Test Report: GST40A48-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: 200mVp-p	I/P:230VAC O/P:FULL LOAD Ta:25℃	V1: 73.2mVp-p	P
2	OUTPUT VOLTAGE(Max) TOLERANCE	V1: -2.5%~ 2.5%	I/P: 100VAC /264VAC O/P:FULL/ MIN. LOAD Ta:25℃	V1: -0.025%~ 0.646%	P
3	LINE REGULATION (Max)	V1: -1%~ 1%	I/P: 100VAC~ 264VAC O/P:FULL LOAD Ta:25℃	V1:-0.0125%~0.646%	P
4	LOAD REGULATION(Max)	V1: -2.5%~ 2.5%	I/P: 230VAC O/P:FULL ~MIN LOAD Ta:25℃	V1:-0.025%~0.129%	P
5	SET UP TIME(Max)	230VAC/1000ms 115VAC/1000ms	I/P： 230 VAC I/P： 115 VAC O/P：FULL LOAD Ta：25℃	230VAC/ 568ms 115VAC/ 672ms	P
6	RISE TIME (Max)	230VAC/50ms 115VAC/50ms	I/P： 230 VAC I/P： 115 VAC O/P：FULL LOAD Ta：25℃	230VAC/22.244ms 115VAC/20.571ms	P
7	HOLD UP TIME(Typ)	230VAC/50ms 115VAC/15ms	I/P： 230 VAC I/P： 115 VAC O/P：FULL LOAD Ta：25℃	230VAC/132.272ms 115VAC/28.852ms	P
8	OVER/UNDERSHOOT TEST	< ±5%	I/P: 230VAC O/P:FULL LOAD Ta:25℃	< ±5%	P
9	DYNAMIC LOAD	V1: 4800mVp-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℃	267mVp-p(1) 160mVp-p(2) 157mVp-p(3) 932mVp-p(4)	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℃	63.787V~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℃	TEST: OK	
4	EFFICIENCY(TYP)	92%	I/P:230 VAC O/P:FULL LOAD Ta:25℃	92.22%	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℃	I = 0.350A/ 230VAC I = 0.632A/ 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℃	I =45.093A/ 230VAC I =23.546A/ 115VAC	P
7	LEAKAGE CURRENT	< 0.75 mA / 240 VAC	I/P： 240 VAC O/P：Min LOAD Ta：25℃	L-FG：394.7mA N-FG：394.7mA	N
8	NO LOAD CONSUMPTION	< 0.075 W	I/P：115VAC I/P：230VAC O/P：NO LOAD Ta：25℃	< 0.0676 W < 0.0676 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℃	126.38%/ 230VAC 117.23%/115VAC Protection type : Hiccup mode, recovers automatically after fault condition is removed	P
2	OVER VOLTAGE PROTECTION	CH:50.4V~64.8V	I/P: 230VAC I/P: 115VAC O/P:MIN LOAD Ta:25℃	57.6V/ 230VAC 57.6V/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℃	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 Min. Load 90%Duty/5KHz (3) Full Load Continue Ta:25℃	VDS (1) 578V (2) 424V (3) 565V	P
2	Diode Peak **Voltage**	Q100 Rated : 10A/ 200 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℃	Q100: (1) 177V (2) 128V (3) 177V (4) 178V	P
3	**Input Capacitor Voltage**	C5 Rated: : 120μ/ 400V 105℃	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℃	(1)358V (2)358V (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℃	(1) 26.9V (2) 25.1V (3) 25.2V (4) 15.0V (5) 19.2V	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℃	(1) 512 V (2) 514 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℃	I/P-O/P:0.481mA I/P-FG:3.390mA O/P-FG:1.390m 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℃	I/P-O/P: 9999MΩ I/P-FG: 9999MΩ 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℃	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℃	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℃	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℃	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℃	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℃	CRITERIA A	P
7	Test by certified Lab & Test Report Prepare				

■ RELIABILITY TEST

ENVIRONMENT TEST

<table>
<tr><th>NO</th><th>TEST ITEM</th><th>SPECIFICATION</th><th>TEST CONDITION</th><th>RESULT</th><th>VERDICT</th></tr>
<tr><td>1</td><td>TEMPERATURE RISE TEST</td><td colspan="3">MODEL： GST40A24
1. ROOM AMBIENT BURN-IN：1 HRS
I/P： 230VAC O/P： FULL LOAD Ta= 17.5 ℃
2. HIGH AMBIENT BURN-IN： 1 HRS
I/P： 230VAC O/P： FULL LOAD Ta= 47.5 ℃
<table>
<tr><th>NO</th><th>Position</th><th>ROOM AMBIENT Ta= 17.5 ℃</th><th>HIGH AMBIENT Ta= 47.5 ℃</th></tr>
<tr><td>1</td><td>LF1</td><td>39.3℃</td><td>70.9℃</td></tr>
<tr><td>2</td><td>LF2</td><td>42.3℃</td><td>73.5℃</td></tr>
<tr><td>3</td><td>BD1</td><td>47.7℃</td><td>77.5℃</td></tr>
<tr><td>4</td><td>C5</td><td>42.3℃</td><td>73.7℃</td></tr>
<tr><td>5</td><td>C15</td><td>45.3℃</td><td>77.3℃</td></tr>
<tr><td>6</td><td>R22</td><td>42.6℃</td><td>74.0℃</td></tr>
<tr><td>7</td><td>T1</td><td>49.1℃</td><td>80.3℃</td></tr>
<tr><td>8</td><td>Q1</td><td>42.2℃</td><td>74.7℃</td></tr>
<tr><td>9</td><td>C104</td><td>38.9℃</td><td>70.8℃</td></tr>
<tr><td>10</td><td>U1</td><td>41.6℃</td><td>72.9℃</td></tr>
<tr><td>11</td><td>D1</td><td>57.3℃</td><td>90.9℃</td></tr>
<tr><td>12</td><td>R6</td><td>61.0℃</td><td>92.4℃</td></tr>
</table></td><td>P</td></tr>
<tr><td>2</td><td>OVER LOAD BURN-IN TEST</td><td>NO DAMAGE
1 HOUR (MIN)</td><td>I/P： 230 VAC
O/P： 120 % LOAD
Ta：25℃</td><td>TEST：OK</td><td>P</td></tr>
<tr><td>3</td><td>LOW TEMPERATURE
TURN ON TEST</td><td>TURN ON AFTER 2 HOUR</td><td>I/P： 264VAC/100VAC
O/P： 100 % LOAD
Ta= -30 ℃</td><td>TEST：OK</td><td>P</td></tr>
<tr><td>4</td><td>HIGH HUMIDITY
HIGH TEMPERATURE
HIGH VOLTAGE
TURN ON TEST</td><td>AFTER 12 HOURS
IN CHAMBER ON
CONTROL 50 ℃
NO DAMAGE</td><td>I/P： 272 VAC
O/P：FULL LOAD
Ta= 50.1 ℃
HUMIDITY= 95 %R.H</td><td>TEST：OK</td><td>P</td></tr>
<tr><td>5</td><td>TEMPERATURE
COEFFICIENT</td><td>± 0.03 %/℃(0~50℃)</td><td>I/P： 230 VAC
O/P：FULL LOAD</td><td>± 0.004 %/℃(0~50℃)</td><td>P</td></tr>
<tr><td>6</td><td>STORAGE TEMPERATURE TEST</td><td colspan="2">1. Thermal shock Temperature： -40℃~ +85℃
2. Temperature change rate ：25℃ / MIN
3. Dwell time low and high temperature ： 30 MIN/EACH
4. Total test cycle：5 CYCLE
5. Input/Output condition： STATIC</td><td>OK</td><td>P</td></tr>
<tr><td>7</td><td>THERMAL SHOCK TEST</td><td colspan="2">1. Thermal shock Temperature： -30℃~ +70℃
2. Temperature change rate ：25℃ / 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</td><td>OK</td><td>P</td></tr>
<tr><td>8</td><td>VIBRATION TEST</td><td colspan="2">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℃</td><td>TEST：OK</td><td>P</td></tr>
</table>

9	CAPACITOR LIFE CYCLE	SUPPOSE C104 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) 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℃)		P
11	DMTBF/Accelerated Life Test	Demonstration Mean Time Between Failure (Expected Life): Above 50,000 hours @ TA 50℃		P

TEST RESULT	TESTER	REVIEW	APPROVAL
PASS	FRANK	GESG	WANGDZ

2007/3/20 A50-S014