MODEL：SD-1000L-24

OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	RIPPLE & NOISE	V1: 150 mVp-p (Max)	I/P: 48 VDC O/P:FULL LOAD Ta:25℃	V1: 52 mVp-p (Max)	P
2	OUTPUT VOLTAGE ADJUST RANGE	CH1:23 V~ 30 V	I/P: 48 VDC O/P:MIN LOAD Ta:25℃	21.99 V~ 30.73V	P
3	OUTPUT VOLTAGE TOLERANCE	V1: 1%~ -1 % (Max)	I/P: 48 VDC / 72VDC O/P:FULL/ MIN LOAD Ta:25℃	V1: 0.05 %~ -0.05 %	P
4	LINE REGULATION	V1: 0.5 %~ -0.5 % (Max)	I/P: 48VDC ~ 72VDC O/P:FULL LOAD Ta:25℃	V1: 0.03 %~ -0.03 %	P
5	LOAD REGULATION	V1: 0.5 %~ -0.5 % (Max)	I/P: 48 VDC O/P:FULL ~MIN LOAD Ta:25℃	V1: 0.03 %~ -0.03 %	P
6	SET UP TIME	500 ms (Max)	I/P: 48 VDC O/P:FULL LOAD Ta:25℃	85 ms	P
7	RISE TIME	50 ms (Max)	I/P: 48 VDC O/P:FULL LOAD Ta:25℃	27 ms	P
8	OVER/UNDERSHOOT TEST	＜±5%	I/P: 48 VDC O/P:FULL LOAD Ta:25℃	TEST: <5 %	P
9	DYNAMIC LOAD	V1: 2400 mVp-p	I/P: 48 VDC O/P:FULL /Min LOAD 90%DUTY/1KHZ Ta:25℃	668 mVp-p	P

INPUT FUNCTION TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	INPUT VOLTAGE RANGE	19VDC~ 72 VDC	I/P:TESTING O/P:FULL LOAD Ta:25℃	17.7 V~ 72V	P
			I/P: LOW-LINE-0.2V= 18.8V HIGH-LINE+5%= 75 V O/P:FULL/MIN LOAD ON: 30 Sec . OFF: 30 Sec 10MIN (AC POWER ON/OFF NO DAMAGE)	TEST: OK	
2	EFFICIENCY	88 % (TYP)	I/P: 48 VDC O/P:FULL LOAD Ta:25℃	89.5 %	P
3	INPUT CURRENT	23.5 A/ 48 V(TYP)	I/P: 48 VDC O/P:FULL LOAD Ta:25℃	I = 22.7 A	P

PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	OVER LOAD PROTECTION	105 %~ 125 %	I/P: 48VDC O/P:TESTING Ta:25℃	114 % Constant Current Limiting, unit will shut down o/p voltage above 5sec Re-power on to recover	P
2	OVER VOLTAGE PROTECTION	CH1: 30.8V~ 35.2V	I/P: 48VDC O/P:MIN LOAD Ta:25℃	33 V Shunt down Re- power ON	P
3	OVER TEMPERATURE PROTECTION	SPEC: 75℃ ±5℃ OT.P. (TSW1) 85℃ ±5℃ OT.P. (TSW2) NO DAMAGE	I/P: 48 VDC O/P:FULL LOAD	O.T.P. Active Shut down o/p volotage，recovers automatically after temperature goes down	P
4	SHORT PROTECTION	SHORT EVERY OUTPUT 1 HOUR NO DAMAGE	I/P: 72 VDC O/P: FULL LOAD Ta:25℃	NO DAMAGE Constant Current Limiting, unit will shut down o/p voltage above 5sec Re-power on to recover	P

CONTROL FUNCTION TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	FAN SPEED CONTROL	0%LOAD=6V~8.5V 100%LOAD=11.8V~12.8V	I/P: 48 VDC O/P:FULL LOAD Ta:25℃	Fan Voltage= 7.02 V/ NO LOAD Fan Voltage= 12.3 V/ 100%LOAD	P
2	REMOTE CONTROL	Rc+ / Rc- POWER ON:OPEN BETWEEN ON/OFF POWEROFF:SHORT BETWEEN ON/OFF (A) Using External Voltage Source (B) Using Internal 12V Auxiliary Output (C) Using Internal 12V Auxiliary Output.	I/P: 48 VDC O/P:FULL LOAD Ta:25℃	(A)OK (B)OK (C)OK	P
3	REMOTE SENSE	>0.3V	I/P: 48 VDC O/P:FULL LOAD Ta:25℃	>0.3 V	P
4	OUTPUT OK SIGNAL	OPEN COLLECTOR SIGNAL LOW WHEN PSU TURN ON,MAX.SINK CURRENT 10mA,external voltage is 13V 0~0.5V OUTPUT STATUS ON 12~13V OUTPUT STATUS OFF	I/P: 48 VDC O/P:FULL LOAD Ta:25℃	SINK CURRENT: 10 mA OUTPUT STATUS ON= 0.06 V OUTPUT STATUS OFF= 12.46 V	P
5	FAN LOCK	SHUTDOWN RE-POWER ON	I/P: 48 VDC O/P:FULL LOAD Ta:25℃	SHUTDOWN RE-POWER ON	P
6	AUX POWER	0~0.25A(10.8V~13.2V)	I/P: 48 VDC Ta:25℃	12.77V/0A 12.78V/0.25A	P
7	DC I/P UVP	17V~18.7V	O/P:70% LOAD Ta:25℃	17.7 VDC	P

ENVIRONMENT TEST

<table>
<tr><th>NO</th><th>TEST ITEM</th><th>SPECICATION</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：SD-1000L-24
1. ROOM AMBIENT BURN-IN：1 HRS
I/P: 48 VDC O/P: FULL LOAD Ta= 29.6℃
2. HIGH AMBIENT BURN-IN：2HRS
I/P: 48 VDC O/P: FULL LOAD Ta= 53.6℃

<table>
<tr><th>NO</th><th>Position</th><th>P/N</th><th>ROOM AMBIENT Ta= 29.6 ℃</th><th>HIGH AMBIENT Ta= 53.6 ℃</th></tr>
<tr><td>1</td><td>U2</td><td>UCC28220D</td><td>46.6℃</td><td>65.0℃</td></tr>
<tr><td>2</td><td>D2</td><td>60CPQ150 60A/150V</td><td>44.0℃</td><td>64.6℃</td></tr>
<tr><td>3</td><td>Q3</td><td>IRFP3710 57A/100V</td><td>53.3℃</td><td>69.3℃</td></tr>
<tr><td>4</td><td>Q1</td><td>IRFP3710 57A/100V</td><td>50.0℃</td><td>73.8℃</td></tr>
<tr><td>5</td><td>TSW1</td><td>ST-22 75℃</td><td>42.2℃</td><td>63.1℃</td></tr>
<tr><td>6</td><td>LF1</td><td>TR-757</td><td>51.3℃</td><td>72.3℃</td></tr>
<tr><td>7</td><td>C8</td><td>1000U/100V 105℃ MXR</td><td>50.7℃</td><td>71.2℃</td></tr>
<tr><td>8</td><td>T2 COIL</td><td>TF-1684</td><td>66.2℃</td><td>87.9℃</td></tr>
<tr><td>9</td><td>D901</td><td>S3L60 2.2A/600V</td><td>56.9℃</td><td>78.1℃</td></tr>
<tr><td>10</td><td>L2</td><td>TF-1655</td><td>59.5℃</td><td>79.3℃</td></tr>
<tr><td>11</td><td>U9</td><td>TNY280PN</td><td>58.8℃</td><td>80.7℃</td></tr>
<tr><td>12</td><td>ZD10</td><td>P6KE100A</td><td>56.5℃</td><td>78.3℃</td></tr>
<tr><td>13</td><td>U1</td><td>IR1150IS(PbF)</td><td>39.6℃</td><td>60.1℃</td></tr>
<tr><td>14</td><td>Q903</td><td>IRFP260N 50A/200V</td><td>66.6℃</td><td>91.5℃</td></tr>
<tr><td>15</td><td>C73</td><td>10U/50V 105℃ KY</td><td>54.9℃</td><td>76.1℃</td></tr>
<tr><td>16</td><td>L100</td><td>TF-1455</td><td>58.6℃</td><td>80.1℃</td></tr>
<tr><td>17</td><td>Q161</td><td>TIP42C -5A/100V</td><td>51.0℃</td><td>72.8℃</td></tr>
<tr><td>18</td><td>TSW2</td><td>ST-22 90℃</td><td>61.1℃</td><td>85.9℃</td></tr>
<tr><td>19</td><td>D102</td><td>ESAD83-006 30A/60V</td><td>70.4℃</td><td>92.0℃</td></tr>
<tr><td>20</td><td>PCB</td><td>T2 與 ZD10 間</td><td>59.4℃</td><td>82.2℃</td></tr>
<tr><td>21</td><td>內 TA</td><td>C303 上方處</td><td>43.8℃</td><td>64.5℃</td></tr>
<tr><td>22</td><td>C113</td><td>1000U/35V 105℃YXG</td><td>58.1℃</td><td>78.9℃</td></tr>
</table>
</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: 48 VDC
O/P: 113 % 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: 48 VDC
O/P: 100% LOAD
Ta= -20℃</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: 72 VDC
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>± 0.02%(0~50℃)</td><td>I/P: 48VDC
O/P:FULL LOAD</td><td>± 0.013 %(0~50℃)</td><td>P</td></tr>
<tr><td>6</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:2G
(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	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	WITHSTAND VOLTAGE	I/P-O/P: 2 KVAC/min I/P-FG: 1.5 KVAC/min O/P-FG: 0.5 KVAC/min	I/P-O/P: 2.4 KVAC/min I/P-FG: 1.8 KVAC/min O/P-FG: 0.6 KVAC/min Ta:25℃ / 70%RH	I/P-O/P: 4.9 mA I/P-FG: 4.64 mA O/P-FG: 4.8 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℃	I/P-O/P: 18 GΩ I/P-FG: 14 GΩ O/P-FG: 11 GΩ NO DAMAGE	P
3	GROUNDING CONTINUITY	FG(PE) TO CHASSIS OR TRACE < 100 mΩ	40 A / 2min Ta:25℃ / 70%RH	10 mΩ	P
4	APPROVAL	TUV: Certificate NO : UL: File NO :			N/A

E.M.C TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	RADIATION	EN55022 CLASS B	I/P: 48VDC O/P:FULL LOAD Ta:25℃	PASS Test by certified Lab	P
2	E.S.D	EN61000-4-2 LIGHT INDUSTRY AIR:8KV / Contact:4KV	I/P: 48 VDC O/P:FULL LOAD Ta:25℃	CRITERIA A	P
3	E.F.T	EN61000-4-4 LIGHT INDUSTRY INPUT: 1KV	I/P: 48VDC O/P:FULL LOAD Ta:25℃	CRITERIA A	P
4	SURGE	IEC61000-4-5 LIGHT INDUSTRY L-N :0.5KV L,N-PE:0.5KV	I/P: 48 VDC O/P:FULL LOAD Ta:25℃	CRITERIA A	P
5	Test by certified Lab & Test Report Prepare				

M.T.B.F & LIFE CYCLE CALCULATION

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	CAPACITOR LIFE CYCLE	SD-1000L-24 : SUPPOSE C113 IS THE MOST CRITICAL COMPONENT I/P: 48VDC O/P:FULL LOAD Ta=50 ℃ LIFE TIME= 251623 HRS I/P: 48VDC O/P:FULL LOAD Ta=50 ℃ LIFE TIME= 55554 HRS			P
2	MTBF	Conducted by Parts Stress Analysis Prediction 898.2K hrs min. Telcordia SR-332 (Bellcore) ; 106.7K hrs min. MIL-HDBK-217F (25℃)			P

COMPONENT STRESS TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	Power Transistor (D to S) or (C to E) **Peak Voltage**	Q 900 Rated IRFP260N: 200 V 50 A	I/P:High-Line +3V = 75 V O/P: (1)Full Load Turn on (2) Output Short Ta:25℃	(1) 201 V (2) 205 V	P
2	Diode Peak **Voltage**	D101 Rated S30JC10 30A/100V	I/P:High-Line +3V = 75 V O/P: (1)Full Load Turn on (2)Output Short Ta:25℃	(1) 75 V (2) 40 VV	P
3	Clamp Diode Peak **Voltage**	D 900 Rated S3L60 2.2A/600V	I/P:High-Line +3V = 75 V O/P: (1) Dynamic Load 90%Duty/1KHz Ta:25℃	(1) 178 V	P
4	**Input Capacitor Voltage**	C5 Rated 1000u /100 V /105℃	I/P:High-Line +3V = 75V O/P: (1)Full Load Turn on /Off (2) Min load Turn on /Off (3)Full Load /Min load Change Ta:25℃	(1) 81 V (2) 79 V (3) 81 V	P
5	**Control IC Voltage Test**	U2 Rated UCC28220: 8V~14 V	I/P:High-Line +3V = 75 V O/P: (1)Full Load Turn on /Off (2) Min load Turn on /Off (3)Full Load /Min load Change Ta:25℃	(1) 13.6 V (2) 13.51 V (3) 13.6 V	P

DATE	SAMPLE	TEST RESULT	TESTER	APPROVAL
2007/9/14	RD SAMPLE	PASS	VINCENT TSENG	MAX LIN
2007/11/16	PRODUCT SAMPLE W0710C50	PASS	VINCENT TSENG	MAX LIN

2003/12/12 A50-F023