



# Test Report: ELG-300-24A

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300W Constant Voltage+Constant Current 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

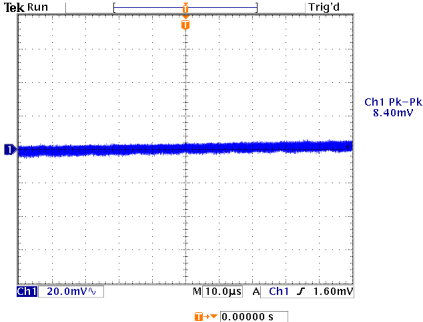
Environment Test

DESIGN VERIFY TEST

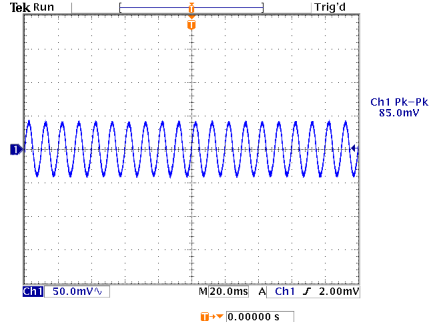
OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	CONSTANT CURRENT REGION	14.4V~24V	I/P: 230VAC O/P: LED MODE Ta: 25°C	7.2 V~ 24 V
2	VOLTAGE ADJUST RANGE	22.4V~25.6V	I/P: 230VAC O/P: NO LOAD Ta: 25°C	21.75V~ 26.4V
3	CURRENT ADJ. RANGE	6.25A~12.5A	I/P: 230VAC O/P: SETTING Ta: 25°C	5.86A~13.87A
4	VOLTAGE TOLERANCE	-2%~+2%	I/P: 100VAC / 305VAC O/P: FULL/ NO LOAD Ta: 25°C	-0.415%~ 0.625%
5	LINE REGULATION	-0.5%~+0.5%	I/P: 120VAC ~ 305VAC O/P: FULL LOAD Ta: 25°C	-0.004%~0.08%
6	LOAD REGULATION	-1%~+1%	I/P: 230VAC O/P: FULL ~NO LOAD Ta: 25°C	-0.415%~ 0.33%
7	OVER/UNDERSHOOT TEST	<± 5 %	I/P: 230VAC O/P: FULL LOAD Ta: 25°C	±2.092%
8	RIPPLE & NOISE (Max)	240mVp-p	I/P: 230VAC O/P: FULL LOAD Ta: 25°C	85mVp-p

high frequency :



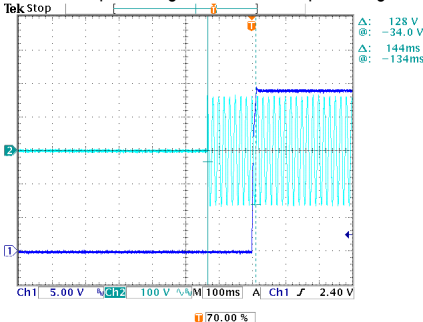
low frequency :



9	SET UP TIME(Max)	115VAC/ 500ms 230VAC/ 500ms	I/P: 115 VAC I/P: 230 VAC O/P: FULL LOAD Ta: 25°C	115VAC/ 144 ms 230VAC/ 146 ms
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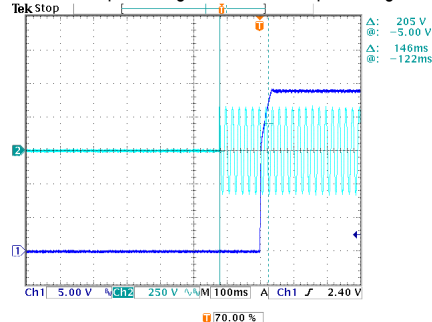
INPUT=115VAC/50HZ @ FULL LOAD

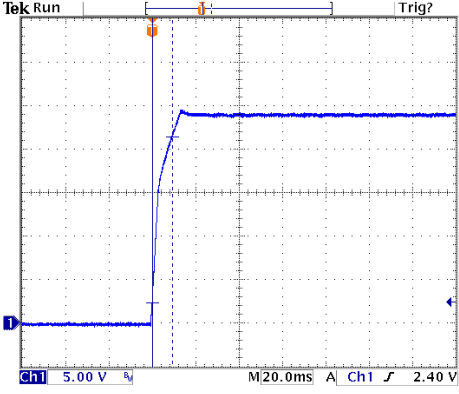
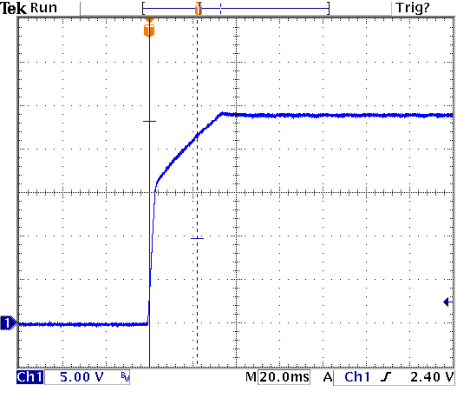
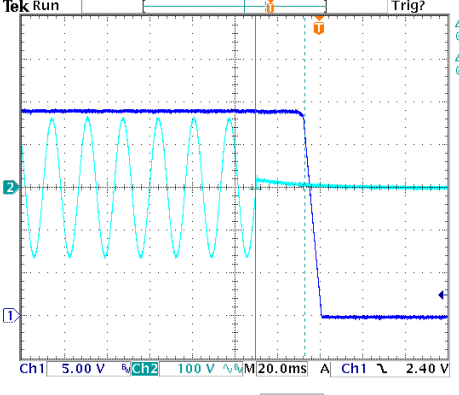
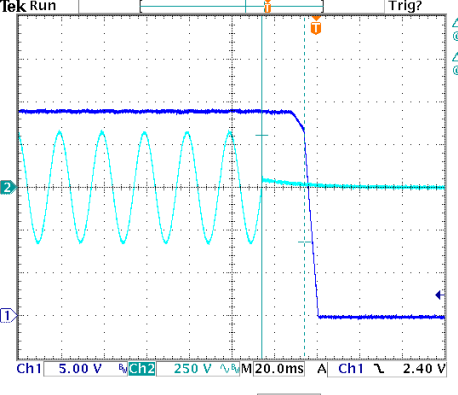
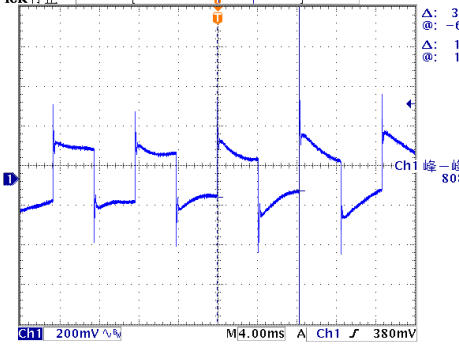

CH1: Output Voltage CH2: AC Input Voltage



INPUT=230VAC/50HZ @ FULL LOAD

CH1: Output Voltage CH2: AC Input Voltage



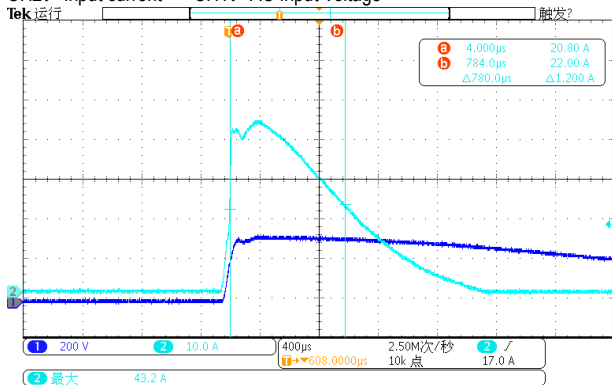
<p>10 RISE TIME (Max)</p>	<p>115VAC/ 100ms 230VAC/ 100ms</p>	<p>I/P: 115 VAC I/P: 230 VAC O/P: FULL LOAD Ta: 25°C</p>	<p>115VAC/ 9.2 ms 230VAC/ 22.0 ms</p>
<p>INPUT=115VAC/50HZ @ FULL LOAD CH1: Output Voltage</p> 		<p>INPUT=230VAC/50HZ @ FULL LOAD CH1: Output Voltage</p> 	
<p>11 HOLD UP TIME(Typ)</p>	<p>115VAC/ 10ms 230VAC/ 10ms</p>	<p>I/P: 115 VAC I/P: 230 VAC O/P: FULL LOAD Ta: 25°C</p>	<p>120VAC/ 23.2 ms 230VAC/ 20.0 ms</p>
<p>INPUT=115VAC/50HZ @ FULL LOAD CH1: Output Voltage CH2: AC Input Voltage</p> 		<p>INPUT=230VAC/50HZ @ FULL LOAD CH1: Output Voltage CH2: AC Input Voltage</p> 	
<p>12 DYNAMIC LOAD</p>	<p>V1: 2400 mVp-p</p>	<p>I/P: 230VAC O/P: (1)FULL /50% LOAD 50%DUTY / 120HZ (2)FULL /50% LOAD 50%DUTY / 1KHZ Ta: 25°C</p>	<p>(1) 808mVp-p (2) 696mVp-p</p>
<p>FULL /50% LOAD 50%DUTY / 120HZ</p> 		<p>FULL /50% LOAD 50%DUTY / 1KHZ</p> 	

INPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	INPUT VOLTAGE RANGE	100VAC~305VAC	I/P: TESTING O/P: FULL LOAD Ta: 25°C	100 V~ 305 V
			I/P: (1)LOW-LINE-3V=97 V HIGH-LINE+10V=315 V O/P: FULL/MIN LOAD ON: 30 Sec OFF: 30 Sec 10MIN (2)230VAC ON: 0.5 Sec OFF: 0.5 Sec 20MIN ( 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	1.3A/277VAC 1.6A/230VAC 3.0A/115VAC	I/P: 277 VAC I/P: 230 VAC I/P: 115 VAC O/P: FULL LOAD Ta: 25°C	I = 1.13 A/ 277VAC I = 1.33 A/ 230VAC I = 2.66 A/ 115VAC
4	LEAKAGE CURRENT	< 0.75mA / 277VAC	I/P: 277 VAC O/P: NO LOAD Ta: 25°C	L-FG: 0.335 mA N-FG: 0.325 mA
5	INRUSH CURRENT(Typ)	230VAC/ 45A Twidth =1200us measured at 50% Ipeak COLD START	I/P: 230 VAC O/P: FULL LOAD Ta: 25°C	I = 43.2A/ 277VAC Twidth =784 us/50% Ipeak

INPUT=277VAC/50HZ @ FULL LOAD

CH2: Input current CH1: AC Input Voltage



6	EFFICIENCY(Typ)	93%	I/P: 230VAC O/P: FULL LOAD Ta: 25°C	94.47%																												
<p><b>EFFICIENCY vs LOAD</b></p> <table border="1"> <caption>Efficiency vs Load Data</caption> <thead> <tr> <th>LOAD</th> <th>277V</th> <th>230V</th> <th>115V</th> </tr> </thead> <tbody> <tr> <td>50%</td> <td>94.5</td> <td>94.5</td> <td>93.0</td> </tr> <tr> <td>60%</td> <td>94.5</td> <td>94.5</td> <td>93.0</td> </tr> <tr> <td>70%</td> <td>94.5</td> <td>94.5</td> <td>93.0</td> </tr> <tr> <td>80%</td> <td>94.5</td> <td>94.5</td> <td>92.5</td> </tr> <tr> <td>90%</td> <td>94.5</td> <td>94.5</td> <td>92.5</td> </tr> <tr> <td>100%</td> <td>94.5</td> <td>94.5</td> <td>92.0</td> </tr> </tbody> </table>					LOAD	277V	230V	115V	50%	94.5	94.5	93.0	60%	94.5	94.5	93.0	70%	94.5	94.5	93.0	80%	94.5	94.5	92.5	90%	94.5	94.5	92.5	100%	94.5	94.5	92.0
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7	POWER FACTOR	0.90/ 277VAC 0.93/ 230VAC 0.95/ 120VAC	I/P: 277 VAC I/P: 230 VAC I/P: 115 VAC O/P: FULL LOAD Ta: 25°C	PF= 0.950 / 277VAC PF= 0.983 / 230VAC PF= 0.999 / 115VAC																												
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8	TOTAL HARMONIC DISTORTION	THD<10% (@load ≥ 50%/120VAC, @load ≥ 50%/230VAC, @load ≥ 75%/277VAC)	I/P: 115 VAC/50% LOAD I/P: 230 VAC/50% LOAD I/P: 277 VAC/75% LOAD Ta: 25°C	THD=3.69% @50% load /115VAC THD=5.85% @50% load /230VAC THD=6.56% @75% load /277VAC																												
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**PROTECTION FUNCTION TEST**

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OVER CURRENT PROTECTION	95%~108%	I/P: 100VAC I/P: 230VAC I/P: 305VAC O/P: TESTING Ta: 25°C	99.6 %/ 120VAC 99.2 %/ 230VAC 99.6 %/ 305VAC Constant Current Limiting, recovers automatically after fault condition is removed
2	OVER VOLTAGE PROTECTION	27V~34V	I/P: 100VAC I/P: 230VAC I/P: 305VAC O/P: NO LOAD Ta: 25°C	29.9 V/ 100VAC 29.9 V/ 230VAC 29.9 V/ 305VAC Shut down output voltage, re-power on to recovery
3	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
4	SHORT CIRCUIT PROTECTION	SHORT EVERY OUTPUT 1 HOUR NO DAMAGE	I/P: 100VAC I/P: 305VAC O/P: FULL LOAD Ta: 25°C	NO DAMAGE onstant Current Limiting, recovers automatically after fault condition is removed

**COMPONENT STRESS TEST**

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	PWM Power Transistor	Q6 Rated 600V/23.9A	I/P: High-Line +3V =308V O/P: (1) Full Load Turn on (2) Output Short (3) Full load continue Ta: 25°C	(1) 528 V (2) 544 V (3) 523 V
2	O/P Diode (MOSFET)	Q100 Rated 80V/90A	I/P: High-Line +3V =308V O/P: (1) Full Load Turn on (2) Output Short (3) Full load continue Ta: 25°C	(1) 59.6 V (2) 18 V (3) 56.4 V
3	Input Capacitor	C5 Rated 150u/ 450V	I/P: High-Line +3V =308 V O/P: (1) Full Load input on/off (2) NO LOAD input on /Off (3) Full Load /NO LOAD Change Ta: 25°C	(1) 444 V (2) 446 V (3) 446 V
4	Control IC	U2 Rated 50V (MAX.)	I/P: High-Line +3V =308 V O/P: ((1) FULL LOAD (2) Output Short (3) O.L.P (4) O.V.P (5) Low Line No Load Vo(min) Ta: 25°C	(1) 13.5 V (2) 13.4 V (3) 13.4 V (4) 13.5 V (5) 13.5 V
5	PFC Power Transistor	D2 Rated 600V/3A	I/P: High-Line +3V =308V O/P: (1) Full Load Turn on (2) Output Short (3) Full load continue Ta: 25°C	(1) 438 V (2) 444 V (3) 435 V

**SAFETY TEST**

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	WITHSTAND VOLTAGE	I/P-O/P: 3.75KVAC/min I/P-FG: 2.0KVAC/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: 2.418 mA I/P-FG: 2.4 mA O/P-FG: 2.773 mA 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: >9999 MΩ I/P-FG: >9999 MΩ O/P-FG: >9999 MΩ
3	GROUNDING CONTINUITY	FG(PE) TO CHASSIS OR TRACE < 100 mΩ	40A / 2min Ta:25°C	16 mΩ

**E.M.C TEST**

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	HARMONIC	EN61000-3-2 CLASS C	I/P: 230 VAC/50HZ O/P: FULL/50% LOAD Ta: 25°C	PASS Test by certified Lab
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	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,N-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: ELG-300-24A 1. ROOM AMBIENT BURN-IN: 2 HRS I/P: 230VAC O/P: FULL LOAD Ta=29.8 °C 2. HIGH AMBIENT BURN-IN: 2 HRS I/P: 230VAC O/P: FULL LOAD Ta=41.7 °C																																																																																						
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19	C105	66.2°C	74.4°C																																																																																					
20	C108	65.8°C	74.0°C																																																																																					
2	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR	I/P: 305VAC/100VAC O/P: 100% 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	±0.007 %/°C (0~60°C)																																																																																				
5	STORAGE TEMPERATURE TEST	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		TEST: OK																																																																																				





6	THERMAL SHOCK TEST	1. Thermal shock Temperature: Tcase=-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: 10 CYCLE 5. Input/Output condition: 230VAC/Full Load AC ON/OFF TEST AC on 3 sec/AC off 1 sec TEST	TEST: OK
7	VIBRATION TEST	1 Carton & 1 Set (1) Waveform: Sine Wave (2) Frequency: 10~500Hz (3) Sweep Time: 12min/sweep cycle (4) Acceleration: 5G (5) Test Time: 72min in each axis (X.Y.Z) (6) Ta: 25°C	TEST: OK
8	CAPACITOR LIFE CYCLE	ELG-300-24: 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) 80310 HRS (2) 112621 HRS (3) 143208 HRS
9	MTBF	Conducted by Parts Stress Analysis Prediction 1827.7K hrs min. Telcordia SR-332 (Bellcore); 196.5K 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