

Quality Engineering Test Report

SERIES: SP-100 100 WATTS SIGLE OUTPUT SWITCHING POWER SUPPLY

| | | | | | |
|----------------------|-------------|---------------|-------------|-------------|-----------|
| SAMPLE: A.SP-100-3.3 | 3.3V / 20A | D.SP-100-12 | 12V /8.5A | G.SP-100-24 | 24V /4.2A |
| B.SP-100-5 | 5V /20A | E.SP-100-13.5 | 13.5V /7.5A | H.SP-100-27 | 27V /3.8A |
| C.SP-100-7.5 | 7.5V /13.5A | F.SP-100-15 | 15V /6.7A | I.SP-100-48 | 48V /2.1A |

| NO | TEST ITEM | TEST CONDITION / SPECIFICATION | RESULT | VERDICT |
|----|--------------------------|--|---|---------|
| 1 | AC INPUT VOLTAGE RANGE | I/P:TESTING SPEC:85~264VAC O/P:FULL LOAD | F : 54V~267VAC | P |
| 2 | LINE REGULATION | I/P:85~264VAC SPEC: O/P:FULL LOAD A: ±0.5% B: ±0.5% C:±0.5% D: ±0.5% E: ±0.5% G:±0.5% H: ±0.5% I: ±0.5% | A: 0.18% ~ 0.18% B: -0.36% ~ 0.36% C: 0% ~ 0% D: 0% ~ 0% E: 0% ~ 0% F: 0% ~ 0% G: 0% ~ 0.02% H: 0% ~ 0% I: -0.01% ~ -0.01% | P |
| 3 | LOAD REGULATION | I/P:230VAC SPEC: O/P:0% LOAD TO FULL LOAD A: ±1% B: ±1% C: ±1% D: ±0.5% E: ±0.5% F: ±0.5% G: ±0.5% H: ±0.5% I: ±0.5% | A: 0.35% ~ 0.17% B: -0.12% ~ 0.12% C: -0.24% ~ 0.16% D: -0.04 % ~ 0% E: 0% ~ 0.042% F: -0.07% ~ 0.07% G: 0% ~ 0.020% H: 0.06% ~ -0.04% I: 0% ~ 0.024% | P |
| 4 | OUTPUT VOLTAGE TOLERANCE | I/P:85~264VAC SPEC: O/P:0% LOAD TO FULL LOAD A: ±2% B: ±2% C: ±2% D: ±2% E: ±2% F: ±2% G: ±1% H: ±1% I: ±1% | A: -1.19% ~ 0% B: 1% ~ 1.3% C: -0.4% ~ 0.07% D: 0% ~ -0.05% E: 0.50% ~ 0.45% F: 0.10% ~ 0.74% G: 0.70% ~ 0.75% H: 0.67% ~ 0.6% I: 0.46% ~ 0.41% | P |
| 5 | RIPPLE & NOISE | I/P:230VAC SPEC: O/P: FULL LOAD A:100mV B:100mV C:100mV D:100mV E:100mV F:100mV G :150mV H:150mV I:250mV | A: 37mV B: 92mV C: 76mV D: 52mV E: 65mV F: 58mV G: 66mV H: 50mV I: 87mV | P |
| 6 | AC INPUT CURRENT | I/P:230VAC SPEC: 0.75A(3.3v:0.06A) O/P:FULL LOAD | F:0.55A | P |
| 7 | MAX. INRUSH CURRENT | I/P:230VAC SPEC: 40A O/P:FULL LOAD | F:14.8A | P |

| NO | TEST ITEM | TEST CONDITION / SPECIFICATION | RESULT | VERDICT |
|----|-------------------------|---|--|---------|
| 8 | O/P VOLTAGE ADJ.RANGE | I/P:230VAC O/P:MIN. LOAD SPEC: +10%~-5% A:3.1V~3.6V B:4.7V~5.5V C:7.12V~8.25V D:11.4V~13.2V E:12.8 V~14.8V F:14.2V~16.5V G:22.8V~26.4V H:25.6V~29.7V I:45.6V~52.8V | A:3.08V~3.8V B:4.39V~5.54V C:6.33V~9.06V D:10.1V~13.6V E:11.55V~14.89V F:12.79V~17.63V G:19.6V~27.4V H:20.15V~30.09V I:40V~54.3V | P |
| 9 | SET UP TIME | I/P:230VAC O/P:FULL LOAD SPEC:600ms | F:56mS | P |
| 10 | HOLD UP TIME | I/P:230VAC O/P:FULL LOAD SPEC:20mS | F:34mS | P |
| 11 | EFFICIENCY | I/P:230VAC O/P: FULL LOAD SPEC: A:70% B:76% C:78% D:80% E:80% F:82% G:84% H:83% I:82 | A: 70.20% B: 78.01% C: 78.76% D: 83.05% E: 83.64% F: 81.37% G: 86.20% H: 87.07% I: 87.13% | P |
| 12 | OVER LOAD PROTECTION | I/P:230VAC O/P:TESTING SPEC:105%~150% | A: 130% B: 112% C: 130% D: 122% E: 118% F: 148% G: 124% H: 128% I: 133% | P |
| 13 | OVER VOLTAGE PROTECTION | I/P:230VAC O/P: TESTING SPEC:110%~135% A3.63~4.45 V B:5.5~6.75V C:8.25~10.12V D:13.2~16.2V E:14.8~18.2V F:16.5~20.2V G:26.4~32.4V H:29.7~36.4V I:52.8~64.8V | A: 4.2V B: 5.79V C: 9.3V D: 14.3V E: 15.8V F: 19.0V G: 29.1V H: 31.8V I: 56.8V | P |
| 14 | GROUND LEAKAGE CURRENT | I/P:240VAC SPEC: L-FG--<2mA N-FG--<2mA | A: L-FG:0.6mA N-FG:0.48mA | P |
| 15 | GROUNDING CONTINUITY | SPEC: FG--CHASSIS<0.1Ohms/2min | A: 52mOhms | P |
| 16 | INSULATION RESISTANCE | SPEC: O/P-FG 500VDC / 100MOhms MIN. I/P-O/P 500VDC / 100MOhms MIN. I/P-FG 500VDC / 100MOhms MIN. | A: O/P-FG >100MOhms I/P-O/P >100MOhms I/P-FG >100MOhms | P |

| NO | TEST ITEM | TEST CONDITION / SPECIFICATION | RESULT | VERDICT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|----|--|--|---|---------|----------|-----|------|-------|--|-----|--------------|--------|--------|--|----|-----------------|--------|--------|--|----|----------------|--------|--------|--|----|-----------------------|--------|--------|--|----|-----------------------|--------|--------|--|-----|-----------|--------|--------|--|-----|----------------------|--------|--------|--|----|-----------|--------|--------|--|----|----------------------|--------|--------|--|-----|------------------|--------|--------|--|----|-----------|--------|--------|---|
| 17 | DIELECTRIC / WITHSTAND VOLTAGE | SPEC : I/P- O/P: 3000VAC/ 60 sec (10mA CUT-OFF) I/P - FG: 1500VAC/ 60 sec (10mA CUT-OFF) O/P - FG: 500VAC/60sec (10mA CUT-OFF) | :F I/P-O/P : 4.00mA I/P-FG : 3.38mA O/P- FG : 3.56mA | P | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 18 | BURN-IN TEST | I/P: 230VAC O/P:FULL LOAD with cooling FAN TA:26.7°C BURN-IN DURATION : 13.5 hrs | B: NON BREAK | P | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 19 | ENVIRONMENT TEST | 1.LOW TEMPERATURE TEST I/P : 230 VAC O/P : 80% LOAD AMBIENT TEMPERATURE : -10.1°C | B : AFTER 2 hrs POWER ON OK | P | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 2.HIGH AMBIENT TEMPERATURE TEST I/P : 230VAC O/P: FULL LOAD TEMPERATURE : 40.3°C with cooling FAN | B : AFTER 2.5hrs NON BREAK | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 3.HIGH HUMIDITY HIGH VOLTAGE ON/OFF TEST I/P : 272VAC O/P : FULL LOAD AMBIENT TEMPERATURE : 25°C AMBIENT HUMIDITY : 95% | I : AFTER14.5 hrs POWER ON/OFF NON BREAK | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 20 | TEMPERATURE RISE TEST Trise OF PARTS | B: I/P : 230VAC AFTER 13 hrs BURN-IN O/P : FULL LOAD TA : 26.2°C | <table border="1"> <thead> <tr> <th></th> <th>POSITION</th> <th>P/N</th> <th>TEMP</th> <th>Trise</th> </tr> </thead> <tbody> <tr> <td></td> <td>BD1</td> <td>BRIDGE DIODE</td> <td>51.5°C</td> <td>25.3°C</td> </tr> <tr> <td></td> <td>Q2</td> <td>MAIN TRANSISTOR</td> <td>60.0°C</td> <td>33.8°C</td> </tr> <tr> <td></td> <td>Q1</td> <td>PFC TRANSISTOR</td> <td>43.9°C</td> <td>17.7°C</td> </tr> <tr> <td></td> <td>T1</td> <td>MAIN TRANSFORMER COIL</td> <td>60.5°C</td> <td>34.3°C</td> </tr> <tr> <td></td> <td>T1</td> <td>MAIN TRANSFORMER CORE</td> <td>65.9°C</td> <td>39.7°C</td> </tr> <tr> <td></td> <td>D19</td> <td>O/P DIODE</td> <td>61.9°C</td> <td>35.7°C</td> </tr> <tr> <td></td> <td>C42</td> <td>O/P FILTER CAPACITOR</td> <td>60.3°C</td> <td>34.1°C</td> </tr> <tr> <td></td> <td>L2</td> <td>O/P CHOCK</td> <td>76.8°C</td> <td>50.6°C</td> </tr> <tr> <td></td> <td>C5</td> <td>I/P FILTER CAPACITOR</td> <td>43.6°C</td> <td>17.4°C</td> </tr> <tr> <td></td> <td>LF1</td> <td>LINE FILTER COIL</td> <td>42.1°C</td> <td>15.9°C</td> </tr> <tr> <td></td> <td>D2</td> <td>PFC DIODE</td> <td>36.9°C</td> <td>10.7°C</td> </tr> </tbody> </table> | | POSITION | P/N | TEMP | Trise | | BD1 | BRIDGE DIODE | 51.5°C | 25.3°C | | Q2 | MAIN TRANSISTOR | 60.0°C | 33.8°C | | Q1 | PFC TRANSISTOR | 43.9°C | 17.7°C | | T1 | MAIN TRANSFORMER COIL | 60.5°C | 34.3°C | | T1 | MAIN TRANSFORMER CORE | 65.9°C | 39.7°C | | D19 | O/P DIODE | 61.9°C | 35.7°C | | C42 | O/P FILTER CAPACITOR | 60.3°C | 34.1°C | | L2 | O/P CHOCK | 76.8°C | 50.6°C | | C5 | I/P FILTER CAPACITOR | 43.6°C | 17.4°C | | LF1 | LINE FILTER COIL | 42.1°C | 15.9°C | | D2 | PFC DIODE | 36.9°C | 10.7°C | P |
| | POSITION | P/N | TEMP | Trise | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | BD1 | BRIDGE DIODE | 51.5°C | 25.3°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Q2 | MAIN TRANSISTOR | 60.0°C | 33.8°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Q1 | PFC TRANSISTOR | 43.9°C | 17.7°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | T1 | MAIN TRANSFORMER COIL | 60.5°C | 34.3°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | T1 | MAIN TRANSFORMER CORE | 65.9°C | 39.7°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | D19 | O/P DIODE | 61.9°C | 35.7°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | C42 | O/P FILTER CAPACITOR | 60.3°C | 34.1°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | L2 | O/P CHOCK | 76.8°C | 50.6°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | C5 | I/P FILTER CAPACITOR | 43.6°C | 17.4°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | LF1 | LINE FILTER COIL | 42.1°C | 15.9°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | D2 | PFC DIODE | 36.9°C | 10.7°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 21 | LIFE CYCLE | SUPPOSE C42 IS THE MOST CRITICAL COMPONENT I/P : 230VAC O/P : FULL LOAD Ta : 25°C Tc42 : 59.1°C Life:143581hrs I/P : 230VAC O/P : FULL LOAD Ta : 40°C Tc42 : 72.2°C Life:57909hrs | | P | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 22 | CRITICAL COMPONENT RECORD (FOR QC INSPECTION REFERENCE ONLY) | B : FUSE :4A/250V GFE/GMA BRIDGE DIODE : D3SB60 4A/800V GL LINE FILTER :TF-479 ET-24 10mH TRANSFOMER :TF-594 EI-33 OUTPUT DIODE :CTB34M 30A/40V ESAD83004 OUTPUT CAPACITOR :N.C.C 2200uF/10V 105°C RJH INPUT CAPACITOR :HITACHI 100uF/400V,85°C HP3/USC P.C.B :SP-100 CEM-3 20Z SS | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| DATE | SAMPLE | TEST RESULT | TEST | APPROVAL |
|----------|--|-------------|----------|----------|
| 19990904 | RD SAMPLE | PASS | H.C.LIOU | Max Lin |
| 19991014 | PRODUCTION SAMPLE 3.3V,5V,7.5V 12V,13.5V,15V 24V,27V,48V | PASS | C.C.CHEN | Max Lin |
| 20000619 | PRODUCTION SAMPLE A006B09 3.3V,7.5V | PASS | VINCENT | Max Lin |
| 20000828 | PRODUCTION SAMPLE A008C04 12V | PASS | VINCENT | Max Lin |
| 20020103 | PRODUCTION SAMPLE A112D23 13.5V | PASS | VINCENT | Max Lin |