



Test Report: SLD-50-56

50W 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

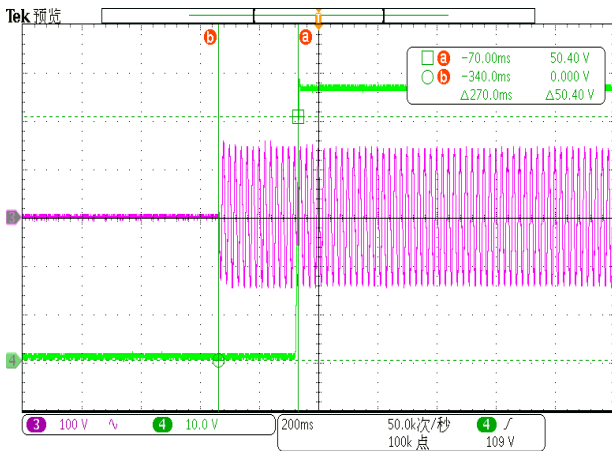
DESIGN VERIFY TEST

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°C	±1.88%
2	CONSTANT CURRENT REGION	30V-56V	I/P: 230 VAC O/P: FULL LOAD Ta: 25°C	24.4 V~ 56.0 V
3	OPEN CIRCUIT VOLTAGE (max.)	60 V	I/P: 230 VAC O/P: NO LOAD	57.8V
4	CURRENT RIPPLE	5.0% @ rated current	I/P: 230 VAC O/P: FULL LOAD Ta: 25°C	<5%
5	CURRENT ADJ. RANGE	450 mA ~1400mA	I/P: 230 VAC O/P: TESTING Ta: 25°C	413mA~ 1720mA
6	CONSTANT POWER	O/P: 50.4W	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°C	270 ms /115 VAC 258 ms /230 VAC

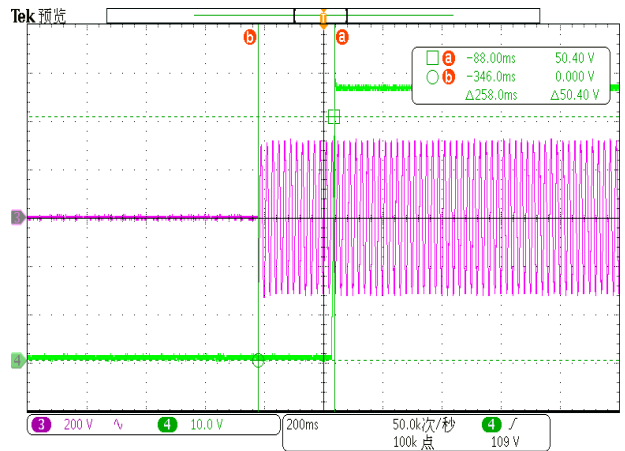
INPUT=115VAC/50HZ @ FULL LOAD

CH1: Output Voltage CH2: AC Input Voltage



INPUT=230 VAC/50HZ @ FULL LOAD

CH1: Output Voltage CH2: AC Input Voltage

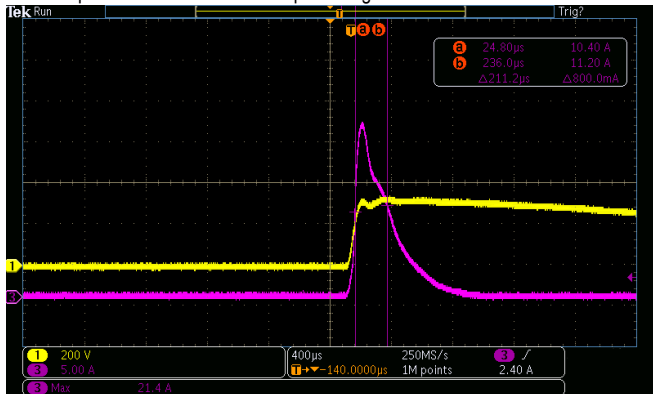


INPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	INPUT VOLTAGE RANGE	110VAC~305VAC	I/P: TESTING O/P: FULL LOAD (PLEASE CHECK DERATING CURVE) Ta: 25°C	90V~315V
			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: 110 VAC ~305 VAC O/P: FULL~NO LOAD Ta: 25°C	TEST: OK
3	AC CURRENT	0.6A/115VAC 0.3A/230VAC 0.25A/277VAC	I/P: 115 VAC I/P: 230 VAC I/P: 277 VAC O/P: FULL LOAD Ta: 25°C	I = 0.493A/ 115VAC I = 0.244A/ 230VAC I = 0.211A/277VAC
4	LEAKAGE CURRENT	< 0.25mA / 277VAC	I/P: 277 VAC O/P: NO LOAD Ta: 25°C	L-FG: 0.033mA N-FG: 0.033mA
5	NO LOAD CONSUMPTION	<0.5W	I/P: 230VAC O/P: NO LOAD Ta: 25°C	0.4187W
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°C	I=21.4A/ 230VAC Twidth = 211.2us

INPUT=230VAC/50HZ @ FULL LOAD

CH2: Input current CH1: AC Input Voltage



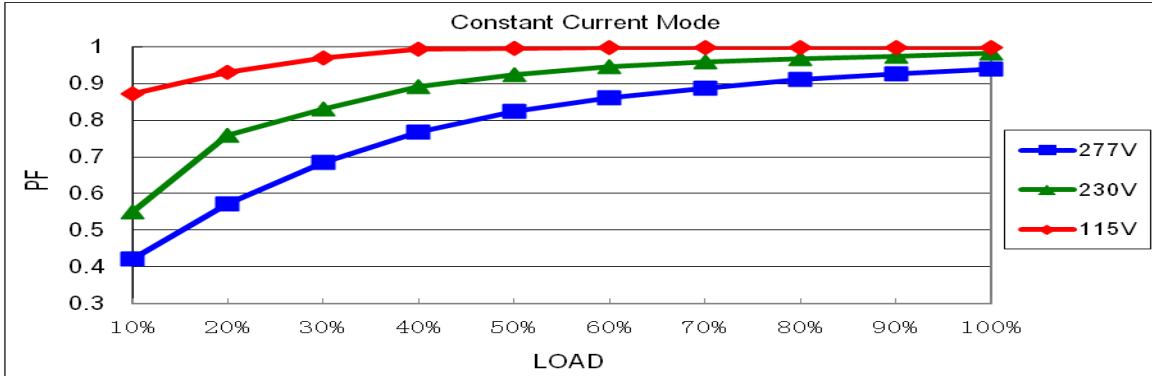


50W Constant Power Mode LED Driver

SLD-50 series

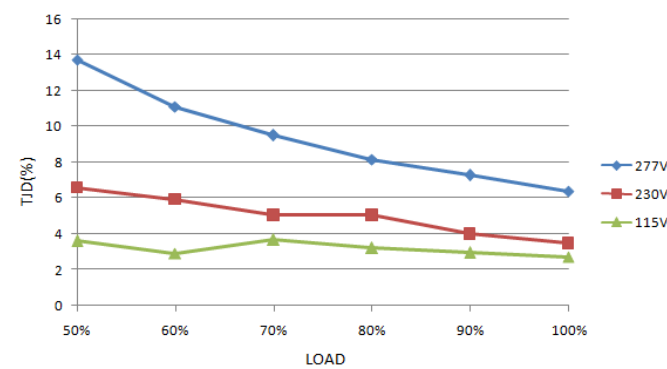
7	POWER FACTOR	0.97/ 115VAC@ FULL LOAD 0.95/ 230VAC@ FULL LOAD 0.92/ 277VAC@ FULL LOAD	I/P: 115 VAC I/P: 230 VAC I/P: 277 VAC O/P: FULL LOAD Ta: 25°C	PF=0.999 @ FULL LOAD /115VAC PF=0.982 @ FULL LOAD /230VAC PF=0.940 @ FULL LOAD /277VAC
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PF vs LOAD



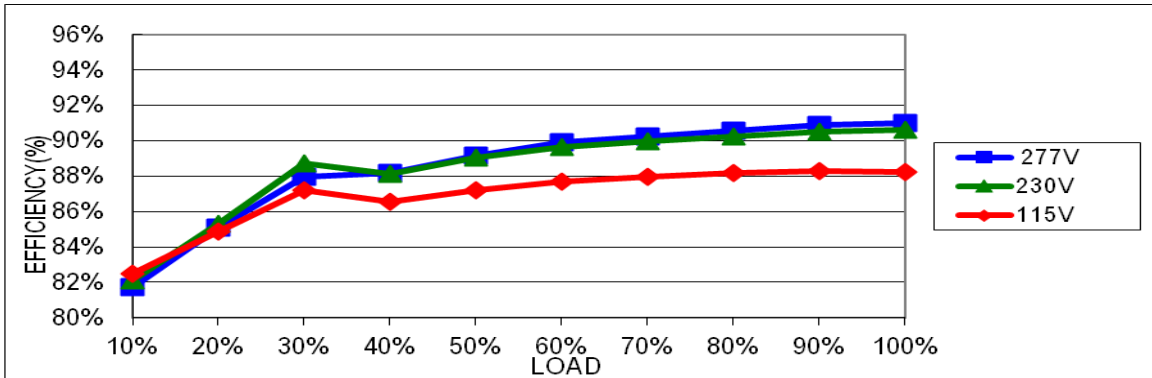
8	TOTAL HARMONIC DISTORTION	THD < 10% (@load ≥ 60%/115VAC; @load ≥ 60%/230VAC; @load ≥ 75%/277VAC)	I/P: 115 VAC I/P: 230 VAC I/P: 277 VAC O/P: 60% /75% LOAD Ta: 25°C	THD=2.74% @60% load /115VAC THD=5.93% @60% load /230VAC THD=8.23% @75% load /277VAC
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THD vs LOAD



9	EFFICIENCY(Typ)	90%	I/P: 230VAC O/P: FULL LOAD Ta: 25°C	90.63%
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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 Shut down output voltage, re-power on to recovery
2	OVER VOLTAGE PROTECTION	V1: 61V~ 80V	I/P: 305VAC I/P: 230VAC I/P: 100VAC O/P:MIN LOAD Ta:25°C	65.75V/ 305VAC 64.49V/ 230VAC 64.74V/ 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°C	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°C	135.5% / 305VAC 134.8%/ 230VAC 134.4%/ 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/800V	I/P: High-Line +3V =308V O/P: (1) Full Load (2) Output Short (3) Full load continue Ta: 25°C	(1) 744V (2) 560V (3) 736V
2	PFC Transistor	Q1 Rated 8A/600 V	I/P: High-Line +3V =308V O/P: (1)Full Load (2)Output Short (3) Full Load continue	(1) 462V (2) 486V (3) 458V
3	P.F.C DIODE	D5 Rated 600V/3A	I/P: High-Line +3V =308V O/P: (1) Full Load (2) Output Short (3) Full load continue Ta: 25°C	(1) 434V (2) 434V (3) 402V
4	Diode Peak Voltage	D100 Rated 10A/200V	I/P: High-Line +3V =308V O/P: (1)Full Load (2)Output Short (3) Full Load continue (4) No Load Ta: 25°C	(1) 185V (2) 141V (3) 155V (4) 185V



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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°C	(1) 440V (2) 446V (3) 440V (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°C	(1) 17.5V (2) 17.3V (3) 17.3V (4) 14.5V

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°C	I/P-O/P: 1.512 mA NO DAMAGE
2	ISOLATION RESISTANCE	I/P-O/P: 500VDC>100M Ω	I/P-O/P: 500 VDC Ta: 25°C	I/P-O/P: >9999 M Ω

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/60% LOAD Ta: 25°C	PASS
2	CONDUCTION	EN55015	I/P: 230 VAC/50HZ O/P: FULL LOAD Ta: 25°C	PASS Test by certified Lab
3	RADIATION	EN55015	I/P: 230 VAC/50HZ O/P: FULL LOAD Ta: 25°C	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°C	CRITERIA A
5	E.F.T	EN61000-4-4 LIGHT INDUSTRY INPUT: 1KV	I/P: 230VAC/50HZ O/P: FULL LOAD Ta: 25°C	CRITERIA A
6	SURGE	EN61000-4-5 LIGHT INDUSTRY L-N : 1KV	I/P: 230VAC/50HZ O/P: FULL LOAD Ta: 25°C	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

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT																																																																								
1	TEMPERATURE RISE TEST	MODEL: SLD-50-56 1. ROOM AMBIENT BURN-IN: 2 HRS I/P: 230VAC O/P: FULL LOAD Ta= 23.2°C 2. HIGH AMBIENT BURN-IN: 2 HRS I/P: 230VAC O/P: FULL LOAD Ta=51.9°C																																																																										
				<table border="1"> <thead> <tr> <th>NO</th> <th>Position</th> <th>ROOM AMBIENT Ta= 23.2 °C</th> <th>HIGH AMBIENT Ta=51.9 °C</th> </tr> </thead> <tbody> <tr><td>1</td><td>BD1</td><td>51.5°C</td><td>76.6°C</td></tr> <tr><td>2</td><td>C7</td><td>49.1°C</td><td>74.2°C</td></tr> <tr><td>3</td><td>Q1</td><td>62.2°C</td><td>85.4°C</td></tr> <tr><td>4</td><td>R5</td><td>63.9°C</td><td>87.2°C</td></tr> <tr><td>5</td><td>C5</td><td>63.5°C</td><td>86.8°C</td></tr> <tr><td>6</td><td>C15</td><td>70.1°C</td><td>93.2°C</td></tr> <tr><td>7</td><td>Q2</td><td>94.4°C</td><td>111.5°C</td></tr> <tr><td>8</td><td>T1</td><td>88.3°C</td><td>107.9°C</td></tr> <tr><td>9</td><td>D7</td><td>104.5°C</td><td>117.8°C</td></tr> <tr><td>10</td><td>T1core</td><td>84.8°C</td><td>104.3°C</td></tr> <tr><td>11</td><td>U2</td><td>79.4°C</td><td>98.3°C</td></tr> <tr><td>12</td><td>D100</td><td>76.8°C</td><td>95.6°C</td></tr> <tr><td>13</td><td>C105</td><td>55.9°C</td><td>77.5°C</td></tr> <tr><td>14</td><td>C106</td><td>52.6°C</td><td>75.0°C</td></tr> <tr><td>15</td><td>LF100</td><td>44.8°C</td><td>67.9°C</td></tr> <tr><td>16</td><td>RTH2</td><td>77.5°C</td><td>98.3°C</td></tr> <tr><td>17</td><td>TC</td><td>63.0°C</td><td>81.6°C</td></tr> </tbody> </table>	NO	Position	ROOM AMBIENT Ta= 23.2 °C	HIGH AMBIENT Ta=51.9 °C	1	BD1	51.5°C	76.6°C	2	C7	49.1°C	74.2°C	3	Q1	62.2°C	85.4°C	4	R5	63.9°C	87.2°C	5	C5	63.5°C	86.8°C	6	C15	70.1°C	93.2°C	7	Q2	94.4°C	111.5°C	8	T1	88.3°C	107.9°C	9	D7	104.5°C	117.8°C	10	T1core	84.8°C	104.3°C	11	U2	79.4°C	98.3°C	12	D100	76.8°C	95.6°C	13	C105	55.9°C	77.5°C	14	C106	52.6°C	75.0°C	15	LF100	44.8°C	67.9°C	16	RTH2	77.5°C	98.3°C	17	TC	63.0°C	81.6°C
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2	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR	I/P: 305VAC/110VAC O/P: FULL LOAD Ta= -25°C	TEST: OK																																																																								
3	HIGH HUMIDITY HIGH TEMPERATURE HIGH VOLTAGE TURN ON TEST	AFTER 12 HOURS IN CHAMBER ON CONTROL 50 °C NO DAMAGE	I/P: 305VAC O/P: FULL LOAD Ta=50 °C HUMIDITY= 95% R.H	TEST: OK																																																																								
4	TEMPERATURE COEFFICIENT	± 0.03%/°C (0~50°C)	I/P: 230 VAC O/P: FULL LOAD	± 0.006%/°C (0~50°C)																																																																								
5	STORAGE TEMPERATURE TEST	-40~+80°C	1. Thermal shock Temperature: -45°C~ +90°C 2. Temperature change rate : 25°C / MIN 3. Dwell time low and high temperature : 30 MIN/EACH 4. Total test cycle: 10CYCLE 5. Input/Output condition: STATIC TEST: OK																																																																									
6	THERMAL SHOCK TEST	-20~+50°C	1. Thermal shock Temperature: -25°C~ +55°C 2. Temperature change rate : 25°C / 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																																																																									



50W Constant Power Mode LED Driver

SLD-50 series

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°C TEST: OK
8	CAPACITOR LIFE CYCLE	SLD-50-56: SUPPOSE C105 IS THE MOST CRITICAL COMPONENT (1) I/P: 230VAC O/P: FULL LOAD Tc= 75 °C LIFE TIME (2) I/P: 230VAC O/P: 75% LOAD Tc= 75 °C LIFE TIME (3) I/P: 230VAC O/P: 50% LOAD Tc= 75 °C LIFE TIME	(1) 137176 HRS (2) 96454 HRS (3) 75112 HRS
9	MTBF	Conducted by Parts Stress Analysis Prediction 4150.1K hrs min. Telcordia SR-332 (Bellcore); 362.8K hrs min. MIL-HDBK-217F (25°C)	
10	Ongoing Reliability Test	I/P: 230VAC O/P: FULL LOAD TA=50°C Demonstration Mean Time Between Failure : 30,000 hours	

TEST RESULT	TESTER	REVIEW	APPROVAL
PASS	WUWQ/ZHOUBIAO	WENF	LIUWY