

MODEL : TS-700-212

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: 1.15 % NO LOAD: 0.7 %	P
3	FREQUENCY	50HZ ± 0.1HZ	IP: 12VDC OP: FULL LOAD/NO LOAD Ta:25°C	FULL LOAD: 49.98 HZ NO LOAD: 50 HZ	P
4	AC REGULATION (TYP)	3%~3%	IP: 12VDC OP: FULL LOAD/NO LOAD Ta:25°C	0.4% - 0.4 %	P
5	SAVING MODE TO NORMAL	≤6S (5W-25W)	IP: 12VDC OP: TESTING Ta:25°C	≥ 10 W 5 SEC	P
6	NORMAL TO SAVING MODE	≤6S (5W-15W)	IP: 12VDC OP: TESTING Ta:25°C	< 9 W 5 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>1367</u> W <u>30</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	66A	P
2	NO LOAD DISSIPATION	≤6W @ saving mode	IP: 12VDC OP:NO LOAD Ta:25°C	5.25W	P
3	OFF MODE DRAW CURRENT	≤1mA	IP: SW OFF OP:NO LOAD Ta:25°C	0.6mA	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)	89%	IP: 13VDC OP: 530W Ta:25°C	92.1%	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	11.2V	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	12.7V	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	75 °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</u> _W <u>180</u> _SEC <u>1000</u> _W <u>10</u> _SEC 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	SWITCHING POWER SUPPLY	RSP-1500-48(Pin=700W)	IP: 12VDC OP: RSP-1500-48 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	<7.48V
●	---	11.5V-11.85V
●	Vin >12.6V	>11.9V

Load LIGHT	CONDITION	RESULT
●	LOAD > 595W	>585W
●	LOAD=385W-525W	376W-580W
●	LOAD < 315W	<375W

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-700-212 1. ROOM AMBIENT BURN-IN : 14 HRS I/P: 12 VDC O/P: FULL LOAD Ta=27.9 °C 2. HIGH AMBIENT BURN-IN : 2 HRS I/P: 12 VDC O/P: FULL LOAD Ta=48.2 °C			P																																																																																																																								
		<table border="1"><thead><tr><th>NO</th><th>Position</th><th>P/N</th><th>ROOM AMBIENT Ta= 27.9 °C</th><th>HIGH AMBIENT Ta= 48.2°C</th></tr></thead><tbody><tr><td>6</td><td>C301</td><td>3300U/16V 105°C KY</td><td>54.5°C</td><td>68.5°C</td></tr><tr><td>7</td><td>L301</td><td>TF-1750</td><td>107.4°C</td><td>118.5°C</td></tr><tr><td>8</td><td>C308</td><td>565/250V</td><td>74.8°C</td><td>86.3°C</td></tr><tr><td>9</td><td>T301</td><td>TF-1756</td><td>79.4°C</td><td>91.6°C</td></tr><tr><td>10</td><td>D403</td><td>YG975C6R 20A/600V</td><td>48.6°C</td><td>63.9°C</td></tr><tr><td>11</td><td>C416</td><td>150U/450V 105°C HU</td><td>60.0°C</td><td>73.0°C</td></tr><tr><td>12</td><td>L13</td><td>TR-793</td><td>71.3°C</td><td>82.3°C</td></tr><tr><td>13</td><td>L1</td><td>TR-794</td><td>32.5°C</td><td>51.2°C</td></tr><tr><td>14</td><td>C7</td><td>5u/250Vac</td><td>38.1°C</td><td>54.9°C</td></tr><tr><td>15</td><td>Q309</td><td>IRFZ44V 55A/60V</td><td>47.4°C</td><td>65.1°C</td></tr><tr><td>16</td><td>Q307</td><td>IXT160N075T 160A/75V</td><td>55.2°C</td><td>72.2°C</td></tr><tr><td>17</td><td>U307</td><td>TL3845P</td><td>46.7°C</td><td>63.2°C</td></tr><tr><td>18</td><td>C328</td><td>100U/25V 105°C KY</td><td>44.7°C</td><td>60.7°C</td></tr><tr><td>19</td><td>D308</td><td>HER203 2A/200V</td><td>53.6°C</td><td>69.4°C</td></tr><tr><td>20</td><td>Q13</td><td>HGTG12N60A4D 12A/600V</td><td>48.4°C</td><td>65.2°C</td></tr><tr><td>21</td><td>U501</td><td>PIC18F65J10</td><td>37.0°C</td><td>54.0°C</td></tr><tr><td>22</td><td>RTH3</td><td>10KΩ 1%</td><td>48.0°C</td><td>63.0°C</td></tr><tr><td>23</td><td>RG300</td><td>LM317T 1.5A</td><td>37.9°C</td><td>55.2°C</td></tr><tr><td>24</td><td>Q601</td><td>IRF540N 27A/100V</td><td>39.6°C</td><td>56.7°C</td></tr><tr><td>25</td><td>RG601</td><td>LM317T 1.5A</td><td>39.8°C</td><td>56.9°C</td></tr><tr><td>26</td><td>D630</td><td>21DQ10 2A/100V</td><td>37.4°C</td><td>54.6°C</td></tr><tr><td>27</td><td>INTERNAL TA</td><td>2 cm above C416</td><td>59.2°C</td><td>72.1°C</td></tr><tr><td>28</td><td>CASE</td><td>Attach CASE</td><td>43.7°C</td><td>58.2°C</td></tr></tbody></table>	NO	Position		P/N	ROOM AMBIENT Ta= 27.9 °C	HIGH AMBIENT Ta= 48.2°C	6	C301	3300U/16V 105°C KY	54.5°C	68.5°C	7	L301	TF-1750	107.4°C	118.5°C	8	C308	565/250V	74.8°C	86.3°C	9	T301	TF-1756	79.4°C	91.6°C	10	D403	YG975C6R 20A/600V	48.6°C	63.9°C	11	C416	150U/450V 105°C HU	60.0°C	73.0°C	12	L13	TR-793	71.3°C	82.3°C	13	L1	TR-794	32.5°C	51.2°C	14	C7	5u/250Vac	38.1°C	54.9°C	15	Q309	IRFZ44V 55A/60V	47.4°C	65.1°C	16	Q307	IXT160N075T 160A/75V	55.2°C	72.2°C	17	U307	TL3845P	46.7°C	63.2°C	18	C328	100U/25V 105°C KY	44.7°C	60.7°C	19	D308	HER203 2A/200V	53.6°C	69.4°C	20	Q13	HGTG12N60A4D 12A/600V	48.4°C	65.2°C	21	U501	PIC18F65J10	37.0°C	54.0°C	22	RTH3	10KΩ 1%	48.0°C	63.0°C	23	RG300	LM317T 1.5A	37.9°C	55.2°C	24	Q601	IRF540N 27A/100V	39.6°C	56.7°C	25	RG601	LM317T 1.5A	39.8°C	56.9°C	26	D630	21DQ10 2A/100V	37.4°C	54.6°C	27	INTERNAL TA	2 cm above C416	59.2°C	72.1°C	28	CASE	Attach CASE	43.7°C	58.2°C		
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		2	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR		IP: 12.1VDC 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: 14.56VDC 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: 6.07 mA AC O/P-FG: 4.51 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: 10.7 GΩ BAT I/P-FG: 10.7 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-700-212 : SUPPOSE C301 IS THE MOST CRITICAL COMPONENT I/P: 12VDC O/P:FULL LOAD Ta= 25°C LIFE TIME= 245227 HRS I/P: 12VDC O/P:FULL LOAD Ta= 40°C LIFE TIME= 134178 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) Peak Voltage	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) 42 V (2) 20 V	P
2	DCTO DC Diode Peak Voltage	D 400 Rated YG975C6R 20A/600V	I/P:14.5 VC O/P: (1)Full Load Turn On (2) Output Short Ta:25°C	(1) 468 V (2) 450 V	P
3	DC BUS Capacitor Voltage	C415 Rated 150u/450V 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) 417 V (2) 447 V	P
4	DC TO AC Power Transistor (D to S) or (C to E) Peak Voltage	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) 550 V (2) 466 V	P
7	DC TO FAN Power Transistor (D to S) or (C to E) Peak Voltage	Q 309 Rated IRFZ44V 55A/60V	I/P:14.5VDC O/P: (1)Full Load Turn On (2) Output Short Ta:25°C	(1) 47 V (2) 39 V	P
8	DCTO FAN Diode Peak Voltage	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) 68 V (2) 47 V	P
9	FAN TO CPU Power Transistor (D to S) or (C to E) Peak Voltage	Q601 Rated IRF540N 27A/100V	I/P:14.5 VDC O/P: (1)Full Load Turn On (2) Output Short Ta:25°C	(1) 46 V (2) 28 V	P
10	FAN TO CPU Diode Peak Voltage	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) 29 V (2) 24 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 W0808C64	PASS	SANFORD SU	VINCENT TSENG

2003/12/12 A50-F023