



Test Report: PLP-45-12

45W 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	RIPPLE & NOISE	V1 : 4.2 Vp-p (Max)	I/P : 230VAC O/P : FULL LOAD Ta : 25°C	V1 : 2.4 Vp-p (Max)
2	CURRENET ADJUST RANGE	CH1 : 2.85A ~3.8 A	I/P : 230 VAC I/P : 115 VAC O/P : CV:10V Ta : 25°C	2.1 A ~ 4.37 A/ 230 VAC 2.08 A ~ 4.37 A/ 115 VAC
3	OUTPUT VOLTAGE TOLERANCE	V1 : 10 %~ -10 % (Max)	I/P : 100 VAC / 264 VAC O/P : FULL/ MN LOAD Ta : 25°C	V1 : 4.5 %~ -4.5 %
4	LINE REGULATION	V1 : 3 %~ -3 % (Max)	I/P : 100 VAC ~ 264 VAC O/P : FULL LOAD Ta : 25°C	V1 : 2.1 %~ -2.1 %
5	LOAD REGULATION	V1 : 5 %~ -5 % (Max)	I/P : 230 VAC O/P : FULL ~MN LOAD Ta : 25°C	V1 : 0.6 %~ 4.5 %
6	SET UP TIME	230VAC : 500 ms (Max) 115VAC : 1200 ms(Max)	I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C	230VAC/ 388 ms 115VAC/ 800 ms
7	OVER/UNDERSHOOT TEST	< ±5%	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	TEST : < 5 %

INPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	INPUT VOLTAGE RANGE	90VAC~264 VAC	I/P : TESTNG O/P : FULL LOAD Ta : 25°C	40 V~264V
			I/P : LOW-LINE-3V= 87 V 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	I/P : 90 VAC ~ 264 VAC O/P : FULL~MN LOAD Ta : 25°C	TEST : OK
3	POWER FACTOR	0.9 / 230 VAC(TYP) 0.9 / 115 VAC(TYP)	I/P : 230 VAC I/P : 115 VAC O/P : O/P : 75%~100% LOAD Ta : 25°C	230V: PF= 0.98 / 100% Load PF= 0.969 / 75% Load
				115V: PF= 1 / 100% Load PF= 1 / 75% Load
4	EFFICIENCY	86% (TYP)	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	87.9 %
5	INPUT CURRENT	230V/ 0.3 A (TYP)	I/P : 230 VAC	I = 0.23 A/ 230 VAC
		115V/ 0.6 A (TYP)	I/P : 115 VAC O/P : FULL LOAD Ta : 25°C	I = 0.46 A/ 115 VAC
6	INRUSH CURRENT	230V/ 30 A (TYP)	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	I = 27 A/ 230 VAC
7	LEAKAGE CURRENT	< 0.75 mA / 240 VAC	I/P : 264 VAC	L-FG : 0.28 mA
			O/P : Min LOAD Ta : 25°C	N-FG : 0.28 mA

PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OVER LOAD PROTECTION	100%~ 110%	I/P : 230 VAC I/P : 115 VAC O/P : TESTING Ta : 25°C	100.5%/ 230 VAC 100.5%/ 115 VAC Constant current limiting, recovers automatically after fault condition is removed
2	OVER VOLTAGE PROTECTION	CH1 : 15 V~ 18 V	I/P : 230 VAC I/P : 115 VAC O/P : MIN LOAD Ta : 25°C	16.93 V/ 230 VAC 16.88 V/ 115 VAC Shut down Re- power ON
4	SHORT PROTECTION	NO DAMAGE	I/P : 264 VAC 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	Power Transistor (D to S) or (C to E) Peak Voltage	Q 1 Rated : 10A/600V	I/P : High-Line +3V = 267 V O/P : (1) Full Load Turn on (2) Output Short (3) Full load continue Ta : 25°C	(1) 599 V (2) 550 V (3) 580 V
2	Diode Peak Voltage	D100 Rated : 30A/80V	I/P : High-Line +3V = 267 V O/P : (1) Full Load Turn on (2) Output Short (3) Full load continue Ta : 25°C	(1) 71.6 V (2) 61.6 V (3) 71 V
3	Clamp Diode Peak Voltage	D2 Rated : 2A/800V	I/P : High-Line +3V = 267 V O/P : (1) Dynamic Load 90%Duty/1KHz (2) Full load continue Ta : 25°C	(1) 640 V (2) 554 V
4	Control IC Voltage Test	U 1 Rated : 10.5V~18V	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°C	(1) 17.28 V (2) 12.23~12.32 V (3) 17.3 V

■ SAFETY & E.M.C. TEST

SAFETY TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	WITHSTAND VOLTAGE	I/P-O/P : 3.75 KVAC/min I/P-FG : 2KVAC/min O/P-FG : 1.5 KVAC/min	I/P-O/P : 4KVAC/min I/P-FG : 2.4 KVAC/min O/P-FG : 1.8 KVAC/min Ta : 25°C	I/P-O/P : 3.57 mA I/P-FG : 3.18 mA O/P-FG : 1.42 mA 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/70%RH	I/P-O/P : 30 GΩ I/P-FG : 30 GΩ O/P-FG : 30 GΩ NO DAMAGE

E.M.C TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	HARMONIC	EN61000-3-2 CLASS A CLASS C	I/P : 230 VAC/50HZ O/P : FULL LOAD Ta : 25°C	PASS
2	CONDUCTION	EN55015 CLASS B	I/P : 230 VAC (50HZ) O/P : FULL/50% LOAD Ta : 25°C	PASS Test by certified Lab
3	RADIATION	EN55015 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.FT	EN61000-4-4 LIGHT INDUSTRY INPUT : 1KV	I/P : 230 VAC/50HZ O/P : FULL LOAD Ta : 25°C	CRITERIA A
6	SURGE	IEC61000-4-5 LIGHT INDUSTRY L-N : 1KV LN-PE : 2KV	I/P : 230 VAC/50HZ O/P : FULL LOAD Ta : 25°C	CRITERIA A

■ RELIABILITY TEST

ENVIRONMENT TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	
1	TEMPERATURE RISE TEST	MODEL : PLP-45-24			
		1. ROOM AMBIENT BURN-IN : 6 HRS			
		I/P : 230VAC O/P : FULL LOAD Ta= 26.3 °C			
		2. HIGH AMBIENT BURN-IN : 2 HRS			
		I/P : 230VAC O/P : FULL LOAD Ta= 62.6 °C			
2	OVER LOAD BURN-IN TEST	NO DAMAGE 1 HOUR (MIN)	I/P : 230 VAC O/P : O/P SHORT Ta : 25°C	TEST : OK	
3	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR	I/P : 264VAC/100VAC O/P : LED=23V Ta= -35 °C	TEST : OK	
4	HIGH HUMIDITY HIGH TEMPERATURE HIGH VOLTAGE TURN ON TEST	AFTER 12 HOURS IN CHAMBER ON CONTROL 62.6 °C NO DAMAGE	I/P : 272 VAC O/P : LED=23V Ta=62.6 °C HUMIDITY= 95%R.H	TEST : OK	
5	TEMPERATURE COEFFICIENT	± 0.03 % (0~50°C)	I/P : 230 VAC O/P : FULL LOAD	± 0.02 % (0~50°C)	
6	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		OK	
7	THERMAL SHOCK TEST	1. Thermal shock Temperature : -35°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		OK	



8	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°C	TEST : OK
9	CAPACITOR LIFE CYCLE	PLP-45-24 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= 60 °C LIFE TIME	(1) 566416.5HRS (2) 70363.8HRS
10	MTBF	MIL-HDBK-217F NOTICES 2 PARTS COUNT TOTAL FAILURE RATE : 586.5K HRS	
11	DMTBF/Accelerated Life Test	Demonstration Mean Time Between Failure : Above 20,000 hours @ TA 60°C	

DATE	SAMPLE	TEST RESULT	TESTER	APPROVAL
2009/7/31	RD SAMPLE	PASS	SANFORD SU	VINCENT TSENG
2009/10/7	PRODUCT SAMPLE W0908C39	PASS	SANFORD SU	VINCENT TSENG

2003/12/12 A50-F023