



# Test Report: ELGC-300-H

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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



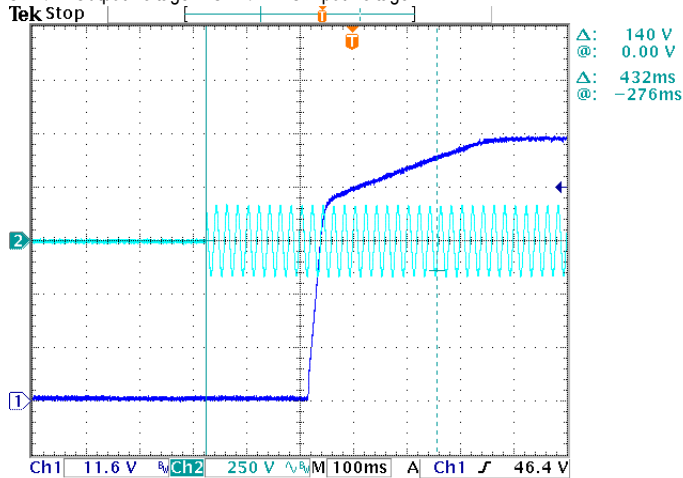
DESIGN VERIFY TEST

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	29 V~ 58 V	I/P: 230 VAC O/P: FULL LOAD Ta: 25°C	5.8 V~ 58 V
3	OPEN CIRCUIT VOLTAGE (max.)	62 V	I/P: 230 VAC O/P: NO LOAD Ta: 25°C	57.3V
4	CURRENT RIPPLE	5.0% max. @rated current	I/P: 230 VAC O/P: FULL LOAD Ta: 25°C	3.53%
5	CURRENT ADJ. RANGE	2.6 A ~ 8.0A	I/P: 230 VAC O/P: TESTING Ta: 25°C	2.6 A ~ 8.0A
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	432 ms/115 VAC 452 ms/230 VAC

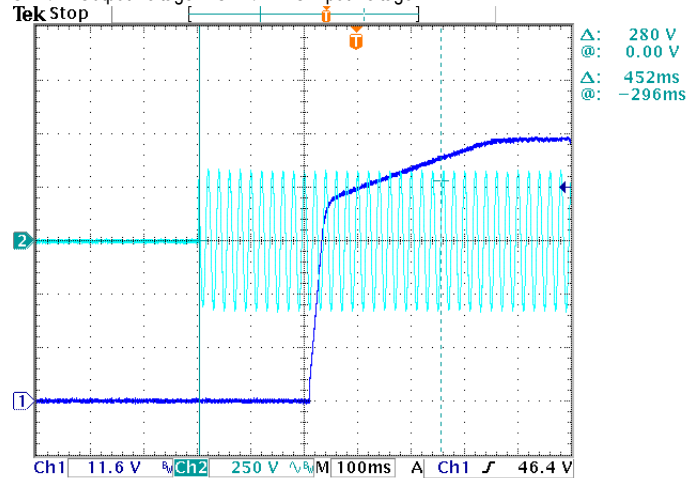
INPUT=115VAC/50HZ @ FULL LOAD

CH1: Output Voltage CH2: AC Input Voltage



INPUT=230 VAC/50HZ @ FULL LOAD

CH1: Output Voltage CH2: AC Input Voltage

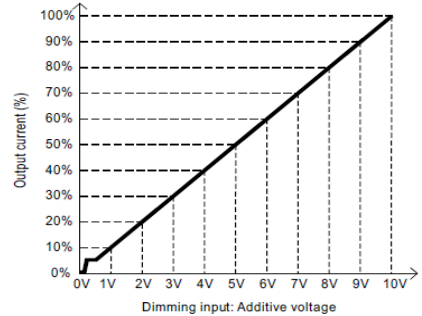
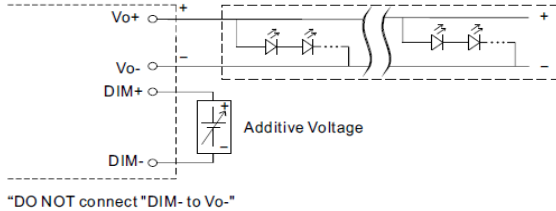


8 DIMMING OPERATION (for AB-Type)

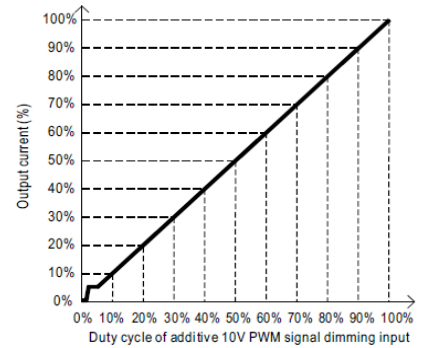
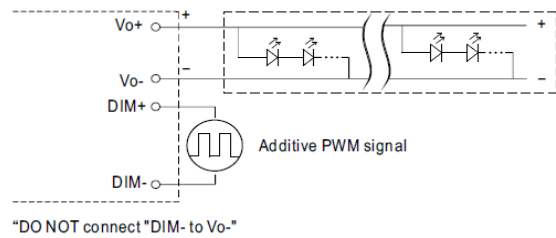
※ 3 in 1 dimming function(for B-Type)

- 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.)

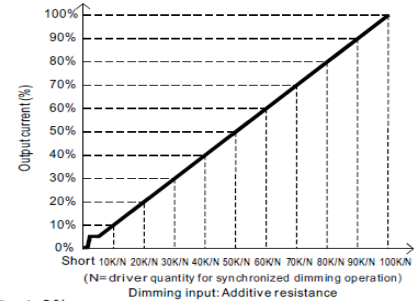
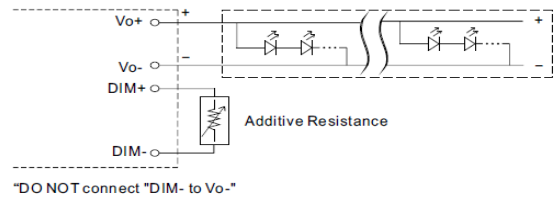
Ⓒ Applying additive 0 ~ 10VDC



Ⓒ 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

	DIMMING	Output Current											
		Short	1V	2V	3V	4V	5V	6V	7V	8V	9V	10V	OPEN
1	Output Current	0A	0.9943A	1.7336A	2.6000A	3.3400A	4.2000A	4.9423A	5.8100A	6.5540A	7.3640A	8.0680A	8.0700A
	%	0%	12.43%	21.67%	32.50%	41.75%	52.50%	61.78%	72.63%	81.93%	92.05%	100.85%	100.88%
	PWM	0V	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	OPEN
2	Output Current	0	0.9988A	1.7380A	2.6000A	3.3400A	4.0900A	4.9470A	5.6900A	6.5600A	7.3680A	8.0760A	8.0770A
	%	0%	12.49%	21.73%	32.50%	41.75%	51.13%	61.84%	71.13%	82.00%	92.10%	100.95%	100.96%
	R	0%	10K	20K	30K	40K	50K	60K	70K	80K	90K	100K	OPEN
3	Output Current	0	0.9990A	1.7400A	2.4800A	3.3430A	4.0860A	4.9500A	5.6900A	6.5000A	7.2500A	8.0720A	8.0750A
	%	0%	12.49%	21.75%	31.00%	41.79%	51.08%	61.88%	71.13%	81.25%	90.63%	100.90%	100.94%

TEST RESULT: OK

9 DIMMING OPERATION (for DXX-Type by User definition)

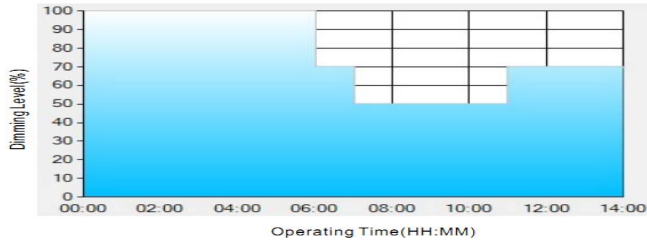
- ※ **DALI Interface (primary side; for DA-Type)**
  - Apply DALI signal between DA+ and DA-.
  - DALI protocol comprises 16 groups and 64 addresses.
  - First step is fixed at 8% of output.

TEST RESULT: OK

※ **Smart timer dimming function (for Dxx-Type by User definition)**

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:

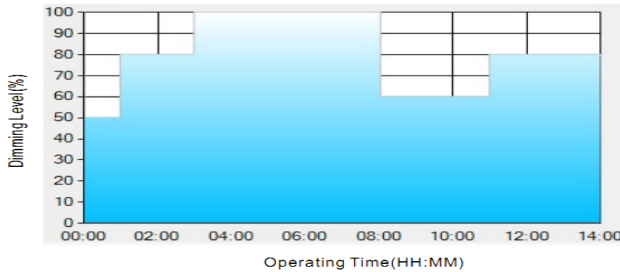
	T1	T2	T3	T4
TIME**	06:00	07:00	11:00	---
LEVEL**	100%	70%	50%	70%

\*\* 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:

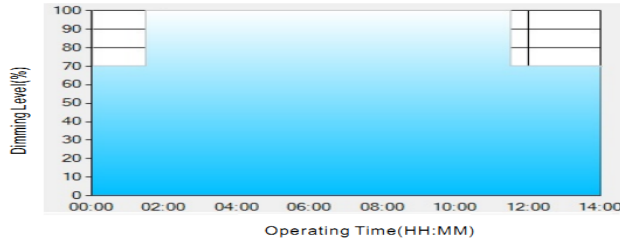
	T1	T2	T3	T4	T5
TIME**	01:00	03:00	8:00	11:00	---
LEVEL**	50%	80%	100%	60%	80%

\*\* 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

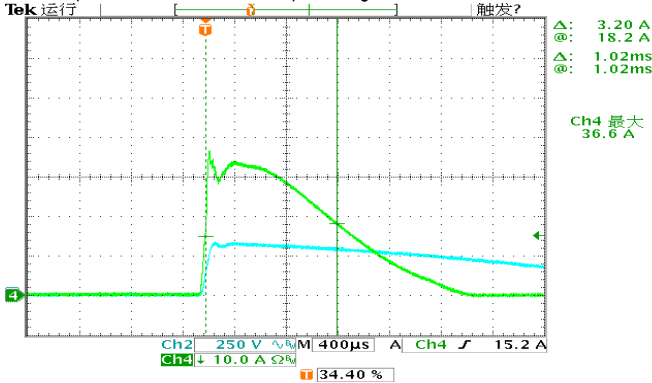
MEAN WELL  
2018/10/2  
ISSUE

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 = 2.817A/ 115VAC I = 1.403A/ 230VAC I = 1.192A/277VAC
4	LEAKAGE CURRENT	< 0.75mA / 277VAC	I/P: 277 VAC O/P: NO LOAD Ta: 25°C	L-FG: 0.355mA N-FG: 0.366mA
5	STANDBY POWER CONSUMPTION	<0.5W for A/B/DA-Type	I/P: 230VAC O/P: NO LOAD/STANDBY Ta: 25°C	0.42W
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=36.6A/ 230VAC Twidth = 1020us

INPUT=230VAC/50HZ @ FULL LOAD

CH2: Input current CH1: AC Input Voltage



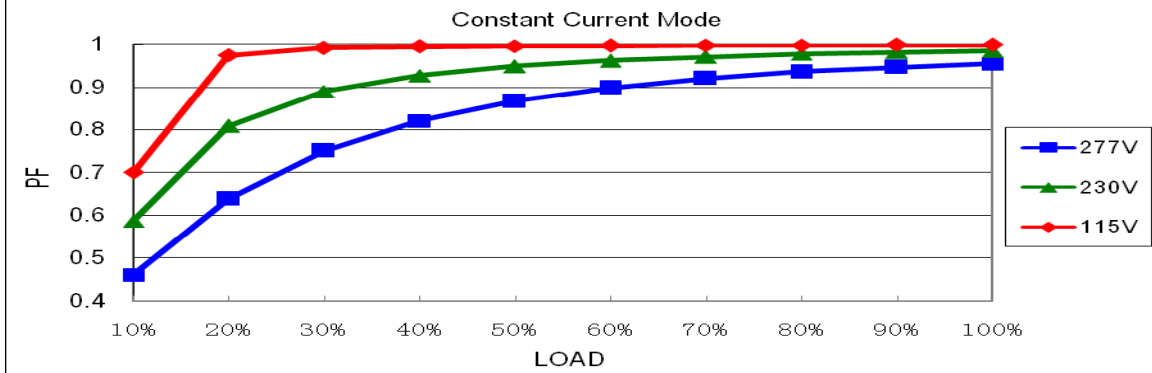


300W Constant Power Mode LED Driver

ELGC-300 series

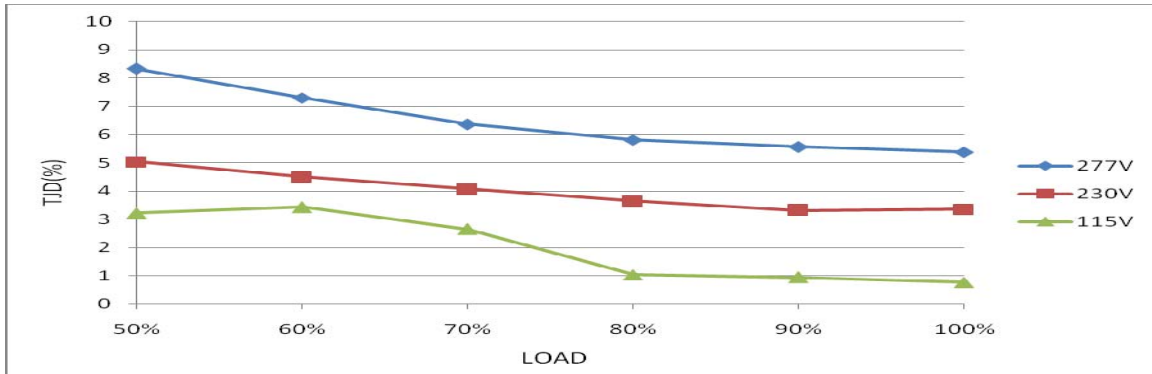
7	POWER FACTOR	0.97/ 115VAC@ FULL LOAD 0.95/ 230VAC@ FULL LOAD 0.92/ 277VAC@ FULL LOAD	I/P: 115 VAC I/P: 230 VAC I/P: 277 VAC O/P: FULL LOAD Ta: 25°C	PF=0.999 @ FULL LOAD /115VAC PF=0.985 @ FULL LOAD /230VAC PF=0.955@ FULL LOAD /277VAC
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PF vs LOAD



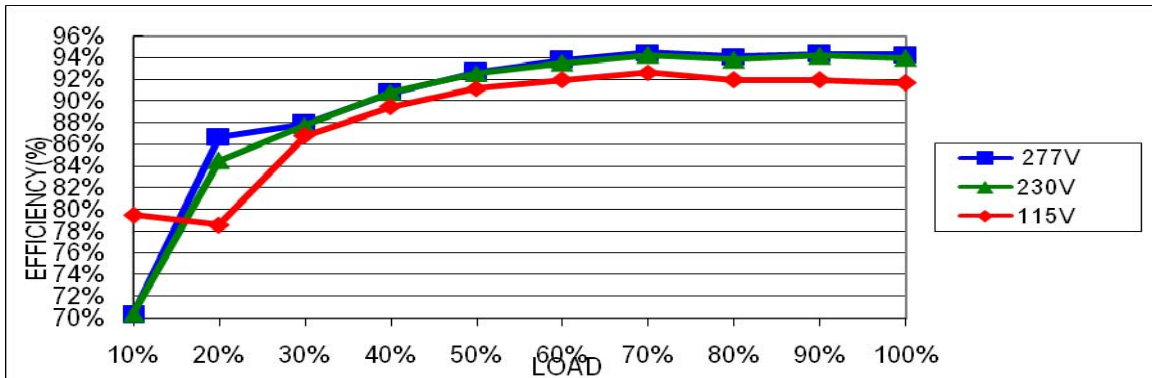
8	TOTAL HARMONIC DISTORTION	THD < 10% (@load ≥ 50%/115VAC; @load ≥ 50%/230VAC; @load ≥ 75%/277VAC)	I/P: 115 VAC I/P: 230 VAC I/P: 277 VAC O/P: 50% /75% LOAD Ta: 25°C	THD=3.02% @50% load /115VAC THD=5.03% @50% load /230VAC THD=6.03% @75% load /277VAC
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THD vs LOAD



9	EFFICIENCY(Typ)	92.5%	I/P: 230VAC O/P: FULL LOAD Ta: 25°C	93.99%
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EFFICIENCY vs LOAD





## PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OVER VOLTAGE PROTECTION	61V~78V	I/P: 100VAC I/P: 230VAC I/P: 305VAC O/P: NO LOAD	65.12V/ 100VAC 65.12V/ 230VAC 65.18V/ 305VAC Shut down output 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) Peak Voltage	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)456V (2) 482V (3) 470V
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)502V (2)472V (3)498V
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)450V (2)454V (3)450V
4	Diode Peak Voltage	Q100 Rated 35A/150V	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)122V (2)22.8V (3)121V (4)120V
5	Input Capacitor Voltage	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)446V (2)444V (3)444V (4)452V



300W Constant Power Mode LED Driver

ELGC-300 series

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) 14.2V (2) 14.2V (3) 14.2V (4) 13.2V
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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: 2.832mA I/P-FG: 3.120mA O/P-FG: 3.883mA 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: >9999 G Ω O/P-FG: >9999 G Ω NO DAMAGE
3	GROUNDING CONTINUITY	FG(PE) TO CHASSIS OR TRACE < 100 mΩ	40A / 2min Ta:25°C	21mΩ

**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: EIGC-300-H 1. ROOM AMBIENT BURN-IN: 2 HRS I/P: 230VAC O/P: FULL LOAD Ta= 24.8℃ 2. HIGH AMBIENT BURN-IN: 2 HRS I/P: 230VAC O/P: FULL LOAD Ta=42℃																																																																																						
				<table border="1"> <thead> <tr> <th>NO</th> <th>Position</th> <th>ROOM AMBIENT Ta= 24.8 ℃</th> <th>HIGH AMBIENT Ta=42 ℃</th> </tr> </thead> <tbody> <tr><td>1</td><td>RT1</td><td>50.1℃</td><td>72.7℃</td></tr> <tr><td>2</td><td>L1</td><td>52.0℃</td><td>74.8℃</td></tr> <tr><td>3</td><td>BD1</td><td>54.8℃</td><td>76.4℃</td></tr> <tr><td>4</td><td>C5</td><td>52.9℃</td><td>75.7℃</td></tr> <tr><td>5</td><td>Q2</td><td>53.8℃</td><td>76.0℃</td></tr> <tr><td>6</td><td>D1</td><td>55.7℃</td><td>77.7℃</td></tr> <tr><td>7</td><td>Q6</td><td>55.7℃</td><td>78.1℃</td></tr> <tr><td>8</td><td>Q5</td><td>56.2℃</td><td>79.1℃</td></tr> <tr><td>9</td><td>U2</td><td>51.8℃</td><td>74.1℃</td></tr> <tr><td>10</td><td>R8</td><td>52.9℃</td><td>74.9℃</td></tr> <tr><td>11</td><td>C41</td><td>52.5℃</td><td>75.6℃</td></tr> <tr><td>12</td><td>T1</td><td>61.2℃</td><td>93.7℃</td></tr> <tr><td>13</td><td>Q100</td><td>55.9℃</td><td>80.9℃</td></tr> <tr><td>14</td><td>Q101</td><td>58.5℃</td><td>83.5℃</td></tr> <tr><td>15</td><td>U107</td><td>55.4℃</td><td>80.4℃</td></tr> <tr><td>16</td><td>C103</td><td>52.4℃</td><td>76.5℃</td></tr> <tr><td>17</td><td>C102</td><td>52.0℃</td><td>76.0℃</td></tr> <tr><td>18</td><td>T500</td><td>53.7℃</td><td>77.9℃</td></tr> <tr><td>19</td><td>C562</td><td>52.8℃</td><td>76.8℃</td></tr> <tr><td>20</td><td>U510</td><td>55.9℃</td><td>79.0℃</td></tr> </tbody> </table>	NO	Position	ROOM AMBIENT Ta= 24.8 ℃	HIGH AMBIENT Ta=42 ℃	1	RT1	50.1℃	72.7℃	2	L1	52.0℃	74.8℃	3	BD1	54.8℃	76.4℃	4	C5	52.9℃	75.7℃	5	Q2	53.8℃	76.0℃	6	D1	55.7℃	77.7℃	7	Q6	55.7℃	78.1℃	8	Q5	56.2℃	79.1℃	9	U2	51.8℃	74.1℃	10	R8	52.9℃	74.9℃	11	C41	52.5℃	75.6℃	12	T1	61.2℃	93.7℃	13	Q100	55.9℃	80.9℃	14	Q101	58.5℃	83.5℃	15	U107	55.4℃	80.4℃	16	C103	52.4℃	76.5℃	17	C102	52.0℃	76.0℃	18	T500	53.7℃	77.9℃	19	C562	52.8℃	76.8℃	20	U510	55.9℃	79.0℃
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9	U2	51.8℃	74.1℃																																																																																					
10	R8	52.9℃	74.9℃																																																																																					
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12	T1	61.2℃	93.7℃																																																																																					
13	Q100	55.9℃	80.9℃																																																																																					
14	Q101	58.5℃	83.5℃																																																																																					
15	U107	55.4℃	80.4℃																																																																																					
16	C103	52.4℃	76.5℃																																																																																					
17	C102	52.0℃	76.0℃																																																																																					
18	T500	53.7℃	77.9℃																																																																																					
19	C562	52.8℃	76.8℃																																																																																					
20	U510	55.9℃	79.0℃																																																																																					
2	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR	I/P: 305VAC/100VAC O/P: 100% LOAD/85% LOAD Ta= -45℃/-35℃	TEST: OK																																																																																				
3	HIGH HUMIDITY HIGH TEMPERATURE HIGH VOLTAGE TURN ON TEST	AFTER 12 HOURS IN CHAMBER ON CONTROL 40 ℃ NO DAMAGE	I/P: 305VAC O/P: FULL LOAD Ta=40 ℃ HUMIDITY= 95% R.H	TEST: OK																																																																																				
4	TEMPERATURE COEFFICIENT	±0.03%/℃ (0~60℃)	I/P: 230 VAC O/P: FULL LOAD	±0.025%/℃ (0~60℃)																																																																																				
5	STORAGE TEMPERATURE TEST	-40~+80℃	1. Thermal shock Temperature: -45℃~ +85℃ 2. Temperature change rate : 25℃ / MIN 3. Dwell time low and high temperature : 30 MIN/EACH 4. Total test cycle: 200CYCLE 5. Input/Output condition:																																																																																					



300W Constant Power Mode LED Driver

ELGC-300 series

6	THERMAL SHOCK TEST	-40~+40°C	1. Thermal shock Temperature: -45°C~ +45°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
8	CAPACITOR LIFE CYCLE	ELGC-300-H: SUPPOSE C103 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) 116032 HRS (2) 127896 HRS (3) 122875 HRS
9	MTBF	Conducted by Parts Stress Analysis Prediction 565 K hrs min. Telcordia SR-332 (Bellcore) 166K 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