



Test Report: GST60A05

60W 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: 68.0mVp-p	P
2	OUTPUT VOLTAGE(Max) TOLERANCE	V1: -5%~ 5%	I/P: 100VAC /264VAC O/P:FULL/ MIN. LOAD Ta:25°C	V1: -2.12 %~ 2 %	P
3	LINE REGULATION (Max)	V1: -1%~ 1%	I/P: 100VAC~ 264VAC O/P:FULL LOAD Ta:25°C	V1: 0 %~ 0.123 %	P
4	LOAD REGULATION(Max)	V1: -5%~ 5%	I/P: 230VAC O/P:FULL ~MIN LOAD Ta:25°C	V1: -2.12 %~2 %	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/ 113.260 ms 115VAC/ 226.880 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/10.718 ms 115VAC/10.210 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/ 170.548 ms 115VAC/ 32.758 ms	P
8	OVER/UNDERSHOOT TEST	< ±10%	I/P: 230VAC O/P:FULL LOAD Ta:25°C	< ±10%	P
9	DYNAMIC LOAD	V1: 1000mVp-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	744mVp-p 646mVp-p 644mVp-p 804mVp-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	64.237 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)	85.5%	I/P:230 VAC O/P:FULL LOAD Ta:25°C	86.02%	P
5	INPUT CURRENT (Typ)	230V/ 1 A 115V/ 1.4 A	I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C	I = 0.256A/ 230VAC I = 0.508A/ 115VAC	P
6	INRUSH CURRENT(Typ)	230VAC/65A 115VAC/35A COLD START	I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C	I =42. 929A/ 230VAC I =22. 877A/ 230VAC	P
7	LEAKAGE CURRENT	< 0.75 mA / 240 VAC	I/P : 240 VAC O/P : Min LOAD Ta : 25°C	L-FG : 0.425 mA N-FG : 0.425 mA	P
8	NO LOAD CONSUMPTION	< 0.075 W	I/P : 115VAC I/P : 230VAC O/P : NO LOAD Ta : 25°C	< 0.0411 W < 0.0411 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	120.8%/ 230VAC 125.0%/115VAC Hiccup Mode	P
2	OVER VOLTAGE PROTECTION	CH:5.2V~6.8V	I/P: 230VAC I/P: 115VAC O/P: MIN LOAD Ta:25°C	6.46V/ 230VAC 6.36V/115VAC Shut down Re- power ON	P
3	OVER TEMPERATURE PROTECTION	NO DAMAGE	I/P: 230 VAC O/P: FULL LOAD	O.T.P. Active Shut down o/p volotage , recovers automatically after temperature goes down	P
4	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) 640V (2) 492V (3) 628V	P
2	Diode Peak Voltage	Q100 Rated : 120A/ 40 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) 23.1V (2) 21.5V (3) 23.2V (4) 24.6V	P
3	Input Capacitor Voltage	C5 Rated: : 150 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) 364V (2) 364V (3) 364V	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.	(1) 26.5V (2) V 26.4 (3) 26.4V (4) 15.1V (5) 26.5V	P

			(5)NO LOAD VR MIN LOW LINE Ta:25°C		
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) 580 V (2) 548 V	P

SAFETY TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
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. 421mA I/P-FG:3. 409mA O/P-FG:0. 463m A 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: 9999MΩ O/P-FG:9999 MΩ 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%,75%,50%OAD 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 AIR : 15KV / Contact : 8KV	I/P : 230 VAC/50HZ O/P : FULL LOAD Ta : 25°C	CRITERIA A	P
5	E.F.T	EN61000-4-4 INPUT : 1KV	I/P : 230 VAC/50HZ O/P : FULL LOAD Ta : 25°C	CRITERIA A	P
6	SURGE	EN61000-4-5 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 : GST60A12-P1J 1. ROOM AMBIENT BURN-IN : 1HRS I/P : 230VAC O/P : FULL LOAD Ta=20.4 °C 2. HIGH AMBIENT BURN-IN : 1HRS I/P : 230VAC O/P : FULL LOAD Ta= 41.8°C <table><thead><tr><th>NO</th><th>Position</th><th>ROOM AMBIENT Ta= 20.4 °C</th><th>HIGH AMBIENT Ta= 41.8 °C</th></tr></thead><tbody><tr><td>1</td><td>LF1</td><td>45.9°C</td><td>70.5°C</td></tr><tr><td>2</td><td>LF2</td><td>52.4°C</td><td>80.5°C</td></tr><tr><td>3</td><td>BD1</td><td>58.6°C</td><td>81.5°C</td></tr><tr><td>4</td><td>C5</td><td>49.7°C</td><td>70.4°C</td></tr><tr><td>5</td><td>C15</td><td>53.2°C</td><td>72.9°C</td></tr><tr><td>6</td><td>RTH2</td><td>51.5°C</td><td>71.3°C</td></tr><tr><td>7</td><td>T1</td><td>55.2°C</td><td>73.6°C</td></tr><tr><td>8</td><td>Q100</td><td>57.6°C</td><td>77.4°C</td></tr><tr><td>9</td><td>C103</td><td>52.5°C</td><td>71.6°C</td></tr><tr><td>10</td><td>U1</td><td>48.4°C</td><td>68.7°C</td></tr><tr><td>11</td><td>D5</td><td>62.4°C</td><td>81.8°C</td></tr><tr><td>12</td><td>R5</td><td>65.5°C</td><td>84.1°C</td></tr><tr><td>13</td><td>R22</td><td>51.3°C</td><td>71.9°C</td></tr><tr><td>14</td><td>Q1</td><td>51.3°C</td><td>71.0°C</td></tr><tr><td>15</td><td>CASE</td><td>43.6°C</td><td>62.7°C</td></tr></tbody></table>			NO	Position	ROOM AMBIENT Ta= 20.4 °C	HIGH AMBIENT Ta= 41.8 °C	1	LF1	45.9°C	70.5°C	2	LF2	52.4°C	80.5°C	3	BD1	58.6°C	81.5°C	4	C5	49.7°C	70.4°C	5	C15	53.2°C	72.9°C	6	RTH2	51.5°C	71.3°C	7	T1	55.2°C	73.6°C	8	Q100	57.6°C	77.4°C	9	C103	52.5°C	71.6°C	10	U1	48.4°C	68.7°C	11	D5	62.4°C	81.8°C	12	R5	65.5°C	84.1°C	13	R22	51.3°C	71.9°C	14	Q1	51.3°C	71.0°C	15	CASE	43.6°C	62.7°C	P
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2	OVER LOAD BURN-IN TEST	NO DAMAGE 1 HOUR (MIN)	I/P : 230 VAC O/P : 114 % 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= 50.2°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																																																																



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℃	TEST : OK	P
9	CAPACITOR LIFE CYCLE	SUPPOSE C103 IS THE MOST CRITICAL COMPONENT (1) I/P : 230VAC O/P : FULL LOAD Ta= 25℃ LIFE TIME (2) I/P : 230VAC O/P : FULL LOAD Ta= 50℃ LIFE TIME (3) I/P : 230VAC O/P : 75% LOAD Ta= 50℃ LIFE TIME (4) I/P : 230VAC O/P : 50% LOAD Ta= 50℃ LIFE TIME	(1) 340064HRS (2) 70544.6HRS (3) 119335.9HRS (4) 166529.5HRS	P
10	MTBF	MIL-HDBK-217F TOTAL FAILURE RATE : 709.7 KHRS		P
11	DMTBF/Accelerated Life Test	Demonstration Mean Time Between Failure (Expected Life): Above 30,000 hours @ TA 50℃		P

TEST RESULT	TESTER	REVIEW	APPROVAL
PASS	FRANK	GESG	WANGDZ

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