Test Report： SLD-80-56

80W Constant Power Mode LED Driver

■ DESIGN VERIFY TEST

Output Function Test
Input Function Test
Protection Function Test
Component Stress Test

■ SAFETY & E.M.C. TEST

Safety Test
E.M.C. Test

■ RELIABILITY TEST

Environment Test

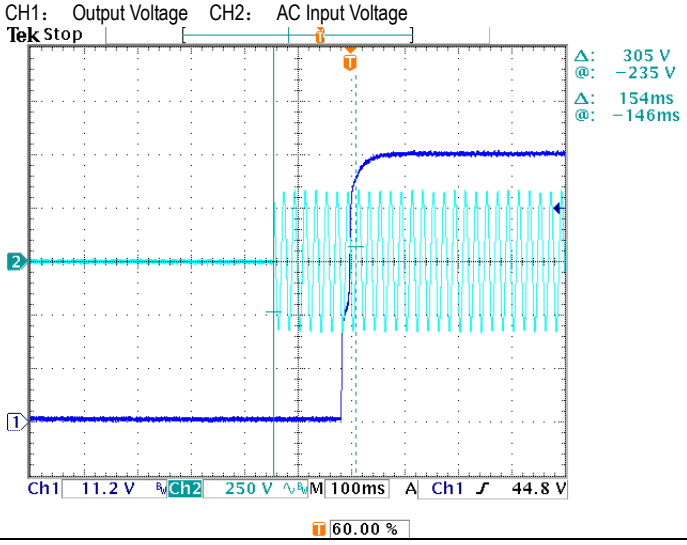
■ DESIGN VERIFY TEST

OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	CURRENT TOLERANCE	±5%	I/P：100 VAC / 305 VAC O/P：FULL/ MIN LOAD Ta：25℃	<±5%
2	CONSTANT CURRENT REGION	30V-56V	I/P： 230 VAC O/P：FULL LOAD Ta：25℃	23.8 V~ 56.0 V
3	OPEN CIRCUIT VOLTAGE (max.)	60 V	I/P： 230 VAC O/P：NO LOAD	57.7V
4	CURRENT RIPPLE	5.0% @ rated current	I/P： 230 VAC O/P： FULL LOAD Ta：25℃	<5%
5	CURRENT ADJ. RANGE	700 mA ~2100mA	I/P: 230 VAC O/P：TESTING Ta：25℃	600mA~ 2270mA
6	CONSTANT POWER	O/P：78.4W	I/P：230 VAC O/P：Vo×Io	TEST：OK
7	SET UP TIME(Max)	1200ms/115VAC 500ms/230VAC	I/P： 115 VAC I/P： 230 VAC O/P：FULL LOAD Ta：25℃	154 ms /115 VAC 128 ms /230 VAC

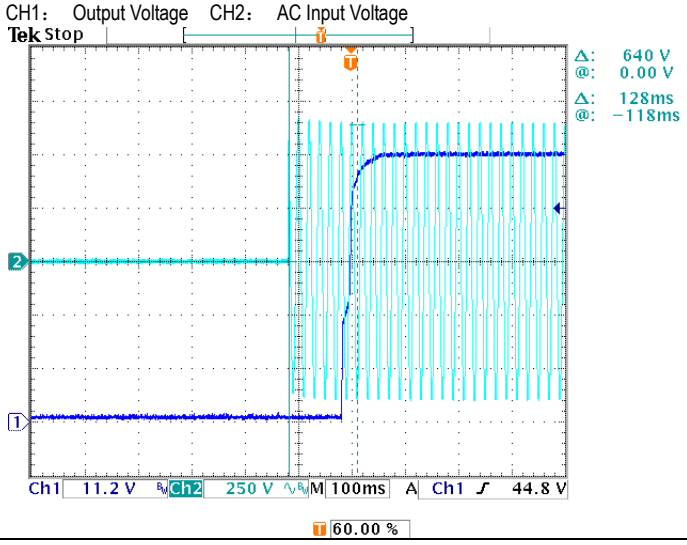
INPUT=115VAC/50HZ @ FULL LOAD

CH1： Output Voltage CH2： AC Input Voltage



INPUT=230 VAC/50HZ @ FULL LOAD

CH1： Output Voltage CH2： AC Input Voltage

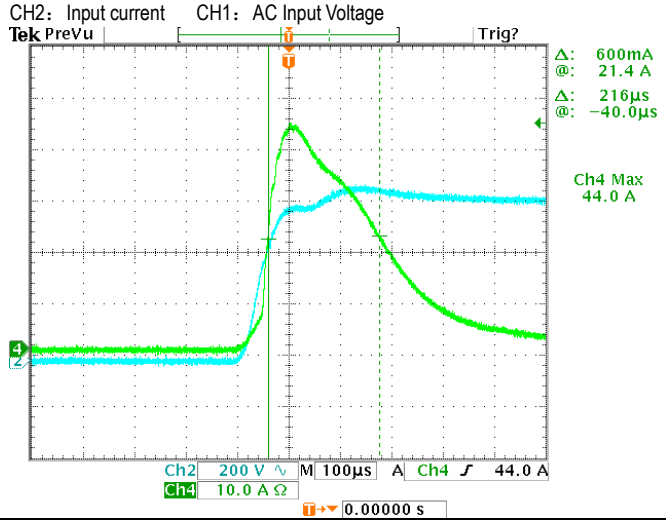


INPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	INPUT VOLTAGE RANGE	100VAC~305VAC	I/P：TESTING O/P：FULL LOAD (PLEASE CHECK DERATING CURVE) Ta：25℃	90V~309V
			I/P： LOW-LINE-3V=97 V HIGH-LINE+10V=315 V O/P：FULL/MIN LOAD (PLEASE CHECK DERATING CURVE) ON：30 Sec OFF：30 Sec 10MIN (POWER ON/OFF NO DAMAGE)	TEST：OK
2	INPUT FREQUENCY RANGE	47HZ ~63 HZ NO DAMAGE	I/P： 100 VAC ~305 VAC O/P：FULL~NO LOAD Ta：25℃	TEST：OK
3	AC CURRENT	0.9A/115VAC 0.45A/230VAC 0.38A/277VAC	I/P： 115 VAC I/P： 230 VAC I/P： 277 VAC O/P：FULL LOAD Ta：25℃	I =0.75A/ 115VAC I = 0.36A/ 230VAC I = 0.31A/277VAC
4	LEAKAGE CURRENT	< 0.25mA / 277VAC	I/P： 277 VAC O/P：NO LOAD Ta：25℃	L-FG： 0.029mA N-FG： 0.029mA
5	NO LOAD CONSUMPTION	<0.5W	I/P：230VAC O/P：NO LOAD Ta：25℃	0.366W
6	INRUSH CURRENT(Typ)	230VAC/ 50A COLD START (twidth=270us measured at 50% Ipeak) COLD START at 230V	I/P： 230 VAC O/P：FULL LOAD Ta：25℃	I=44A/ 230VAC Twidth = 216us

INPUT=230VAC/50HZ @ FULL LOAD

CH2：Input current CH1：AC Input Voltage



7	POWER FACTOR	0.97/ 115VAC@ FULL LOAD 0.95/ 230VAC@ FULL LOAD 0.92/ 277VAC@ FULL LOAD	I/P： 115 VAC I/P： 230 VAC I/P： 277 VAC O/P：FULL LOAD Ta：25℃	PF=0.999 @ FULL LOAD /115VAC PF=0.981 @ FULL LOAD /230VAC PF=0.946@ FULL LOAD /277VAC
	PF vs LOAD			
8	TOTAL HARMONIC DISTORTION	THD＜10% （@load≥50%/115VAC； @load≥50%/230VAC； @load≥75%/277VAC）	I/P： 115 VAC I/P： 230 VAC I/P： 277 VAC O/P：50% /75% LOAD Ta：25℃	THD=5.58% @50% load /115VAC THD=6.13% @50% load /230VAC THD=8.21% @75% load /277VAC
	THD vs LOAD			
9	EFFICIENCY(Typ)	92%	I/P： 230VAC O/P：FULL LOAD Ta：25℃	93.37%
	EFFICIENCY vs LOAD			

PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OVER TEMPERATURE PROTECTION	NO DAMAGE	I/P： 100VAC I/P： 230VAC I/P： 305VAC O/P：FULL LOAD	O.T.P. Active Hiccup mode，recovers automatically after fault condition is removed
2	OVER VOLTAGE PROTECTION	V1: 60V~ 70V	I/P: 305VAC I/P: 230VAC I/P: 100VAC O/P:MIN LOAD Ta:25℃	66.0V/ 305VAC 66.0V/ 230VAC 66.4V/ 100VAC Shut down output voltage, re-power on to recover
3	SHORT PROTECTION	SHORT EVERY OUTPUT 1 HOUR NO DAMAGE	I/P： 100VAC I/P： 230VAC I/P： 305VAC O/P： FULL LOAD Ta：25℃	NO DAMAGE Hiccup mode，recovers automatically after fault condition is removed
4	Over Power Protection	110%-150%	I/P: 305VAC I/P: 230VAC I/P: 100VAC O/P: Testing Ta:25℃	128% / 305VAC 128%/ 230VAC 128%/ 100VAC Hiccup mode，recovers automatically after fault condition is removed

COMPONENT STRESS TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	PWM Transistor (D to S) or (C to E) **Peak Voltage**	Q2 Rated 6A/600V	I/P：High-Line +3V =308V O/P： (1) Full Load Turn on (2) Output Short (3) Full load continue Ta：25℃	 (1) 530V (2) 537V (3) 448V
2	PFC Transistor	Q1 Rated 11A/600 V	I/P：High-Line +3V =308V O/P: (1)Full Load (2)Output Short (3) Full Load continue	 (1) 486V (2) 458V (3) 462V
3	P.F.C DIODE	D5 Rated 600V/9A	I/P：High-Line +3V =308V O/P： (1) Full Load Turn on (2) Output Short (3) Full load continue Ta：25℃	 (1) 450V (2) 444V (3) 446V
4	**Diode Peak Voltage**	D100 Rated 15A/150V	I/P：High-Line +3V =308V O/P: (1)Full Load (2)Output Short (3) Full Load continue (4) No Load Ta：25℃	 (1) 122V (2) 12.4V (3)120V (4) 125V

5	**Input Capacitor Voltage**	C5 Rated: 18 μ F/ 450V	I/P: High-Line +3V =308 V O/P: (1)Full Load input on/off (2) Min load input on /Off (3)Full Load /Min load Change (4)Full load continue Ta: 25℃	 (1) 456V (2) 450V (3) 444V (4) 446V
6	**Control IC Voltage Test**	U2 Rated 30V	I/P: High-Line +3V =308V O/P(1)FULL LOAD (2) Output Short (3)O.V.P (4)NO LOAD VR.LOW LINE Ta: 25℃	 (1) 12.4V (2) 12.3V (3) 12.5V (4) 12.4V

SAFETY TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	WITHSTAND VOLTAGE	I/P-O/P: 3.75KVAC/min	I/P-O/P: 4.125 KVAC/min Ta: 25℃	I/P-O/P: 1.811 mA NO DAMAGE
2	ISOLATION RESISTANCE	I/P-O/P: 500VDC>100MΩ	I/P-O/P: 500 VDC Ta: 25℃	I/P-O/P: >9999 MΩ

E.M.C TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	HARMONIC	EN61000-3-2 CLASS C	I/P: 230VAC/50HZ O/P: FULL/50% LOAD Ta: 25℃	PASS
2	CONDUCTION	EN55015	I/P: 230 VAC/50HZ O/P: FULL LOAD Ta: 25℃	PASS Test by certified Lab
3	RADIATION	EN55015	I/P: 230 VAC/50HZ O/P: FULL LOAD Ta: 25℃	PASS Test by certified Lab
4	E.S.D	EN61000-4-2 LIGHT INDUSTRY Air: 8KV Contact: 4KV	I/P: 230 VAC/50HZ O/P: FULL LOAD Ta: 25℃	CRITERIA A
5	E.F.T	EN61000-4-4 LIGHT INDUSTRY INPUT: 1KV	I/P: 230VAC/50HZ O/P: FULL LOAD Ta: 25℃	CRITERIA A
6	SURGE	EN61000-4-5 LIGHT INDUSTRY L-N : 1KV	I/P: 230VAC/50HZ O/P: FULL LOAD Ta: 25℃	CRITERIA A
7	Test by certified Lab & Test Report Prepare. Any contradictions of the test results please refer to the latest EMC test report.			

■ RELIABILITY TEST

ENVIRONMENT TEST

<table>
<tr><th>NO</th><th>TEST ITEM</th><th>SPECIFICATION</th><th>TEST CONDITION</th><th>RESULT</th></tr>
<tr><td>1</td><td>TEMPERATURE RISE TEST</td><td colspan="3">MODEL： SLD-80-56
1. ROOM AMBIENT BURN-IN：2 HRS
I/P： 230VAC O/P： FULL LOAD Ta= 27℃
2. HIGH AMBIENT BURN-IN： 2 HRS
I/P： 230VAC O/P： FULL LOAD Ta=51.1℃
<table>
<tr><th>NO</th><th>Position</th><th>ROOM AMBIENT Ta= 27 ℃</th><th>HIGH AMBIENT Ta=51.1 ℃</th></tr>
<tr><td>1</td><td>BD1</td><td>57.8℃</td><td>80.4℃</td></tr>
<tr><td>2</td><td>C8</td><td>52.2℃</td><td>75.0℃</td></tr>
<tr><td>3</td><td>L2</td><td>55.2℃</td><td>77.8℃</td></tr>
<tr><td>4</td><td>Q1</td><td>62.2℃</td><td>84.7℃</td></tr>
<tr><td>5</td><td>R7</td><td>61.3℃</td><td>83.9℃</td></tr>
<tr><td>6</td><td>C6</td><td>60.1℃</td><td>83.0℃</td></tr>
<tr><td>7</td><td>U1</td><td>54.3℃</td><td>77.3℃</td></tr>
<tr><td>8</td><td>Q2</td><td>64.7℃</td><td>88.3℃</td></tr>
<tr><td>9</td><td>U2</td><td>74.0℃</td><td>97.8℃</td></tr>
<tr><td>10</td><td>L3</td><td>71.2℃</td><td>94.6℃</td></tr>
<tr><td>11</td><td>C51</td><td>60.2℃</td><td>83.4℃</td></tr>
<tr><td>12</td><td>C15</td><td>73.1℃</td><td>96.6℃</td></tr>
<tr><td>13</td><td>T1</td><td>82.4℃</td><td>106.1℃</td></tr>
<tr><td>14</td><td>T1core</td><td>82.2℃</td><td>106.0℃</td></tr>
<tr><td>15</td><td>D100</td><td>80.5℃</td><td>105.7℃</td></tr>
<tr><td>16</td><td>D101</td><td>76.5℃</td><td>101.2℃</td></tr>
<tr><td>17</td><td>C105</td><td>56.7℃</td><td>80.9℃</td></tr>
<tr><td>18</td><td>J100</td><td>54.7℃</td><td>78.9℃</td></tr>
<tr><td>19</td><td>RTH2</td><td>78.6℃</td><td>102.4℃</td></tr>
<tr><td>20</td><td>TC</td><td>57.8℃</td><td>80.5℃</td></tr>
</table></td></tr>
<tr><td>2</td><td>LOW TEMPERATURE
TURN ON TEST</td><td>TURN ON AFTER 2 HOUR</td><td>I/P： 305VAC/110VAC
O/P：FULL LOAD
Ta= -25℃</td><td>TEST：OK</td></tr>
<tr><td>3</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： 305VAC
O/P：FULL LOAD
Ta=50 ℃
HUMIDITY= 95% R.H</td><td>TEST：OK</td></tr>
<tr><td>4</td><td>TEMPERATURE
COEFFICIENT</td><td>±0.03%/℃(0~60℃)</td><td>I/P： 230 VAC
O/P：FULL LOAD</td><td>±0.0007%/℃(0~60℃)</td></tr>
<tr><td>5</td><td>STORAGE TEMPERATURE TEST</td><td>-40~+80℃</td><td colspan="2">1. Thermal shock Temperature： -45℃~+90℃
2. Temperature change rate ： 25℃ / MIN
3. Dwell time low and high temperature ： 30 MIN/EACH
4. Total test cycle：10CYCLE
5. Input/Output condition： STATIC
TEST：OK</td></tr>
</table>

6	THERMAL SHOCK TEST	-20~+50℃	1. Thermal shock Temperature： -25℃~ +55℃ 2. Temperature change rate ： 25℃ / MIN 3. Dwell time low and high temperature ： 30 MIN/EACH 4. Total test cycle： 16CYCLE 5. Input/Output condition： 15cycle:230VAC/ FULL LOAD AC on 3 sec/AC off 1 sec TEST 1cycle:230VAC/ FULL LOAD Burn In Test TEST： OK
7	VIBRATION TEST	10~ 500Hz, 2G 12min./1cycle, period for 72min. each along X, Y, Z axes	1 Carton & 1 Set (1) Waveform： Sine Wave (2) Frequency： 10~500Hz (3) Sweep Time： 10min/sweep cycle (4) Acceleration： 3G (5) Test Time： 180min in each axis (X.Y.Z) (6) Ta： 25℃ TEST： OK
8	CAPACITOR LIFE CYCLE	SLD-80-56： SUPPOSE C105 IS THE MOST CRITICAL COMPONENT (1) I/P： 230VAC O/P： FULL LOAD Tc= 75 ℃ LIFE TIME (2) I/P： 230VAC O/P： 75% LOAD Tc= 75 ℃ LIFE TIME (3) I/P： 230VAC O/P： 50% LOAD Tc= 75 ℃ LIFE TIME	(1) 107675 HRS (2) 92106 HRS (3) 100302 HRS
9	MTBF	Conducted by Parts Stress Analysis Prediction 2666.8K hrs min. Telcordia SR-332 (Bellcore) ; 260.9K hrs min. MIL-HDBK-217F (25℃)	
10	Ongoing Reliability Test	I/P：230VAC O/P：FULL LOAD TA=50℃ Demonstration Mean Time Between Failure : 30,000 hours	

TEST RESULT	TESTER	REVIEW	APPROVAL
PASS	WUWQ/ZHOUB	WENF	LIUWY