Test Report： ELG-100U-36

100W 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

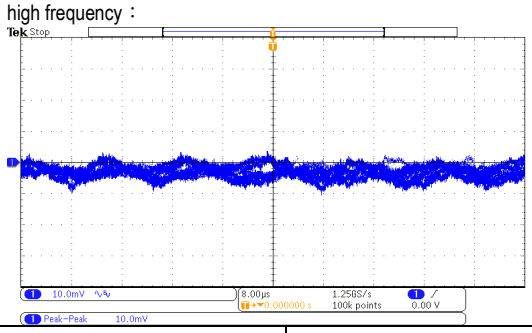
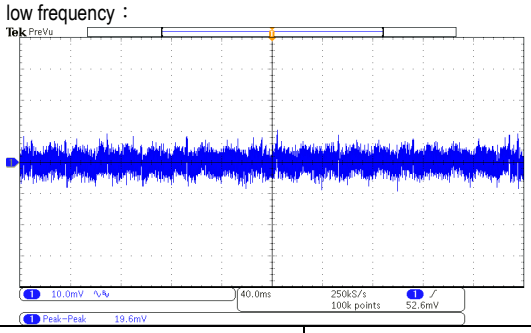
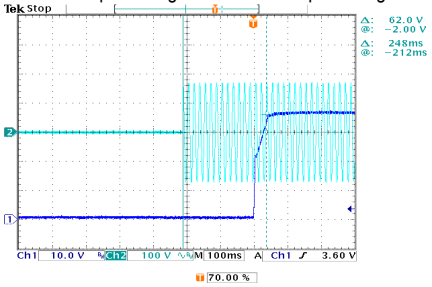
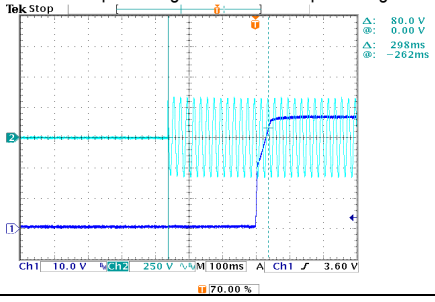
Safety Test
E.M.C. Test

■ RELIABILITY TEST

Environment Test

■ DESIGN VERIFY TEST

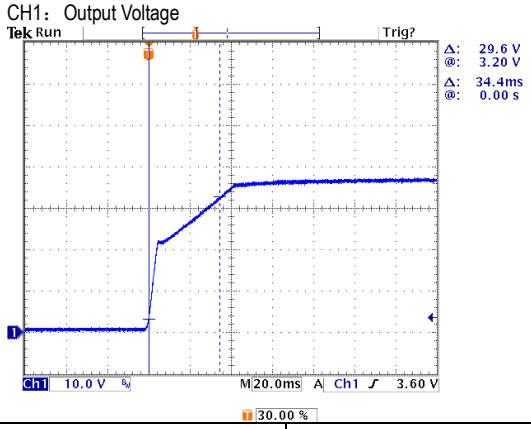
OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	CONSTANT CURRENT REGION	18V~36V	I/P： 230VAC O/P：LED MODE Ta：25℃	10.8 V~ 36 V
2	OUTPUT VOLTAGE ADJUST RANGE (For A-Type only)	32.4V~39.6V	I/P： 230VAC O/P：NO LOAD Ta：25℃	31.56 V~ 41.81 V
3	OUTPUT CURRENT ADJUST RANGE (For A-Type only)	1.33A~2.66A (For A-Type only)	I/P： 230VAC O/P：SETTING Ta：25℃	0.969A~2.924A
4	OUTPUT VOLTAGE TOLERANCE	-2.5%~+2.5%	I/P： 100VAC / 305VAC O/P：FULL/ NO LOAD Ta：25℃	-0.387%~0.416%
5	LINE REGULATION	-0.5%~+0.5%	I/P： 100VAC ~ 305VAC O/P：FULL LOAD Ta：25℃	-0.387%~-0.083%
6	LOAD REGULATION	-1%~+1%	I/P： 230VAC O/P：FULL ~NO LOAD Ta：25℃	-0.16%~0.19%
7	OVER/UNDERSHOOT TEST	<±5 %	I/P： 230VAC O/P：FULL LOAD Ta：25℃	±0.7%
8	RIPPLE & NOISE (Max)	250mVp-p	I/P： 230VAC O/P：FULL LOAD Ta：25℃	19.6mVp-p
	high frequency： 		low frequency： 	
9	SET UP TIME(Max)	120VAC/ 1000ms 230VAC/ 500ms	I/P： 120 VAC I/P： 230 VAC O/P：FULL LOAD Ta：25℃	120VAC/ 248ms 230VAC/ 298ms
	INPUT=120VAC/50HZ @ FULL LOAD CH1： Output Voltage CH2： AC Input Voltage 		INPUT=230VAC/50HZ @ FULL LOAD CH1： Output Voltage CH2： AC Input Voltage 	

10	RISE TIME (Max)	120VAC/ 80ms 230VAC/ 100ms	I/P：120 VAC I/P：230 VAC O/P：FULL LOAD Ta：25℃	120VAC/ 34.4 ms 230VAC/ 35.6 ms

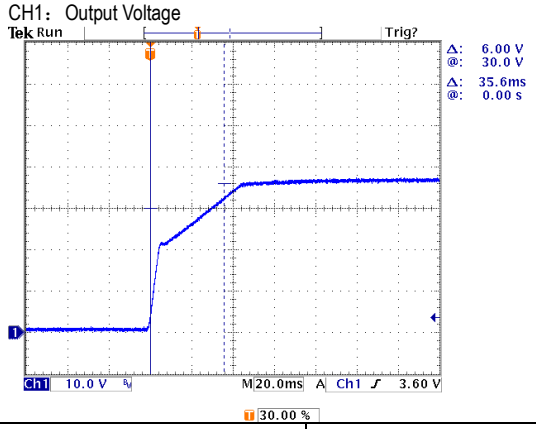
INPUT=120VAC/50HZ @ FULL LOAD

CH1：Output Voltage



INPUT=230VAC/50HZ @ FULL LOAD

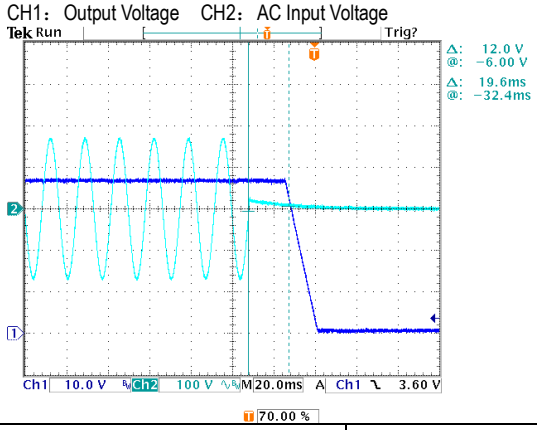
CH1：Output Voltage



11	HOLD UP TIME(Typ)	120VAC/ 15ms 230VAC/ 10ms	I/P： 120 VAC I/P： 230 VAC O/P：FULL LOAD Ta：25℃	120VAC/ 19.6 ms 230VAC/ 30.0 ms

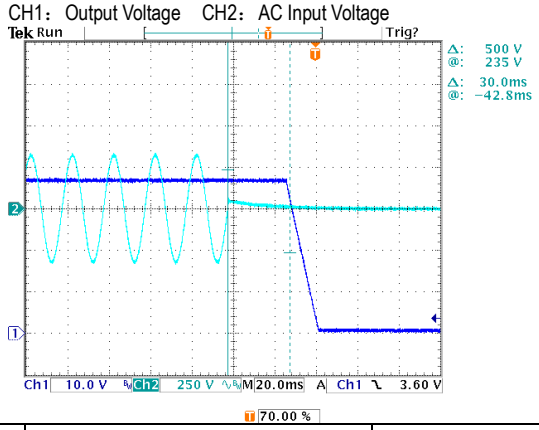
INPUT=120VAC/50HZ @ FULL LOAD

CH1：Output Voltage CH2：AC Input Voltage



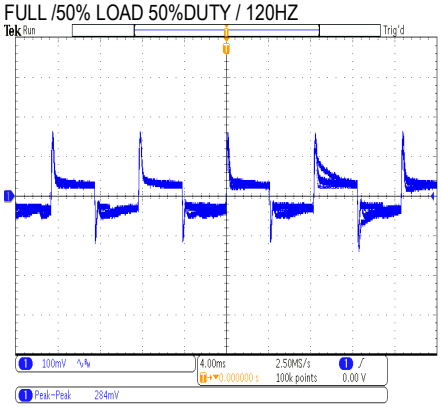
INPUT=230VAC/50HZ @ FULL LOAD

CH1：Output Voltage CH2：AC Input Voltage

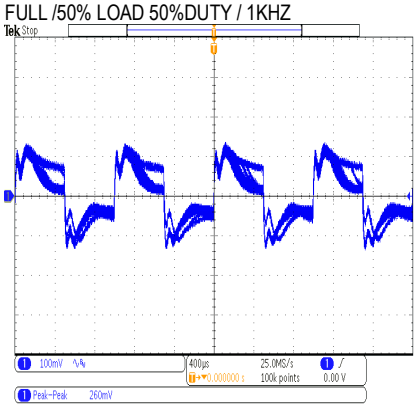


12	DYNAMIC LOAD	V1： 3600 mVp-p	I/P： 230VAC O/P： (1)FULL /50% LOAD 50%DUTY / 120HZ (2)FULL /50% LOAD 50%DUTY / 1KHZ Ta：25℃	(1) 284mVp-p (2) 260mVp-p

FULL /50% LOAD 50%DUTY / 120HZ



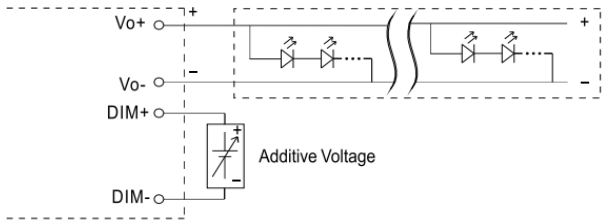
FULL /50% LOAD 50%DUTY / 1KHZ



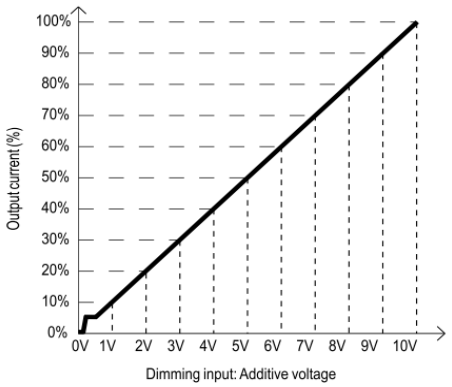
13 DIMMING TEST (For B-Type only)

·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: 100uA (typ.)

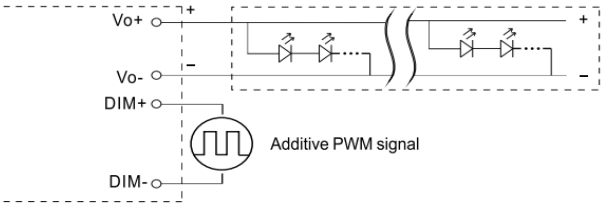
◎ Applying additive 0 ~ 10VDC



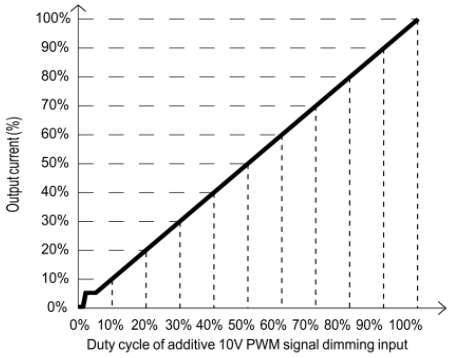
"DO NOT connect "DIM- to Vo-"



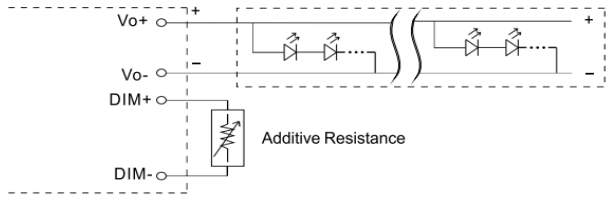
◎ Applying additive 10V PWM signal (frequency range 100Hz ~ 3KHz):



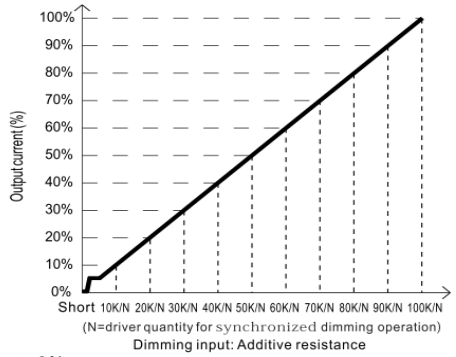
"DO NOT connect "DIM- to Vo-"



◎ Applying additive resistance:



"DO NOT connect "DIM- to Vo-"



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 0kΩ or 0Vdc, or 10V PWM signal with 0% duty cycle.

I/P: 230 VAC
O/P: DIMMING TEST
Ta: 25℃

1	R	0K	10K	20K	30K	40K	50K	60K	70K	80K	90K	100K	OPEN
	Output Current	0	0.3612	0.6244	0.8864	1.1532	1.4188	1.6848	1.9500	2.2252	2.5000	2.6620	2.6624
	%	0%	13.58%	23.47%	33.32%	43.35%	53.34%	63.34%	73.31%	83.65%	93.98%	100.08%	100.09%
2	V	0V	1V	2V	3V	4V	5V	6V	7V	8V	9V	10V	OPEN
	Output Current	0	0.3808	0.6548	0.9092	1.1868	1.4508	1.7288	1.9948	2.2588	2.5048	2.6612	2.6616
	%	0%	14.32%	24.62%	34.18%	44.62%	54.54%	64.99%	74.99%	84.92%	94.17%	100.05%	100.06%
3	PWM(100Hz)	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	OPEN
	Output Current	0	0.3632	0.6288	0.8940	1.1600	1.4264	1.6920	1.9548	2.2228	2.4908	2.6676	2.6673
	%	0%	13.65%	23.64%	33.61%	43.61%	53.62%	63.61%	73.49%	83.56%	93.64%	100.29%	100.27%

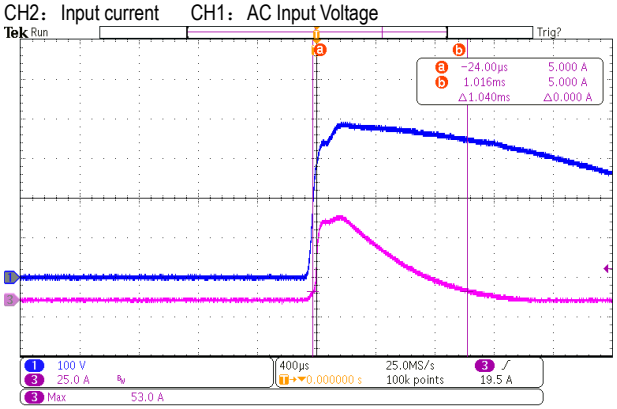
TEST RESULT: OK

INPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	INPUT VOLTAGE RANGE	100VAC~305VAC	I/P：TESTING O/P：FULL LOAD Ta：25℃	97 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℃	TEST： OK
3	AC CURRENT	0.5A/277VAC 0.6A/230VAC 1.1A/120VAC	I/P： 277 VAC I/P： 230 VAC I/P： 120 VAC O/P：FULL LOAD Ta：25℃	I = 0.37 A/ 277VAC I = 0.44 A/ 230VAC I = 0.85 A/ 120VAC
4	LEAKAGE CURRENT	< 0.75mA / 277VAC	I/P： 277 VAC O/P：NO LOAD Ta：25℃	L-FG： 0.335 mA N-FG： 0.342 mA
5	NO LOAD/STANDBY POWER CONSUMPTION	< 0.5W	I/P：230VAC O/P：NO LOAD Ta：25℃	0.3214 W/ 230VAC
6	INRUSH CURRENT(Typ)	277VAC/ 60A Twidth =1.4ms measured at 10% Ipeak, Twidth =620us measured at 50% Ipeak, COLD START	I/P： 277 VAC O/P：FULL LOAD Ta：25℃	I = 53 A/ 277VAC Twidth =1016 us/10% Ipeak Twidth =512 us/50% Ipeak

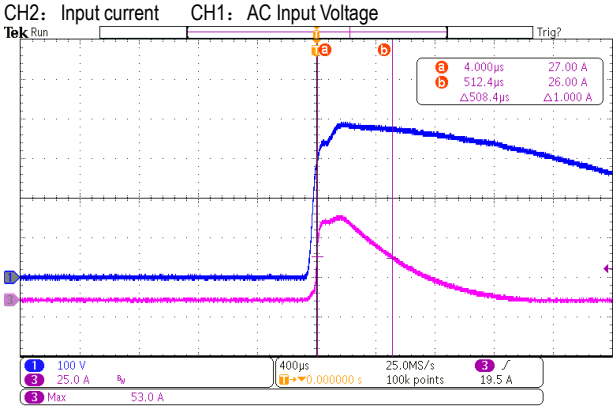
INPUT=277VAC/50HZ @ FULL LOAD

CH2： Input current CH1： AC Input Voltage



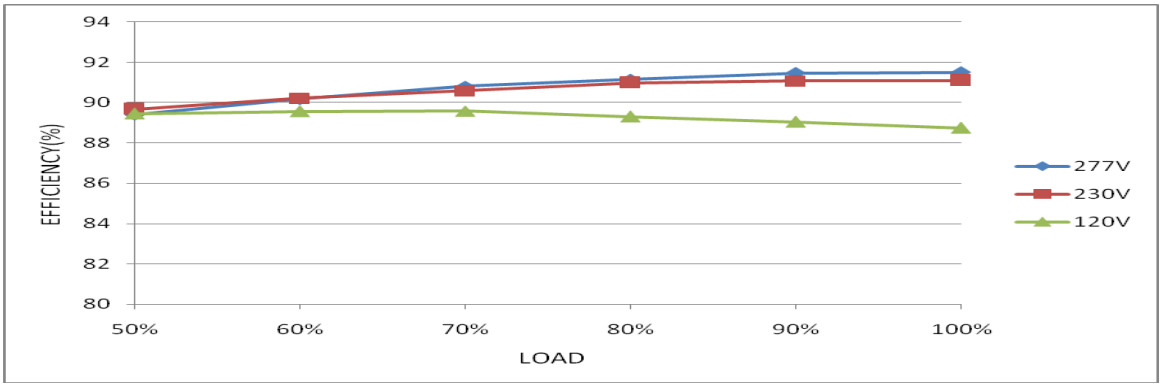
INPUT=277VAC/50HZ @ FULL LOAD

CH2： Input current CH1： AC Input Voltage



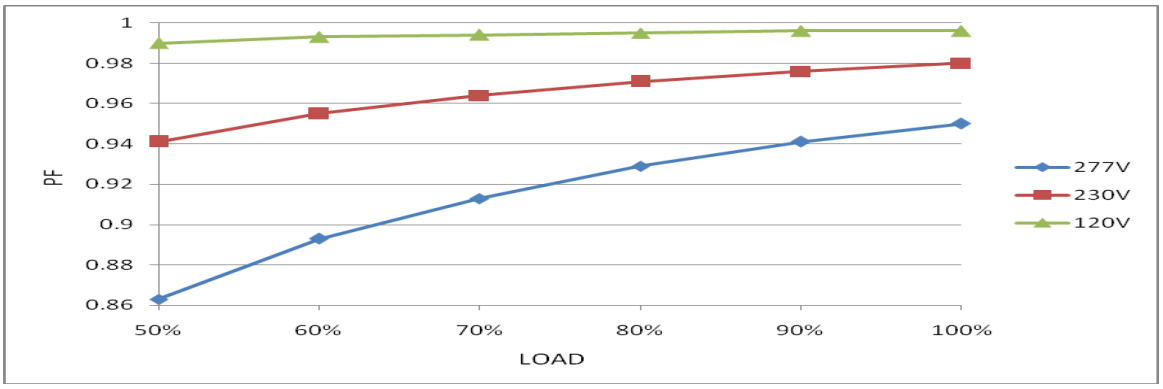
7	EFFICIENCY(Typ)	89%	I/P： 230VAC O/P：FULL LOAD Ta：25℃	91.09 %

EFFICIENCY vs LOAD



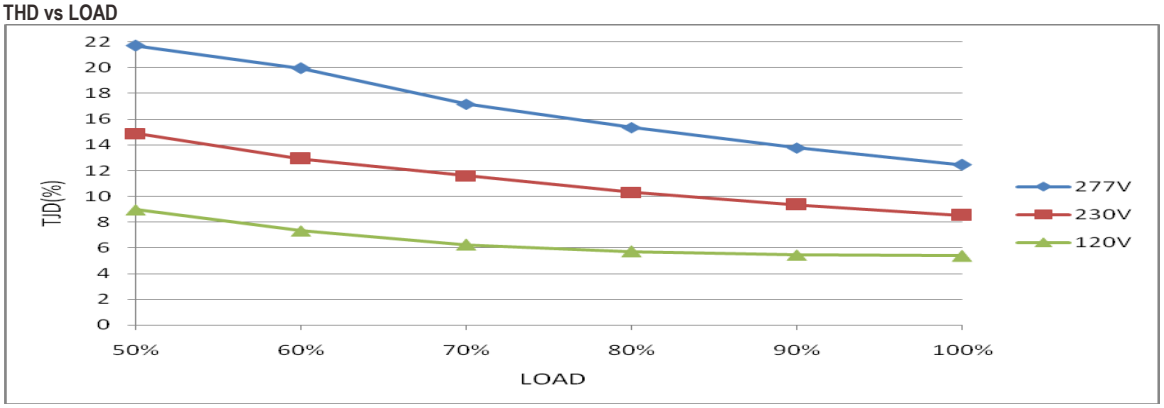
8	POWER FACTOR	0.92/ 277VAC 0.95/ 230VAC 0.97/ 120VAC	I/P： 277 VAC I/P： 230 VAC I/P： 120 VAC O/P：FULL LOAD Ta：25℃	PF= 0.950 / 277VAC PF= 0.980 / 230VAC PF= 0.996 / 120VAC

P.F vs LOAD



9	TOTAL HARMONIC DISTORTION	THD＜20% （@load≥50%/120VAC， @load≥60%/230VAC， @load≥75%/277VAC）	I/P：120 VAC/50% LOAD I/P：230 VAC/60% LOAD I/P：277 VAC/75% LOAD Ta：25℃	THD=8.97% @50% load /120VAC THD=12.92% @60% load /230VAC THD=16.9% @75% load /277VAC

THD vs LOAD



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℃	100 %/ 100VAC 100 %/ 230VAC 100 %/ 305VAC Constant Current Limiting，recovers automatically after fault condition is removed
2	OVER VOLTAGE PROTECTION	41V~48V	I/P： 100VAC I/P： 230VAC I/P： 305VAC O/P：NO LOAD Ta：25℃	43.462V/ 308VAC 43.423V/ 230VAC 43.467V/ 120VAC 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 with auto-recovery or re-power on to recover
4	SHORT CIRCUIT PROTECTION	SHORT EVERY OUTPUT 1 HOUR NO DAMAGE	I/P： 100VAC I/P： 305VAC O/P：FULL LOAD Ta：25℃	NO DAMAGE Hiccup mode，recovers automatically after fault condition is removed

COMPONENT STRESS TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	PWM Power Transistor	Q 2 Rated 800V/5.7A	I/P：High-Line +3V =308V O/P： (1) Full Load Turn on (2) Output Short (3) Full load continue Ta：25℃	 (1) 680 V (2) 516 V (3) 678 V
2	O/P Diode (MOSFET)	Q101 Rated 150V/30A	I/P：High-Line +3V =308V O/P： (1) Full Load Turn on (2) Output Short (3) Full load continue Ta：25℃	 (1) 122 V (2) 84 V (3) 120 V
3	Input Capacitor	C5 Rated 100u/ 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℃	 (1) 448 V (2) 444 V (3) 442 V
4	Control IC	U1 Rated 28V (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℃	 (1) 17.5 V (2) 15.2 V (3) 15.2 V (4) 17.6 V (5) 17.4 V

5	PFC Power Transistor	Q 1 Rated 600V/10A	I/P：High-Line +3V =308V O/P： (1) Full Load Turn on (2) Output Short (3) Full load continue Ta：25℃	 (1) 486 V (2) 452 V (3) 486 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℃	I/P-O/P：3.328 mA I/P-FG： 3.304 mA O/P-FG：2.284 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℃	I/P-O/P：>9999 MΩ I/P-FG： >9999 MΩ O/P-FG：>9999 MΩ
3	GROUNDING CONTINUITY	IEC60950-1 FG(PE) TO CHASSIS OR TRACE < 100 mΩ	40A / 2min Ta:25℃	17mΩ

E.M.C TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	CONDUCTION	FCC PART 15 CLASS B	I/P：230 VAC/50HZ O/P：FULL LOAD Ta：25℃	PASS Test by certified Lab
2	RADIATION	FCC PART 15 CLASS B	I/P：230 VAC/50HZ O/P：FULL LOAD Ta：25℃	PASS Test by certified Lab
3	E.S.D	EN61000-4-2 LIGHT INDUSTRY AIR：8KV Contact：4KV	I/P：230 VAC/50HZ O/P：FULL LOAD Ta：25℃	PASS
4	E.F.T	EN61000-4-4 LIGHT INDUSTRY INPUT：1KV	I/P： 230VAC/50HZ O/P：FULL LOAD Ta：25℃	PASS
5	SURGE	EN61000-4-5 LIGHT INDUSTRY L-N：1KV L,N-PE：2KV	I/P： 230VAC/50HZ O/P：FULL LOAD Ta：25℃	PASS
6	Test by certified Lab ＆ Test Report Prepare			

■ RELIABILITY TEST

ENVIRONMENT TEST

<table>
<tr><th>NO</th><th>TEST ITEM</th><th>SPECIFICATION</th><th>TEST CONDITION</th><th>RESULT</th></tr>
<tr><td>1</td><td>TEMPERATURE RISE TEST</td><td colspan="3">MODEL： ELG-100U-24
1. ROOM AMBIENT BURN-IN：2 HRS
I/P： 230VAC O/P： FULL LOAD Ta=27.8℃
2. HIGH AMBIENT BURN-IN： 2 HRS
I/P： 230VAC O/P： FULL LOAD Ta=59.4 ℃
<table>
<tr><th>NO</th><th>Position</th><th>ROOM AMBIENT Ta=27.8 ℃</th><th>HIGH AMBIENT Ta=59.4 ℃</th></tr>
<tr><td>1</td><td>LF2</td><td>57.0℃</td><td>87.3℃</td></tr>
<tr><td>2</td><td>L1</td><td>60.0℃</td><td>90.8℃</td></tr>
<tr><td>3</td><td>L2</td><td>58.2℃</td><td>88.4℃</td></tr>
<tr><td>4</td><td>ZNR2</td><td>61.7℃</td><td>92.3℃</td></tr>
<tr><td>5</td><td>C11</td><td>61.5℃</td><td>92.4℃</td></tr>
<tr><td>6</td><td>BD1</td><td>61.7℃</td><td>92.6℃</td></tr>
<tr><td>7</td><td>Q1</td><td>63.8℃</td><td>95.7℃</td></tr>
<tr><td>8</td><td>Q2</td><td>64.1℃</td><td>95.7℃</td></tr>
<tr><td>9</td><td>D6</td><td>62.7℃</td><td>94.2℃</td></tr>
<tr><td>10</td><td>D10</td><td>67.0℃</td><td>98.5℃</td></tr>
<tr><td>11</td><td>U1</td><td>57.9℃</td><td>88.4℃</td></tr>
<tr><td>12</td><td>R7</td><td>68.7℃</td><td>99.6℃</td></tr>
<tr><td>13</td><td>C5</td><td>58.9℃</td><td>89.5℃</td></tr>
<tr><td>14</td><td>T1</td><td>64.6℃</td><td>95.1℃</td></tr>
<tr><td>15</td><td>C45</td><td>59.5℃</td><td>90.0℃</td></tr>
<tr><td>16</td><td>U100</td><td>54.0℃</td><td>84.6℃</td></tr>
<tr><td>17</td><td>U101</td><td>58.8℃</td><td>89.3℃</td></tr>
<tr><td>18</td><td>Q101</td><td>58.2℃</td><td>89.6℃</td></tr>
<tr><td>19</td><td>C205</td><td>58.7℃</td><td>89.6℃</td></tr>
<tr><td>20</td><td>C105</td><td>58.7℃</td><td>89.9℃</td></tr>
<tr><td>21</td><td>C106</td><td>56.7℃</td><td>88.1℃</td></tr>
<tr><td>22</td><td>C108</td><td>57.7℃</td><td>88.9℃</td></tr>
<tr><td>23</td><td>RTH3</td><td>57.5℃</td><td>88.2℃</td></tr>
<tr><td>24</td><td>TC</td><td>52.2℃</td><td>82.8℃</td></tr>
</table></td></tr>
<tr><td>2</td><td>LOW TEMPERATURE
TURN ON TEST</td><td>TURN ON AFTER 2 HOUR</td><td>I/P： 305VAC/120VAC/100VAC
O/P：FULL LOAD/70% LOAD
Ta= -45℃ / -30℃</td><td>TEST：OK</td></tr>
<tr><td>3</td><td>HIGH HUMIDITY
HIGH TEMPERATURE
HIGH VOLTAGE
TURN ON TEST</td><td>AFTER 12 HOURS
IN CHAMBER ON
CONTROL 55℃
NO DAMAGE</td><td>I/P： 305VAC
O/P：FULL LOAD
Ta=55℃
HUMIDITY= 95 %R.H</td><td>TEST：OK</td></tr>
<tr><td>4</td><td>TEMPERATURE
COEFFICIENT</td><td>±0.03 %/℃(0~60℃)</td><td>I/P： 230 VAC
O/P：FULL LOAD</td><td>±0.004 %/℃(0~60℃)</td></tr>
<tr><td>5</td><td>STORAGE TEMPERATURE TEST</td><td colspan="2">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：5 CYCLE
5. Input/Output condition： STATIC</td><td>TEST：OK</td></tr>
</table>

6	THERMAL SHOCK TEST	1. Thermal shock Temperature： Tcase=-45℃~ +90℃ 2. Temperature change rate ： 25℃ / 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℃	TEST：OK
8	CAPACITOR LIFE CYCLE	ELG-100U-24：SUPPOSE C105 IS THE MOST CRITICAL COMPONENT (1) I/P： 230VAC O/P：FULL LOAD Tc= 75 ℃ LIFE TIME (2) I/P： 230VAC O/P：75% LOAD Tc= 75 ℃ LIFE TIME (3) I/P： 230VAC O/P：50% LOAD Tc= 75 ℃ LIFE TIME	(1) 68508 HRS (2) 88437 HRS (3) 86961 HRS
9	MTBF	Conducted by Parts Stress Analysis Prediction 2877.8K hrs min. Telcordia SR-332 (Bellcore) ; 287.5K hrs min. MIL-HDBK-217F (25℃)	
10	Ongoing Reliability Test	I/P：230VAC O/P：FULL LOAD TA=50℃ Demonstration Mean Time Between Failure : 50,000 hours	

TEST RESULT	TESTER	REVIEW	APPROVAL
PASS	WUWQ/ZHOUB	WENF	LIUWY