



# Test Report: LPC-100-700

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100W 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

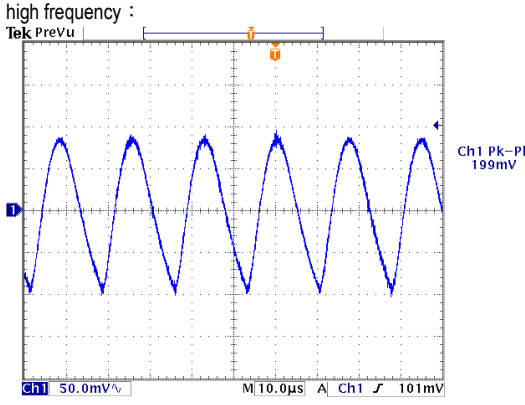
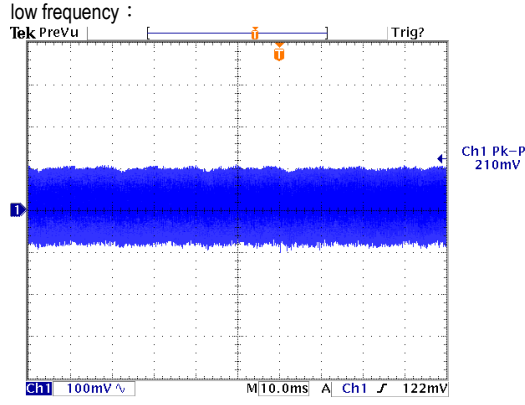
E.M.C. Test

## ■ RELIABILITY TEST

Environment Test

## DESIGN VERIFY TEST

### OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	CURRENT ACCURACY	$< \pm 5\%$	I/P: 230 VAC O/P: FULL LOAD Ta: 25°C	TEST: 3.5 %
2	CONSTANT CURRENT REGION	V1: 72V~ 143 V	I/P: 230VAC O/P: LED MODE Ta:25°C	V1: 46.79 V~ 142.21 V
3	RIPPLE CURRENT	$< \pm 5\%$	I/P: 230 VAC O/P: FULL LOAD Ta: 25°C	TEST: 4.0%
4	LINE REGULATION	V1: -1 %~ 1 %	I/P: 100VAC~ 264VAC O/P: FULL LOAD Ta: 25°C	V1: -0.56 %~ 0 %
5	OUTPUT VOLTAGE TOLERANCE	V1: -1.5 %~ 1.5 %	I/P: 100VAC /264VAC O/P: FULL/ MIN LOAD Ta: 25°C	V1: -0.468%~0.007%
6	OVER/UNDERSHOOT TEST	$< \pm 5\%$	I/P: 230VAC O/P: FULL LOAD Ta: 25°C	< 5 %
7	RIPPLE & NOISE(Max)	V1: 1.0Vp-p	I/P: 230VAC O/P: FULL LOAD Ta: 25°C	V1: 210mVp-p
<p>high frequency :</p> 		<p>low frequency :</p> 		
8	SET UP TIME(Max)	230VAC/ 1000ms 115VAC/ 2000ms	I/P: 230 VAC I/P: 115 VAC O/P: FULL LOAD Ta: 25°C	230VAC/ 654 ms 115VAC/ 1380 ms



# 100W Single Output LED Power Supply

# LPC-100 series

<p>INPUT=230VAC/50HZ @ FULL LOAD</p> <p>CH1 : Output Voltage CH2 : AC Input Voltage</p> <p>Δ: 123 V @: 1.60 V Δ: 654ms @: -654ms</p> <p>Ch1 20.0 V Ch2 250 V %M 100ms A Ch1 124 V</p> <p>79.60 %</p>	<p>INPUT=115VAC/60HZ @ FULL LOAD</p> <p>CH1 : Output Voltage CH2 : AC Input Voltage</p> <p>Δ: 123 V @: 124 V Δ: 1.38 s @: 0.00 s</p> <p>Ch1 20.0 V Ch2 250 V %M 200ms A Ch1 124 V</p> <p>80.20 %</p>		
<p>9 RISE TIME (Max)</p>	<p>230VAC/ 80ms 115VAC/ 80ms</p>	<p>I/P: 230 VAC I/P: 115 VAC O/P: FULL LOAD Ta: 25°C</p>	<p>230VAC/ 10ms 115VAC/ 10ms</p>
<p>INPUT=230VAC/50HZ @ FULL LOAD</p> <p>CH1 : Output Voltage</p> <p>Δ: 113 V @: 127 V Δ: 10.0ms @: 400μs</p> <p>Ch1 20.0 V M 20.0ms A Ch1 124 V</p> <p>50.20 %</p>	<p>INPUT=115VAC/60HZ @ FULL LOAD</p> <p>CH1 : Output Voltage</p> <p>Δ: 112 V @: 127 V Δ: 10.0ms @: 400μs</p> <p>Ch1 20.0 V M 20.0ms A Ch1 124 V</p> <p>50.20 %</p>		
<p>10 HOLD UP TIME(Typ)</p>	<p>230VAC/ 16ms 115VAC/ 10ms</p>	<p>I/P: 230 VAC I/P: 115 VAC O/P: FULL LOAD Ta: 25°C</p>	<p>230VAC/ 95.2 ms 115VAC/ 21.6 ms</p>
<p>INPUT=230VAC/50HZ @ FULL LOAD</p> <p>CH1 : Output Voltage CH2 : AC Input Voltage</p> <p>Δ: 16.0 V @: 127 V Δ: 95.2ms @: -300μs</p> <p>Ch1 20.0 V Ch2 250 V %M 40.0ms A Ch1 126 V</p> <p>60.20 %</p>	<p>INPUT=115VAC/60HZ @ FULL LOAD</p> <p>CH1 : Output Voltage CH2 : AC Input Voltage</p> <p>Δ: 15.6 V @: 128 V Δ: 21.6ms @: -3.20ms</p> <p>Ch1 20.0 V Ch2 250 V %M 20.0ms A Ch1 124 V</p> <p>50.20 %</p>		



INPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	INPUT VOLTAGE RANGE	90VAC~264VAC	I/P: TESTING O/P: FULL LOAD Ta: 25°C	87V~267V
			I/P: (1)LOW-LINE-3V=87 V HIGH-LINE+15%=300 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: 90 VAC ~264 VAC O/P: FULL~MIN LOAD Ta: 25°C	TEST: OK
3	INPUT CURRENT (Typ)	230V/ 1.2A 115V/ 2.2A	I/P: 230 VAC I/P: 115 VAC O/P: FULL LOAD Ta: 25°C	I =0.98A/ 230VAC I =1.66A/ 115VAC
4	LEAKAGE CURRENT	< 0.25mA / 240 VAC	I/P: 240 VAC O/P: Min LOAD Ta: 25°C	L-FG: 0.003 mA N-FG: 0.003 mA
5	INRUSH CURRENT(Typ)	230V/ 75A Twidth =980 us measured at 50% Ipeak COLD START	I/P: 230 VAC O/P: FULL LOAD Ta: 25°C	I = 54.8A Twidth =896us
<p>INPUT=230VAC/50HZ @ FULL LOAD</p> <p>CH2 : Input current CH1 : AC Input Voltage</p> <p>Ch1 Max 320 V Ch2 Max 54.8 A</p> <p>Δ: 3.60 A @: 30.6 A Δ: 896µs @: -8.00µs</p> <p>Ch1 100 V Ch2 35.2 A</p> <p>40.00 %</p>				
6	EFFICIENCY(Typ)	90%	I/P: 230 VAC O/P: FULL LOAD Ta: 25°C	91.32%



## PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OVER VOLTAGE PROTECTION	V1: 160 V~ 172 V	I/P: 90VAC I/P: 230VAC I/P: 264VAC O/P: TESTING Ta: 25°C	167.11V/ 90VAC 167.14V/ 230VAC 167.18V/ 264VAC Shut down o/p voltage, re-power on to recover
2	SHORT PROTECTION	SHORT EVERY OUTPUT 1 HOUR NO DAMAGE	I/P: 264VAC O/P: FULL LOAD Ta: 25°C	NO DAMAGE Constant current limiting, recovers automatically after fault condition is removed

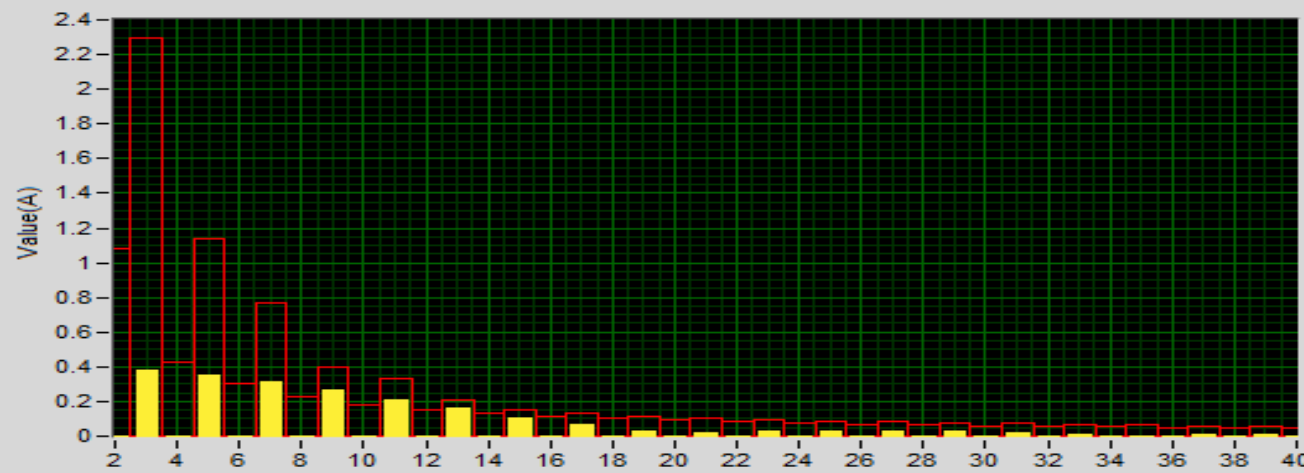
## COMPONENT STRESS TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	PWM Transistor (D to S) or (C to E) Peak Voltage	Q1 Rated 800V/9.4A	I/P: High-Line +3V =267V O/P: (1)Full Load Turn on (2)Output Short (3)Full load continue Ta: 25°C	(1) 562V (2) 440V (3) 520V
2	Diode Peak Voltage	D100 Rated 600V/3A	I/P: High-Line +3V =267V O/P: (1)Full Load Turn on (2)Output Short (3)Full load continue Ta: 25°C	(1) 528V (2) 464V (3) 526V
3	Input Capacitor Voltage	C5 Rated 100uF/ 400V	I/P: High-Line +3V =267 V O/P: (1)Full Load input on/off (2) Min load input on /Off Ta: 25°C	(1) 346V (2) 342V
4	Control IC Voltage Test	U1 Rated 28V (MAX.)	I/P: High-Line +3V =267 V O/P: (1)Full Load input on/off (2) Min load input on /Off Ta: 25°C	(1) 17.1V (2) 17.2V

## SAFETY TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	WITHSTAND VOLTAGE	I/P-O/P: 3KVAC/min	I/P-O/P: 3.6 KVAC/min Ta: 25°C	I/P-O/P: 1.59mA NO DAMAGE
2	ISOLATION RESISTANCE	I/P-O/P: 500VDC>100MΩ	I/P-O/P: 500 VDC Ta: 25°C	I/P-O/P: >9999MΩ NO DAMAGE

## E.M.C TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	HARMONIC	EN61000-3-2 CLASS A	I/P: 230 VAC/50HZ O/P: ≤80% LOAD Ta: 25°C	PASS
<div style="border: 1px solid gray; padding: 5px;"> <p style="text-align: center;"> <span style="margin-right: 20px;">Current Table</span> <span style="margin-right: 20px;">Current Graph</span> <span style="margin-right: 20px;">Voltage Table</span> <span>Voltage Graph</span> </p>  </div>				
2	CONDUCTION	EN55022 CLASS B	I/P: 230 VAC (50HZ) O/P: FULL LOAD Ta: 25°C	PASS Test by certified Lab
3	RADIATION	EN55022 CLASS B	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 LIGHT INDUSTRY L-N : 1KV	I/P: 230VAC/50HZ O/P: FULL LOAD 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: LPC-100-1050 1. ROOM AMBIENT BURN-IN: 2 HRS I/P: 230VAC O/P: FULL LOAD Ta= 33 °C 2. HIGH AMBIENT BURN-IN: 2 HRS I/P: 230VAC O/P: FULL LOAD Ta= 54 °C																																																														
		<table border="1"> <thead> <tr> <th>NO</th> <th>Position</th> <th>ROOM AMBIENT Ta= 33 °C</th> <th>HIGH AMBIENT Ta= 54 °C</th> </tr> </thead> <tbody> <tr><td>1</td><td>LF3</td><td>52.7°C</td><td>70.3°C</td></tr> <tr><td>2</td><td>C6</td><td>58.1°C</td><td>76.6°C</td></tr> <tr><td>3</td><td>Q1</td><td>62.9°C</td><td>81.6°C</td></tr> <tr><td>4</td><td>D2</td><td>65.1°C</td><td>84.5°C</td></tr> <tr><td>5</td><td>C26</td><td>62.3°C</td><td>80.7°C</td></tr> <tr><td>6</td><td>R9</td><td>69.2°C</td><td>88.4°C</td></tr> <tr><td>7</td><td>U1</td><td>58.6°C</td><td>77.2°C</td></tr> <tr><td>8</td><td>T1</td><td>72.7°C</td><td>91.6°C</td></tr> <tr><td>9</td><td>D102</td><td>65.1°C</td><td>84.1°C</td></tr> <tr><td>10</td><td>C120</td><td>58.8°C</td><td>77.2°C</td></tr> <tr><td>11</td><td>C106</td><td>61.1°C</td><td>79.9°C</td></tr> <tr><td>12</td><td>C108</td><td>53.3°C</td><td>72.0°C</td></tr> <tr><td>13</td><td>RTH2</td><td>61.0°C</td><td>79.5°C</td></tr> <tr><td>14</td><td>Tc</td><td>60.3°C</td><td>78.4°C</td></tr> </tbody> </table>	NO	Position	ROOM AMBIENT Ta= 33 °C	HIGH AMBIENT Ta= 54 °C	1	LF3	52.7°C	70.3°C	2	C6	58.1°C	76.6°C	3	Q1	62.9°C	81.6°C	4	D2	65.1°C	84.5°C	5	C26	62.3°C	80.7°C	6	R9	69.2°C	88.4°C	7	U1	58.6°C	77.2°C	8	T1	72.7°C	91.6°C	9	D102	65.1°C	84.1°C	10	C120	58.8°C	77.2°C	11	C106	61.1°C	79.9°C	12	C108	53.3°C	72.0°C	13	RTH2	61.0°C	79.5°C	14	Tc	60.3°C	78.4°C		
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2	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR	I/P: 264VAC/100VAC O/P: 100 % LOAD Ta= -30 °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: 272 VAC O/P: FULL LOAD Ta= 50 °C HUMIDITY= 95 % R.H	TEST: OK																																																												
4	TEMPERATURE COEFFICIENT	±0.03 %/°C (0~50°C)	I/P: 230 VAC O/P: FULL LOAD	±0.006 %/°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																																																												
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: 10 CYCLE 5. Input/Output condition: 230VAC/Full Load AC ON/OFF TEST turn on 58 sec; turn off 2 sec		TEST: OK																																																												



100W Single Output LED Power Supply

# LPC-100 series

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
8	CAPACITOR LIFE CYCLE	LPC-100-1050 : SUPPOSE C106 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) 435445 HRS (2) 89713.6 HRS (3) 98780.4 HRS (4) 131230 HRS
9	MTBF	MIL-HDBK-217F TOTAL FAILURE RATE: 511K HRS	
10	DMTBF/Accelerated Life Test	Demonstration Mean Time Between Failure (Expected Life): Above 20,000 hours @ Tcase 75°C	

TEST RESULT	TESTER	REVIEW	APPROVAL
PASS	ZHANGZJ/ZHUOKB	SKY	LIUWY