



# Test Report : LPC-150-1050

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150W Single Output LED 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	VERDICT
1	RIPPLE & NOISE	V1 : 1 Vp-p (Max)	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	V1 : 0.167 Vp-p (Max)	PASS
2	RIPPLE CURRENT	< ±5%	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	TEST : 0.9 %	PASS
3	CONSTANT CURRENT REGION	V1: 72V ~144 V	I/P : 230VAC O/P:LED MODE Ta:25°C	OP= 72V / 1.035A OP= 143V / 1.034A	PASS
4	OUTPUT VOLTAGE TOLERANCE	V1 : -2.0%~ 2.0% (Max)	I/P : 180VAC / 305 VAC O/P : FULL/ MIN LOAD Ta : 25°C	V1 : 0 %~ 0.05 %	PASS
5	LINE REGULATION	V1 : -1.0%~ 1.0% (Max)	I/P : 200VAC ~ 305 VAC O/P : FULL LOAD Ta : 25°C	V1 : 0 %~ 0 %	PASS
6	SET UP TIME	230VAC : 1000 ms (Max)	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	230VAC/ 369 ms	PASS
7	RISE TIME	230VAC : 80 ms (Max)	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	230VAC/ 18 ms	PASS
8	HOLD UP TIME	230VAC : 16 ms (TYP)	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	230VAC/ 32 ms	PASS
9	OVER/UNDERSHOOT TEST	< ±5%	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	TEST : < 5 %	PASS
10	CURRENT ACCURACY	< ±5%	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	TEST : 1.12 %	PASS

**INPUT FUNCTION TEST**

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	INPUT VOLTAGE RANGE	180 VAC~305 VAC	I/P : TESTING O/P : FULL LOAD Ta : 25°C	177V~305 V	PASS
			I/P : (1)LOW-LINE-3V=177 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 : (1) OK (2) OK (3) OK	
2	INPUT FREQUENCY RANGE	47Hz~63 Hz NO DAMAGE OSC	I/P : 180VAC ~ 305 VAC O/P : FULL ~MIN LOAD Ta : 25°C	TEST : OK	PASS
3	EFFICIENCY	90% (TYP)	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	92.46%	PASS
4	INPUT CURRENT	230V/ 1.7 A (TYP) 277V/ 1.5 A (TYP)	I/P : 230 VAC I/P : 277 VAC O/P : FULL LOAD Ta : 25°C	I = 1.221 A / 230VAC I = 0.972 A / 277 VAC	PASS
5	INRUSH CURRENT	230V/ 40 A (TYP) Twidth =750 us measured at 50% Ipeak COLD START	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	I = 29.2 A Twidth =704us	PASS
6	LEAKAGE CURRENT	< 0.25 mA / 277 VAC	I/P : 305 VAC O/P : NO LOAD Ta : 25°C	L-CASE : 0.003 mA N-CASE : 0.003 mA	PASS

**PROTECTION FUNCTION TEST**

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	OVER VOLTAGE PROTECTION	CH1 : 158 V ~ 188 V	I/P : 180 VAC I/P : 230 VAC I/P : 305 VAC O/P : TESTING Ta : 25°C	178.22V/ 180 VAC 178.24V/ 230 VAC 178.21V/ 305 VAC Shut down and latch off o/p voltage, re-power on to recover	PASS
2	OVER TEMPERATURE PROTECTION	SPEC : O.T.P. NO DAMAGE	I/P : 230 VAC O/P : FULL LOAD	O.T.P. Active Shut down o/p voltage, recovers automatically after temperature goes down	PASS
3	SHORT PROTECTION	SHORT EVERY OUTPUT 1 HOUR NO DAMAGE	I/P : 305 VAC O/P : FULL LOAD Ta : 25°C	NO DAMAGE Constant current limiting, recovers automatically after fault condition is removed	PASS

**COMPONENT STRESS TEST**

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	Power Transistor ( D to S) or (C to E) Peak Voltage	Q1 Rated 800 V /9A	I/P : High-Line +3V = 308 V O/P : (1)FULL LOAD Turn on (2) Output Short (3) FULL LOAD continue Ta : 25°C	(1) 620 V (2) 524 V (3) 570 V	PASS
2	Diode Peak Voltage	D102 Rated 1000 V /10A	I/P : High-Line +3V = 308 V O/P : (1) FULL LOAD Turn on (2)Output Short (3) FULL LOAD continue Ta : 25°C	(1) 710 V (2) 885 V (3) 685 V	PASS
3	Input Capacitor Voltage	C5 Rated 100uF / 450 V	I/P : High-Line +3V = 308 V O/P : (1) FULL LOAD Turn on /Off (2)MIN LOAD Turn on /Off (3) FULL LOAD /MIN LOAD Change Ta : 25°C	(1) 446 V (2) 444 V (3) 445 V	PASS
4	Control IC Voltage Test	U1 Rated 28V	I/P : High-Line +3V = 308 V O/P : (1) FULL LOAD Turn on /Off (2)MIN LOAD Turn on /Off (3) FULL LOAD /MIN LOAD Change Ta : 25°C	(1) 17.4 V (2) 17.1 V (3) 17.3 V	PASS

■ SAFETY & E.M.C. TEST

SAFETY TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	WITHSTAND VOLTAGE	I/P-O/P : 3KVAC/min	I/P-O/P : 3.6 KVAC/min Ta : 25°C	I/P-O/P : 2.090 mA NO DAMAGE	PASS
2	ISOLATION RESISTANCE	I/P-O/P : 500VDC>100MΩ	I/P-O/P : 500 VDC Ta : 25°C/70% RH	I/P-O/P : >9999 MΩ NO DAMAGE	PASS

E.M.C TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	HARMONIC	EN61000-3-2 CLASS A	I/P : 230VAC/50HZ O/P : 80% LOAD Ta:25°C	OK	PASS
2	CONDUCTION	EN55022 CLASS B	I/P : 230 VAC/50HZ O/P:FULL LOAD Ta:25°C	OK Test by certified Lab	PASS
3	RADIATION	EN55022 CLASS B	I/P : 230 VAC/50HZ O/P:FULL LOAD Ta:25°C	OK Test by certified Lab	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	CRITERIA A	PASS
5	E.F.T	EN61000-4-4 LIGHT INDUSTRY INPUT : 1KV	I/P : 230 VAC/50HZ O/P:FULL LOAD Ta:25°C	CRITERIA A	PASS
6	SURGE	IEC61000-4-5 LIGHT INDUSTRY L-N :1KV	I/P : 230 VAC/50HZ O/P:FULL LOAD Ta:25°C	CRITERIA A	PASS
7	Test by certified Lab & Test Report Prepare				

■ RELIABILITY TEST

ENVIRONMENT TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT																																																																
1	TEMPERATURE RISE TEST	MODEL : LPC-150-1750 1. ROOM AMBIENT BURN-IN : 2 HRS I/P : 230VAC O/P : FULL LOAD Ta=34.4 °C 2. HIGH AMBIENT BURN-IN : 2 HRS I/P : 230VAC O/P : FULL LOAD Ta=53.2°C			PASS																																																																
		<table border="1"> <thead> <tr> <th>NO</th> <th>Position</th> <th>ROOM AMBIENT Ta= 34.4 °C</th> <th>HIGH AMBIENT Ta= 53.2 °C</th> </tr> </thead> <tbody> <tr><td>1</td><td>ZNR1</td><td>68.0°C</td><td>85.6°C</td></tr> <tr><td>2</td><td>BD1</td><td>78.9°C</td><td>97.9°C</td></tr> <tr><td>3</td><td>C5</td><td>77.2°C</td><td>97.2°C</td></tr> <tr><td>4</td><td>Q1</td><td>86.7°C</td><td>107.7°C</td></tr> <tr><td>5</td><td>C24</td><td>78.6°C</td><td>99.3°C</td></tr> <tr><td>6</td><td>C25</td><td>76.8°C</td><td>97.6°C</td></tr> <tr><td>7</td><td>D5</td><td>84.3°C</td><td>106.4°C</td></tr> <tr><td>8</td><td>TSW1</td><td>78.8°C</td><td>99.3°C</td></tr> <tr><td>9</td><td>T1</td><td>80.4°C</td><td>102.2°C</td></tr> <tr><td>10</td><td>D100</td><td>78.2°C</td><td>98.2°C</td></tr> <tr><td>11</td><td>C102</td><td>67.0°C</td><td>86.3°C</td></tr> <tr><td>12</td><td>C104</td><td>67.4°C</td><td>86.8°C</td></tr> <tr><td>13</td><td>U1</td><td>74.8°C</td><td>94.8°C</td></tr> <tr><td>14</td><td>LF100</td><td>59.0°C</td><td>78.6°C</td></tr> <tr><td>15</td><td>Tc</td><td>65.2°C</td><td>84.8°C</td></tr> </tbody> </table>	NO	Position		ROOM AMBIENT Ta= 34.4 °C	HIGH AMBIENT Ta= 53.2 °C	1	ZNR1	68.0°C	85.6°C	2	BD1	78.9°C	97.9°C	3	C5	77.2°C	97.2°C	4	Q1	86.7°C	107.7°C	5	C24	78.6°C	99.3°C	6	C25	76.8°C	97.6°C	7	D5	84.3°C	106.4°C	8	TSW1	78.8°C	99.3°C	9	T1	80.4°C	102.2°C	10	D100	78.2°C	98.2°C	11	C102	67.0°C	86.3°C	12	C104	67.4°C	86.8°C	13	U1	74.8°C	94.8°C	14	LF100	59.0°C	78.6°C	15	Tc	65.2°C	84.8°C		
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2	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR	I/P : 305VAC/200VAC O/P : FULL LOAD Ta= -30°C	TEST : OK	PASS																																																																
3	HIGH HUMIDITY HIGH TEMPERATURE HIGH VOLTAGE TURN ON TEST	AFTER 12 HOURS IN CHAMBER ON CONTROL 50 °C NO DAMAGE	I/P : 315VAC O/P : FULL LOAD Ta=50°C HUMIDITY= 95% R.H	TEST : OK	PASS																																																																
4	TEMPERATURE COEFFICIENT	±0.03 %(0~50°C)	I/P : 230 VAC O/P : FULL LOAD	±0.006 %(0~50°C)	PASS																																																																
5	STORAGE TEMPERATURE TEST	1. Thermal shock Temperature : -45°C ~ +75°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		OK	PASS																																																																
6	THERMAL SHOCK TEST	1. Thermal shock Temperature : -30°C ~ +55°C 2. Temperature change rate : 25°C / MIN 3. Dwell time low and high temperature : 30 MIN/EACH 4. Total test cycle : 5CYCLE 5. Input/Output condition : 230VAC/FULL LOAD AC ON/OFF TEST turn on 58sec ; turn off 2sec		OK	PASS																																																																
7	VIBRATION TEST	1 Carton & 1 Set (1) Waveform : Sine Wave (2) Frequency : 10~500Hz (3) Sweep Time : 10min/sweep cycle (4) Acceleration : 3G (5) Test Time : 90min in each axis (X.Y.Z) (6) Ta : 25°C		TEST : OK	PASS																																																																



8	CAPACITOR LIFE CYCLE	LPC-150-1750 : SUPPOSE C102 IS THE MOST CRITICAL COMPONENT (1) I/P : 230VAC O/P : FULL LOAD Ta=25 °C LIFE TIME (2) I/P : 230VAC O/P : FULL LOAD Ta=50 °C LIFE TIME (3) I/P : 230VAC O/P : 75% LOAD Ta=50 °C LIFE TIME (4) I/P : 230VAC O/P : 50% LOAD Ta=50 °C LIFE TIME	(1) 296324 HRS (2) 50570 HRS (3) 51346 HRS (4) 60551 HRS	PASS
9	MTBF	Conducted by Parts Stress Analysis Prediction 3528.4K hrs min. Telcordia SR-332 (Bellcore); 479.1K hrs min. MIL-HDBK-217F (25°C)		PASS
10	DMTBF/Accelerated Life Test	Demonstration Mean Time Between Failure(Expected Life) : 20000hours @ Tcase 90 °C		PASS

TEST RESULT	TESTER	REVIEW	APPROVAL
PASS	ZHOU/ ZHUOKB	SKY	LIUWY

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