

MODEL : GS90A12-P1M

OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	RIPPLE & NOISE	V1:80 mVp-p (Max)	I/P: 230VAC O/P:FULL LOAD Ta:25°C	V1: 55 mVp-p (Max)	P
2	OUTPUT VOLTAGE TOLERANCE	V1:5%~ -5% (Max)	I/P: 100 VAC / 264 VAC O/P:FULL/ MIN LOAD Ta:25°C	V1: 1.1 %~ -1.1 %	P
3	LINE REGULATION	V1: 1 %~ -1% (Max)	I/P: 100 VAC ~ 264 VAC O/P:FULL LOAD Ta:25°C	V1: 0 %~ 0 %	P
4	LOAD REGULATION	V1: 5 %~ -5% (Max)	I/P: 230 VAC O/P:FULL -MIN LOAD Ta:25°C	V1: 1.1 %~ -1.1 %	P
5	SET UP TIME	230VAC: 1000 ms (Max) 115 VAC: 1000 ms (Max)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25°C	230VAC/ 484 ms 115VAC/ 484 ms	P
6	RISE TIME	230VAC: 20 ms (Max) 115VAC: 20 ms (Max)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25°C	230VAC/ 7 ms 115VAC/ 8 ms	P
7	HOLD UP TIME	230VAC: 20 ms (TYP) 115VAC: 20 ms (TYP)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25°C	230VAC/ 83.2 ms 115VAC/ 35.9 ms	P
8	OVER/UNDERSHOOT TEST	< ±5%	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	TEST: <5 %	P
9	DYNAMIC LOAD	V1: 1200 mVp-p	I/P: 230 VAC O/P:FULL /Min LOAD 90%DUTY/1KHZ Ta:25°C	649 mVp-p	P

### INPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	INPUT VOLTAGE RANGE	90VAC~264 VAC	I/P:TESTING O/P:FULL LOAD Ta:25°C	65 V~264V	P
			I/P: LOW-LINE-3V= 87 V HIGH-LINE+15%=300 V O/P:FULL/MIN LOAD ON: 30 Sec . OFF: 30 Sec 10MIN ( AC POWER ON/OFF NO DAMAGE )	TEST: OK	
2	INPUT FREQUENCY RANGE	47HZ ~63 HZ NO DAMAGE OSC	I/P: 100 VAC ~ 264 VAC O/P:FULL-MIN LOAD Ta:25°C	TEST: OK	P
3	POWER FACTOR	0.91 / 230 VAC(TYP) 0.95 / 115 VAC(TYP)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25°C	PF= 0.915 / 230VAC PF= 0.981 / 115VAC	P
4	EFFICIENCY	88 % (TYP)	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	88.3 %	P
5	INPUT CURRENT	230V/ 1 A (TYP) 115V/ 2 A (TYP)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25°C	I = 0.41 A/ 230 VAC I = 0.79 A/ 115 VAC	P
6	INRUSH CURRENT	230V/ 70 A (TYP) COLD START	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	I = 59 A/ 230 VAC	P
7	LEAKAGE CURRENT	< 1 mA / 240 VAC	I/P: 264 VAC O/P:Min LOAD Ta:25°C	L-FG: 0.32 mA N-FG: 0.32 mA	P
8	NO LOAD CONSUMPTION	< 0.5 W/240VAC	I/P: 240 VAC O/P:NO LOAD Ta:25°C	0.3 W	P

### PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	OVER LOAD PROTECTION	110%~ 150 %	I/P: 230 VAC I/P: 115 VAC O/P:TESTING Ta:25°C	138 %/ 230 VAC 133 %/ 115 VAC Hiccup Mode	P
2	OVER VOLTAGE PROTECTION	CH1: 12.6 V- 16.2 V	I/P: 230 VAC I/P: 115 VAC O/P:MIN LOAD Ta:25°C	14.1 V/ 230 VAC 14.1 V/ 115 VAC Shut down Re- power ON	P
3	OVER TEMPERATURE PROTECTION	SPEC: RTH30>100°C O.T.P. NO DAMAGE	I/P: 230 VAC O/P:FULL LOAD	O.T.P. Active Shunt down Re-power ON	P
4	SHORT PROTECTION	SHORT EVERY OUTPUT 1 HOUR NO DAMAGE	I/P: 264 VAC O/P:FULL LOAD Ta:25°C	NO DAMAGE Hiccup Mode	P

ENVIRONMENT TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	TEMPERATURE RISE TEST	MODEL : GS90A12-P1M 1. ROOM AMBIENT BURN-IN : 2 HRS I/P: 230VAC O/P: FULL LOAD Ta=33°C 2. HIGH AMBIENT BURN-IN : 13HRS I/P: 230VAC O/P: FULL LOAD Ta=46.9°C			P
2	OVER LOAD BURN-IN TEST	NO DAMAGE 1 HOUR ( MIN )	I/P: 230 VAC O/P:136 % LOAD Ta:30.7°C	TEST : OK	
3	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR	I/P:264 VAC O/P:100% LOAD Ta=-5°C	TEST : OK	P
4	HIGH HUMIDITY HIGH TEMPERATURE HIGH VOLTAGE TURN ON TEST	AFTER 12 HOURS IN CHAMBER ON CONTROL 40 °C NO DAMAGE	I/P: 272 VAC O/P:FULL LOAD Ta=40 °C HUMIDITY= 95 %R.H	TEST : OK	P
5	TEMPERATURE COEFFICIENT	±0.03 %(0-50°C)	I/P: 230 VAC O/P:FULL LOAD	± 0.006 %(0-50°C)	P
6	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:1 hour in each axis (X.Y.Z) (6) Ta:25°C		TEST : OK	P

### SAFETY TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	WITHSTAND VOLTAGE	I/P-O/P: 3 KVAC/min I/P-FG: 1.5 KVAC/min O/P-FG: 0.5 KVAC/min	I/P-O/P: 3.6 KVAC/min I/P-FG: 1.8 KVAC/min O/P-FG: 0.6 KVAC/min Ta:25°C	I/P-O/P: 2.657 mA I/P-FG: 1.994 mA O/P-FG: 0.500 mA 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 / 70%RH	I/P-O/P: 30 GΩ I/P-FG: 1.67 GΩ O/P-FG: 6.66 GΩ NO DAMAGE	P
3	APPROVAL	TUV: Certificate NO : S50132045 UL: File NO : E183223			P

### E.M.C TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	HARMONIC	EN61000-3-2 CLASS A CLASS D	I/P: 220VAC/230VAC/240VAC/ 50HZ O/P:100%/75%/50%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 :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				

### M.T.B.F & LIFE CYCLE CALCULATION

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	CAPACITOR LIFE CYCLE	GS90A12-P1M : SUPPOSE C102 IS THE MOST CRITICAL COMPONENT I/P: 230VAC O/P:FULL LOAD Ta=25 °C LIFE TIME=142447 HRS I/P: 230VAC O/P:FULL LOAD Ta=40 °C LIFE TIME=48678 HRS			P
2	MTBF	MIL-HDBK-217F NOTICES2 PARTS COUNT TOTAL FAILURE RATE: 348.7K HRS			P
3	DMTBF/Accelerated Life Test	Demonstration Mean Time Between Failure : Above 20,000 hours @ TA 40°C			P

COMPONENT STRESS TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	Power Transistor ( D to S) or (C to E) Peak Voltage	Q 32Rated SPA07N60C3 7.3A/600V	I/P:High-Line +3V = 267 V O/P: (1)Full Load Turn on (2) Output Short Ta:25°C	(1) 582 V (2) 580 V	P
2	Diode Peak Voltage	Q 101 Rated STP75NF75 80A/75V	I/P:High-Line +3V = 267 V O/P: (1)Full Load Turn on (2)Output Short Ta:25°C	(1) 67.4 V (2) 54.8 V	P
3	Clamp Diode Peak Voltage	D 30 Rated GP20K : 800 V 2 A	I/P:High-Line +3V = 267 V O/P: (1) Dynamic Load 90%Duty/1KHz Ta:25°C	(1) 536 V	P
4	Input Capacitor Voltage	C 5 Rated 120u/400V 105°C KMG	I/P:High-Line +3V = 267 V O/P: (1)Full Load Turn on /Off (2) Min load Turn on /Off (3)Full Load /Min load Change Ta:25°C	(1) 396 V (2) 380 V (3) 396 V	P
5	Control IC Voltage Test	U 2Rated TEA1751T : 38 V	I/P:High-Line +3V = 267 V O/P: (1)Full Load Turn on /Off (2) Min load Turn on /Off (3)Full Load /Min load Change Ta:25°C	(1) 24.42 V (2) 17 V (3) 24.42 V	P

DATE	SAMPLE	TEST RESULT	TESTER	APPROVAL
2008/5/16	RD SAMPLE	PASS	SANFORD SU	VINCENT TSENG
2008/8/7	PRODUCT SAMPLE W0806B60	PASS	SANFORD SU	VINCENT TSENG
2008/9/16	PRODUCT SAMPLE W0808C62	PASS	SANFORD SU	VINCENT TSENG

2003/12/12 A50-F023