Test Report: PLD-25-350

25W 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	V1：4.6 Vp-p (Max)	I/P： 230VAC O/P：FULL LOAD Ta：25℃	V1： 1.39 Vp-p (Max)	P
2	SET UP TIME	230VAC： 500 ms (Max) 115VAC： 2000 ms(Max)	I/P： 230 VAC I/P： 115 VAC O/P：FULL LOAD Ta：25℃	230VAC/ 366.319 ms 115VAC/ 334.594 ms	P
3	NO LOAD OUTPUT VOLTAGE (max.)	< 63V	I/P： 230 VAC O/P：NO LOAD Ta：25℃	TEST： 58.456 V	P

INPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	INPUT VOLTAGE RANGE	90 VAC~295 VAC	I/P：TESTING O/P：FULL LOAD Ta：25℃	73V~295V	P
			I/P： LOW-LINE-3V= 87V HIGH-LINE+15%=300 V O/P：FULL/MIN LOAD ON： 30 Sec . OFF： 30 Sec 10MIN (AC POWER ON/OFF NO DAMAGE)	TEST： OK	
2	INPUT FREQUENCY RANGE	47HZ ~63 HZ NO DAMAGE OSC	I/P： 90 VAC ~ 295 VAC O/P：FULL~MIN LOAD Ta：25℃	TEST： OK	P
3	POWER FACTOR	0.92 / 230 VAC(TYP) 0.98 / 115 VAC(TYP)	I/P： 230 VAC I/P： 115 VAC O/P：FULL LOAD Ta：25℃	PF= 0.978 / 230 V PF= 0.998 / 115 V	P
4	EFFICIENCY	85 % (TYP)	I/P： 230 VAC O/P：FULL LOAD Ta：25℃	85.16 %	P
5	INPUT CURRENT	230V/ 0.3 A (TYP) 115V/ 0.6 A (TYP)	I/P： 230 VAC I/P： 115 VAC O/P：FULL LOAD Ta：25℃	I = 0.128 A/ 230 VAC I = 0.202 A/ 115 VAC	P
6	INRUSH CURRENT	230V/ 15 A (TYP)	I/P： 230 VAC O/P：FULL LOAD Ta：25℃	I = 13 A/ 230 VAC	P
7	LEAKAGE CURRENT	< 0.5 mA / 240 VAC	I/P： 240 VAC O/P：Min LOAD Ta：25℃	L-FG： 0.01 mA N-FG： 0.01 mA	P

PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	OVER LOAD PROTECTION	95 % ~ 110 %	I/P： 230 VAC I/P： 115 VAC O/P：TESTING Ta：25℃	100 %/ 230 VAC 99.42 %/ 115 VAC Constant Current Limiting. recovers automatically after fault condition is removed	P
2	OVER TEMPERATURE PROTECTION	SPEC： RTH1： 95 ± 10℃ O.T.P. NO DAMAGE	I/P： 230 VAC O/P：FULL LOAD	O.T.P. Active Shut down o/p voltage	P
3	SHORT PROTECTION	SHORT EVERY OUTPUT 1 HOUR NO DAMAGE	I/P： 295 VAC O/P：FULL LOAD Ta：25℃	NO DAMAGE Hiccup Mode, recovers automatically after fault condition is removed	P

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： SPD04N80C3 4A/800V	I/P：High-Line +3V = 298 V O/P： (1)Full Load Turn on (2) Output Short (3)Full load continue Ta：25℃	(1) 750 V (2) 504 V (3) 576 V	P
2	Diode Peak Voltage	D 100 Rated： NSF03A40 3A/400V	I/P：High-Line +3V = 298 V O/P： (1)Full Load Turn on (2)Output Short (3)Full load continue Ta：25℃	(1) 399 V (2) 398 V (3) 320 V	P
3	Clamp Diode Peak Voltage	D6 Rated： 1A/1KV 1N4007GP	I/P：High-Line +3V = 267 V O/P： (1) Dynamic Load 90%Duty/1KHz (2)Full load continue Ta：25℃	(1) 528 V (2) 624 V	P
4	Control IC Voltage Test	U1 Rated： NCP1608B 10.2V~20V	I/P：High-Line +3V = 267 V O/P： (1)Full Load Turn on /Off (2) Min load Turn on /Off (3)Full Load /Min load Change Ta：25℃	(1) 13.678 V (2) 13.881 V (3) 13.883 V	P

■ SAFETY & E.M.C. TEST

SAFETY TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	WITHSTAND VOLTAGE	I/P-O/P： 3.75 KVAC/min	I/P-O/P： 4 KVAC/min I Ta：25℃	I/P-O/P： 1.786 mA NO DAMAGE	P
2	ISOLATION RESISTANCE	I/P-O/P：500VDC>100MΩ I	I/P-O/P： 500 VDC Ta：25℃/70%RH	I/P-O/P： 30 GΩ NO DAMAGE	P
3	APPROVAL	TUV： Certificate NO ： UL： File NO ：			N/A

E.M.C TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	HARMONIC	EN61000-3-2 CLASS C	I/P:230 /240//220VAC/50HZ LOAD:LED/ELECTRONIC LOAD O/P:40V/58VLOAD Ta:25℃	PASS Test by certified Lab	P
2	CONDUCTION	EN55015 CLASS B	I/P: 230VAC (50HZ) O/P:FULL/50% LOAD Ta:25℃	PASS Test by certified Lab	P
3	RADIATION	EN55015 CLASS B	I/P: 230VAC (50HZ) O/P:FULL LOAD Ta:25℃	PASS Test by certified Lab	P
4	E.S.D	EN61000-4-2 LIGHT INDUSTRY AIR:8KV / Contact:4KV	I/P: 230VAC/50HZ O/P:FULL LOAD Ta:25℃	CRITERIA A	P
5	E.F.T	EN61000-4-4 LIGHT INDUSTRY INPUT: 1KV	I/P: 230VAC/50HZ O/P:FULL LOAD Ta:25℃	CRITERIA A	P
6	SURGE	IEC61000-4-5 LIGHT INDUSTRY L-N :1KV L,N-PE:2KV	I/P: 230VAC/50HZ O/P:FULL LOAD Ta:25℃	CRITERIA A	P
7	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><th>VERDICT</th></tr>
<tr><td>1</td><td>TEMPERATURE RISE TEST</td><td colspan="3">MODEL：PLD-25-1400
1. ROOM AMBIENT BURN-IN： 1.5HRS
I/P： 230VAC O/P： FULL LOAD Ta= 28.1℃
2. HIGH AMBIENT BURN-IN： 19HRS
I/P： 230VAC O/P： FULL LOAD Ta= 57.7℃
<table>
<tr><th>NO</th><th>Position</th><th>P/N</th><th>ROOM AMBIENT Ta=28.1 ℃</th><th>HIGH AMBIENT Ta=57.7 ℃</th></tr>
<tr><td>1</td><td>BD1</td><td>2A/800V GLASS KBP208G</td><td>60.5℃</td><td>87.2℃</td></tr>
<tr><td>2</td><td>L1</td><td>TF2313</td><td>59.3℃</td><td>86.1℃</td></tr>
<tr><td>3</td><td>D6</td><td>1A/1KV 1N4007GP</td><td>78.5℃</td><td>104.9℃</td></tr>
<tr><td>4</td><td>D30</td><td>1A/1KV 1N4007GP</td><td>67.8℃</td><td>97.2℃</td></tr>
<tr><td>5</td><td>C48</td><td>22u/50V UL10Kh 5*11 YXM</td><td>69.5℃</td><td>96.7℃</td></tr>
<tr><td>6</td><td>T1</td><td>TF2309</td><td>82.8℃</td><td>108.2℃</td></tr>
<tr><td>7</td><td>C54</td><td>100u/25V UL10Kh 6.3*11 YXM</td><td>69.9℃</td><td>95.7℃</td></tr>
<tr><td>8</td><td>RTH1</td><td>220KΩ 3Φ TTC3A224F4371EY 1%</td><td>61.8℃</td><td>91.4℃</td></tr>
<tr><td>9</td><td>Q1</td><td>FET SPD04N80C3 4A/800V DPAK</td><td>83.6℃</td><td>109.3℃</td></tr>
<tr><td>10</td><td>U1</td><td>NCP1608B SOIC-8</td><td>71.6℃</td><td>98.1℃</td></tr>
<tr><td>11</td><td>C105</td><td>1500u/25V UL10Kh 12.5*20 ZLH</td><td>66.2℃</td><td>91.2℃</td></tr>
<tr><td>12</td><td>LF100</td><td>TR574-R2</td><td>68.6℃</td><td>93.8℃</td></tr>
<tr><td>13</td><td>D100</td><td>SBD B5100C 5A/100V SMC</td><td>83.6℃</td><td>108.1℃</td></tr>
</table></td><td>P</td></tr>
<tr><td>2</td><td>LOW TEMPERATURE
TURN ON TEST</td><td>TURN ON AFTER 2 HOUR</td><td>I/P： 295VAC/100VAC
O/P： 100 % LOAD
Ta= -35 ℃</td><td>TEST：OK</td><td>P</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 50 ℃
NO DAMAGE</td><td>I/P： 295 VAC
O/P：FULL LOAD
Ta= 50 ℃
HUMIDITY= 95 %R.H</td><td>TEST：OK</td><td>P</td></tr>
<tr><td>4</td><td>TEMPERATURE
COEFFICIENT</td><td>± 0.03 %(0~50℃)</td><td>I/P： 230 VAC
O/P：FULL LOAD</td><td>± 0 %(0~50℃)</td><td>P</td></tr>
<tr><td>5</td><td>STORAGE TEMPERATURE TEST</td><td colspan="2">1. Thermal shock Temperature： -45℃~ +90℃
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>OK</td><td>P</td></tr>
<tr><td>6</td><td>THERMAL SHOCK TEST</td><td colspan="2">1. Thermal shock Temperature： -35℃~ +55℃
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
turn on 58sec；turn off 2sec</td><td>OK</td><td>P</td></tr>
</table>

7	VIBRATION TEST	1 Carton & 1 Set (1) Waveform： Sine Wave (2) Frequency：10~500Hz (3) Sweep Time：12min/sweep cycle (4) Acceleration：2G (5) Test Time：60min in each axis (X.Y.Z) (6) Ta：25℃	TEST：OK	P
8	CAPACITOR LIFE CYCLE	SUPPOSE C105 IS THE MOST CRITICAL COMPONENT (1) I/P： 230VAC O/P：FULL LOAD Ta=25 ℃ LIFE TIME (2) I/P： 230VAC O/P：FULL LOAD Ta=50 ℃ LIFE TIME	(1) 222833 HRS (2) 54212 HRS	P
9	MTBF	MIL-HDBK-217F NOTICES2 PARTS COUNT TOTAL FAILURE RATE：968.6K HRS		P
10	DMTBF/Accelerated Life Test	Demonstration Mean Time Between Failure(Expected Life) : 30,000 hours @ Tcase 80℃; 50,000 hours @ Tcase70℃		P

DATE	SAMPLE	TEST RESULT	TESTER	APPROVAL
2011/1/4	RD SAMPLE	PASS	SANFORD SU	VINCENT TSENG
2011/3/11	PRODUCT SAMPLE	PASS	SANFORD SU	VINCENT TSENG

2009/08/04 A50-F023