



Test Report: GST36E24

36W 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: 150 mVp-p	I/P : 230VAC O/P:FULL LOAD Ta:25°C	V1: 41.0mVp-p	P
2	OUTPUT VOLTAGE(Max) TOLERANCE	V1: 2 %~ -2 %	I/P: 100VAC /264VAC O/P:FULL/ MIN. LOAD Ta:25°C	V1: 0.833%~0%	P
3	LINE REGULATION (Max)	V1: 1 %~ -1 %	I/P: 100VAC~ 264VAC O/P:FULL LOAD Ta:25°C	V1:0.04%~ 0%	P
4	LOAD REGULATION(Max)	V1: 2 %~ -2 %	I/P: 230VAC O/P:FULL ~MIN LOAD Ta:25°C	V1: 0.122%~ -0.163%	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/ 670ms 115VAC/1156ms	P
6	RISE TIME (Max)	230VAC/30ms 115VAC/30 ms	I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C	230VAC/ 9.6ms 115VAC/13.2ms	P
7	HOLD UP TIME(Typ)	230VAC/50 ms 115VAC/13 ms	I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C	230VAC/ 64.8ms 115VAC/14.4ms	P
8	OVER/UNDERSHOOT TEST	< $\pm 5\%$	I/P: 230VAC O/P:FULL LOAD Ta:25°C	< $\pm 5\%$	P
9	DYNAMIC LOAD	V1: 2400 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	250mVp-p 142mVp-p 121mVp-p 462mVp-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℃	70V~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℃	TEST: OK	P
3	EFFICIENCY(TYP)	88.5%	I/P:230 VAC I/P:115 VAC O/P:FULL LOAD Ta:25℃	90.31%	P
4	INPUT CURRENT (Typ)	230V/ 0.45 A 115V/ 0.8 A	I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25℃	I =0.33A/ 230VAC I =0.54A/ 115VAC	P
5	INRUSH CURRENT(Typ)	230V/70A 115V/35A COLD START	I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25℃	I =57.1A/230VAC I =28.6A/115VAC	P
6	LEAKAGE CURRENT	< 0.25 mA / 240 VAC	I/P : 240 VAC O/P : Min LOAD Ta : 25℃	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℃	< 0.0344W < 0.0394W	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	133.3%/ 230VAC 130.67%/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	132.08%/ 230VAC 132.08%/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	(1)492V (2)564V (3)478V	P
2	Diode Peak Voltage	D100 Rated 10A/200V	I/P:High-Line +3V =267 V AC ON/OFF O/P: (1)Full Load (2)Output Short (3)Dynamic Load Full Load/ Min. Load 90%Duty/5KHz (4)Dynamic Load 100% Load/ Min. Load 50%Duty/120Hz Ta:25°C	D100 : (1) 186V (2) 178V (3) 184V (4) 184V	P
3	Input Capacitor Voltage	C5 Rated: 56u/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) 392V (2) 360V (3) 360V	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 (4)NO LOAD VR MIN LOW LINE Ta:25°C	(1) 17.0V (2) 17.3V (3) 17.0V (4) 17.0V	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) 430 V (2) 428 V	P
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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:1.99mA 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 : 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 : GST36E12-P1J 1. ROOM AMBIENT BURN-IN : 1HRS I/P : 230VAC O/P : FULL LOAD Ta=30.6℃ 2. HIGH AMBIENT BURN-IN : 1 HRS I/P : 230VAC O/P : FULL LOAD Ta=47.0℃ <table><thead><tr><th>NO</th><th>Position</th><th>ROOM AMBIENT Ta=30.6℃</th><th>HIGH AMBIENT Ta=47.0℃</th></tr></thead><tbody><tr><td>1</td><td>C5</td><td>66.6℃</td><td>80.8℃</td></tr><tr><td>2</td><td>BD1</td><td>72.0℃</td><td>85.9℃</td></tr><tr><td>3</td><td>T1</td><td>79.5℃</td><td>93.6℃</td></tr><tr><td>4</td><td>Q1</td><td>81.9℃</td><td>97.0℃</td></tr><tr><td>5</td><td>C40</td><td>72.7℃</td><td>86.5℃</td></tr><tr><td>6</td><td>D1</td><td>80.9℃</td><td>95.5℃</td></tr><tr><td>7</td><td>C105</td><td>74.9℃</td><td>89.3℃</td></tr><tr><td>8</td><td>D100</td><td>85.5℃</td><td>99.7℃</td></tr><tr><td>9</td><td>LF1</td><td>69.3℃</td><td>82.8℃</td></tr><tr><td>10</td><td>TC</td><td>59.5℃</td><td>75.9℃</td></tr></tbody></table>			NO	Position	ROOM AMBIENT Ta=30.6℃	HIGH AMBIENT Ta=47.0℃	1	C5	66.6℃	80.8℃	2	BD1	72.0℃	85.9℃	3	T1	79.5℃	93.6℃	4	Q1	81.9℃	97.0℃	5	C40	72.7℃	86.5℃	6	D1	80.9℃	95.5℃	7	C105	74.9℃	89.3℃	8	D100	85.5℃	99.7℃	9	LF1	69.3℃	82.8℃	10	TC	59.5℃	75.9℃		P
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2	OVER LOAD BURN-IN TEST	NO DAMAGE 1 HOUR (MIN)	I/P : 230 VAC O/P : 133% LOAD Ta : 25℃	TEST : OK	P																																													
3	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR	I/P : 264VAC/100VAC O/P : 100 % LOAD Ta=-30℃	TEST : OK	P																																													
4	HIGH HUMIDITY HIGH TEMPERATURE HIGH VOLTAGE TURN ON TEST	AFTER 12 HOURS IN CHAMBER ON CONTROL 50℃ NO DAMAGE	I/P : 272 VAC O/P : FULL LOAD Ta=50℃ HUMIDITY= 95 %R.H	TEST : OK	P																																													
5	TEMPERATURE COEFFICIENT	±0.03%/℃ (0~50℃)	I/P : 230 VAC O/P : FULL LOAD	±0%/℃ (0~50℃)	P																																													
6	STORAGE TEMPERATURE TEST	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		OK	P																																													
7	THERMAL SHOCK TEST	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		OK	P																																													

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℃	TEST : OK	P
9	CAPACITOR LIFE CYCLE	SUPPOSE C105 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) 77837HRS (2) 25790HRS (3) 32321HRS (4) 54250HRS	P
10	MTBF	MIL-HDBK-217F TOTAL FAILURE RATE : 692.3KHRS		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

2007/3/20 A50-S014