Test Report: GST36B05-P1J

36W 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: 90mVp-p	I/P : 230VAC O/P:FULL LOAD Ta:25℃	V1: 28.6mVp-p	P
2	OUTPUT VOLTAGE(Max) TOLERANCE	V1: 5 %~ -5 %	I/P: 100VAC~264VAC O/P:FULL~ MIN. LOAD Ta:25℃	V1: 0%~2.94 %	P
3	LINE REGULATION (Max)	V1: 1 %~ -1 %	I/P: 100VAC~ 264VAC O/P:FULL LOAD Ta:25℃	V1: 0%~ 0%	P
4	LOAD REGULATION(Max)	V1: 5 %~ -5 %	I/P: 230VAC O/P:FULL ~MIN LOAD Ta:25℃	V1:1.6 %~ -1.39%	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℃	230VAC/632 ms 115VAC/768ms	P
6	RISE TIME (Max)	230VAC/30ms 115VAC/30 ms	I/P： 230 VAC I/P： 115 VAC O/P：FULL LOAD Ta：25℃	230VAC/3.6 ms 115VAC/4.8ms	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℃	230VAC/ 76.8ms 115VAC/21.6ms	P
8	OVER/UNDERSHOOT TEST	< ±5%	I/P: 230VAC O/P:FULL LOAD Ta:25℃	< ±5%	P
9	DYNAMIC LOAD	V1: 1000 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℃	536mVp-p 444mVp-p 440mVp-p 628mVp-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℃	70 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:P	
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)	82%	I/P:230 VAC O/P:FULL LOAD Ta:25℃	85.86%	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 =0.21A/ 230VAC I =0.36A/ 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℃	<0.0234W <0.0291W	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℃	128.8%/ 230VAC 137.9%/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℃	122%/ 230VAC 122%/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℃	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℃	 (1)568 V (2) 570V (3) 566V	P
2	Diode Peak Voltage	D100 Rated : 45V/ 40A	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℃	D100 : (1) 38.2V (2) 38.2V (3) 39.2V (4) 40.0V	P
3	Input Capacitor Voltage	C5 Rated: 56u/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) 374V (2) 360V (3) 362V	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℃	(1) 20.7V (2) 16.9V (3) 20.9V (4) 17.0V	P

5	Clamp Diode Peak Voltage	D1 Rated: GP20K : 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℃	(1) 452 V (2) 450 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℃	I/P-O/P:0.001mA NO DAMAGE	P
2	ISOLATION RESISTANCE	I/P-O/P:500VDC>100MΩ	I/P-O/P: 500 VDC Ta:25℃	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℃	PASS	P
2	CONDUCTION	EN55022 CLASS B	I/P： 230 VAC (50HZ) O/P：FULL/50% LOAD Ta：25℃	PASS Test by certified Lab	P
3	RADIATION	EN55022 CLASS B	I/P： 230 VAC (50HZ) O/P：FULL LOAD Ta：25℃	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℃	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℃	CRITERIA A	P
6	SURGE	IEC61000-4-5 LIGHT INDUSTRY L-N ：1KV	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： GST36B05-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>
<tr><th>NO</th><th>Position</th><th>ROOM AMBIENT Ta=30.6℃</th><th>HIGH AMBIENT Ta=47.0℃</th></tr>
<tr><td>1</td><td>C5</td><td>61.6℃</td><td>76.0℃</td></tr>
<tr><td>2</td><td>BD1</td><td>61.1℃</td><td>75.5℃</td></tr>
<tr><td>3</td><td>T1</td><td>75.3℃</td><td>89.7℃</td></tr>
<tr><td>4</td><td>Q1</td><td>70.9℃</td><td>85.8℃</td></tr>
<tr><td>5</td><td>C40</td><td>67.9℃</td><td>82.1℃</td></tr>
<tr><td>6</td><td>D1</td><td>70.7℃</td><td>85.3℃</td></tr>
<tr><td>7</td><td>C105</td><td>71.3℃</td><td>85.3℃</td></tr>
<tr><td>8</td><td>D100</td><td>78.5℃</td><td>93.0℃</td></tr>
<tr><td>9</td><td>LF1</td><td>57.0℃</td><td>71.1℃</td></tr>
<tr><td>10</td><td>TC</td><td>61.0℃</td><td>76.5℃</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：134% 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℃
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%/℃(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>
</table>

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) 82448HRS (2) 17203HRS (3) 30187HRS (4) 47716HRS	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 50,000 hours @ TA 50℃		P

TEST RESULT	TESTER	REVIEW	APPROVAL
PASS	FRANK	GESG	WANGDZ

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