



# Test Report: ELG-150-C500

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150W Single Output Switching Power Supply

## ■ 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

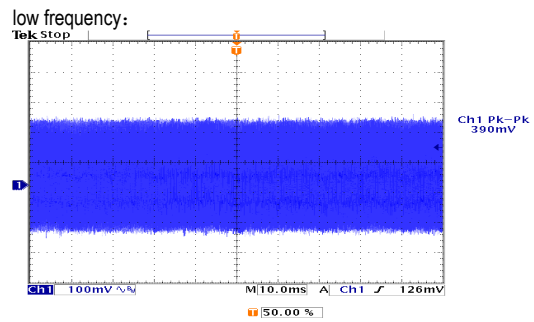
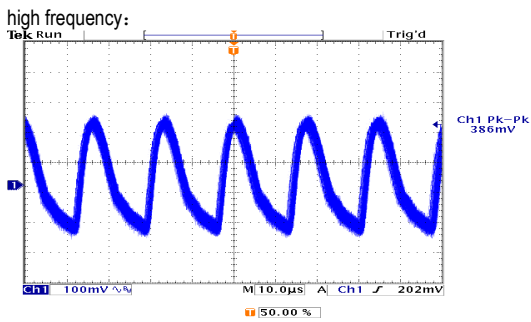
## ■ RELIABILITY TEST

Environment Test

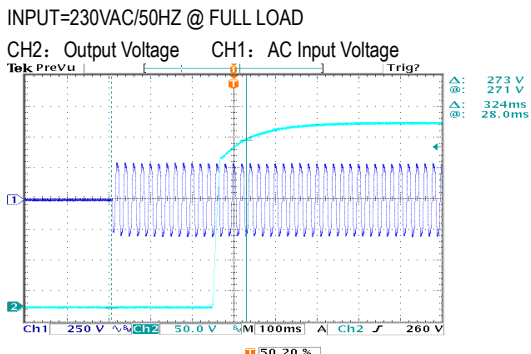
■ DESIGN VERIFY TEST

**OUTPUT FUNCTION TEST**

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OUTPUT CURRENT ADJUST RANGE	250mA~500mA	I/P: 230VAC O/P: LED MODE Ta: 25°C	0.1651A~0.5451A
2	OUTPUT CURRENT TOLERANCE	±5%	I/P: 230VAC O/P: FULL/ MIN LOAD Ta: 25°C	±1.90 %
3	RIPPLE CURRENT	±5%	I/P: 230VAC O/P: LED MODE Ta: 25°C	3.20%
4	CONSTANT CURRENT REGION	150V~300V	I/P: 230VAC O/P: LED MODE Ta: 25°C	52V~300V
5	NO LOAD OUTPUT VOLTAGE (Max)	315V	I/P: 230VAC O/P: NO LOAD Ta: 25°C	305V
6	OVER/UNDERSHOOT TEST	<±5 %	I/P: 230VAC O/P: FULL LOAD Ta: 25°C	<5 %
7	RIPPLE & NOISE (Max)	2Vp-p	I/P: 230VAC O/P: FULL LOAD Ta: 25°C	0.39Vp-p



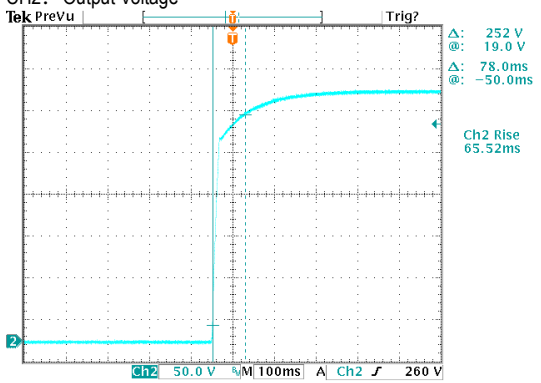
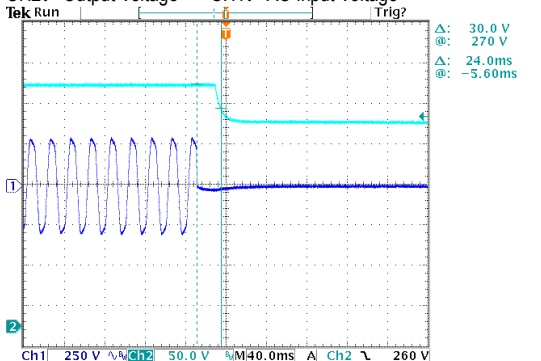
8	SET UP TIME(Max)	230VAC/ 500ms	I/P: 230 VAC O/P: FULL LOAD Ta: 25°C	230VAC/ 324ms
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150W Single Output Switching Power Supply

ELG-150-C series

9	RISE TIME (Max)	230VAC/ 85ms	I/P: 230 VAC O/P: FULL LOAD Ta: 25°C	230VAC/65ms
<p>INPUT=230VAC/50HZ @ FULL LOAD CH2: Output Voltage</p>  <p>Ch2 Rise 65.52ms</p> <p>Δ: 252 V @: 19.0 V Δ: 78.0ms @: 50.0ms</p> <p>50.20 %</p>				
10	HOLD UP TIME(Typ )	230VAC/ 10ms	I/P: 230 VAC O/P: FULL LOAD Ta: 25°C	230VAC/24ms
<p>INPUT=230VAC/50HZ @ FULL LOAD CH2: Output Voltage CH1: AC Input Voltage</p>  <p>Δ: 30.0 V @: 270 V Δ: 24.0ms @: 5.60ms</p> <p>50.20 %</p>				



150W Single Output Switching Power Supply

**ELG-150-C series**

11	DIMMING TEST (For B-Type only)	SPEC:													
		※ Built-in 3 in 1 dimming function, IP67 rated. Output constant current level can be adjusted through output cable by connecting a resistance or 0 ~ 10Vdc or 10V PWM signal between DIM+ and DIM-.													
		※ Please DO NOT connect "DIM-" to "-V".													
		※ Reference resistance value for output current adjustment (Typical)													
		Resistance value	Single driver	Short	10K Ω	20K Ω	30K Ω	40K Ω	50K Ω	60K Ω	70K Ω	80K Ω	90K Ω	100K Ω	OPEN
			Multiple drivers (N=driver quantity for synchronized dimming operation)	Short	10K Ω/N	20K Ω/N	30K Ω/N	40K Ω/N	50K Ω/N	60K Ω/N	70K Ω/N	80K Ω/N	90K Ω/N	100K Ω/N	.....
		Percentage of rated current		0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	95%~108%
		※ 0 ~ 10V dimming function for output current adjustment (Typical)													
		Dimming value	0V	1V	2V	3V	4V	5V	6V	7V	8V	9V	10V	OPEN	
		Percentage of rated current	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	95%~108%	
		※ 10V PWM signal for output current adjustment (Typical): Frequency range: 100Hz~3KHz													
Duty value	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	OPEN			
Percentage of rated current	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	95%~108%			
TEST RESULT:															
I/P: 230 VAC; Ta: 25°C															
1	Resistance value	Short	10K	20K	30K	40K	50K	60K	70K	80K	90K	100K	OPEN		
	Output Current	0	0.045	0.098	0.151	0.204	0.257	0.312	0.366	0.42	0.474	0.509	0.514		
	Percentage of rated current	0%	9.00%	19.60%	30.20%	40.80%	51.40%	62.40%	73.20%	84.00%	94.80%	101.80%	102.80%		
2	Dimming value	0V	1V	2V	3V	4V	5V	6V	7V	8V	9V	10V	OPEN		
	Output Current	0	0.045	0.097	0.146	0.197	0.249	0.301	0.351	0.401	0.452	0.501	0.514		
	Percentage of rated current	0%	9.00%	19.40%	29.20%	39.40%	49.80%	60.20%	70.20%	80.20%	90.40%	100.20%	102.80%		
3	Duty value	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	OPEN		
	Output Current	0	0.049	0.1	0.151	0.202	0.253	0.303	0.354	0.405	0.455	0.501	0.514		
	Percentage of rated current	0%	9.80%	20.00%	30.20%	40.40%	50.60%	60.60%	70.80%	81.00%	91.00%	100.20%	102.80%		

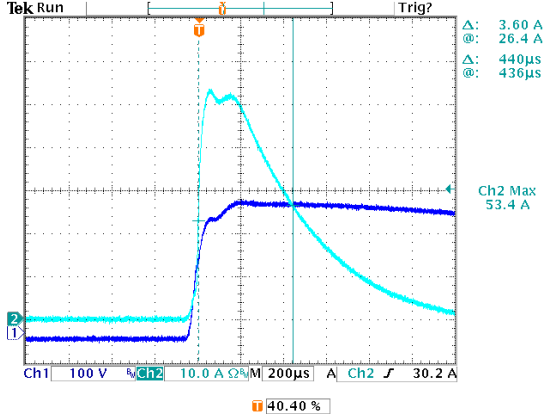


**INPUT FUNCTION TEST**

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	INPUT VOLTAGE RANGE	100VAC~305VAC	I/P: TESTING O/P: FULL LOAD Ta: 25°C	97V~305V
			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 (3)230VAC ON: 3Sec OFF: 3Sec 12HOURS (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~MIN LOAD Ta: 25°C	TEST: OK
3	AC CURRENT	0.7A/277VAC 0.9A/230VAC	I/P: 277 VAC I/P: 230 VAC O/P: FULL LOAD Ta: 25°C	I =0.585A/ 277VAC I =0.712A/ 230VAC
4	LEAKAGE CURRENT	< 0.75mA / 277VAC	I/P: 277 VAC O/P: NO LOAD Ta: 25°C	L-FG: 0.406 mA N-FG: 0.368 mA
5	NO LOAD POWER CONSUMPTION	< 0.5W	I/P: 230VAC O/P: NO LOAD Ta: 25°C	0.292W/ 230VAC
6	TOTAL HARMONIC DISTORTION	Total harmonic distortion will be lower than 20% when output loading is 50% or higher at 230VAC	I/P: 230VAC O/P: 50% LOAD	THD: 10.80 %
		Total harmonic distortion will be lower than 20% when output loading is 75% or higher at 277VAC	I/P: 277VAC O/P: 75% LOAD	THD: 9.56 %
7	INRUSH CURRENT(Typ)	230V/ 65A Twidth =485 us measured at 50% Ipeak COLD START	I/P: 230 VAC O/P: FULL LOAD Ta: 25°C	I =53.4A/ 230VAC Twidth =440us

INPUT=230VAC/50HZ @ FULL LOAD

CH2: Input current CH1: AC Input Voltage



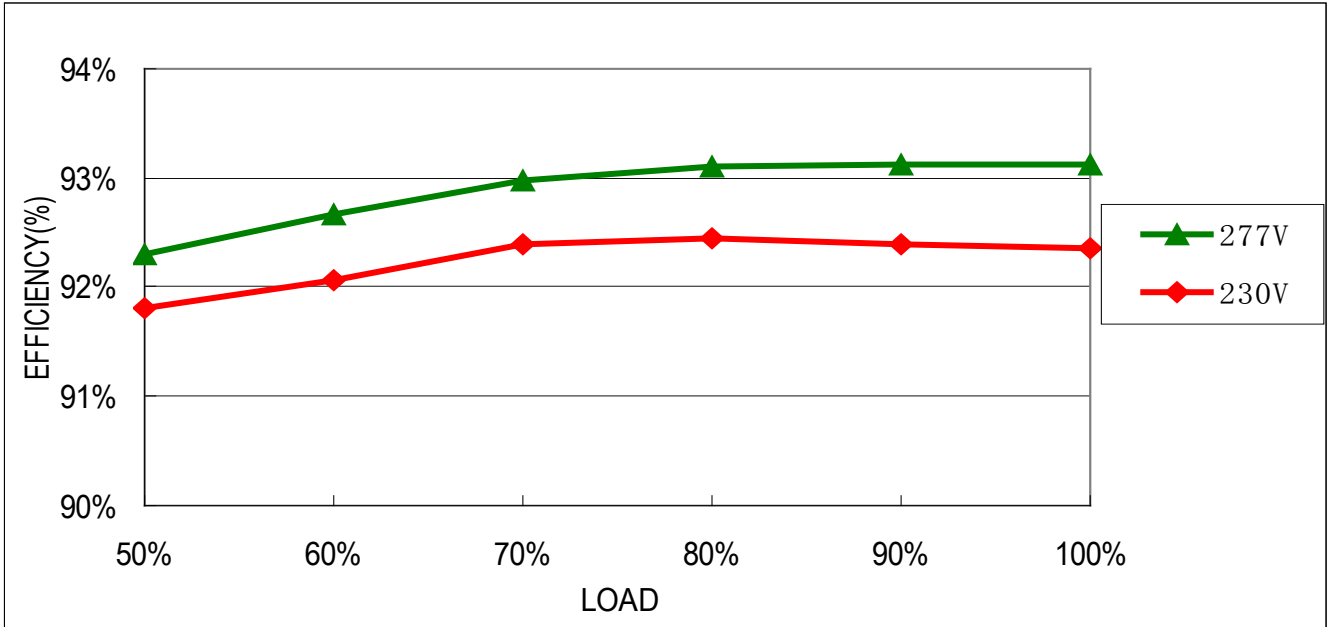


150W Single Output Switching Power Supply

ELG-150-C series

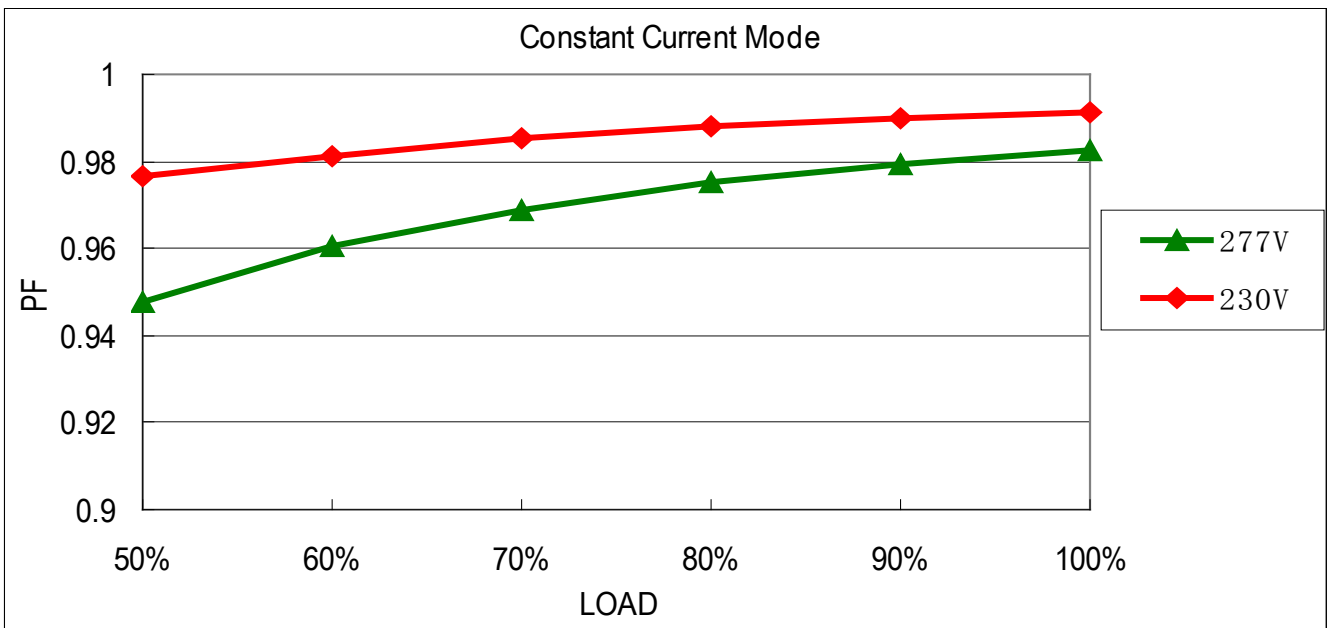
8	EFFICIENCY(Typ)	92%	I/P: 230VAC O/P: FULL LOAD Ta: 25°C	92.35%
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EFFICIENCY vs LOAD



9	POWER FACTOR	0.92/ 277VAC 0.95/ 230VAC	I/P: 277 VAC I/P: 230 VAC O/P: FULL LOAD Ta: 25°C	PF=0.983/ 277VAC PF=0.991/ 230VAC
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P.F vs LOAD



**PROTECTION FUNCTION TEST**

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OVER VOLTAGE PROTECTION	320V~360V	I/P: 230VAC O/P: NO LOAD Ta: 25°C	335.6V/ 230VAC Shut down o/p voltage, re-power on to recover
2	OVER TEMPERATURE PROTECTION	NO DAMAGE	I/P: 230 VAC O/P: FULL LOAD	O.T.P. Active Shut down o/p voltage, re-power on to recover
3	SHORT PROTECTION	SHORT EVERY OUTPUT 1 HOUR NO DAMAGE	I/P: 305VAC O/P: FULL LOAD Ta: 25°C	NO DAMAGE Hiccup mode, recovers automatically after fault condition is removed

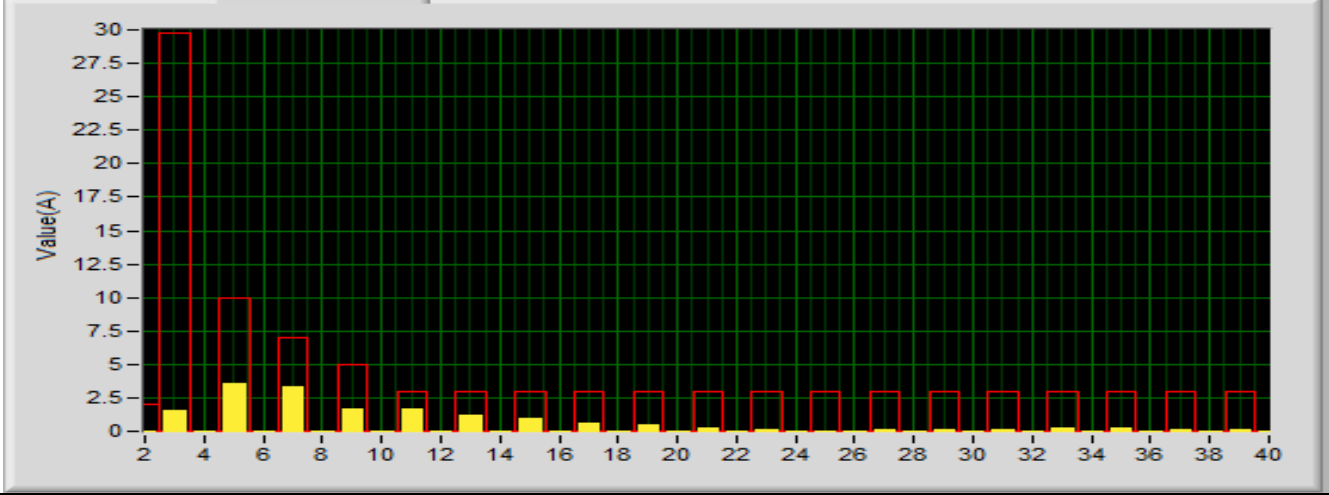
**COMPONENT STRESS TEST**

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	PWM Transistor ( D to S) or (C to E) <b>Peak Voltage</b>	Q 2 Rated 800V/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) 742V (2) 504V (3) 726V
2	<b>Diode Peak Voltage</b>	D100 Rated 1000V/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) 836V (2) 504V (3) 828V
3	<b>Input Capacitor Voltage</b>	C5 Rated 100u/ 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 Ta: 25°C	(1) 452V (2) 440V (3) 444V
4	<b>Control IC Voltage Test</b>	U1 Rated 28V (MAX.)	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 Ta: 25°C	(1) 17.6V (2) 15.1V (3) 17.3V
5	PFC Transistor ( D to S) or (C to E) <b>Peak Voltage</b>	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°C	(1) 456V (2) 428V (3) 458V

**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: 4.2 KVAC/min I/P-FG: 2.4 KVAC/min O/P-FG: 1.8 KVAC/min Ta: 25°C	I/P-O/P: 1.834mA I/P-FG: 2.387mA O/P-FG: 1.756mA 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: >9999MΩ I/P-FG: >9999MΩ O/P-FG: >9999MΩ

**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
				
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: 1KV	I/P: 230VAC/50HZ O/P: FULL LOAD Ta: 25°C	CRITERIA A
6	SURGE	EN61000-4-5 INDUSTRY L-N: 4KV L,N-PE: 6KV	I/P: 230VAC/50HZ O/P: FULL LOAD L-N: 4KV L,N-PE: 6KV Ta: 25°C	CRITERIA A
7	Test by certified Lab & Test Report Prepare			



■ **RELIABILITY TEST**

**ENVIRONMENT TEST**

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT																																																																																
1	TEMPERATURE RISE TEST	MODEL: ELG-150-C500 1. ROOM AMBIENT BURN-IN: 2 HRS I/P: 230VAC O/P: FULL LOAD Ta= 21.9°C 2. HIGH AMBIENT BURN-IN: 2 HRS I/P: 230VAC O/P: FULL LOAD Ta= 61.7°C																																																																																		
				<table border="1"> <thead> <tr> <th>NO</th> <th>Position</th> <th>ROOM AMBIENT Ta= 21.9 °C</th> <th>HIGH AMBIENT Ta=61.7 °C</th> </tr> </thead> <tbody> <tr><td>1</td><td>ZNR1</td><td>46.2°C</td><td>80.1°C</td></tr> <tr><td>2</td><td>BD1</td><td>57.6°C</td><td>89.9°C</td></tr> <tr><td>3</td><td>C11</td><td>56.8°C</td><td>89.7°C</td></tr> <tr><td>4</td><td>L3</td><td>54.8°C</td><td>86.9°C</td></tr> <tr><td>5</td><td>D6</td><td>58.9°C</td><td>92.0°C</td></tr> <tr><td>6</td><td>R5</td><td>58.8°C</td><td>91.9°C</td></tr> <tr><td>7</td><td>Q1</td><td>58.6°C</td><td>92.0°C</td></tr> <tr><td>8</td><td>Q2</td><td>60.4°C</td><td>94.3°C</td></tr> <tr><td>9</td><td>D10</td><td>63.2°C</td><td>97.8°C</td></tr> <tr><td>10</td><td>R4</td><td>66.6°C</td><td>99.7°C</td></tr> <tr><td>11</td><td>C5</td><td>57.1°C</td><td>89.8°C</td></tr> <tr><td>12</td><td>C45</td><td>55.3°C</td><td>87.8°C</td></tr> <tr><td>13</td><td>U1</td><td>53.0°C</td><td>86.1°C</td></tr> <tr><td>14</td><td>T1</td><td>64.3°C</td><td>96.0°C</td></tr> <tr><td>15</td><td>D100</td><td>54.2°C</td><td>87.9°C</td></tr> <tr><td>16</td><td>C102</td><td>45.7°C</td><td>79.2°C</td></tr> <tr><td>17</td><td>LF100</td><td>44.1°C</td><td>78.4°C</td></tr> <tr><td>18</td><td>RTH2</td><td>53.3°C</td><td>86.4°C</td></tr> <tr><td>19</td><td>TC</td><td>47.9°C</td><td>81.3°C</td></tr> </tbody> </table>	NO	Position	ROOM AMBIENT Ta= 21.9 °C	HIGH AMBIENT Ta=61.7 °C	1	ZNR1	46.2°C	80.1°C	2	BD1	57.6°C	89.9°C	3	C11	56.8°C	89.7°C	4	L3	54.8°C	86.9°C	5	D6	58.9°C	92.0°C	6	R5	58.8°C	91.9°C	7	Q1	58.6°C	92.0°C	8	Q2	60.4°C	94.3°C	9	D10	63.2°C	97.8°C	10	R4	66.6°C	99.7°C	11	C5	57.1°C	89.8°C	12	C45	55.3°C	87.8°C	13	U1	53.0°C	86.1°C	14	T1	64.3°C	96.0°C	15	D100	54.2°C	87.9°C	16	C102	45.7°C	79.2°C	17	LF100	44.1°C	78.4°C	18	RTH2	53.3°C	86.4°C	19	TC	47.9°C	81.3°C
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13	U1	53.0°C	86.1°C																																																																																	
14	T1	64.3°C	96.0°C																																																																																	
15	D100	54.2°C	87.9°C																																																																																	
16	C102	45.7°C	79.2°C																																																																																	
17	LF100	44.1°C	78.4°C																																																																																	
18	RTH2	53.3°C	86.4°C																																																																																	
19	TC	47.9°C	81.3°C																																																																																	
2	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR	I/P: 305VAC/200VAC O/P: FULL LOAD Ta= -45°C	TEST: OK																																																																																
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 (0~50°C)	I/P: 230 VAC O/P: FULL LOAD	±0.003%/°C (0~50°C)																																																																																
5	STORAGE TEMPERATURE TEST	1. Thermal shock Temperature: -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: 5 CYCLE 5. Input/Output condition: STATIC		TEST: OK																																																																																



150W Single Output Switching Power Supply

**ELG-150-C series**

6	THERMAL SHOCK TEST	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: 10 CYCLE 5. Input/Output condition: 230VAC/Full Load AC ON/OFF TEST turn on 58 sec; turn off 2 sec	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-150-C700: SUPPOSE C102 IS THE MOST CRITICAL COMPONENT (1) I/P: 230VAC O/P: FULL LOAD Tc= 75 °C LIFE TIME (2) I/P: 230VAC O/P: 75% LOAD Tc= 75 °C LIFE TIME (3) I/P: 230VAC O/P: 50% LOAD Tc= 75 °C LIFE TIME	(1) 88640 HRS (2) 101520 HRS (3) 104377 HRS
9	MTBF	Conducted by Parts Stress Analysis Prediction 3102.4K hrs min. Telcordia SR-332 (Bellcore) ; 308.5K 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	ZHANGZJ/ZHUOKB	SKY	LIUWY