MODEL：TN1500-112

OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	RATED POWER (TYP)	1500W	IP: 12VDC Ta:25℃	1430W	P
2	WAVEFORM	True sine wave (THD<3%)	IP: 13VDC OP: FULL LOAD/NO LOAD Ta:25℃	FULL LOAD: 1.69 % NO LOAD: 0.91 %	P
3	FREQUENCY	60HZ ± 1HZ	IP: 12VDC OP: FULL LOAD/NO LOAD Ta:25℃	FULL LOAD: 60.03 HZ NO LOAD: 59.96 HZ	P
6	AC REGULATION (TYP)	3%~-3%	IP: 12VDC OP: FULL LOAD/NO LOAD Ta:25℃	0.8% ~ -0.8 %	P
7	TRANSFER TIME	＞10 ms (By pass to inverter, vice versa inverter By pass)	IP: 12VDC OP: FULL LOAD Ta:25℃	By pass to Inverter: 3ms Inverter to By pass: 3ms	P
8	SAVING MODE TO NORMAL	≤3S (5W~25W)	IP: 12VDC OP:NO LOAD Ta:25℃	OK	P

INPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	DC CURRENT (TYP)	150A	IP: 13VDC OP:NO LOAD Ta:25℃	150.7A	P
2	NO LOAD DISSIPATION	≦18W @ saving mode	IP: 12VDC OP:NO LOAD Ta:25℃	14 W	P
3	OFF MODE DRAW CURRENT	≤1mA	IP: SW OFF OP:NO LOAD Ta:25℃	0.04mA	P
4	VOLTAGE RANGE (TYP)	10.5VDC~15VDC	IP: TESTING OP:NO LOAD Ta:25℃	10.5 VDC~ 15 VDC	P
5	EFFICIENCY (TYP)	87%	IP: 13VDC OP: FULL LOAD Ta:25℃	87.7%	P

BATTERY INPUT PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	BAT LOW ALARM	10.7VDC ±2%	IP: TESTING OP: NO LOAD SW:ON Ta:25℃	11.1V	P
2	BAT LOW SHUT DOWN	10.3VDC ± 2%	IP: TESTING OP: NO LOAD SW:ON Ta:25℃	10.5V Shunt down Recovery	P
3	BAT POLARITY	BY INTERNAL FUSE	IP: 12VDC OP: NO LOAD SW:ON Ta:25℃	OK	P

OUTPUT PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	OVER TEMPERATURE	40℃~45℃ at full load , Reset: re-power on	IP: 12VDC OP: FULL LOAD SW:ON Ta:25℃	O.T.P Active Reset: re-power on	P
2	OUTPUT SHORT	Shut-off , Reset: re-power on	IP: 12VDC OP: FULL LOAD SW:ON Ta:25℃	Shut-off , Reset: re-power on	P
3	OVER LOAD (INVERTER)	105%~117% ± 5% LOAD 180sec 117%~150%± 5% LOAD 10sec Shunt down Re-power ON	IP: 12VDC OP: TESTING SW:ON Ta:25℃	111 %/ 180 SEC 126%/ 10 SEC Shunt down Re-power ON	P
4	OVER LOAD (AC LINE)	CIRCUIT BREAKER PROTECTION	IP: 110VAC OP: TESTING SW:ON Ta:25℃	CIRCUIT BREAKER PROTECTION	P

AC CHARGER FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	CHARGE CURRENT	5.5A ± 0.5A	IP: 110VAC OP: BAT LOAD SW:ON Ta:25℃	5.25A	P
2	CHARGE VOLTAGE	14.5V ± 4%	IP: 110VAC OP: BAT LOAD SW:ON Ta:25℃	14.3VDC	P
3	SHORT CIRCUIT PROTECTION	Constant current limiting	IP: 110VAC OP: BAT LOAD SW:ON Ta:25℃	NO DAMAGE Constant current limiting	P

SOLAR CHARGER FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	MAX OPEN CIRCUIT VOLTAGE	25V	IP: TESTING OP: BAT LOAD SW:ON Ta:25℃	25V	P
2	CHARGE CURRENT (MAX)	30A	IP: OPEN CIRCUIT VOLTAGE 25V OP: BAT LOAD SW:ON Ta:25℃	30 A	P
3	V max CHARGE VOLTAGE	14.5VDC± 4%	IP: OPEN CIRCUIT VOLTAGE 25V OP: BAT LOAD SW:ON Ta:25℃	14.3VDC	P

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：TN-1500-112
1. ROOM AMBIENT BURN-IN：2HRS
I/P: 12 VDC O/P: FULL LOAD Ta= 31.5 ℃
2. HIGH AMBIENT BURN-IN：1 HRS
I/P: 12 VDC O/P: FULL LOAD Ta= 41.1 ℃
<table>
<tr><th>NO</th><th>Position</th><th>P/N</th><th>ROOM AMBIENT Ta= 31.5℃</th><th>HIGH AMBIENT Ta= 41.1℃</th></tr>
<tr><td>1</td><td>L301</td><td>TF-1047 HF0619</td><td>118.8℃</td><td>128.6℃</td></tr>
<tr><td>2</td><td>C311</td><td>565/100V TAI YANG</td><td>71.8℃</td><td>81.3℃</td></tr>
<tr><td>3</td><td>C301</td><td>2200U/16Y NCC 105℃ KY</td><td>77.5℃</td><td>86.2℃</td></tr>
<tr><td>4</td><td>D417</td><td>SF20LC30 20A/300V SHI</td><td>60.3℃</td><td>69.1℃</td></tr>
<tr><td>5</td><td>D413</td><td>SF20LC30 20A/300V SHI</td><td>63.3℃</td><td>71.9℃</td></tr>
<tr><td>6</td><td>T302</td><td>TF-1371 LS</td><td>82.3℃</td><td>91.6℃</td></tr>
<tr><td>7</td><td>C416</td><td>330U/250V RUB 105℃</td><td>60.2℃</td><td>69.5℃</td></tr>
<tr><td>8</td><td>L13</td><td>TR-641</td><td>64.7℃</td><td>75.2℃</td></tr>
<tr><td>9</td><td>C7</td><td>15U/250V CARLI</td><td>41.5℃</td><td>49.5℃</td></tr>
<tr><td>10</td><td>RY2</td><td>8324-1C-C ONG</td><td>41.7℃</td><td>50.2℃</td></tr>
<tr><td>11</td><td>L1</td><td>TR-639</td><td>42.8℃</td><td>53.2℃</td></tr>
<tr><td>12</td><td>CT1</td><td>TF-1386 LS</td><td>34.4℃</td><td>44.8℃</td></tr>
<tr><td>13</td><td>Q326</td><td>IRF1405Z 75A/55V IR</td><td>85.5℃</td><td>96.0℃</td></tr>
<tr><td>14</td><td>Q328</td><td>IRF1405Z 75A/55V IR</td><td>88.7℃</td><td>98.4℃</td></tr>
<tr><td>15</td><td>Q330</td><td>IRF1405Z 75A/55V IR</td><td>81.0℃</td><td>92.2℃</td></tr>
<tr><td>16</td><td>RTH3</td><td>NTC 10K 5%</td><td>77.8℃</td><td>88.4℃</td></tr>
<tr><td>17</td><td>Q11</td><td>IRGP50B60PD 50A/600V IR</td><td>84.0℃</td><td>94.8℃</td></tr>
<tr><td>18</td><td>Q13</td><td>IRGP50B60PD 50A/600V IR</td><td>74.2℃</td><td>85.5℃</td></tr>
<tr><td>19</td><td>U301</td><td>KA3846 FAIR</td><td>56.8℃</td><td>65.8℃</td></tr>
<tr><td>20</td><td>Q602</td><td>CEP50N06 50A/60V CET</td><td>83.2℃</td><td>94.8℃</td></tr>
<tr><td>21</td><td>D601</td><td>HER302 3A/100V REC</td><td>54.9℃</td><td>64.1℃</td></tr>
<tr><td>22</td><td>RG602</td><td>LC7805CV 1A/5V ST</td><td>52.0℃</td><td>61.3℃</td></tr>
<tr><td>23</td><td>RG601</td><td>LC7812CV 1A/12V ST</td><td>54.0℃</td><td>63.9℃</td></tr>
<tr><td>24</td><td>U509</td><td>PIC18F6520 MICROCHIP</td><td>45.4℃</td><td>54.5℃</td></tr>
<tr><td>25</td><td>Q702</td><td>K3568 12A/500V TOS</td><td>48.0℃</td><td>57.3℃</td></tr>
<tr><td>26</td><td>D806</td><td>SB1040FC 10A/40V PEC</td><td>49.2℃</td><td>59.9℃</td></tr>
<tr><td>27</td><td>BD701</td><td>D3SB60 4A/600V SHI</td><td>47.9℃</td><td>56.9℃</td></tr>
<tr><td>28</td><td>T701</td><td>TF-1470 JSI</td><td>49.4℃</td><td>59.7℃</td></tr>
<tr><td>29</td><td>Q802</td><td>IRF1010E 84A/60V IR</td><td>49.8℃</td><td>60.4℃</td></tr>
<tr><td>30</td><td>C812</td><td>1000U/25V RUB 105℃</td><td>49.2℃</td><td>60.0℃</td></tr>
<tr><td>31</td><td>C720</td><td>100U/35V CAPX 105 ℃</td><td>51.6℃</td><td>61.7℃</td></tr>
<tr><td>32</td><td>U701</td><td>TI3845</td><td>51.7℃</td><td>62.5℃</td></tr>
<tr><td>33</td><td>內環溫</td><td>T302-D411 間</td><td>48.6℃</td><td>56.7℃</td></tr>
</table></td><td>P</td></tr>
<tr><td>3</td><td>LOW TEMPERATURE
TURN ON TEST</td><td>TURN ON AFTER 2 HOUR</td><td>IP: 12VDC
OP:FULL LOAD
Ta= -10℃</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 40℃
NO DAMAGE</td><td>IP: 13.6VDC
OP:FULL LOAD
Ta:= 40℃
HUMIDITY= 95 %R.H</td><td>TEST：OK</td><td>P</td></tr>
<tr><td>5</td><td>VIBRATION TEST</td><td colspan="2">1 Carton & 1 Set
(1) Waveform: Sine Wave (2) Frequency:10~500Hz
(3) Sweep Time:10min/sweep cycle (4) Acceleration:3G
(5) Test Time:1 hour in each axis (X.Y.Z) (6) Ta:25℃</td><td>TEST：OK</td><td>P</td></tr>
</table>

SAFETY TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	WITHSTAND VOLTAGE	BAT I/P-AC I/P: 3 KVAC/min BAT I/P-AC O/P: 3 KVAC/min AC I/P-FG: 1.5 KVAC/min	BAT I/P-AC I/P: 3.3 KVAC/min BAT I/P-AC O/P: 3.3 KVAC/min AC I/P-FG: 1.8 KVAC/min Ta:25℃	BAT I/P-AC I/P: 8.66 mA BAT I/P-AC O/P: 8.66mA AC I/P-FG: 9.32 mA NO DAMAGE	P
2	GROUNDING CONTINUITY	FG(PE) TO CHASSIS OR TRACE < 100 mΩ	40 A / 2min Ta:25℃	22 mΩ	P
3	APPROVAL	TUV: Certificate NO : UL: File NO :			N/A

E.M.C TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	CONDUCTION	FCC CLASS A	I/P: 110 VAC (50HZ) O/P:FULL/50% LOAD Ta:25℃	PASS Test by certified Lab	P
2	RADIATION	FCC CLASS A	I/P: 110 VAC (50HZ) O/P:FULL LOAD Ta:25℃	PASS Test by certified Lab	P
3	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	TN-1500-112 : SUPPOSE C812 IS THE MOST CRITICAL COMPONENT I/P: 12VDC O/P:FULL LOAD Ta= 25℃ LIFE TIME= 420711 HRS I/P: 12VDC O/P:FULL LOAD Ta= 40℃ LIFE TIME= 136874 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**	Q324 Rated IRF1405Z : 55V 75A	I/P:14 VDC O/P: (1)Full Load Turn on (2) Full Load (3)Output Short Ta:25℃	(1) 60 V (2) 50 V (3) 49 V	P
2	DCTO DC Diode Peak **Voltage**	D414 Rated SF20LC30 : 300V 20A	I/P:14VDC O/P: (1)Full Load Turn on (2) Full Load (3)Output Short Ta:25℃	(1) 252 V (2) 236 V (3) 256 V	P
3	**Input Capacitor Voltage**	C417 Rated : 330u / 250V/ 105℃	I/P:14VDC O/P: (1)Full Load Turn on /Off (2) Min load Turn on /Off (3)Full Load /Min load Change (4)Burn in 1hour Ta:25℃	(1) 209 V (2) 230 V (3) 209 V	P
4	INVERTER Power Transistor (D to S) or (C to E) **Peak Voltage**	Q12 Rated IRGP50B60PD : 600V 50A	I/P:14VDC O/P: (1)Full Load Turn on (2) Full Load (3)Output Short Ta:25℃	(1) 430 V (2) 362 V (3) 372 V	P

DATE	SAMPLE	TEST RESULT	TESTER	APPROVAL
2006/4/18	RD SAMPLE	PASS	VINCENT TSENG	MAX LIN
2006/9/25	PRODUCT SAMPLE W0605A45	PASS	VINCENT TSENG	MAX LIN
2007/5/15	PRODUCT SAMPLE W0703A19	PASS	VINCENT TSENG	MAX LIN
2007/1/17	PRODUCT SAMPLE W0711B50	PASS	SANFORD SU	VINCENT TSENG

2003/12/12 A50-F023