Test Report: GST18A05-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)	V1:80 mVp-p	I/P : 230VAC O/P:FULL LOAD Ta:25℃	V1: 14.2mVp-p	P
2	OUTPUT VOLTAGE(Max) TOLERANCE	V1: 5 %~ -5%	I/P: 100VAC~264VAC O/P:FULL~ MIN. LOAD Ta:25℃	V1: -2.71%~0%	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: -1.37 %~1.37%	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/676ms 115VAC / 932ms	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℃	230VAC/4.4 ms 115VAC /7 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℃	230VAC/75.2 ms 115VAC /20.8 ms	P
8	OVER/UNDERSHOOT TEST	< ±5%	I/P: 230VAC O/P:FULL LOAD Ta:25℃	<4.6%	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℃	382mVp-p 362mVp-p 363mVp-p 420mVp-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℃	73V~264V	P
			I/P: (1)LOW-LINE-3V=97 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)	81%	I/P:230 VAC I/P:115 VAC O/P:FULL LOAD Ta:25℃	83.246%	P
4	INPUT CURRENT (Typ)	230V/ 0.30A 115V/ 0.50 A	I/P： 230 VAC I/P： 115 VAC O/P：FULL LOAD Ta：25℃	I =0.22A/ 230VAC I =0.322A/ 115VAC	P
5	INRUSH CURRENT(Typ)	230V/ 65A 115V/35A COLD START	I/P： 230 VAC I/P： 115 VAC O/P：FULL LOAD Ta：25℃	I =60.7A/ 230VAC I =32.5A/ 115VAC	P
6	LEAKAGE CURRENT	< 0.75 mA / 240 VAC	I/P： 240 VAC O/P：Min LOAD Ta：25℃	L-FG：0.013 mA N-FG：0.013 mA	P
7	NO LOAD CONSUMPTION	< 0.075 W	I/P：115VAC I/P：230VAC O/P：NO LOAD Ta：25℃	< 0.0255 W < 0.0313 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℃	132.5%/ 230VAC 138.25%/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℃	125.8%/ 230VAC 125.8%/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) 584V (3) 548V	P
2	Diode Peak **Voltage**	D100 Rated : 30A/45V	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)44.4V (3) 36.6V (4) 43.2V	P
3	**Input Capacitor Voltage**	C5 Rated: 47u/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)384V (2)386V (3)380V	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) 16.7V (2) 17.0V (3) 17.0V (4) 10.9V	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℃	(1) 468 V (2) 472 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-FG: 2.121 KVDC/min	I/P-O/P: 4.666 KVDC/min I/P-FG: 2.545 KVDC/min Ta:25℃	I/P-O/P:1.504mA I/P-FG:1.044mA NO DAMAGE	P
2	ISOLATION RESISTANCE	I/P-O/P:500VDC>100MΩ I/P-FG:500VDC>100MΩ	I/P-O/P: 500 VDC I/P-FG: 500 VDC Ta:25℃	I/P-O/P:9999MΩ I/P-FG: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="2">MODEL： GST18A05-P1J
1. ROOM AMBIENT BURN-IN：1HRS
I/P： 230VAC O/P： FULL LOAD Ta=31.0℃
2. HIGH AMBIENT BURN-IN：1 HRS
I/P： 230VAC O/P： FULL LOAD Ta=56.1℃
<table>
<tr><th>NO</th><th>Position</th><th>ROOM AMBIENT Ta=31.0℃</th><th>HIGH AMBIENT Ta=56.1℃</th></tr>
<tr><td>1</td><td>C5</td><td>58.5℃</td><td>82.7℃</td></tr>
<tr><td>2</td><td>BD1</td><td>64.3℃</td><td>87.1℃</td></tr>
<tr><td>3</td><td>T1</td><td>75.1℃</td><td>98.4℃</td></tr>
<tr><td>4</td><td>Q1</td><td>88.7℃</td><td>111.8℃</td></tr>
<tr><td>5</td><td>C40</td><td>68.5℃</td><td>91.6℃</td></tr>
<tr><td>6</td><td>D1</td><td>71.2℃</td><td>94.7℃</td></tr>
<tr><td>7</td><td>C105</td><td>68.5℃</td><td>92.1℃</td></tr>
<tr><td>8</td><td>D100</td><td>78.9℃</td><td>101.7℃</td></tr>
<tr><td>9</td><td>LF1</td><td>60.1℃</td><td>82.3℃</td></tr>
<tr><td>10</td><td>TC</td><td>47.2℃</td><td>74.9℃</td></tr>
</table></td><td></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：132% 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：12in/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) 210662HRS (2) 41291HRS (3) 68966HRS (4) 109814HRS	P
10	MTBF	MIL-HDBK-217F TOTAL FAILURE RATE：500KHRS		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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