



Test Report: PLM-12-500

12W 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 : 2400 mVp-p (Max)	I/P : 230VAC O/P : FULL LOAD Ta : 25°C	V1 : 1290 mVp-p (Max)	PASS
2	LED OPERATING VOLTAGE RANGE	V1= 15 V ~ 24 V	I/P : 230VAC I/P : 115VAC O/P : CV MODE Ta : 25°C	O/P= 15V : 0.4979 A 230V O/P= 23V : 0.4970 A 230V O/P= 15V : 0.4921 A 115V O/P= 23V : 0.4927 A 115V	PASS
3	SET UP TIME	230VAC : 500 ms (Max) 115VAC : 500 ms (Max)	I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C	230VAC/ 185 ms 115VAC/ 194 ms	PASS
4	OVER/UNDERSHOOT TEST	< 30V	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	TEST : < 27.8 V	PASS
5	CURRENT ACCURACY	±5%	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	TEST : ±1.58 %	PASS

INPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	INPUT VOLTAGE RANGE	110VAC~295 VAC	I/P : TESTING O/P : FULL LOAD Ta : 25°C I/P : LOW-LINE-3V=107 V HIGH-LINE=295 V O/P : FULL/MIN LOAD ON : 30 Sec . OFF : 30 Sec 10MIN (AC POWER ON/OFF NO DAMAGE)	102V~295V TEST : OK	PASS
2	INPUT FREQUENCY RANGE	47HZ ~63 HZ NO DAMAGE OSC	I/P : 110 VAC ~ 295 VAC O/P : FULL -MIN LOAD Ta : 25°C	TEST : OK	PASS
3	POWER FACTOR	0.97 / 115 VAC(TYP) 0.95 / 230 VAC(TYP) 0.90 / 277 VAC(TYP)	I/P : 115 VAC I/P : 230 VAC I/P : 277 VAC O/P : FULL LOAD Ta : 25°C	PF= 0.994 / 100% PF= 0.971 / 100% PF= 0.952 / 100%	PASS
4	EFFICIENCY	84 % (TYP)	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	84.53 %	PASS
5	INPUT CURRENT	115V/ 0.15 A (TYP) 230V/ 0.08 A (TYP) 277V/ 0.07 A (TYP)	I/P : 115 VAC I/P : 230 VAC I/P : 277 VAC O/P : FULL LOAD Ta : 25°C	I = 0.123 A/ 115 VAC I = 0.064 A/ 230 VAC I = 0.054 A/ 277 VAC	PASS

6	INRUSH CURRENT	230V/ 15 A (TYP) (twidh=50us measured at 50% Ipeak) COLD START	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	I = 1.09 A / 230 VAC T = 40.8 us	PASS
7	LEAKAGE CURRENT	< 0.5 mA / 240 VAC	I/P : 240 VAC O/P : Min LOAD Ta : 25°C	L-CASE : 0.003 mA N-CASE : 0.003 mA	PASS
8	TOTAL HARMONIC DISTORTION	Total harmonic distortion will be lower than 20% when output loading is 60% or higher at 115VAC / 230VAC	I/P : 115VAC I/P : 230VAC O/P : 60% LOAD Ta : 25°C	THD : 8.89 % THD : 11.65 %	PASS
		Total harmonic distortion will be lower than 20% when output loading is 75% or higher at 277VAC	I/P : 277VAC O/P : 75% LOAD Ta : 25°C	THD : 11.83 %	
9	NO LOAD CONSUMPTION	< 0.5 W	I/P:115VAC I/P:230VAC I/P:277VAC O/P:NO LOAD	< 0.17 W < 0.32 W < 0.39 W	PASS

PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	SHORT PROTECTION	SHORT EVERY OUTPUT 1 HOUR NO DAMAGE	I/P : 295 VAC O/P : FULL LOAD Ta : 25°C	NO DAMAGE Hiccup mode, 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	Q 1 Rated : 700 V / 10 A	I/P : High-Line +3V = 298 V O/P : (1) Full Load Turn on (2) Output Short (3) Full load continue Ta : 25°C	(1) 620 V (2) 526 V (3) 614 V	PASS
2	Diode Peak Voltage	D100 Rated : 300 V / 5 A	I/P : High-Line +3V = 298 V O/P : (1) Full Load Turn on (2) Output Short (3) Full load continue Ta : 25°C	(1) 118 V (2) 196 V (3) 116 V	PASS
3	Clamp Diode Peak Voltage	D 2 Rated : 1000V / 1 A	I/P : High-Line +3V = 298 V O/P : (1) Full Load Turn on (2) Output Short (3) Full load continue Ta : 25°C	(1) 600 V (2) 500 V (3) 612 V	PASS
4	Control IC Voltage Test	U 1 Rated : 25 V	I/P : High-Line +3V = 298 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) 17.6 V (2) 16.6 V (3) 17.6 V	PASS

■ 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 Ta : 25°C	I/P-O/P : 1.096 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 C	I/P: 230/240/277VAC /50HZ/60HZ O/P:100% LOAD Ta:25°C	PASS	PASS
2	CONDUCTION	EN55015	I/P:230 VAC (50HZ) O/P:FULL LOAD Ta:25°C	PASS Test by certified Lab	PASS
3	RADIATION	EN55015	I/P: 230 VAC (50HZ) O/P:FULL LOAD Ta:25°C	PASS 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	EN61000-4-5 INDUSTRY L-N :2KV	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 : PLM-12-700 1. ROOM AMBIENT BURN-IN : 1.0 HRS I/P : 230VAC O/P : CVmode=17V Ta=26.7 °C 2. HIGH AMBIENT BURN-IN : 2.0 HRS I/P : 230VAC O/P : CVmode=17V Ta=49.6 °C	<table border="1"> <thead> <tr> <th>NO</th> <th>Position</th> <th>ROOM AMBIENT Ta= 26.7 °C</th> <th>HIGH AMBIENT Ta= 49.6 °C</th> </tr> </thead> <tbody> <tr><td>1</td><td>LF1</td><td>38.9°C</td><td>59.8°C</td></tr> <tr><td>2</td><td>BD1</td><td>48.6°C</td><td>69.0°C</td></tr> <tr><td>3</td><td>L1</td><td>47.0°C</td><td>67.5°C</td></tr> <tr><td>4</td><td>Q1</td><td>48.4°C</td><td>78.6°C</td></tr> <tr><td>5</td><td>T1</td><td>58.2°C</td><td>78.2°C</td></tr> <tr><td>6</td><td>D101</td><td>70.1°C</td><td>87.8°C</td></tr> <tr><td>7</td><td>C25</td><td>55.4°C</td><td>74.8°C</td></tr> <tr><td>8</td><td>D100</td><td>66.7°C</td><td>84.6°C</td></tr> <tr><td>9</td><td>C105</td><td>57.8°C</td><td>76.6°C</td></tr> </tbody> </table>	NO	Position	ROOM AMBIENT Ta= 26.7 °C	HIGH AMBIENT Ta= 49.6 °C	1	LF1	38.9°C	59.8°C	2	BD1	48.6°C	69.0°C	3	L1	47.0°C	67.5°C	4	Q1	48.4°C	78.6°C	5	T1	58.2°C	78.2°C	6	D101	70.1°C	87.8°C	7	C25	55.4°C	74.8°C	8	D100	66.7°C	84.6°C	9	C105	57.8°C	76.6°C		PASS
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8	D100	66.7°C	84.6°C																																										
9	C105	57.8°C	76.6°C																																										
2	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR	I/P : 295VAC/110VAC O/P : LED LOAD=17V Ta= -35°C	TEST : OK	PASS																																								
3	TEMPERATURE COEFFICIENT	+ 0.03 % (0-50°C)	I/P : 230 VAC O/P : CVmode=17V	± 0.003 % (0-50°C)	PASS																																								
4	STORAGE TEMPERATURE TEST	1. Thermal shock Temperature : -45°C ~ +85°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																																								
5	THERMAL SHOCK TEST	1. Thermal shock Temperature : -35°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/ CVmode=17V AC ON/OFF TEST turn on 58sec ; turn off 2sec		OK	PASS																																								
6	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																																								
7	CAPACITOR LIFE CYCLE	PLM-12-700:SUPPOSE C105 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=45 °C LIFE TIME (3) I/P : 230VAC O/P : 75% LOAD Ta=45 °C LIFE TIME		(1) 363805.5 HRS (2) 120859.5 HRS (3) 122577.3 HRS	PASS																																								
8	MTBF	MIL-HDBK-217F NOTICES2 PARTS COUNT TOTAL FAILURE RATE : 808.162KHRS			PASS																																								
9	DMTBF/Accelerated Life Test	Demonstration Mean Time Between Failure(Expected Life) : 20,000 hours @ Tcase 60°C ; 50,000 hours @ Tcase 45°C			PASS																																								



SAMPLE	TEST RESULT	TESTER	APPROVAL
PRODUCT SAMPLE	PASS	ZHUOKB/ZOULF	LIUWY

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