



Test Report: GST18B15-P1J

18W AC-DC High Reliability 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) | V1:100 mVp-p | I/P : 230VAC O/P:FULL LOAD Ta:25°C | V1: 64.4 mVp-p | P |
| 2 | OUTPUT VOLTAGE(Max) TOLERANCE | V1: 3%~-3% | I/P: 100VAC~264VAC O/P:FULL~MIN. LOAD Ta:25°C | V1: 0 %~-1.03% | P |
| 3 | LINE REGULATION (Max) | V1: 1%~-1% | I/P: 100VAC~264VAC O/P:FULL LOAD Ta:25°C | V1: 0%~0% | P |
| 4 | LOAD REGULATION(Max) | V1:3%~-3% | I/P: 230VAC O/P:FULL ~MIN LOAD Ta:25°C | V1: -0.52 %~-0.52% | P |
| 5 | SET UP TIME(Max) | 230VAC/1000 ms 115VAC/1500 ms | I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C | 230VAC/652 ms 115VAC / 828ms | P |
| 6 | RISE TIME (Max) | 230VAC/30 ms 115VAC/30 ms | I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C | 230VAC/6 ms 115VAC /9.8 ms | P |
| 7 | HOLD UP TIME(Typ) | 230VAC/50 ms 115VAC/15 ms | I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C | 230VAC/76 ms 115VAC /17.6 ms | P |
| 8 | OVER/UNDERSHOOT TEST | < ±5% | I/P: 230VAC O/P:FULL LOAD Ta:25°C | < ±5% | P |
| 9 | DYNAMIC LOAD | V1: 1500 mVp-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 | 436mVp-p 326mVp-p 342mVp-p 532mVp-p | P |

INPUT FUNCTION TEST

| NO | TEST ITEM | SPECIFICATION | TEST CONDITION | RESULT | VERDICT |
|----|-----------------------|--|--|--|---------|
| 1 | INPUT VOLTAGE RANGE | 100VAC~264VAC | I/P:TESTING O/P:FULL LOAD Ta:25°C | 77 V ~264V | P |
| | | | I/P: (1)LOW-LINE-3V=97V 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 |
| 3 | EFFICIENCY(TYP) | 87% | I/P:230 VAC O/P:FULL LOAD Ta:25°C | 89.59 % | P |
| 4 | INPUT CURRENT (Typ) | 230V/ 0.30 A 115V/ 0.50 A | I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C | I = 0.238A/ 230VAC I = 0.411A/ 115VAC | P |
| 5 | INRUSH CURRENT(Typ) | 230V/ 65 A 115V/ 35 A COLD START | I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C | I = 60.7 A/ 230VAC I = 32.5 A/ 115VAC | P |
| 6 | LEAKAGE CURRENT | < 0.25 mA / 240 VAC | I/P : 240 VAC O/P : Min LOAD Ta : 25°C | L-FG : 0.001 mA N-FG : 0.001 mA | P |
| 7 | NO LOAD CONSUMPTION | < 0.075 W | I/P : 115VAC I/P : 230VAC O/P : NO LOAD Ta : 25°C | < 0.027 W < 0.0342 W | P |

PROTECTION FUNCTION TEST

| NO | TEST ITEM | SPECIFICATION | TEST CONDITION | RESULT | VERDICT |
|----|-------------------------|---|--|---|---------|
| 1 | OVER LOAD PROTECTION | 110 %~ 150 % | I/P: 230VAC I/P: 115VAC O/P: TESTING Ta:25°C | 130.7 %/ 230VAC 128.3 %/115VAC Hiccup mode, recovers automatically after fault condition is removed | P |
| 2 | OVER VOLTAGE PROTECTION | 110 ~ 140% rated output voltage Clamp by zener diode | I/P: 230VAC I/P: 115VAC O/P: MIN LOAD Ta:25°C | 117.3 %/ 230VAC 117.3 %/115VAC Clamp by zener diode | 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, recovers automatically after fault condition is removed | P |

COMPONENT STRESS TEST

| NO | TEST ITEM | SPECIFICATION | TEST CONDITION | RESULT | VERDICT |
|----|--|---------------------------------------|---|---|---------|
| 1 | PWM Transistor (D to S) or (C to E) Peak Voltage | Q 1 Rated 6A/600V | 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) 528V (2) 548V (3) 520V | P |
| 2 | Diode Peak Voltage | D100 Rated : 20A/120V | 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 Ta:25°C | D100 : (1) 114 V (2) 118V (3) 114V | P |
| 3 | Input Capacitor Voltage | C5 Rated: 47u/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) 372 V (2) 356 V (3) 356 V | P |
| 4 | Control IC Voltage Test | PWM IC U1 Rated : 27V 10V(MIN.) | I/P: High-Line +3V =267 V AC ON/OFF O/P: (1) FULL LOAD (2) Output Short (3) O.L.P Ta:25°C | (1) 17.1 V (2) 17.1 V (3) 17.1 V | P |
| 5 | Clamp Diode Peak Voltage | D1 Rated : 2A/800V | 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) 440 V (2) 432 V | P |

SAFETY TEST

| NO | TEST ITEM | SPECIFICATION | TEST CONDITION | RESULT | VERDICT |
|----|----------------------|-------------------------|------------------------------------|------------------------------|---------|
| 1 | WITHSTAND VOLTAGE | I/P-O/P: 4.242 KVDC/min | I/P-O/P: 4.666 KVDC/min Ta:25°C | I/P-O/P:0.002mA NO DAMAGE | P |
| 2 | ISOLATION RESISTANCE | I/P-O/P:500VDC>100MΩ | I/P-O/P: 500 VDC Ta:25°C | I/P-O/P: 9999MΩ NO DAMAGE | P |

E.M.C TEST

| NO | TEST ITEM | SPECIFICATION | TEST CONDITION | RESULT | VERDICT |
|----|---|--|--|-------------------------------|---------|
| 1 | HARMONIC | EN61000-3-2 CLASS A | I/P:230VAC/50HZ O/P:100%LOAD Ta:25°C | PASS | P |
| 2 | CONDUCTION | EN55022 CLASS B | I/P : 230 VAC (50HZ) O/P : FULL/50% LOAD Ta : 25°C | PASS Test by certified Lab | P |
| 3 | RADIATION | EN55022 CLASS B | I/P : 230 VAC (50HZ) O/P : FULL LOAD Ta : 25°C | PASS Test by certified Lab | P |
| 4 | E.S.D | EN61000-4-2 LIGHT INDUSTRY AIR : 8KV / Contact : 4KV | I/P : 230 VAC/50HZ O/P : FULL LOAD Ta : 25°C | CRITERIA A | P |
| 5 | E.F.T | EN61000-4-4 LIGHT INDUSTRY INPUT : 1KV | I/P : 230 VAC/50HZ O/P : FULL LOAD Ta : 25°C | CRITERIA A | P |
| 6 | SURGE | IEC61000-4-5 LIGHT INDUSTRY L-N : 1KV | 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 : GST18B12-P1J 1. ROOM AMBIENT BURN-IN : 1HRS I/P : 230VAC O/P : FULL LOAD Ta=31.0°C 2. HIGH AMBIENT BURN-IN : 1 HRS I/P : 230VAC O/P : FULL LOAD Ta=56.1°C | <table border="1"> <thead> <tr> <th>NO</th> <th>Position</th> <th>ROOM AMBIENT Ta=31.0°C</th> <th>HIGH AMBIENT Ta=56.1°C</th> </tr> </thead> <tbody> <tr><td>1</td><td>C5</td><td>60.9°C</td><td>84.5°C</td></tr> <tr><td>2</td><td>BD1</td><td>66.1°C</td><td>88.2°C</td></tr> <tr><td>3</td><td>T1</td><td>78.4°C</td><td>101.7°C</td></tr> <tr><td>4</td><td>Q1</td><td>90.5°C</td><td>113.7°C</td></tr> <tr><td>5</td><td>C40</td><td>69.0°C</td><td>92.1°C</td></tr> <tr><td>6</td><td>D1</td><td>74.3°C</td><td>97.4°C</td></tr> <tr><td>7</td><td>C105</td><td>65.5°C</td><td>89.2°C</td></tr> <tr><td>8</td><td>D100</td><td>75.6°C</td><td>97.8°C</td></tr> <tr><td>9</td><td>LF1</td><td>61.8°C</td><td>83.2°C</td></tr> <tr><td>10</td><td>TC</td><td>49.9°C</td><td>77.9°C</td></tr> </tbody> </table> | NO | Position | ROOM AMBIENT Ta=31.0°C | HIGH AMBIENT Ta=56.1°C | 1 | C5 | 60.9°C | 84.5°C | 2 | BD1 | 66.1°C | 88.2°C | 3 | T1 | 78.4°C | 101.7°C | 4 | Q1 | 90.5°C | 113.7°C | 5 | C40 | 69.0°C | 92.1°C | 6 | D1 | 74.3°C | 97.4°C | 7 | C105 | 65.5°C | 89.2°C | 8 | D100 | 75.6°C | 97.8°C | 9 | LF1 | 61.8°C | 83.2°C | 10 | TC | 49.9°C | 77.9°C | | P |
| NO | Position | ROOM AMBIENT Ta=31.0°C | HIGH AMBIENT Ta=56.1°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | C5 | 60.9°C | 84.5°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | BD1 | 66.1°C | 88.2°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | T1 | 78.4°C | 101.7°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | Q1 | 90.5°C | 113.7°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | C40 | 69.0°C | 92.1°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | D1 | 74.3°C | 97.4°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | C105 | 65.5°C | 89.2°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | D100 | 75.6°C | 97.8°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | LF1 | 61.8°C | 83.2°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | TC | 49.9°C | 77.9°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | OVER LOAD BURN-IN TEST | NO DAMAGE 1 HOUR (MIN) | I/P : 230 VAC O/P : 132% 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=-35°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°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%/°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 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |



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|----|-----------------------------|---|--|---|
| 8 | VIBRATION TEST | 1 Carton & 1 Set (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 | P |
| 9 | CAPACITOR LIFE CYCLE | SUPPOSE C105 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) 257261HRS (2) 50068HRS (3) 76969HRS (4) 129454HRS | P |
| 10 | MTBF | MIL-HDBK-217F TOTAL FAILURE RATE : 500KHRS | | P |
| 11 | DMTBF/Accelerated Life Test | Demonstration Mean Time Between Failure (Expected Life): Above 30,000 hours @ TA 50°C | | P |

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

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