LOAD Ta:25°C | 48V/ 230VAC(Δ) 48V/400VAC(Y) Shunt down Re- power ON |
| 3 | OVER TEMPERATURE PROTECTION | Shut down o/p voltage · recovers automatically after temperature goes down | I/P: 230 VAC(Δ) I/P:400VAC(Y) O/P:FULL LOAD | Shut down o/p voltage · recovers automatically after temperature goes down |
| 4 | SHORT PROTECTION | SHORT EVERY OUTPUT 1 HOUR NO DAMAGE | I/P: 305VAC(Δ) I/P:530VAC(Y) O/P: FULL LOAD Ta:25°C | NO DAMAGE User adjustable continuous constant current limiting or constant current limiting with delay shutdown after 5 seconds, re-power on to recover |

CONTROL FUNCTION TEST

| NO | TEST ITEM | SPECIFICATION | TEST CONDITION | RESULT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|-----------------------------|--|--|--|--|---------------|------------------|------------|----------------|---------|------------|--------|--------|------------|--------|--------|------------|--------|--------|------------|---------|--------|------------|---------|---------|-----------|----|------|-------|-------------|--------|-------|-------------|--------|-------|-------------|--------|-------|-------------|--------|-------|--------------|--------|-------|---------------|---------|
| 1 | AUXILIARY POWER (AUX) | 12V@0.1A Only for Remote ON/OFF Control | I/P: 230 VAC(Δ) I/P: 400VAC(Y) O/P:FULL LOAD Ta:25°C | 230 VAC(Δ):11.96V/0.1 A 400VAC(Y): 11.96/0.1VA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | Remote ON/OFF Control | <p>The PSU can be turned ON/OFF by using the "Remote ON/OFF" function.</p> <table border="1"> <tr> <td>Between ON/OFF(CN313 or CN314 pin10) and 12V-AUX(CN315 pin1)</td> <td>Output Status</td> </tr> <tr> <td>SW close (Short)</td> <td>PSU ON</td> </tr> <tr> <td>SW open (Open)</td> <td>PSU OFF</td> </tr> </table>  <p>Fig.1.1</p> | | | Between ON/OFF(CN313 or CN314 pin10) and 12V-AUX(CN315 pin1) | Output Status | SW close (Short) | PSU ON | SW open (Open) | PSU OFF | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Between ON/OFF(CN313 or CN314 pin10) and 12V-AUX(CN315 pin1) | Output Status | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SW close (Short) | PSU ON | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SW open (Open) | PSU OFF | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | REMOTE SENSE | S+ / S- >0.3V | I/P: 400VAC(Y) O/P:FULL LOAD Ta:25°C | > 0.3 V | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | OUTPUT VOLTAGE PROGRAMMABLE | <p>I/P: 400VAC(Y)</p>  <p>DIP SW3 ON CN313 PV+ Connect to external V+ CN313 PV- Connect to external V-</p> <table border="1"> <thead> <tr> <th>EXT.DC(V)</th> <th>Vo</th> <th>LOAD</th> </tr> </thead> <tbody> <tr> <td>DC=1V±0.5%</td> <td>20%±3%</td> <td>0~100%</td> </tr> <tr> <td>DC=2V±0.5%</td> <td>40%±3%</td> <td>0~100%</td> </tr> <tr> <td>DC=3V±0.5%</td> <td>60%±3%</td> <td>0~100%</td> </tr> <tr> <td>DC=4V±0.5%</td> <td>80%±3%</td> <td>0~100%</td> </tr> <tr> <td>DC=5V±0.5%</td> <td>100%±3%</td> <td>0~100%</td> </tr> <tr> <td>DC=6V±0.5%</td> <td>120%±3%</td> <td>0~83.3%</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th>EXT.DC(V)</th> <th>Vo</th> <th>LOAD</th> </tr> </thead> <tbody> <tr> <td>DC=1V</td> <td>20.8%~20.5%</td> <td>0~100%</td> </tr> <tr> <td>DC=2V</td> <td>40.4%~40.1%</td> <td>0~100%</td> </tr> <tr> <td>DC=3V</td> <td>60.3%~60.3%</td> <td>0~100%</td> </tr> <tr> <td>DC=4V</td> <td>80.3%~79.8%</td> <td>0~100%</td> </tr> <tr> <td>DC=5V</td> <td>100.3%~99.7%</td> <td>0~100%</td> </tr> <tr> <td>DC=6V</td> <td>120.3%~119.7%</td> <td>0~83.3%</td> </tr> </tbody> </table> | | | EXT.DC(V) | Vo | LOAD | DC=1V±0.5% | 20%±3% | 0~100% | DC=2V±0.5% | 40%±3% | 0~100% | DC=3V±0.5% | 60%±3% | 0~100% | DC=4V±0.5% | 80%±3% | 0~100% | DC=5V±0.5% | 100%±3% | 0~100% | DC=6V±0.5% | 120%±3% | 0~83.3% | EXT.DC(V) | Vo | LOAD | DC=1V | 20.8%~20.5% | 0~100% | DC=2V | 40.4%~40.1% | 0~100% | DC=3V | 60.3%~60.3% | 0~100% | DC=4V | 80.3%~79.8% | 0~100% | DC=5V | 100.3%~99.7% | 0~100% | DC=6V | 120.3%~119.7% | 0~83.3% |
| EXT.DC(V) | Vo | LOAD | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| DC=1V±0.5% | 20%±3% | 0~100% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| DC=2V±0.5% | 40%±3% | 0~100% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| DC=3V±0.5% | 60%±3% | 0~100% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| DC=4V±0.5% | 80%±3% | 0~100% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| DC=5V±0.5% | 100%±3% | 0~100% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| DC=6V±0.5% | 120%±3% | 0~83.3% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| EXT.DC(V) | Vo | LOAD | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| DC=1V | 20.8%~20.5% | 0~100% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| DC=2V | 40.4%~40.1% | 0~100% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| DC=3V | 60.3%~60.3% | 0~100% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| DC=4V | 80.3%~79.8% | 0~100% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| DC=5V | 100.3%~99.7% | 0~100% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| DC=6V | 120.3%~119.7% | 0~83.3% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| 5 | <p>OUTPUT CURRENT PROGRAMMABLE</p> | <p>I/P: 400VAC(Y)</p>  <p>DIP SW2 ON</p> <p>CN313 PC+ Connect to external V+</p> <p>CN313 PC- Connect to external V-</p> <table border="1" data-bbox="448 454 900 656"> <thead> <tr> <th>EXT.DC(V)</th> <th>Io_limit</th> <th>LOAD</th> </tr> </thead> <tbody> <tr> <td>DC=1V±0.5%</td> <td>20%±10%</td> <td>0~100%</td> </tr> <tr> <td>DC=2V±0.5%</td> <td>40%±10%</td> <td>0~100%</td> </tr> <tr> <td>DC=3V±0.5%</td> <td>60%±10%</td> <td>0~100%</td> </tr> <tr> <td>DC=4V±0.5%</td> <td>80%±10%</td> <td>0~100%</td> </tr> <tr> <td>DC=5V±0.5%</td> <td>100%±10%</td> <td>0~100%</td> </tr> </tbody> </table> | EXT.DC(V) | Io_limit | LOAD | DC=1V±0.5% | 20%±10% | 0~100% | DC=2V±0.5% | 40%±10% | 0~100% | DC=3V±0.5% | 60%±10% | 0~100% | DC=4V±0.5% | 80%±10% | 0~100% | DC=5V±0.5% | 100%±10% | 0~100% | <table border="1" data-bbox="995 376 1359 577"> <thead> <tr> <th>EXT.DC(V)</th> <th>Io_limit</th> <th>LOAD</th> </tr> </thead> <tbody> <tr> <td>DC=1V</td> <td>21.25%</td> <td>0~100%</td> </tr> <tr> <td>DC=2V</td> <td>41.07%</td> <td>0~100%</td> </tr> <tr> <td>DC=3V</td> <td>61.18%</td> <td>0~100%</td> </tr> <tr> <td>DC=4V</td> <td>80.28%</td> <td>0~100%</td> </tr> <tr> <td>DC=5V</td> <td>100.51%</td> <td>0~100%</td> </tr> </tbody> </table> | EXT.DC(V) | Io_limit | LOAD | DC=1V | 21.25% | 0~100% | DC=2V | 41.07% | 0~100% | DC=3V | 61.18% | 0~100% | DC=4V | 80.28% | 0~100% | DC=5V | 100.51% | 0~100% |
|-------------------|--|--|--|---------------|---------------|--|----------------|-----------------------------------|-------------------|-------------|--------|---|----------------|---------------|------------|----------|--------|------------|-------------------|--------|---|-----------|----------|------|-------|--------|--------|-------|--------|--------|-------|--------|--------|-------|--------|--------|-------|---------|--------|
| EXT.DC(V) | Io_limit | LOAD | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| DC=1V±0.5% | 20%±10% | 0~100% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| DC=2V±0.5% | 40%±10% | 0~100% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| DC=3V±0.5% | 60%±10% | 0~100% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| DC=4V±0.5% | 80%±10% | 0~100% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| DC=5V±0.5% | 100%±10% | 0~100% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| EXT.DC(V) | Io_limit | LOAD | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| DC=1V | 21.25% | 0~100% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| DC=2V | 41.07% | 0~100% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| DC=3V | 61.18% | 0~100% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| DC=4V | 80.28% | 0~100% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| DC=5V | 100.51% | 0~100% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | <p>Select OLP mode</p> | <table border="1" data-bbox="603 701 1342 786"> <thead> <tr> <th>SW301</th> <th>PROTECTION</th> </tr> </thead> <tbody> <tr> <td>SW301 PIN1 ON</td> <td>Constant current delay 5sec Vo shutdown repower on</td> </tr> <tr> <td>SW301 PIN1 OFF</td> <td>Constant current</td> </tr> </tbody> </table> | SW301 | PROTECTION | SW301 PIN1 ON | Constant current delay 5sec Vo shutdown repower on | SW301 PIN1 OFF | Constant current | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SW301 | PROTECTION | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SW301 PIN1 ON | Constant current delay 5sec Vo shutdown repower on | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SW301 PIN1 OFF | Constant current | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | <p>Front Panel Indicators</p> | <table border="1" data-bbox="448 819 946 920"> <thead> <tr> <th>LED</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>GREEN(LED1)</td> <td>LED on when output voltage is OK</td> </tr> <tr> <td>RED(LED2)</td> <td>LED on when any protection occurs</td> </tr> </tbody> </table> | LED | Description | GREEN(LED1) | LED on when output voltage is OK | RED(LED2) | LED on when any protection occurs | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| LED | Description | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| GREEN(LED1) | LED on when output voltage is OK | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| RED(LED2) | LED on when any protection occurs | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | <p>FAN LOCK TEST</p> | <p>I/P: 400VAC(Y)</p> <p>O/P: FULL LOAD</p> <p>Ta: 25°C</p> | <p>Shut down Re-power ON</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | <p>AC- FAIL</p> | <p>I/P: 400VAC(Y)</p> <p>O/P: NO LOAD</p> <table border="1" data-bbox="448 1122 940 1211"> <thead> <tr> <th>Test condition</th> <th>Input Voltage</th> <th>STATE</th> </tr> </thead> <tbody> <tr> <td>Low Line</td> <td>316±7Vac(Y)</td> <td>AC Fail</td> </tr> <tr> <td>Low Line recovery</td> <td>332±5Vac(Y)</td> <td>OK</td> </tr> </tbody> </table> <p>Ta: 25°C</p> | Test condition | Input Voltage | STATE | Low Line | 316±7Vac(Y) | AC Fail | Low Line recovery | 332±5Vac(Y) | OK | <table border="1" data-bbox="978 1070 1382 1216"> <thead> <tr> <th>Test condition</th> <th>Input Voltage</th> <th>STATE</th> </tr> </thead> <tbody> <tr> <td>Low Line</td> <td>320.9</td> <td>AC Fail</td> </tr> <tr> <td>Low Line recovery</td> <td>333.9</td> <td>OK</td> </tr> </tbody> </table> | Test condition | Input Voltage | STATE | Low Line | 320.9 | AC Fail | Low Line recovery | 333.9 | OK | | | | | | | | | | | | | | | | | | |
| Test condition | Input Voltage | STATE | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Low Line | 316±7Vac(Y) | AC Fail | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Low Line recovery | 332±5Vac(Y) | OK | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Test condition | Input Voltage | STATE | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Low Line | 320.9 | AC Fail | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Low Line recovery | 333.9 | OK | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | <p>CURRENT SHARING</p> | <p>PSU1-PSU2 < 10%</p> <p>I/P: 400VAC(Y)</p> <p>O/P : 90% /50% LOAD</p> <p>Ta : 25°C</p> | <p>O/P : 100%</p> <p>PSU1 : 282.6A</p> <p>PSU2 : 272.5A</p> <p>O/P : 50%</p> <p>PSU1 : 142.3A</p> <p>PSU2 : 134.4A</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 11 | <p>Alarm Signal Output</p> | <p>There are 4 alarm signals on CN315, and each signal can select two types of output circuit.</p> <p>(1) Relay contact output</p> <p>Normally open contact. "Short" when the alarm arises. Relay contact rating(maximum) is 30V/1A resistive.</p>  <p>(2) Open collector output</p> <p>Normally open contact. "Short" when the alarm arises. Relay contact rating(maximum) is 30V/1A resistive.</p> <p>An external voltage source is required for this function that is shown in Fig 7.2. These signals are isolated from output. The maximum sink current is 10mA and the maximum external voltage is 20V (there is a built-in 24V zener diode in inner circuitry).</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| | <p>TEST CONDITION :</p> <p>I/P: 400VAC(Y) O/P: FULL LOAD Ta: 25°C</p> <p>RESULT:</p> <table border="1"> <thead> <tr> <th>Function</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>DC- OK 1: AC-FAIL 1 FAN -FAIL 1 OTP 1</td> <td>Alarm signal of AC-fail. Normally open contact. "Short" when the PSU input voltage is too low. Relay contact rating(maximum) is 30V/1A resistive.</td> </tr> <tr> <td>DC- OK 2: AC-FAIL 2 FAN -FAIL 2 OTP 2</td> <td>Alarm signal of AC fail. Open collector signal. Low when the PSU input voltage is too low. The maximum sink current is 10mA and the maximum external voltage is 20V.</td> </tr> </tbody> </table> | Function | Description | DC- OK 1: AC-FAIL 1 FAN -FAIL 1 OTP 1 | Alarm signal of AC-fail. Normally open contact. "Short" when the PSU input voltage is too low. Relay contact rating(maximum) is 30V/1A resistive. | DC- OK 2: AC-FAIL 2 FAN -FAIL 2 OTP 2 | Alarm signal of AC fail. Open collector signal. Low when the PSU input voltage is too low. The maximum sink current is 10mA and the maximum external voltage is 20V. | |
|--|---|----------|-------------|--|--|--|---|--|
| Function | Description | | | | | | | |
| DC- OK 1: AC-FAIL 1 FAN -FAIL 1 OTP 1 | Alarm signal of AC-fail. Normally open contact. "Short" when the PSU input voltage is too low. Relay contact rating(maximum) is 30V/1A resistive. | | | | | | | |
| DC- OK 2: AC-FAIL 2 FAN -FAIL 2 OTP 2 | Alarm signal of AC fail. Open collector signal. Low when the PSU input voltage is too low. The maximum sink current is 10mA and the maximum external voltage is 20V. | | | | | | | |

COMPONENT STRESS TEST

| NO | TEST ITEM | SPECIFICATION | TEST CONDITION | RESULT |
|----|--|---|---|--------------------------------|
| 1 | PWM Transistor (D to S) or (C to E) Peak Voltage | Q124 Rated 36 A/500V | I/P:High-Line =533 V(Y) O/P: (1)Full Load input on/off (2)Output Short (3)Dynamic Load Full Load/ Min. Load 90%Duty/1KHz Ta:25°C | (1)462V (2)458V (3)454V |
| 2 | Diode Peak Voltage | D452 Rated 200A/200V - | I/P:High-Line =530V(Y) O/P: (1)Full Load input on/off (2)Output Short (3)Dynamic Load Full Load/ Min. Load 90%Duty/1KHz Ta:25°C | (1)125V (2)2.41V (3)126V |
| 3 | Input Capacitor Voltage | C146 Rated: 470μ /450 V SURGE VOLTAGE :490V | I/P:High-Line=530V(Y) O/P: (1)Full Load input on/off (2) Min load input on /Off (3)Full Load /Min load Change Ta:25°C | (1)462V (2)462V (3)452V |
| 4 | Control IC Voltage Test | U302 Rated 9.8~18.5V | I/P:High-Line =530V(Y) O/P:(1)FULL LOAD (2) Output Short | (1)12.4V (2)12.2V |

| | | | | |
|---|---|-----------------------|--|---------------------------------|
| | | | Ta:25°C | |
| 6 | P.F.C Transistor (D to S) or (C to E) Peak Voltage | Q2 Rated 47A/ 600V | I/P:High-Line =533V(Y) O/P: (1)Full Load input on/off (2)Output Short (3)Dynamic Load Full Load/ Min. Load 90%Duty/1KHz Ta:25°C | (1)544 V (2)546V (3)454 V |

SAFETY & E.M.C. TEST

SAFETY TEST

| NO | TEST ITEM | SPECIFICATION | TEST CONDITION | RESULT |
|----|----------------------|--|--|---|
| 1 | WITHSTAND VOLTAGE | I/P-O/P : 3 KVAC/min I/P-FG : 2KVAC/min O/P-FG : 0.5 KVAC/min | I/P-O/P : 3.6 KVAC/min I/P-FG : 2.4KVAC/min O/P-FG : 0.6 KVAC/min Ta : 25°C | I/P-O/P : 27.78 mA I/P-FG : 23.08 mA O/P-FG : 13.52 mA NO DAMAGE |
| 2 | ISOLATION RESISTANCE | I/P-O/P : 500VDC>100MΩ I/P-FG : 500VDC>100MΩ O/P-FG : 500VDC>100MΩ | I/P-O/P : 500 VDC I/P-FG : 500 VDC O/P-FG : 500 VDC Ta : 25°C /70%RH | I/P-O/P : 609 MΩ I/P-FG : 4.06 GΩ O/P-FG : 7.21 GΩ NO DAMAGE |
| 3 | GROUNDING CONTINUITY | FG(PE) TO CHASSIS OR TRACE < 100 mΩ | 40 A / 2min Ta : 25°C / 70%RH | 6 mΩ |

E.M.C TEST

| NO | TEST ITEM | SPECIFICATION | TEST CONDITION | RESULT |
|----|---|--|---|-----------------------|
| 1 | HARMONIC | EN61000-3-2 CLASS A | I/P: 400VAC(50HZ) (Y) O/P:100%,LOAD Ta:25°C | PASS |
| 2 | CONDUCTION | EN55022 CLASS A | I/P: 400VAC(50HZ) (Y) O/P:FULL/50% LOAD Ta:25°C | Test by certified Lab |
| 3 | RADIATION | EN55022 CLASS A | I/P: 400VAC(50HZ) (Y) O/P:FULL LOAD Ta:25°C | Test by certified Lab |
| 4 | E.S.D | EN61000-4-2 INDUSTRY AIR:8KV / Contact:4KV | I/P: 400VAC(50HZ) (Y) O/P:FULL LOAD Ta:25°C | CRITERIA A |
| 5 | E.F.T | EN61000-4-4 INDUSTRY INPUT: 2KV | I/P: 400VAC(50HZ) (Y) O/P:FULL LOAD Ta:25°C | CRITERIA A |
| 6 | SURGE | IEC61000-4-5 INDUSTRY L-N :2KV L,N-PE:4KV | I/P: 400VAC(50HZ) (Y) O/P:FULL LOAD Ta:25°C | CRITERIA A |
| 7 | Test by certified Lab & Test Report Prepare | | | |



| | | | | | | | | | | | | | | | | | | | | | | | |
|---------------------|-----------------------------|---|---------------------|-----------------|-----------|-----------|-----------------|---------------------|-----------------|-----------|-----------|----------------|---------------------|----------------|-----------|-----------|----------------|---------------------|----------------|-----------|-----------|----------------|--|
| 6 | STORAGE TEMPERATURE TEST | <ol style="list-style-type: none"> 1. Thermal shock Temperature : -45°C~ +90°C 2. Temperature change rate : 25°C / MIN 3. Dwell time low and high temperature : 30 MIN/EACH 4. Total test cycle : 5 CYCLE 5. Input/Output condition : STATIC | OK | | | | | | | | | | | | | | | | | | | | |
| 7 | THERMAL SHOCK TEST | <ol style="list-style-type: none"> 1. Thermal shock Temperature : -35°C~ +55°C 2. Temperature change rate : 25°C / MIN 3. Dwell time low and high temperature : 30 MIN/EACH 4. Total test cycle : 10 CYCLE 5. Input/Output condition : 230VAC(Δ)/Full Load | OK | | | | | | | | | | | | | | | | | | | | |
| 8 | VIBRATION TEST | <p>1 Carton & 1 Set</p> <ol style="list-style-type: none"> (1) Waveform : Sine Wave (2) Frequency : 10~500Hz (3) Sweep Time : 12min/sweep cycle (4) Acceleration : 2G (5) Test Time : 60min in each axis (X.Y.Z) (6) Ta : 25°C | TEST : OK | | | | | | | | | | | | | | | | | | | | |
| 9 | CAPACITOR LIFE CYCLE | <p>SUPPOSE C453 IS THE MOST CRITICAL COMPONENT</p> <table border="0"> <tr> <td>(1) I/P : 400VAC(Y)</td> <td>O/P : FULL LOAD</td> <td>Ta= 25 °C</td> <td>LIFE TIME</td> <td>(1) 1844214 HRS</td> </tr> <tr> <td>(2) I/P : 400VAC(Y)</td> <td>O/P : FULL LOAD</td> <td>Ta= 50 °C</td> <td>LIFE TIME</td> <td>(2) 306284 HRS</td> </tr> <tr> <td>(3) I/P : 400VAC(Y)</td> <td>O/P : 75% LOAD</td> <td>Ta= 50 °C</td> <td>LIFE TIME</td> <td>(3) 384999 HRS</td> </tr> <tr> <td>(4) I/P : 400VAC(Y)</td> <td>O/P : 50% LOAD</td> <td>Ta= 50 °C</td> <td>LIFE TIME</td> <td>(4) 433136 HRS</td> </tr> </table> | (1) I/P : 400VAC(Y) | O/P : FULL LOAD | Ta= 25 °C | LIFE TIME | (1) 1844214 HRS | (2) I/P : 400VAC(Y) | O/P : FULL LOAD | Ta= 50 °C | LIFE TIME | (2) 306284 HRS | (3) I/P : 400VAC(Y) | O/P : 75% LOAD | Ta= 50 °C | LIFE TIME | (3) 384999 HRS | (4) I/P : 400VAC(Y) | O/P : 50% LOAD | Ta= 50 °C | LIFE TIME | (4) 433136 HRS | |
| (1) I/P : 400VAC(Y) | O/P : FULL LOAD | Ta= 25 °C | LIFE TIME | (1) 1844214 HRS | | | | | | | | | | | | | | | | | | | |
| (2) I/P : 400VAC(Y) | O/P : FULL LOAD | Ta= 50 °C | LIFE TIME | (2) 306284 HRS | | | | | | | | | | | | | | | | | | | |
| (3) I/P : 400VAC(Y) | O/P : 75% LOAD | Ta= 50 °C | LIFE TIME | (3) 384999 HRS | | | | | | | | | | | | | | | | | | | |
| (4) I/P : 400VAC(Y) | O/P : 50% LOAD | Ta= 50 °C | LIFE TIME | (4) 433136 HRS | | | | | | | | | | | | | | | | | | | |
| 10 | MTBF | <p>Conducted by Parts Stress Analysis Prediction</p> <p>50K hrs min. Telcordia SR-332 (Bellcore) ; 17K hrs min. MIL-HDBK-217F (25°C)</p> | | | | | | | | | | | | | | | | | | | | | |
| 11 | DMTBF/Accelerated Life Test | <p>Demonstration Mean Time Between Failure (Expected Life): Above 50,000 hours @ TA 50°C</p> | | | | | | | | | | | | | | | | | | | | | |

| SAMPLE | TESTER | REVIEW | APPROVAL |
|----------------|------------|------------|--------------|
| Product sample | DANIEL GAO | SANFORD SU | VINCENT ZENG |

12.10.30 A50-F031