



Test Report: GST40A18-P1J

40W AC-DC Reliable Green Industrial Adaptor

■ DESIGN VERIFY TEST

Output Function Test

Input Function Test

Protection Function Test

Component Stress Test

■ SAFETY & E.M.C. TEST

Safety Test

E.M.C. Test

■ RELIABILITY TEST

ENVIRONMENT TEST

■ DESIGN VERIFY TEST

OUTPUT FUNCTION TEST

| NO | TEST ITEM | SPECIFICATION | TEST CONDITION | RESULT | VERDICT |
|----|----------------------------------|--------------------------------|--|--|---------|
| 1 | RIPPLE & NOISE(Max) | V1: 120mVp-p | I/P:230VAC O/P:FULL LOAD Ta:25°C | V1: 35.8mVp-p | P |
| 2 | OUTPUT VOLTAGE(Max) TOLERANCE | V1: -3%~ 3% | I/P: 100VAC /264VAC O/P:FULL/ MIN. LOAD Ta:25°C | V1: -0.24 %~ 0.28 % | P |
| 3 | LINE REGULATION (Max) | V1: -1%~ 1% | I/P: 100VAC~ 264VAC O/P:FULL LOAD Ta:25°C | V1: 0 %~ 0.034 % | P |
| 4 | LOAD REGULATION(Max) | V1: -3%~ 3% | I/P: 230VAC O/P:FULL ~MIN LOAD Ta:25°C | V1: -0.24 %~ 0.28 % | P |
| 5 | SET UP TIME(Max) | 230VAC/1000ms 115VAC/1000ms | I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C | 230VAC/ 558.431 ms 115VAC/ 631.111 ms | P |
| 6 | RISE TIME (Max) | 230VAC/50ms 115VAC/50ms | I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C | 230VAC/ 43.023 ms 115VAC/ 36.048 ms | P |
| 7 | HOLD UP TIME(Typ) | 230VAC/50ms 115VAC/15ms | I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C | 230VAC/ 148.887 ms 115VAC/ 40.653 ms | P |
| 8 | OVER/UNDERSHOOT TEST | < +5% | I/P: 230VAC O/P:FULL LOAD Ta:25°C | < +5% | P |
| 9 | DYNAMIC LOAD | V1: 1800mVp-p | I/P: 230VAC O/P(1)FULL /Min LOAD 90%DUTY / 1KHZ (2) (1)FULL /Min LOAD 90%DUTY / 3KHZ (3)FULL /Min LOAD 90%DUTY / 5KHZ (4)FULL /Min LOAD 50%DUTY / 120HZ Ta:25°C | 202mVp-p 190mVp-p 203mVp-p 632mVp-p | P |

INPUT FUNCTION TEST

| NO | TEST ITEM | SPECIFICATION | TEST CONDITION | RESULT | VERDICT |
|----|-----------|---------------|----------------|--------|---------|
|----|-----------|---------------|----------------|--------|---------|



| | | | | | |
|---|-----------------------|------------------------------------|---|--|---|
| 1 | INPUT VOLTAGE RANGE | 90VAC~264VAC | I/P:TESTING O/P:FULL LOAD Ta:25°C | 64. 243 V~264V | P |
| | | | I/P: (1)LOW-LINE-3V=87 V HIGH-LINE+15%=300 V O/P:FULL/MIN LOAD ON: 30 Sec OFF: 30 Sec 10MIN (2)230Vac ON: 0.5 Sec OFF: 0.5 Sec 20MIN (3)230Vac ON:3Sec OFF:3Sec 12HOURS (POWER ON/OFF NO DAMAGE) | TEST:OK | |
| 2 | INPUT FREQUENCY RANGE | 47HZ ~63 HZ NO DAMAGE | I/P:100 VAC ~264 VAC O/P:FULL~MIN LOAD Ta:25°C | TEST: OK | P |
| 4 | EFFICIENCY(TYP) | 90% | I/P:230 VAC O/P:FULL LOAD Ta:25°C | 90.60% | P |
| 5 | INPUT CURRENT (Typ) | 230V/ 0.5 A 115V/ 1 A | I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C | I = 0.327A/ 230VAC I = 0.630A/ 115VAC | P |
| 6 | INRUSH CURRENT(Typ) | 230V/65A 115V/35A COLD START | I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C | I =42. 726A/ 230VAC I =22. 368A/ 115VAC | P |
| 7 | LEAKAGE CURRENT | < 0.75 mA / 240 VAC | I/P : 240 VAC O/P : Min LOAD Ta : 25°C | L-FG : 0. 376 mA N-FG : 0. 376 mA | P |
| 8 | NO LOAD CONSUMPTION | < 0.075 W | I/P : 115VAC I/P : 230VAC O/P : NO LOAD Ta : 25°C | < 0.0426 W < 0.0426 W | P |

PROTECTION FUNCTION TEST

| NO | TEST ITEM | SPECIFICATION | TEST CONDITION | RESULT | VERDICT |
|----|-------------------------|--|---|---|---------|
| 1 | OVER LOAD PROTECTION | 105%~ 150% | I/P: 230VAC I/P: 115VAC O/P: TESTING Ta: 25°C | 133.78%/ 230VAC 131.98%/115VAC Protection type : Hiccup mode, recovers automatically after fault condition is removed | P |
| 2 | OVER VOLTAGE PROTECTION | CH: 18.9V~24.3V | I/P: 230VAC I/P: 115VAC O/P: MIN LOAD Ta: 25°C | 24.3V/ 230VAC 24.3V/115VAC Protection type : Shut down o/p voltage, re-power on to recover | P |
| 3 | SHORT PROTECTION | SHORT EVERY OUTPUT 1 HOUR NO DAMAGE | I/P: 264VAC O/P: FULL LOAD Ta: 25°C | NO DAMAGE Hiccup Mode | P |

COMPONENT STRESS TEST

| NO | TEST ITEM | SPECIFICATION | TEST CONDITION | RESULT | VERDICT |
|----|---|---|--|---|---------|
| 1 | PWM Transistor (D to S) or (C to E) Peak Voltage | Q1 Rated : 6A/ 800 V | I/P: High-Line +3V =267V AC ON/OFF VDS: O/P: (1) Full Load (2) Output Short (3) Full Load Continue Ta: 25°C | VDS (1) 544V (2) 404V (3) 534V | P |
| 2 | Diode Peak Voltage | Q100 Rated : 20A/ 100 V | I/P: High-Line +3V =267 V AC ON/OFF O/P: (1) Full Load (2) Output Short (3) Dynamic Load 100% Load/ Min. Load 50% Duty/120Hz (4) 0% → 400% Load. Ta: 25°C | Q100: (1) 64.0 V (2) 47.2V (3) 64.6V (4) 65.2V | P |
| 3 | Input Capacitor Voltage | C5 Rated: : 120 μ / 400V 105°C | I/P: High-Line +3V =267 V O/P: (1) Full Load input on/off (2) Min load input on /Off (3) Full Load /Min load Change Ta: 25°C | (1) 356V (2) 356V (3) 358V | P |
| 4 | Control IC Voltage Test | PWM IC U1 Rated : 30V -0.4V(MIN.) | I/P: High-Line +3V =267 V AC ON/OFF O/P: (1) FULL LOAD (2) Output Short (3) O.L.P (4) O.V.P. (5) NO LOAD VR MIN LOW LINE Ta: 25°C | (1) 26.1V (2) 26.0V (3) 25.9V (4) 15.1V (5) 20.2V | P |
| 5 | Clamp Diode Peak Voltage | D1 Rated : 1000V 1A | I/P : High-Line +3V = 267 V AC ON/OFF O/P : (1) Dynamic Load 90% Duty/1KHz (2) Full load continue Ta : 25°C | (1) 508 V (2) 502 V | P |

SAFETY TEST

| NO | TEST ITEM | SPECIFICATION | TEST CONDITION | RESULT | VERDICT |
|----|-----------|---------------|----------------|--------|---------|
|----|-----------|---------------|----------------|--------|---------|

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|---|----------------------|---|---|---|---|
| 1 | WITHSTAND VOLTAGE | I/P-O/P: 3KVAC/min I/P-FG :2KVAC/min O/P-FG:0.5KVAC/min | I/P-O/P: 3.6 KVAC/min I/P-FG: 2.4 KVAC/min O/P-FG:0.6 KVAC/min Ta:25°C | I/P-O/P:1. 375mA I/P-FG:5. 512mA O/P-FG:0. 464mA NO DAMAGE | P |
| 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 | I/P-O/P: 9999MΩ I/P-FG:9999 MΩ O/P-FG: 9999MΩ NO DAMAGE | P |

E.M.C TEST

| NO | TEST ITEM | SPECIFICATION | TEST CONDITION | RESULT | VERDICT |
|----|---|---|--|-------------------------------|---------|
| 1 | HARMONIC | BS EN/EN61000-3-2,GB9254 CLASS A | I/P:230VAC/50HZ O/P:100%OAD Ta:25°C | PASS | P |
| 2 | CONDUCTION | BS EN/EN55032(CISPR32), FCC PART 15 / CISPR22 CAN ICES-3(B)/NMB-3(B),CNS13438,GB17625.1 EAC TP TC 020,MSIP KN32 CLASS B | I/P : 230 VAC (50HZ) O/P : FULL/50% LOAD Ta : 25°C | PASS Test by certified Lab | P |
| 3 | RADIATION | BS EN/EN55032(CISPR32), FCC PART 15 / CISPR22 CAN ICES-3(B)/NMB-3(B),CNS13438,GB17625.1 EAC TP TC 020,MSIP KN32 CLASS B | I/P : 230 VAC (50HZ) O/P : FULL LOAD Ta : 25°C | PASS Test by certified Lab | P |
| 4 | E.S.D | BS EN/EN61000-4-2 LIGHT INDUSTRY AIR : 15KV / Contact : 8KV | I/P : 230 VAC/50HZ O/P : FULL LOAD Ta : 25°C | CRITERIA A | P |
| 5 | E.F.T | BS EN/EN61000-4-4 LIGHT INDUSTRY INPUT : 1KV | I/P : 230 VAC/50HZ O/P : FULL LOAD Ta : 25°C | CRITERIA A | P |
| 6 | SURGE | BS EN/EN61000-4-5 LIGHT INDUSTRY L-N : 1KV L,N-PE : 2KV | I/P : 230 VAC/50HZ O/P : FULL LOAD Ta : 25°C | CRITERIA A | P |
| 7 | Test by certified Lab & Test Report Prepare | | | | |

■ RELIABILITY TEST

ENVIRONMENT TEST

| NO | TEST ITEM | SPECIFICATION | TEST CONDITION | RESULT | VERDICT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|----|---|--|--|-----------------------|----------|-----------------------------|-----------------------------|---|-----|--------|--------|---|-----|--------|--------|---|-----|--------|--------|---|----|--------|--------|---|-----|--------|--------|---|-----|--------|--------|---|----|--------|--------|---|----|--------|--------|---|------|--------|--------|----|----|--------|--------|----|----|--------|--------|----|----|--------|--------|--|---|
| 1 | TEMPERATURE RISE TEST | MODEL : GST40A24 1. ROOM AMBIENT BURN-IN : 1 HRS I/P : 230VAC O/P : FULL LOAD Ta= 17.5 °C 2. HIGH AMBIENT BURN-IN : 1 HRS I/P : 230VAC O/P : FULL LOAD Ta= 47.5 °C | <table border="1"> <thead> <tr> <th>NO</th> <th>Position</th> <th>ROOM AMBIENT Ta= 17.5 °C</th> <th>HIGH AMBIENT Ta= 47.5 °C</th> </tr> </thead> <tbody> <tr><td>1</td><td>LF1</td><td>39.3°C</td><td>70.9°C</td></tr> <tr><td>2</td><td>LF2</td><td>42.3°C</td><td>73.5°C</td></tr> <tr><td>3</td><td>BD1</td><td>47.7°C</td><td>77.5°C</td></tr> <tr><td>4</td><td>C5</td><td>42.3°C</td><td>73.7°C</td></tr> <tr><td>5</td><td>C15</td><td>45.3°C</td><td>77.3°C</td></tr> <tr><td>6</td><td>R22</td><td>42.6°C</td><td>74.0°C</td></tr> <tr><td>7</td><td>T1</td><td>49.1°C</td><td>80.3°C</td></tr> <tr><td>8</td><td>Q1</td><td>42.2°C</td><td>74.7°C</td></tr> <tr><td>9</td><td>C104</td><td>38.9°C</td><td>70.8°C</td></tr> <tr><td>10</td><td>U1</td><td>41.6°C</td><td>72.9°C</td></tr> <tr><td>11</td><td>D1</td><td>57.3°C</td><td>90.9°C</td></tr> <tr><td>12</td><td>R6</td><td>61.0°C</td><td>92.4°C</td></tr> </tbody> </table> | NO | Position | ROOM AMBIENT Ta= 17.5 °C | HIGH AMBIENT Ta= 47.5 °C | 1 | LF1 | 39.3°C | 70.9°C | 2 | LF2 | 42.3°C | 73.5°C | 3 | BD1 | 47.7°C | 77.5°C | 4 | C5 | 42.3°C | 73.7°C | 5 | C15 | 45.3°C | 77.3°C | 6 | R22 | 42.6°C | 74.0°C | 7 | T1 | 49.1°C | 80.3°C | 8 | Q1 | 42.2°C | 74.7°C | 9 | C104 | 38.9°C | 70.8°C | 10 | U1 | 41.6°C | 72.9°C | 11 | D1 | 57.3°C | 90.9°C | 12 | R6 | 61.0°C | 92.4°C | | P |
| NO | Position | ROOM AMBIENT Ta= 17.5 °C | HIGH AMBIENT Ta= 47.5 °C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | LF1 | 39.3°C | 70.9°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | LF2 | 42.3°C | 73.5°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | BD1 | 47.7°C | 77.5°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | C5 | 42.3°C | 73.7°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | C15 | 45.3°C | 77.3°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | R22 | 42.6°C | 74.0°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | T1 | 49.1°C | 80.3°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | Q1 | 42.2°C | 74.7°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | C104 | 38.9°C | 70.8°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | U1 | 41.6°C | 72.9°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 11 | D1 | 57.3°C | 90.9°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12 | R6 | 61.0°C | 92.4°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | OVER LOAD BURN-IN TEST | NO DAMAGE 1 HOUR (MIN) | I/P : 230 VAC O/P : 120 % LOAD Ta : 25°C | TEST : OK | P | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | LOW TEMPERATURE TURN ON TEST | TURN ON AFTER 2 HOUR | I/P : 264VAC/100VAC O/P : 100 % LOAD Ta= -30 °C | TEST : OK | P | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | HIGH HUMIDITY HIGH TEMPERATURE HIGH VOLTAGE TURN ON TEST | AFTER 12 HOURS IN CHAMBER ON CONTROL 50 °C NO DAMAGE | I/P : 272 VAC O/P : FULL LOAD Ta= 50.1 °C HUMIDITY= 95 %R.H | TEST : OK | P | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | TEMPERATURE COEFFICIENT | ± 0.03 %/°C (0~50°C) | I/P : 230 VAC O/P : FULL LOAD | ± 0.004 %/°C (0~50°C) | P | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | STORAGE TEMPERATURE TEST | 1. Thermal shock Temperature : -40°C~ +85°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 | P | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | THERMAL SHOCK TEST | 1. Thermal shock Temperature : -30°C~ +70°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/Full Load AC ON/OFF TEST turn on 58sec ; turn off 2sec | | OK | P | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | VIBRATION TEST | 1 Carton & 1 Set (1) Waveform : Sine Wave (2) Frequency : 10~500Hz (3) Sweep Time : 10min/sweep cycle (4) Acceleration : 2G (5) Test Time : 60min in each axis (X.Y.Z) (6) Ta : 25°C | | TEST : OK | P | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |



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|----|-----------------------------|---|---|---|
| 9 | CAPACITOR LIFE CYCLE | SUPPOSE C104 IS THE MOST CRITICAL COMPONENT (1) I/P : 230VAC O/P : FULL LOAD Ta= 25 °C LIFE TIME (2) I/P : 230VAC O/P : FULL LOAD Ta= 50 °C LIFE TIME (3) I/P : 230VAC O/P : 75% LOAD Ta= 50 °C LIFE TIME (4) I/P : 230VAC O/P : 50% LOAD Ta= 50 °C LIFE TIME | (1) 500068HRS (2) 89027HRS (3) 128547HRS (4) 131216HRS | P |
| 10 | MTBF | 3493.6K hrs min. Telcordia SR-332 (Bellcore) ; 728.2K hrs min. MIL-HDBK-217F (25°C) | | P |
| 11 | DMTBF/Accelerated Life Test | Demonstration Mean Time Between Failure (Expected Life): Above 50,000 hours @ TA 50°C | | P |

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

2007/3/20 A50-S014