

**MODEL : TS-700-112**
**OUTPUT FUNCTION TEST**

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	RATED POWER (TYP)	700W	IP: 12VDC Ta:25°C	700 W	P
2	WAVEFORM	True sine wave (THD<3%)	IP: 12VDC OP: FULL LOAD/NO LOAD Ta:25°C	FULL LOAD: 1.8 % NO LOAD: 0.98 %	P
3	FREQUENCY	60HZ ± 0.1HZ	IP: 12VDC OP: FULL LOAD/NO LOAD Ta:25°C	FULL LOAD: 60.04 HZ NO LOAD: 59.98 HZ	P
4	AC REGULATION (TYP)	3%~3%	IP: 12VDC OP: FULL LOAD/NO LOAD Ta:25°C	0.2% ~ -0.6 %	P
5	SAVING MODE TO NORMAL	≤6S (5W-25W)	IP: 12VDC OP: TESTING Ta:25°C	≥ <u>13</u> W <u>5</u> SEC	P
6	NORMAL TO SAVING MODE	≤6S (5W-15W)	IP: 12VDC OP: TESTING Ta:25°C	< <u>8</u> W <u>5</u> SEC	P
7	MAXIMUM OUTPUT POWER (TYP)	800W/180sec 1050w/10sec 1400W / 30cycle	IP: 12VDC OP:TESTING Ta:25°C	<u>800</u> W <u>180</u> SEC <u>1000</u> W <u>10</u> SEC <u>1294</u> W <u>31</u> cycle Shut down o/p voltage , re-power on to recover	P

**INPUT FUNCTION TEST**

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	DC CURRENT (TYP)	75A	IP: 12VDC OP:FULL LOAD Ta:25°C	67.2A	P
2	NO LOAD DISSIPATION	≤ 6W @ saving mode	IP: 12VDC OP:NO LOAD Ta:25°C	5.3W	P
3	OFF MODE DRAW CURRENT	≤1mA	IP: SW OFF OP:NO LOAD Ta:25°C	0.58mA	P
4	VOLTAGE RANGE (TYP)	10.5VDC~15VDC	IP: TESTING OP:NO LOAD Ta:25°C	10.4VDC~ 14.8 VDC	P
5	EFFICIENCY (TYP)	86%	IP: 13VDC OP: 530W Ta:25°C	89.8%	P

**INPUT PROTECTION FUNCTION TEST**

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	BAT LOW ALARM	11.3VDC $\pm$ 4%	IP: TESTING OP: NO LOAD SW:ON Ta:25°C	11.19V	P
2	BAT LOW SHUT DOWN	10.5VDC $\pm$ 4%	IP: TESTING OP: NO LOAD SW:ON Ta:25°C	10.4V Shut down Recovery	P
3	BAT. RECOVERY VOLTAGE	12VDC-15VDC	IP: TESTING OP: NO LOAD SW:ON Ta:25°C	12.8V	P
4	BAT POLARITY	BY INTERNAL FUSE	IP: 12VDC OP: NO LOAD SW:ON Ta:25°C	OK	P

**OUTPUT PROTECTION FUNCTION TEST**

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	OVER TEMPERATURE	80 °C $\pm$ 5 °C (RTH3) detect on heatsink of power transistor	IP: 12VDC OP: FULL LOAD SW:ON Ta:25°C	O.T.P Active Shut down o/p voltage , re-power on to recover	P
2	OUTPUT SHORT	Shut-off :Shut down o/p voltage , re-power onto recover	IP: 12VDC OP: FULL LOAD SW:ON Ta:25°C	Shut down o/p voltage , re-power on to recover	P
3	OVER LOAD (TYP)	105%-115% LOAD for 180sec 115%-150% LOAD for 10sec	IP: 12VDC OP:TESTING Ta:25°C	<u>800 W 180_SEC</u> <u>1000 W 10SEC</u> Shut down o/p voltage , re-power on to recover	P

**APPLICATION TEST**

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	INDUCTION MOTOR	0.5HP	IP: 12VDC OP:0.5HP SW:ON Ta:25°C	INVERTER TURN ON/OFF :OK INDUCTION MOTOR ON/OFF:OK	P
2	INCANDESCENT LAMPS	700W	IP: 12VDC OP: 700W SW:ON Ta:25°C	INVERTER TURN ON/OFF :OK INDUCTION MOTOR ON/OFF:OK	P
3	ELECTRONIC HOT BLOWERS	700W	IP:12VDC OP: 700W SW:ON Ta:25°C	INVERTER TURN ON/OFF :OK INDUCTION MOTOR ON/OFF:OK	P

**LED CONTROL TEST**

LED IS TREECOLOR LIGHT (●●●)	PANEL
● ● ●	Status Battery Load

Status LIGHT	CONDITION	RESULT
●	Inverter Ok	P
★ flash per second	Saving mode	P

Battery LIGHT	CONDITION	RESULT
●	Vin < 11.1V	<11.47V
●	---	11.5V-11.88V
●	Vin >12.6V	>11.96V

Load LIGHT	CONDITION	RESULT
●	LOAD > 595W	>582W
●	LOAD=385W-525W	369W-571W
●	LOAD < 315W	<361W

VOLTAGE AND SAVING MODE SETTING CODES

★ flash per second. ● Light on. ○ Light off.

	100V (200V)	110V (220V)	115V (230V)	120V (240V)
50Hz	● ○ ○	● ○ ●	● ● ○	● ● ●
RESULT	OK	OK	OK	OK
60Hz	★ ○ ○	★ ○ ●	★ ● ○	★ ● ●
RESULT	OK	OK	OK	OK

Saving Status	LIGHT	RESULT
Enable	★ ★ ●	OK
Disable	★ ★ ○	OK

ERROR CODE LED

Error Code	LIGHT	EXTRAORDINARY	RESULT
001	○ ○ ★	OLP 105±5%~115±5% error code	P
010	○ ★ ○	OLP 115%±5%~ 150±10% error code	P
011	○ ★ ★	OLP 150%±10% error code	P
100	★ ○ ○	OTP error code	P
110	★ ★ ○	INV fault error code (Output short)	P
111	★ ★ ★	Battery Shut Down (Low: No Alarm)	P

## ENVIRONMENT TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT																																																																																																																						
1	TEMPERATURE RISE TEST	MODEL : TS-700-112 1. ROOM AMBIENT BURN-IN : 1.5 HRS I/P: 12 VDC O/P: FULL LOAD Ta=27.1 °C 2. HIGH AMBIENT BURN-IN : 1 HRS I/P: 12 VDC O/P: FULL LOAD Ta=52.9 °C				P																																																																																																																					
		<table border="1"> <thead> <tr> <th>NO</th> <th>Position</th> <th>P/N</th> <th>ROOM AMBIENT Ta=27.1 °C</th> <th>HIGH AMBIENT Ta=52.9 °C</th> </tr> </thead> <tbody> <tr><td>6</td><td>C302</td><td>3300U/16V 105°C KY</td><td>57.2°C</td><td>84.3°C</td></tr> <tr><td>7</td><td>L301</td><td>TF-1750</td><td>93.7°C</td><td>123.4°C</td></tr> <tr><td>8</td><td>C308</td><td>565/250V</td><td>72.3°C</td><td>99.3°C</td></tr> <tr><td>9</td><td>T301</td><td>TF-1753</td><td>78.3°C</td><td>105.5°C</td></tr> <tr><td>10</td><td>D403</td><td>SF20LC30 20A/300V</td><td>55.7°C</td><td>80.8°C</td></tr> <tr><td>11</td><td>C416</td><td>330U/250V 105°C MXG</td><td>48.9°C</td><td>75.5°C</td></tr> <tr><td>12</td><td>L13</td><td>TR-792</td><td>63.3°C</td><td>90.2°C</td></tr> <tr><td>13</td><td>L1</td><td>TR-794</td><td>41.9°C</td><td>69.3°C</td></tr> <tr><td>14</td><td>C7</td><td>7u/250Vac</td><td>33.2°C</td><td>60.1°C</td></tr> <tr><td>15</td><td>Q309</td><td>IRFZ44V 55A/60V</td><td>50.9°C</td><td>80.2°C</td></tr> <tr><td>16</td><td>Q307</td><td>IXT160N075T</td><td>42.6°C</td><td>71.5°C</td></tr> <tr><td>17</td><td>U307</td><td>TL3845P</td><td>60.1°C</td><td>89.3°C</td></tr> <tr><td>18</td><td>C328</td><td>100U/25V 105°C YXG</td><td>41.1°C</td><td>69.1°C</td></tr> <tr><td>19</td><td>D308</td><td>HER203 2A/200V</td><td>50.9°C</td><td>79.9°C</td></tr> <tr><td>20</td><td>Q13</td><td>HGTG12N60A4D 12A/600V</td><td>59.4°C</td><td>86.7°C</td></tr> <tr><td>21</td><td>U501</td><td>PIC18F65J10</td><td>36.0°C</td><td>63.3°C</td></tr> <tr><td>22</td><td>RTH3</td><td>10KΩ 1%</td><td>54.1°C</td><td>80.1°C</td></tr> <tr><td>23</td><td>RG300</td><td>LM317T 1.5A</td><td>35.5°C</td><td>63.9°C</td></tr> <tr><td>24</td><td>Q601</td><td>IRF540N 27A/100V</td><td>41.4°C</td><td>71.2°C</td></tr> <tr><td>25</td><td>RG601</td><td>LM317T 1.5A</td><td>39.4°C</td><td>68.5°C</td></tr> <tr><td>26</td><td>D630</td><td>21DQ10 2A/100V</td><td>39.5°C</td><td>68.0°C</td></tr> <tr><td>27</td><td>INTERNAL TA</td><td>2 cm above C416</td><td>48.4°C</td><td>75.2°C</td></tr> <tr><td>28</td><td>CASE</td><td>Attach CASE</td><td>47.1°C</td><td>73.3°C</td></tr> </tbody> </table>	NO	Position	P/N		ROOM AMBIENT Ta=27.1 °C	HIGH AMBIENT Ta=52.9 °C	6	C302	3300U/16V 105°C KY	57.2°C	84.3°C	7	L301	TF-1750	93.7°C	123.4°C	8	C308	565/250V	72.3°C	99.3°C	9	T301	TF-1753	78.3°C	105.5°C	10	D403	SF20LC30 20A/300V	55.7°C	80.8°C	11	C416	330U/250V 105°C MXG	48.9°C	75.5°C	12	L13	TR-792	63.3°C	90.2°C	13	L1	TR-794	41.9°C	69.3°C	14	C7	7u/250Vac	33.2°C	60.1°C	15	Q309	IRFZ44V 55A/60V	50.9°C	80.2°C	16	Q307	IXT160N075T	42.6°C	71.5°C	17	U307	TL3845P	60.1°C	89.3°C	18	C328	100U/25V 105°C YXG	41.1°C	69.1°C	19	D308	HER203 2A/200V	50.9°C	79.9°C	20	Q13	HGTG12N60A4D 12A/600V	59.4°C	86.7°C	21	U501	PIC18F65J10	36.0°C	63.3°C	22	RTH3	10KΩ 1%	54.1°C	80.1°C	23	RG300	LM317T 1.5A	35.5°C	63.9°C	24	Q601	IRF540N 27A/100V	41.4°C	71.2°C	25	RG601	LM317T 1.5A	39.4°C	68.5°C	26	D630	21DQ10 2A/100V	39.5°C	68.0°C	27	INTERNAL TA	2 cm above C416	48.4°C	75.2°C	28	CASE	Attach CASE	47.1°C	73.3°C
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		2	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR	IP: 12VDC OP: FULL LOAD Ta= -5°C		TEST : OK	P																																																																																																																			
		3	HIGH HUMIDITY HIGH TEMPERATURE HIGH VOLTAGE TURN ON TEST	AFTER 12 HOURS IN CHAMBER ON CONTROL 40°C NO DAMAGE	IP: 14.6VDC OP: FULL LOAD Ta: = 40°C HUMIDITY= 95 %R.H		TEST : OK	P																																																																																																																			
4	VIBRATION TEST	1 Carton & 1 Set (1) Waveform: Sine Wave (3) Sweep Time: 10min/sweep cycle (5) Test Time: 1 hour in each axis (X.Y.Z)	(2) Frequency: 10-500Hz (4) Acceleration: 3G (6) Ta: 25°C	TEST : OK	P																																																																																																																						

### SAFETY TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	WITHSTAND VOLTAGE	BAT I/P-AC O/P: 3 KVAC/min AC O/P-FG: 1.5 KVAC/min	BAT I/P-AC O/P: 3.6 KVAC/min AC O/P-FG: 1.8 KVAC/min Ta:25°C	BAT I/P-AC O/P: 6.10 mA AC O/P-FG: 4.48 mA NO DAMAGE	P
2	ISOLATION RESISTANCE	BAT I/P-AC O/P:500VDC>100MΩ BAT I/P-FG: 500VDC>100MΩ	BAT I/P-AC O/P: 500 VDC BAT I/P-FG: 500 VDC Ta:25°C	BAT I/P-AC O/P: 12.9 GΩ BAT I/P-FG: 20.4 GΩ NO DAMAGE	P
3	GROUNDING CONTINUITY	FG(PE) TO CHASSIS OR TRACE < 100 mΩ	40 A / 2min Ta:25°C	14 mΩ	P
4	APPROVAL	TUV: Certificate NO : UL: File NO :			N

### E.M.C TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	RADIATION	EN 55022 CLASS B	I/P:12 VDC O/P: :FULL/50% LOAD Ta:25°C	PASS	P
2	E.S.D	EN 61000-4-2 LIGHT INDUSTRY AIR:8KV / Contact:4KV	I/P: 12VDC O/P:100 %LOAD Ta:25°C	CRITERIA A	P
3	E.F.T	EN 61000-4-4 LIGHT INDUSTRY INPUT: 1KV	I/P: 12VDC O/P: 100 %LOAD Ta:25°C	CRITERIA A	P
4	SURGE	EN 61000-4-5 LIGHT INDUSTRY L-N :1KV L,N-PE:1KV	I/P: 12 VDC O/P: 100 %LOAD Ta:25°C	CRITERIA A	P
5	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	TS-700-112 : SUPPOSE C302 IS THE MOST CRITICAL COMPONENT I/P: 12VDC O/P:FULL LOAD Ta= 25°C LIFE TIME=274897 HRS I/P: 12VDC O/P:FULL LOAD Ta= 40°C LIFE TIME=88835 HRS			P



## COMPONENT STRESS TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	DC TO DC Power Transistor ( D to S) or (C to E) <b>Peak Voltage</b>	Q 300 Rated IXT160N075T 160A/75V	I/P:14.5 VDC O/P: (1)Full Load Turn On (2) Output Short Ta:25°C	(1) 51 V (2) 40 V	P
2	DCTO DC Diode Peak <b>Voltage</b>	D 400 Rated SF20LC30 20A/300V	I/P:14.5 VC O/P: (1)Full Load Turn On (2) Output Short Ta:25°C	(1) 220 V (2) 214 V	P
3	<b>DC BUS Capacitor Voltage</b>	C415 Rated 330u/250V 105°C	I/P:14.5VDC O/P: (1)Full Load Turn SW On /Off (2) Min load Turn SW On /Off Ta:25°C	(1) 202 V (2) 214 V	P
4	DC TO AC Power Transistor ( D to S) or (C to E) <b>Peak Voltage</b>	Q 11 Rated HGTG12N60A4D 12A/600V	I/P:14.5 VDC O/P: (1)Full Load Turn On (2) Output Short Ta:25°C	(1) 346 V (2) 339 V	P
7	DC TO FAN Power Transistor ( D to S) or (C to E) <b>Peak Voltage</b>	Q 309 Rated IRFZ44V 55A/60V	I/P:14.5VDC O/P: (1)Full Load Turn On (2) Output Short Ta:25°C	(1) 49 V (2) 43 V	P
8	DCTO FAN Diode Peak <b>Voltage</b>	D 450 Rated HER303 3A/200V	I/P:14.5 VDC O/P: (1)Full Load Turn On (2) Output Short Ta:25°C	(1) 72 V (2) 48 V	P
9	FAN TO CPU Power Transistor ( D to S) or (C to E) <b>Peak Voltage</b>	Q601 Rated IRF540N 27A/100V	I/P:14.5 VDC O/P: (1)Full Load Turn On (2) Output Short Ta:25°C	(1) 48 V (2) 31 V	P
10	FAN TO CPU Diode Peak <b>Voltage</b>	D 630 Rated 21DQ10 2A/100V	I/P:14.5 VDC O/P: (1)Full Load Turn On (2) Output Short Ta:25°C	(1) 31 V (2) 26 V	P

DATE	SAMPLE	TEST RESULT	TESTER	APPROVAL
2008/4/29	RD SAMPLE	PASS	SANFORD SU	VINCENT TSENG
2008/8/7	PRODUCT SAMPLE W0804C23	PASS	SANFORD SU	VINCENT TSENG
2008/9/16	PRODUCT SAMPLE W0806C64	PASS	SANFORD SU	VINCENT TSENG

2003/12/12 A50-F023