



# Test Report: ELGC-300-L

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300W 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

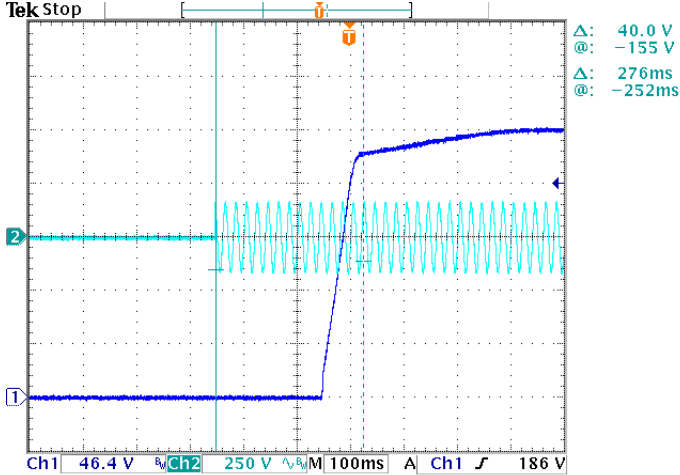
■ DESIGN VERIFY TEST

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	< ±5%
2	CONSTANT CURRENT REGION	116 V~ 232 V	I/P: 230 VAC O/P: FULL LOAD Ta: 25°C	27 V~ 232 V
3	OPEN CIRCUIT VOLTAGE (max.)	240 V	I/P: 230 VAC O/P: NO LOAD	235.5V
4	CURRENT RIPPLE	5.0% max. @rated current	I/P: 230 VAC O/P: FULL LOAD Ta: 25°C	1.5%
5	CURRENT ADJ. RANGE	0.65A ~ 2.0 A	I/P: 230 VAC O/P: TESTING Ta: 25°C	0.65 A ~ 2.2A
6	CONSTANT POWER	O/P: 301.6W	I/P: 230 VAC O/P: Vo×Io	TEST: OK
7	SET UP TIME(Max)	500ms/115VAC 500ms/230VAC	I/P: 115 VAC I/P: 230 VAC O/P: FULL LOAD Ta: 25°C	276 ms/115 VAC 276 ms/230 VAC

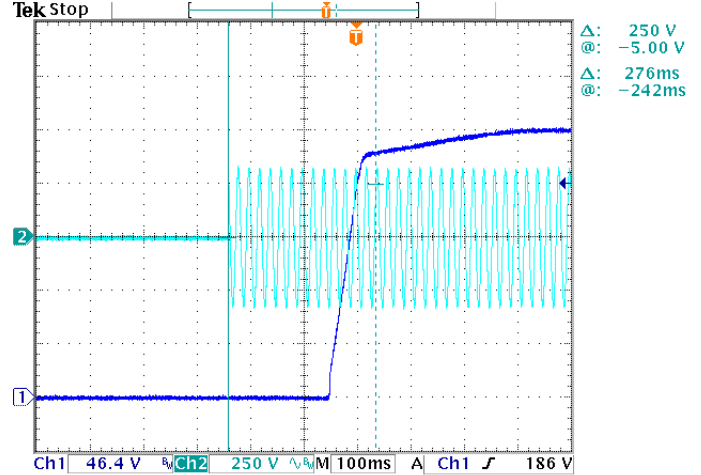
INPUT=115VAC/50HZ @ FULL LOAD

CH1: Output Voltage CH2: AC Input Voltage



INPUT=230 VAC/50HZ @ FULL LOAD

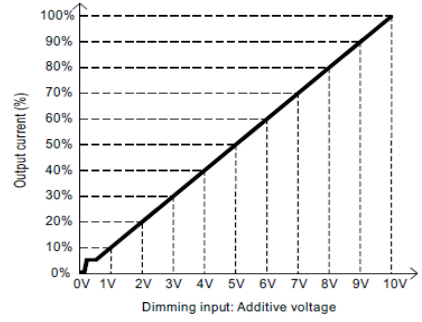
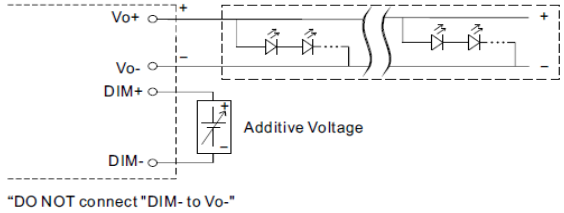
CH1: Output Voltage CH2: AC Input Voltage



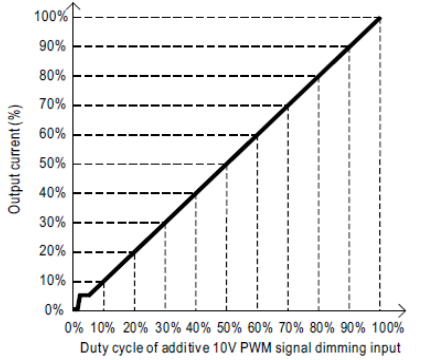
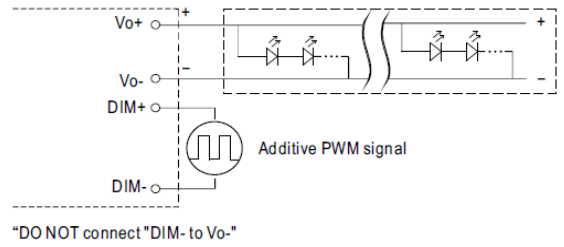
8 DIMMING OPERATION (for AB-Type)

※ 3 in 1 dimming function(for B-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 $\mu$ A (typ.)

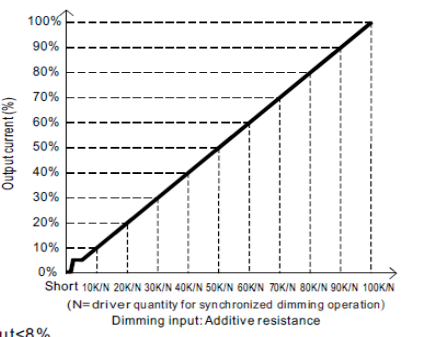
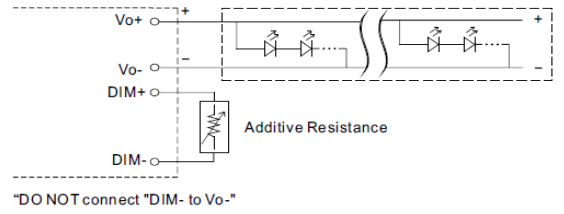
◎ Applying additive 0 ~ 10VDC



◎ 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% < Iout < 8%.  
 2. The output current could drop down to 0% when dimming input is about 0k $\Omega$  or 0Vdc, or 10V PWM signal with 0% duty cycle.

I/P: 230 VAC  
 O/P: DIMMING TEST  
 Ta: 25 $^{\circ}$ C

1	DIMMING	Short	1V	2V	3V	4V	5V	6V	7V	8V	9V	10V	OPEN
	Output Current	0	0.1477A	0.2865A	0.4060A	0.5257A	0.6665A	0.7929A	0.9363A	1.0580A	1.1897A	1.3053A	1.3055A
%	0%	11.36%	22.04%	31.23%	40.44%	51.27%	60.99%	72.02%	81.38%	91.52%	100.41%	100.42%	
2	PWM	0V	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	OPEN
	Output Current	0	0.1554A	0.2730A	0.4200A	0.5326A	0.6560A	0.8000A	0.9217A	1.0550A	1.1836A	1.3082A	1.3084A
%	0%	11.95%	21.00%	32.31%	40.97%	50.46%	61.54%	70.90%	81.15%	91.05%	100.63%	100.65%	
3	R	0%	10K	20K	30K	40K	50K	60K	70K	80K	90K	100K	OPEN
	Output Current	0	0.1495A	0.2680A	0.4080A	0.5277A	0.6480A	0.7945A	0.9178A	1.0490A	1.1800A	1.3000A	1.3064A
%	0%	11.50%	20.62%	31.38%	40.59%	49.85%	61.12%	70.60%	80.69%	90.77%	100.00%	100.49%	

TEST RESULT: OK  
 TEST RESULT: OK

9 DIMMING OPERATION (for DX-Types by User definition)

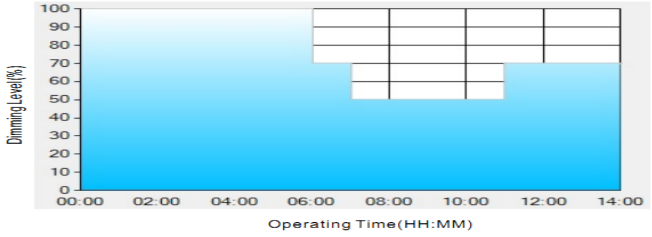
- ※ DALI Interface (primary side; for DA-Type)
  - Apply DALI signal between DA+ and DA-.
  - DALI protocol comprises 16 groups and 64 addresses.
  - First step is fixed at 8% of output.

TEST RESULT: OK

※ Smart timer dimming function

MEAN WELL Smart timer dimming primarily provides the adaptive proportion dimming profile for the output constant current level to perform up to 14 consecutive hours. 3 dimming profiles hereunder are defined accounting for the most frequently seen applications. If other options may be needed, please contact MEAN WELL for details.

Ex: ☉ D01-Type: the profile recommended for residential lighting



Set up for D01-Type in Smart timer dimming software program:

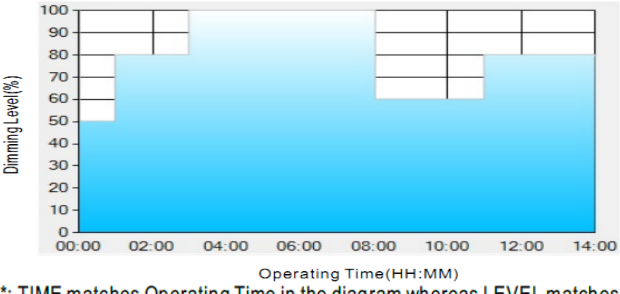
	T1	T2	T3	T4
TIME**	06:00	07:00	11:00	---
LEVEL**	100%	70%	50%	70%

\*\* TIME matches Operating Time in the diagram whereas LEVEL matches Dimming Level.

Example: If a residential lighting application adopts D01-Type, when turning on the power supply at 6:00pm, for instance:

- [1] The power supply will switch to the constant current level at 100% starting from 6:00pm.
  - [2] The power supply will switch to the constant current level at 70% in turn, starting from 0:00am, which is 06:00 after the power supply turns on.
  - [3] The power supply will switch to the constant current level at 50% in turn, starting from 1:00am, which is 07:00 after the power supply turns on.
  - [4] The power supply will switch to the constant current level at 70% in turn, starting from 5:00am, which is 11:00 after the power supply turns on.
- The constant current level remains till 8:00am, which is 14:00 after the power supply turns on.

Ex: ☉ D02-Type: the profile recommended for street lighting



Set up for D02-Type in Smart timer dimming software program:

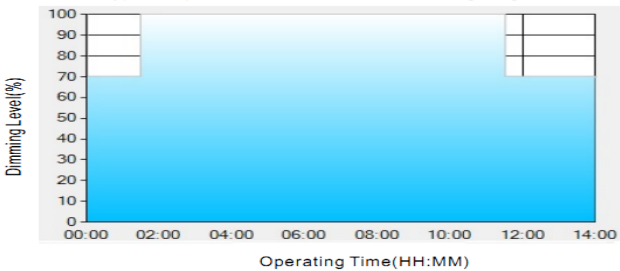
	T1	T2	T3	T4	T5
TIME**	01:00	03:00	8:00	11:00	---
LEVEL**	50%	80%	100%	60%	80%

\*\* TIME matches Operating Time in the diagram whereas LEVEL matches Dimming Level.

Example: If a street lighting application adopts D02-Type, when turning on the power supply at 5:00pm, for instance:

- [1] The power supply will switch to the constant current level at 50% starting from 5:00pm.
- [2] The power supply will switch to the constant current level at 80% in turn, starting from 6:00pm, which is 01:00 after the power supply turns on.
- [3] The power supply will switch to the constant current level at 100% in turn, starting from 8:00pm, which is 03:00 after the power supply turns on.
- [4] The power supply will switch to the constant current level at 60% in turn, starting from 1:00am, which is 08:00 after the power supply turns on.
- [5] The power supply will switch to the constant current level at 80% in turn, starting from 4:00am, which is 11:00 after the power supply turns on. The constant current level remains till 6:30am, which is 14:00 after the power supply turns on.

Ex: ☉ D03-Type: the profile recommended for tunnel lighting



Set up for D03-Type in Smart timer dimming software program:

	T1	T2	T3
TIME**	01:30	11:00	---
LEVEL**	70%	100%	70%

\*\* TIME matches Operating Time in the diagram whereas LEVEL matches Dimming Level.

Example: If a tunnel lighting application adopts D03-Type, when turning on the power supply at 4:30pm, for instance:

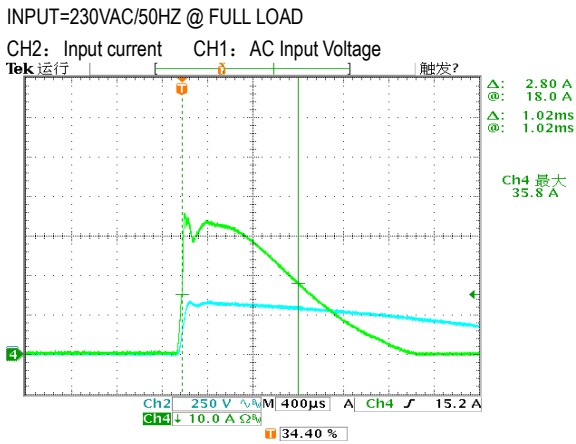
- [1] The power supply will switch to the constant current level at 70% starting from 4:30pm.
  - [2] The power supply will switch to the constant current level at 100% in turn, starting from 6:00pm, which is 01:30 after the power supply turns on.
  - [3] The power supply will switch to the constant current level at 70% in turn, starting from 5:00am, which is 11:00 after the power supply turns on.
- The constant current level remains till 6:30am, which is 14:00 after the power supply turns on.

TEST RESULT: OK

MEAN WELL  
2018/10/2

**INPUT FUNCTION TEST**

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	INPUT VOLTAGE RANGE	90VAC~305 VAC	I/P: TESTING O/P: FULL LOAD (PLEASE CHECK DERATING CURVE) Ta: 25°C	87V~305 V
			I/P: LOW-LINE-3V=87 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: 90 VAC ~305 VAC O/P: FULL~NO LOAD Ta: 25°C	TEST: OK
3	AC CURRENT	115VAC/ 3.0 A 230 VAC/ 1.6 A 277 VAC/ 1.3 A	I/P: 115 VAC I/P: 230 VAC I/P: 277 VAC O/P: FULL LOAD Ta: 25°C	I=2.821A/ 115VAC I = 1.401A/ 230VAC I = 1.207A/277VAC
4	LEAKAGE CURRENT	< 0.75mA / 277VAC	I/P: 277 VAC O/P: NO LOAD Ta: 25°C	L-FG: 0.364mA N-FG: 0.356mA
5	STANDBY POWER CONSUMPTION	<0.5W for A/B/DA-Type	I/P: 230VAC O/P: NO LOAD/STANDBY Ta: 25°C	0.40W
6	INRUSH CURRENT(Typ)	230 V/ 45A COLD START (twidth=1300us measured at 50% Ipeak) COLD START at 230V	I/P: 230 VAC O/P: FULL LOAD Ta: 25°C	I=35.8A/ 230VAC Twidth = 1020 us

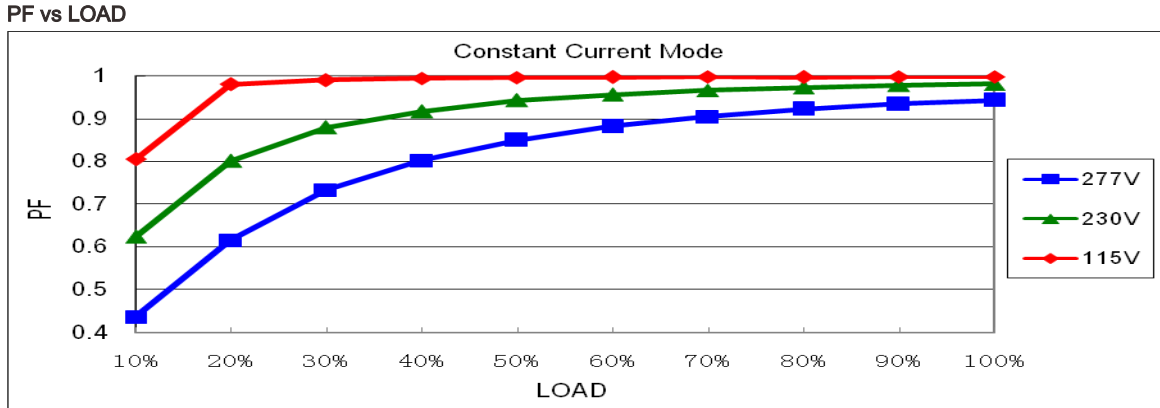




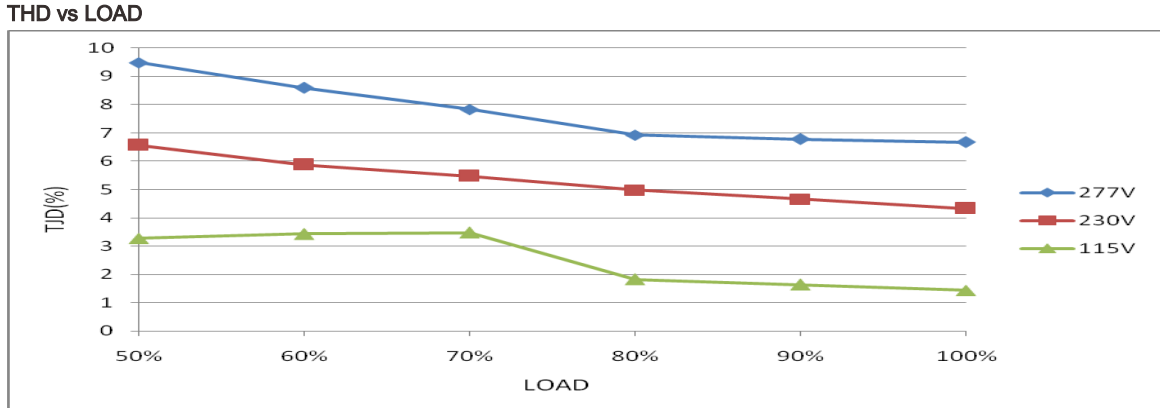
300W Constant Power Mode LED Driver

ELGC-300 series

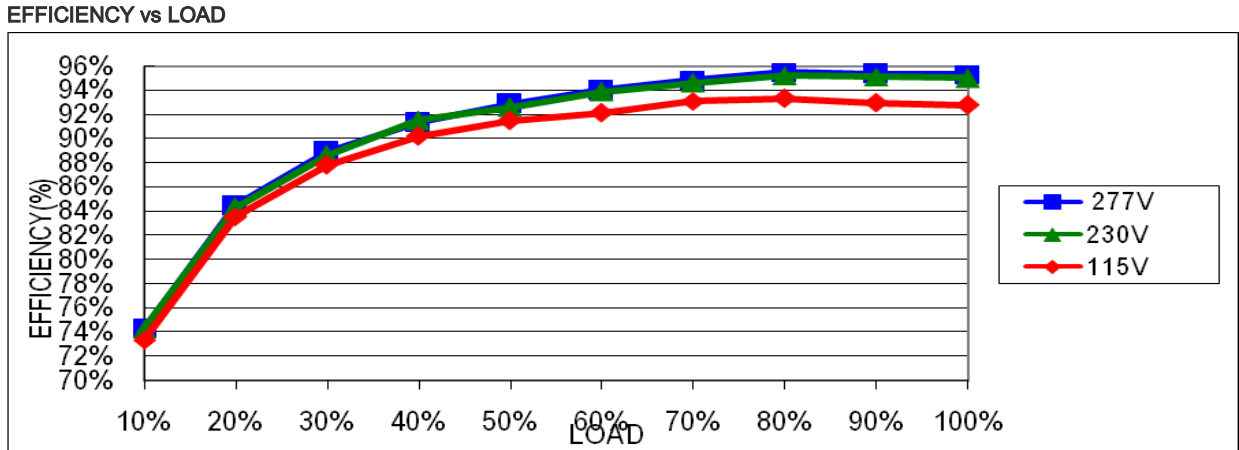
7	POWER FACTOR	0.97/ 115VAC@ FULL LOAD 0.95/ 230VAC@ FULL LOAD 0.92/ 277VAC@ FULL LOAD	I/P: 115 VAC I/P: 230 VAC I/P: 277 VAC O/P: FULL LOAD Ta: 25°C	PF=0.998@ FULL LOAD /115VAC PF=0.981 @ FULL LOAD /230VAC PF=0.943@ FULL LOAD /277VAC
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8	TOTAL HARMONIC 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=3.23% @50% load /115VAC THD=6.56% @50% load /230VAC THD=7.22% @75% load /277VAC
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9	EFFICIENCY(Typ)	94.5%	I/P: 230VAC O/P: FULL LOAD Ta: 25°C	95.01%
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**PROTECTION FUNCTION TEST**

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OVER VOLTAGE PROTECTION	241V~275V	I/P: 100VAC I/P: 230VAC I/P: 305VAC O/P: NO LOAD	249.07V/ 100VAC 249.08V/ 230VAC 248.99V/ 305VAC Shut down o/p voltage, re-power on to recovery
2	OVER TEMPERATURE PROTECTION	NO DAMAGE	I/P: 100VAC I/P: 230VAC I/P: 305VAC O/P: FULL LOAD	O.T.P. Active T <sub>case</sub> >85°C±5°C, derate power automatically by 6%/°C max
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 constant current limiting ,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) <b>Peak Voltage</b>	Q5 Rated 23.9A/ 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) 442V (2) 448V (3) 446V
2	PFC Transistor	Q1 Rated 22A/600V	I/P: High-Line +3V =308V O/P: (1)Full Load (2)Output Short (3) Full Load continue	(1) 490V (2) 452V (3) 486V
3	P.F.C DIODE	D1 Rated 10A/ 600 V	I/P: High-Line +3V =308V O/P: (1) Full Load Turn on (2) Output Short (3) Full load continue Ta: 25°C	(1) 442V (2) 436V (3) 446V
4	<b>Diode Peak Voltage</b>	Q100 Rated 10A/600V	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) 492V (2) 42V (3)486V (4) 494V
5	<b>Input Capacitor Voltage</b>	C5 Rated: 150 μ / 450 V	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) 438V (3) 446V (4) 444V

6	Control IC Voltage Test	U2 Rated 16 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) 13.4V (2) 13.4V (3) 13.4V (4) 13.4V
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**SAFETY TEST**

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	WITHSTAND VOLTAGE	I/P-O/P: 3.75KVAC/min I/P-FG: 2 KVAC/min<4.5mA O/P-FG: 1.5KVAC/min	I/P-O/P: 4.125 KVAC/min I/P-FG: 2.4KVAC/min O/P-FG: 1.8 KVAC/min Ta: 25°C	I/P-O/P: 2.304 mA I/P-FG: 2.455mA O/P-FG: 2.764mA NO DAMAGE
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°C	I/P-O/P: >9999GΩ I/P-FG: >1004 G Ω O/P-FG: >999 G Ω NO DAMAGE
3	GROUNDING CONTINUITY	FG(PE) TO CHASSIS OR TRACE < 100 mΩ	40A / 2min Ta:25°C	27mΩ

**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
3	RADIATION	EN55015	I/P: 230 VAC/50HZ O/P: FULL LOAD Ta: 25°C	PASS
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	PASS
5	E.F.T	EN61000-4-4 LIGHT INDUSTRY INPUT: 2KV	I/P: 230VAC/50HZ O/P: FULL LOAD Ta: 25°C	PASS
6	SURGE	EN61000-4-5 LIGHT INDUSTRY L-N : 4KV L-PE: 6KV	I/P: 230VAC/50HZ O/P: FULL LOAD Ta: 25°C	PASS
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: ELGC-300-L 1. ROOM AMBIENT BURN-IN: 2 HRS I/P: 230VAC O/P: FULL LOAD Ta= 27.8°C 2. HIGH AMBIENT BURN-IN: 2 HRS I/P: 230VAC O/P: FULL LOAD Ta=43.6°C																																																																																						
				<table border="1"> <thead> <tr> <th>NO</th> <th>Position</th> <th>ROOM AMBIENT Ta= 27.8 °C</th> <th>HIGH AMBIENT Ta=43.6 °C</th> </tr> </thead> <tbody> <tr><td>1</td><td>RT1</td><td>62.2°C</td><td>78.1°C</td></tr> <tr><td>2</td><td>L1</td><td>63.5°C</td><td>79.2°C</td></tr> <tr><td>3</td><td>BD1</td><td>68.1°C</td><td>79.5°C</td></tr> <tr><td>4</td><td>C5</td><td>62.7°C</td><td>79.9°C</td></tr> <tr><td>5</td><td>Q1</td><td>63.9°C</td><td>76.2°C</td></tr> <tr><td>6</td><td>D1</td><td>65.6°C</td><td>78.3°C</td></tr> <tr><td>7</td><td>Q6</td><td>64.3°C</td><td>77.9°C</td></tr> <tr><td>8</td><td>Q5</td><td>65.1°C</td><td>79.1°C</td></tr> <tr><td>9</td><td>U2</td><td>62.9°C</td><td>89.7°C</td></tr> <tr><td>10</td><td>R8</td><td>63.6°C</td><td>81.0°C</td></tr> <tr><td>11</td><td>C41</td><td>63.9°C</td><td>80.8°C</td></tr> <tr><td>12</td><td>T1</td><td>73.4°C</td><td>80.8°C</td></tr> <tr><td>13</td><td>Q100</td><td>65.5°C</td><td>73.7°C</td></tr> <tr><td>14</td><td>Q101</td><td>65.4°C</td><td>71.9°C</td></tr> <tr><td>15</td><td>U107</td><td>66.0°C</td><td>84.2°C</td></tr> <tr><td>16</td><td>C103</td><td>61.1°C</td><td>82.4°C</td></tr> <tr><td>17</td><td>C107</td><td>58.4°C</td><td>88.7°C</td></tr> <tr><td>18</td><td>T500</td><td>68.3°C</td><td>83.2°C</td></tr> <tr><td>19</td><td>C562</td><td>66.6°C</td><td>78.5°C</td></tr> <tr><td>20</td><td>U510</td><td>71.6°C</td><td>78.1°C</td></tr> </tbody> </table>	NO	Position	ROOM AMBIENT Ta= 27.8 °C	HIGH AMBIENT Ta=43.6 °C	1	RT1	62.2°C	78.1°C	2	L1	63.5°C	79.2°C	3	BD1	68.1°C	79.5°C	4	C5	62.7°C	79.9°C	5	Q1	63.9°C	76.2°C	6	D1	65.6°C	78.3°C	7	Q6	64.3°C	77.9°C	8	Q5	65.1°C	79.1°C	9	U2	62.9°C	89.7°C	10	R8	63.6°C	81.0°C	11	C41	63.9°C	80.8°C	12	T1	73.4°C	80.8°C	13	Q100	65.5°C	73.7°C	14	Q101	65.4°C	71.9°C	15	U107	66.0°C	84.2°C	16	C103	61.1°C	82.4°C	17	C107	58.4°C	88.7°C	18	T500	68.3°C	83.2°C	19	C562	66.6°C	78.5°C	20	U510	71.6°C	78.1°C
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9	U2	62.9°C	89.7°C																																																																																					
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19	C562	66.6°C	78.5°C																																																																																					
20	U510	71.6°C	78.1°C																																																																																					
2	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR	I/P: 305VAC/100VAC O/P: FULL LOAD/85% LOAD Ta= -45°C/-35°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 (0~60°C)	I/P: 230 VAC O/P: FULL LOAD	±0.0025%/°C (0~60°C)																																																																																				
5	STORAGE TEMPERATURE TEST	-40~+80°C	1. Thermal shock Temperature: -45°C~ +85°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																																																																																					



300W Constant Power Mode LED Driver

**ELGC-300 series**

6	THERMAL SHOCK TEST	-40~+50°C	1. Thermal shock Temperature: -45°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: 15cyle:230VAC/ FULL LOAD AC on 3 sec/AC off 1 sec TEST 1cyle: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
8	CAPACITOR LIFE CYCLE	ELGC-300-L: SUPPOSE C105 IS THE MOST CRITICAL COMPONENT (1) I/P: 230VAC O/P: FULL LOAD Tc= 70 °C LIFE TIME (2) I/P: 230VAC O/P: 75% LOAD Tc= 70 °C LIFE TIME (3) I/P: 230VAC O/P: 50% LOAD Tc= 70 °C LIFE TIME	(1) 138348 HRS (2) 142241 HRS (3) 140748 HRS
9	MTBF	Conducted by Parts Stress Analysis Prediction 1637.5K hrs min. Telcordia SR-332 (Bellcore) ; 170.1K 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