



Test Report: XLG-100-L

100W 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

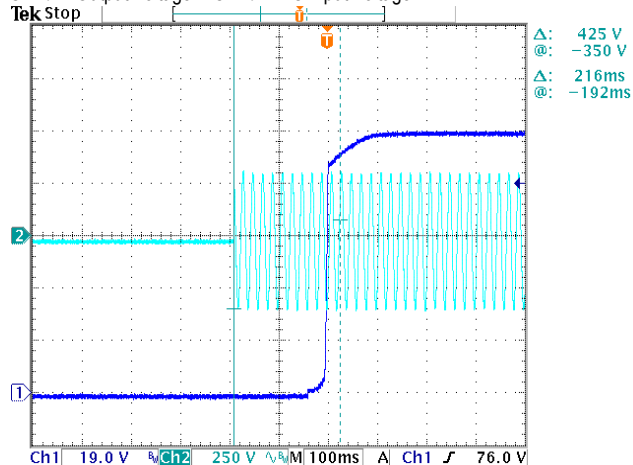
DESIGN VERIFY TEST

OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	CURRENT TOLERANCE	$\pm 5\%$	I/P: 100 VAC / 305 VAC O/P: FULL/ MIN LOAD Ta: 25°C	$< \pm 5\%$
2	CONSTANT CURRENT REGION	71V-142V	I/P: 230 VAC O/P: FULL LOAD Ta: 25°C	47.2 V ~ 142 V
3	OPEN CIRCUIT VOLTAGE (max.)	149V	I/P: 230 VAC O/P: NO LOAD	145.74V
4	CURRENT RIPPLE	3.0% max. @rated current	I/P: 230 VAC O/P: FULL LOAD Ta: 25°C	2.25%
5	CURRENT ADJ. RANGE	350 mA ~1050mA	I/P: 230 VAC O/P: TESTING Ta: 25°C	315 mA ~1150mA
6	CONSTANT POWER	O/P: 100W	I/P: 230 VAC O/P: $V_o \times I_o$	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	216/115 VAC 186/230 VAC

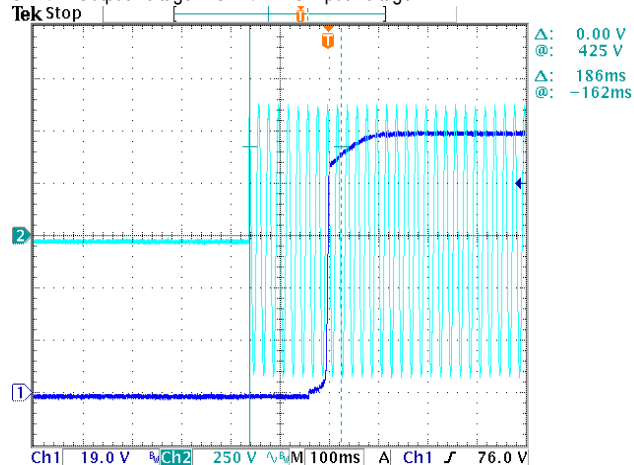
INPUT=115VAC/50HZ @ FULL LOAD

CH1: Output Voltage CH2: AC Input Voltage



INPUT=230 VAC/50HZ @ FULL LOAD

CH1: Output Voltage CH2: AC Input Voltage

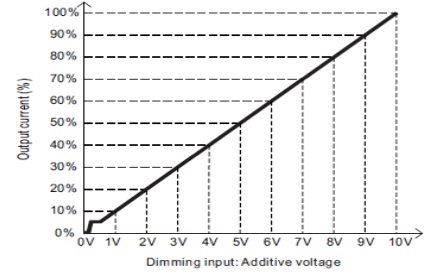
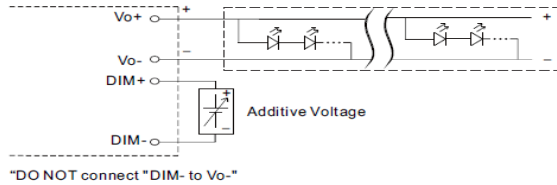


8 DIMMING OPERATION (for AB-Type)

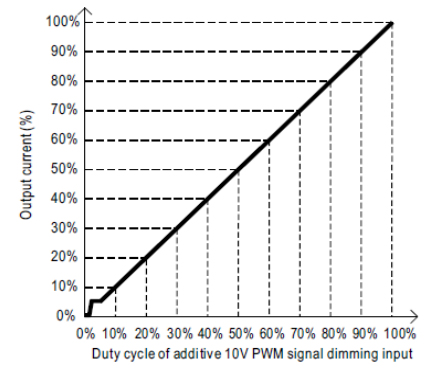
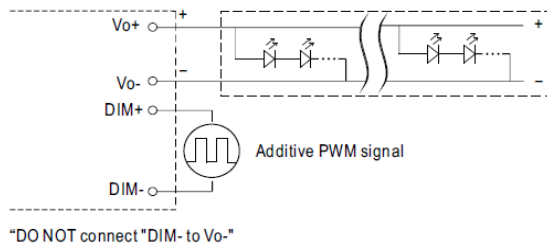
※ 3 in 1 dimming function (for AB-Type)

- Output constant current level can be adjusted by applying one of the three methodologies between DIM+ and DIM-: 0 ~ 10VDC, or 10V PWM signal or resistance.
- Direct connecting to LEDs is suggested. It is not suitable to be used with additional drivers.
- Dimming source current from power supply: 100 μ A (typ.)

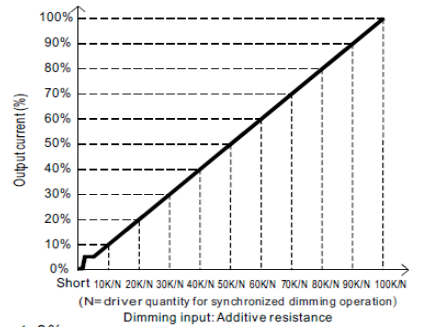
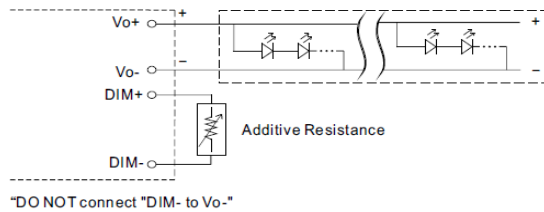
◎ Applying additive 0 ~ 10VDC



◎ Applying additive 10V PWM signal (frequency range 100Hz ~ 3KHz):



◎ Applying additive resistance:



- Note : 1. Min. dimming level is about 8% and the output current is not defined when $0\% < I_{out} < 8\%$.
 2. The output current could drop down to 0% when dimming input is about 0k Ω or 0Vdc, or 10V PWM signal with 0% duty cycle.

I/P: 230 VAC

O/P: DIMMING TEST

Ta: 25°C

	DIMMING	Short	1V	2V	3V	4V	5V	6V	7V	8V	9V	10V	OPEN
1	Output Current	0	0.075A	0.142A	0.210A	0.290A	0.359A	0.428A	0.509A	0.573A	0.648A	0.717A	0.718A
	%	0%	10.66%	20.31%	30.04%	41.46%	51.26%	61.14%	72.67%	81.81%	92.61%	102.47%	102.50%
2	PWM	0V	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	OPEN
	Output Current	0	0.067A	0.136A	0.207A	0.277A	0.346A	0.417A	0.488A	0.562A	0.634A	0.706A	0.706A
	%	0%	9.60%	19.49%	29.50%	39.53%	49.37%	59.57%	69.76%	80.26%	90.63%	100.80%	100.80%
3	R	0%	10K	20K	30K	40K	50K	60K	70K	80K	90K	100K	OPEN
	Output Current	0	0.074A	0.130A	0.204A	0.278A	0.358A	0.416A	0.496A	0.566A	0.642A	0.712A	0.717A
	%	0%	10.59%	18.61%	29.14%	39.70%	51.14%	59.36%	70.87%	80.81%	91.66%	101.76%	102.44%

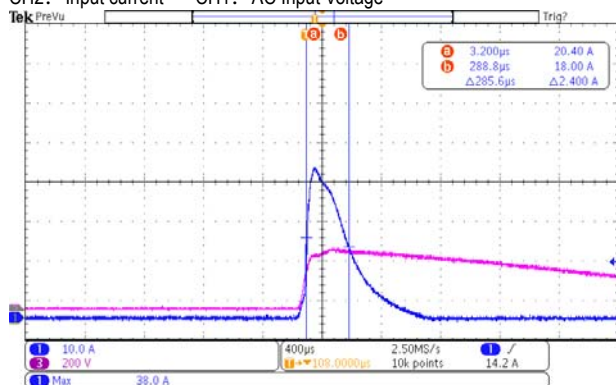
TEST RESULT: OK

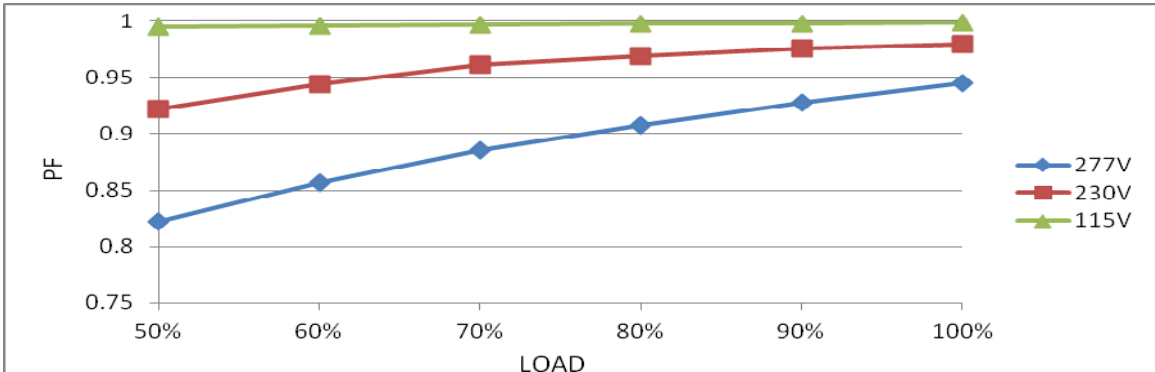
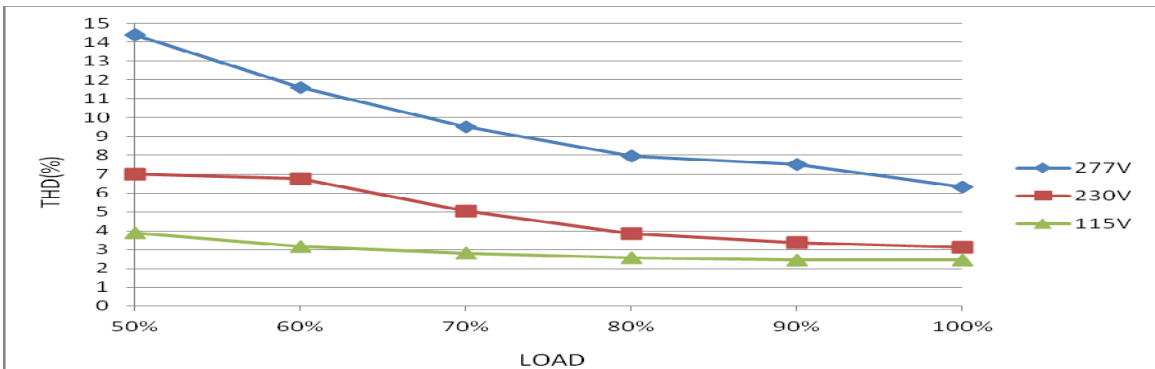
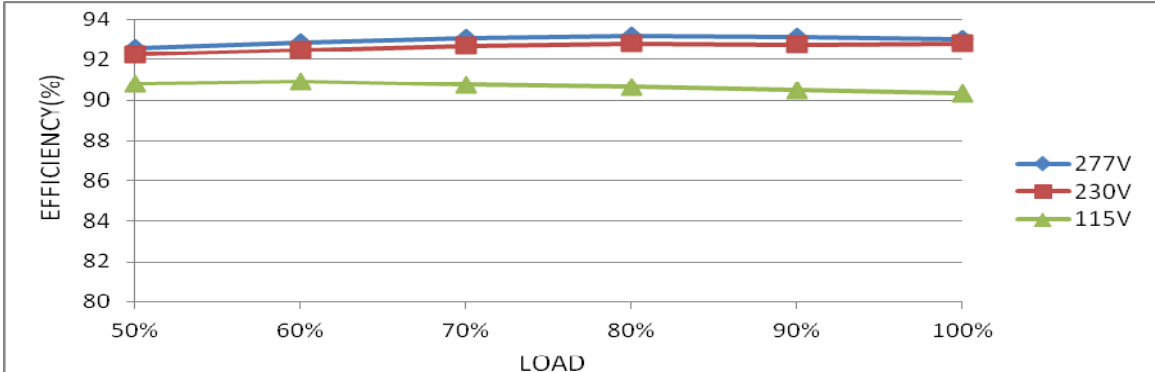
INPUT FUNCTION TEST

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°C	95V~311 V
			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°C	TEST: OK
3	AC CURRENT	1.1A/115VAC 0.5A/230VAC 0.42A/277VAC	I/P: 115 VAC I/P: 230 VAC I/P: 277 VAC O/P: FULL LOAD Ta: 25°C	I=0.967A/ 115VAC I = 0.478A/ 230VAC I = 0.405A/277VAC
4	LEAKAGE CURRENT	< 0.75mA / 277VAC	I/P: 277 VAC O/P: NO LOAD Ta: 25°C	L-FG: 0.452mA N-FG: 0.454mA
5	STANDBY POWER CONSUMPTION	<0.5W for AB -Type	I/P: 230VAC O/P: STANDBY Ta: 25°C	0.41W
6	INRUSH CURRENT(Typ)	230 V/ 50A COLD START (twidth=300us measured at 50% Ipeak) COLD START at 230V	I/P: 230 VAC O/P: FULL LOAD Ta: 25°C	I=38A/ 230VAC Twidth = 285us

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°C	PF=0.999 @ FULL LOAD /115VAC PF=0.983 @ FULL LOAD /230VAC PF=0.954@ FULL LOAD /277VAC																												
PF vs LOAD  <table><caption>PF vs LOAD Data</caption><thead><tr><th>LOAD</th><th>115V</th><th>230V</th><th>277V</th></tr></thead><tbody><tr><td>50%</td><td>0.999</td><td>0.925</td><td>0.825</td></tr><tr><td>60%</td><td>0.999</td><td>0.945</td><td>0.860</td></tr><tr><td>70%</td><td>0.999</td><td>0.960</td><td>0.885</td></tr><tr><td>80%</td><td>0.999</td><td>0.970</td><td>0.910</td></tr><tr><td>90%</td><td>0.999</td><td>0.975</td><td>0.930</td></tr><tr><td>100%</td><td>0.999</td><td>0.980</td><td>0.945</td></tr></tbody></table>					LOAD	115V	230V	277V	50%	0.999	0.925	0.825	60%	0.999	0.945	0.860	70%	0.999	0.960	0.885	80%	0.999	0.970	0.910	90%	0.999	0.975	0.930	100%	0.999	0.980	0.945
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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°C	THD=4.18% @50% load /115VAC THD=6.99% @50% load /230VAC THD=8.65% @75% load /277VAC																												
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9	EFFICIENCY(Typ)	92.5%	I/P: 230VAC O/P: FULL LOAD Ta: 25°C	93.39%																												
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PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OVER POWER PROTECTION	105-150%	I/P: 100VAC I/P: 230VAC I/P: 305VAC O/P: TESTING Ta: 25°C	123.15%/ 100VAC 128.3%/ 230VAC 123.15%/ 305VAC Hiccup mode, recovers automatically after fault condition is removed
2	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
3	OVER VOLTAGE PROTECTION	V1: 160V~ 220V	I/P: 305VAC I/P: 230VAC I/P: 100VAC O/P: MIN LOAD Ta: 25°C	176V/ 305VAC 175V/ 230VAC 176V/ 100VAC Shut down output voltage, re-power on to recover
4	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 or Constant Current Limiting, recovers automatically after fault condition is removed
5	INPUT OVER VOLTAGE (for XLG-100I only)	320 ~ 390VAC (Shut down output voltage when the input voltage exceeds protection voltage Can survive input voltage stress of 440Vac for 48 hours	I/P: TESTING O/P: FULL LOAD Ta: 25°C	PASS

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°C	(1) 474V (2) 462V (3) 442V
2	PFC Transistor	Q1 Rated 12.5A/700 V	I/P: High-Line +3V =308V O/P: (1) Full Load (2) Output Short (3) Full Load continue Ta: 25°C	(1) 470V (2) 458V (3) 454V
3	P.F.C DIODE	D5 Rated 9A/600V	I/P: High-Line +3V =308V O/P: (1) Full Load Turn on (2) Output Short (3) Full load continue Ta: 25°C	(1) 474V (2) 466V (3) 456V



100W Constant Power Mode LED Driver

XLG-100 series

4	Diode Peak Voltage	D101 Rated 6A/ 400V	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) 289V (2) 178V (3)218V (4) 286V
5	Input Capacitor Voltage	C5 Rated: 47 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) 444V (2) 440V (3) 440V (4) 432V
6	Control IC Voltage Test	U2 Rated 27 V	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) 12.5V (2) 12.3V (3) 12.2V (4) 12.2V

SAFETY TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	WITHSTAND VOLTAGE	I/P-O/P: 3.75KVAC/min I/P-FG: 2KVAC/min O/P-FG: 1.5KVAC/min	I/P-O/P: 4.125 KVAC/min I/P-FG: 2.4 KVAC/min O/P-FG: 1.8 KVAC/min Ta: 25°C	I/P-O/P: 3.336mA I/P-FG: 3.580mA O/P-FG: 2.914mA NO DAMAGE
2	ISOLATION RESISTANCE	I/P-O/P: 500VDC>100M Ω I/P-FG: 500VDC>100M Ω O/P-FG: 500VDC>100M Ω	I/P-O/P: 500 VDC I/P-FG: 500 VDC O/P-FG: 500 VDC Ta: 25°C	I/P-O/P: >9999G Ω I/P-FG: >9999 G Ω O/P-FG: >9999 G Ω NO DAMAGE
3	GROUNDING CONTINUITY	FG(PE) TO CHASSIS OR TRACE < 100 m Ω	40A / 2min Ta:25°C	19m 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/50% 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: 2KV	I/P: 230VAC/50HZ O/P: FULL LOAD Ta: 25°C	CRITERIA A
6	SURGE	EN61000-4-5 LIGHT INDUSTRY L-N : 4KV L-PE: 6KV	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: XLG-100-L 1. ROOM AMBIENT BURN-IN: 2 HRS I/P: 230VAC O/P: FULL LOAD Ta= 26.8℃ 2. HIGH AMBIENT BURN-IN: 2 HRS I/P: 230VAC O/P: FULL LOAD Ta=60.7℃ <table><thead><tr><th>NO</th><th>Position</th><th>ROOM AMBIENT Ta= 26.8 °C</th><th>HIGH AMBIENT Ta=60.7 °C</th></tr></thead><tbody><tr><td>1</td><td>ZNR3</td><td>48.4℃</td><td>79.9℃</td></tr><tr><td>2</td><td>C1</td><td>50.5℃</td><td>81.7℃</td></tr><tr><td>3</td><td>RTH1</td><td>57.8℃</td><td>87.1℃</td></tr><tr><td>4</td><td>BD1</td><td>52.4℃</td><td>83.8℃</td></tr><tr><td>5</td><td>L2</td><td>53.7℃</td><td>85.5℃</td></tr><tr><td>6</td><td>Q1</td><td>54.6℃</td><td>86.2℃</td></tr><tr><td>7</td><td>C5</td><td>55.5℃</td><td>86.7℃</td></tr><tr><td>8</td><td>C51</td><td>59.6℃</td><td>91.6℃</td></tr><tr><td>9</td><td>D5</td><td>53.4℃</td><td>85.3℃</td></tr><tr><td>10</td><td>Q2</td><td>54.7℃</td><td>87.4℃</td></tr><tr><td>11</td><td>Q3</td><td>55.7℃</td><td>88.6℃</td></tr><tr><td>12</td><td>U1</td><td>54.9℃</td><td>86.7℃</td></tr><tr><td>13</td><td>U2</td><td>59.7℃</td><td>91.9℃</td></tr><tr><td>14</td><td>C15</td><td>56.2℃</td><td>88.8℃</td></tr><tr><td>15</td><td>T1</td><td>70.0℃</td><td>104.0℃</td></tr><tr><td>16</td><td>D100</td><td>60.5℃</td><td>93.0℃</td></tr><tr><td>17</td><td>D101</td><td>60.7℃</td><td>93.5℃</td></tr><tr><td>18</td><td>C105</td><td>55.8℃</td><td>88.6℃</td></tr><tr><td>19</td><td>C106</td><td>54.9℃</td><td>87.2℃</td></tr><tr><td>20</td><td>RTH3</td><td>53.2℃</td><td>84.8℃</td></tr><tr><td>21</td><td>TC</td><td>49.5℃</td><td>81.0℃</td></tr></tbody></table>			NO	Position	ROOM AMBIENT Ta= 26.8 °C	HIGH AMBIENT Ta=60.7 °C	1	ZNR3	48.4℃	79.9℃	2	C1	50.5℃	81.7℃	3	RTH1	57.8℃	87.1℃	4	BD1	52.4℃	83.8℃	5	L2	53.7℃	85.5℃	6	Q1	54.6℃	86.2℃	7	C5	55.5℃	86.7℃	8	C51	59.6℃	91.6℃	9	D5	53.4℃	85.3℃	10	Q2	54.7℃	87.4℃	11	Q3	55.7℃	88.6℃	12	U1	54.9℃	86.7℃	13	U2	59.7℃	91.9℃	14	C15	56.2℃	88.8℃	15	T1	70.0℃	104.0℃	16	D100	60.5℃	93.0℃	17	D101	60.7℃	93.5℃	18	C105	55.8℃	88.6℃	19	C106	54.9℃	87.2℃	20	RTH3	53.2℃	84.8℃	21	TC	49.5℃	81.0℃
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13	U2	59.7℃	91.9℃																																																																																									
14	C15	56.2℃	88.8℃																																																																																									
15	T1	70.0℃	104.0℃																																																																																									
16	D100	60.5℃	93.0℃																																																																																									
17	D101	60.7℃	93.5℃																																																																																									
18	C105	55.8℃	88.6℃																																																																																									
19	C106	54.9℃	87.2℃																																																																																									
20	RTH3	53.2℃	84.8℃																																																																																									
21	TC	49.5℃	81.0℃																																																																																									
2	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR	I/P: 305VAC/100VAC O/P: FULL LOAD Ta= -45℃/-35℃	TEST: OK																																																																																								



100W Constant Power Mode LED Driver

XLG-100 series

3	HIGH HUMIDITY HIGH TEMPERATURE HIGH VOLTAGE TURN ON TEST	AFTER 12 HOURS IN CHAMBER ON CONTROL 60 °C NO DAMAGE	I/P: 305VAC O/P: FULL LOAD Ta=60 °C HUMIDITY= 95% R.H	TEST: OK
4	TEMPERATURE COEFFICIENT	±0.03%/°C (0~60°C)	I/P: 230 VAC O/P: FULL LOAD	±0.0008%/°C (0~60°C)
5	STORAGE TEMPERATURE TEST	-40~+80°C	1. Thermal shock Temperature: -50°C ~ +125°C 2. Temperature change rate : 25°C / MIN 3. Dwell time low and high temperature : 30 MIN/EACH 4. Total test cycle: 200CYCLE 5. Input/Output condition: STATIC TEST: OK	
6	THERMAL SHOCK TEST	-40~+60°C	1. Thermal shock Temperature: -45°C ~ +65°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	
7	VIBRATION TEST	10~ 500Hz, 5G 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: 6G (5) Test Time: 180min in each axis (X.Y.Z) (6) Ta: 25°C TEST: OK	
8	CAPACITOR LIFE CYCLE	XLG-100-L: SUPPOSE C105 IS THE MOST CRITICAL COMPONENT (1) I/P: 230VAC O/P: FULL LOAD Tc= 80 °C LIFE TIME (2) I/P: 230VAC O/P: 75% LOAD Tc= 80 °C LIFE TIME (3) I/P: 230VAC O/P: 50% LOAD Tc= 80 °C LIFE TIME		(1) 41082 HRS (2) 57486 HRS (3) 58362 HRS
9	MTBF	Conducted by Parts Stress Analysis Prediction 1006.16 K hrs min. Telcordia SR-332 (Bellcore) 276.37K 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 : 50,000 hours		

TEST RESULT	TESTER	REVIEW	APPROVAL
PASS	WUWQ/ZHOUB	WENF	LIUWY