



Test Report: PLM-40-350B

40W Single Output AC Dimmable 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 : 10000 mVp-p (Max)	I/P : 230VAC O/P : FULL LOAD Ta : 25°C	V1 : 4500 mVp-p (Max)	P
2	OPERATING VOLTAGE RANGE	V1= 53V-105V	I/P : 230VAC I/P : 115VAC O/P : CV MODE Ta : 25°C	O/P= 53V : 0.357 A 230V O/P= 104V : 0.344 A 230V O/P= 53V : 0.356 A 115V O/P= 104V : 0.343 A 115V	P
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/ 180 ms 115VAC/ 201 ms	P
4	OVER/UNDERSHOOT TEST	< 115V	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	TEST : < 115 V	P
5	CURRENT ACCURACY	±5%	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	TEST : ±1.52 %	P

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	105 V~295V	P
			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)	TEST : OK	
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	P
3	POWER FACTOR	0.97 / 115 VAC(TYP)	I/P : 115 VAC	PF= 0.988 / 100%	P
		0.95 / 230 VAC(TYP)	I/P : 230 VAC	PF= 0.958 / 100%	
		0.90 / 277 VAC(TYP)	I/P : 277 VAC O/P : FULL LOAD Ta : 25°C	PF= 0.929 / 100%	
4	EFFICIENCY	88 % (TYP)	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	88.58 %	P
5	INPUT CURRENT	115V/ 0.50 A (TYP)	I/P : 115 VAC	I = 0.352 A/ 115 VAC	P
		230V/ 0.30 A (TYP)	I/P : 230 VAC	I = 0.179 A/ 230 VAC	
		277V/ 0.25 A (TYP)	I/P : 277 VAC O/P : FULL LOAD Ta : 25°C	I = 0.153 A/ 277 VAC	
6	INRUSH CURRENT	230V/ 15 A (TYP) (width=75us measured at 50% Ipeak) COLD START	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	I = 4.98 A/ 230 VAC T= 27.2 us	P
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	P
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 : 7.81 % THD : 12.89 %	P
		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 : 14.62 %	

PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	OVER TEMPERATURE PROTECTION	SPEC : TSW1 : 115± 5 °C O.T.P. NO DAMAGE	I/P : 230 VAC O/P : FULL LOAD	O.T.P. Active Hiccup mode, recovers automatically after temperature goes down	P
2	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.	P

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 : HFS10N80: 800V/9.4A	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) 618 V (2) 542 V (3) 624 V	P
2	Diode Peak Voltage	D100 Rated : HER108G: 1000 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) 388 V (2) 480 V (3) 280 V	P
3	Clamp Diode Peak Voltage	D 1 Rated : RL206G: 800V/2A	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) 562 V (2) 454 V (3) 566 V	P
4	Control IC Voltage Test	U 1 Rated : OZ8027: 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) 17.1 V (2) 20.3 V (3) 16.8 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 Ta : 25°C	I/P-O/P : 0.835 mA NO DAMAGE	P
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	P

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	P
2	CONDUCTION	EN55015	I/P:230 VAC (50HZ) O/P:FULL LOAD Ta:25°C	PASS Test by certified Lab	P
3	RADIATION	EN55015	I/P: 230 VAC (50HZ) O/P:FULL LOAD Ta:25°C	PASS Test by certified Lab	P
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	P
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	P
6	SURGE	EN61000-4-5 INDUSTRY L-N :2KV	I/P: 230 VAC/50HZ O/P:FULL LOAD Ta:25°C	CRITERIA B	P
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-40-350B 1. ROOM AMBIENT BURN-IN : 2.5 HRS I/P : 230VAC O/P : 95% LOAD Ta=32.0 °C 2. HIGH AMBIENT BURN-IN : 3.5 HRS I/P : 230VAC O/P : 95% LOAD Ta=44.7 °C			P
2	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR	I/P : 110VAC/295VAC O/P : 95 % LOAD Ta= -30 °C	TEST : OK	P
3	HIGH HUMIDITY HIGH TEMPERATURE HIGH VOLTAGE TURN ON TEST	AFTER 12 HOURS IN CHAMBER ON CONTROL 50 °C NO DAMAGE	I/P : 295 VAC O/P : 95% LOAD Ta= 45 °C HUMIDITY= 95 %R.H	TEST : OK	P
4	TEMPERATURE COEFFICIENT	± 0.03 %(0-50°C)	I/P : 230 VAC O/P : 95% LOAD	± 0.0115 %(0-50°C)	P
5	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	P
6	THERMAL SHOCK TEST	1. Thermal shock Temperature : -35°C~ +50°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 58sec ; turn off 2sec		OK	P



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 : 72min in each axis (X.Y.Z) (6) Ta : 25°C	TEST : OK	P
8	CAPACITOR LIFE CYCLE	PLM-40-350B: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) 447032.0 HRS (2) 87104.2 HRS (3) 123984.1HRS	P
9	MTBF	MIL-HDBK-217F NOTICES2 PARTS COUNT TOTAL FAILURE RATE : 822.70KHRS		P
10	DMTBF/Accelerated Life Test	Demonstration Mean Time Between Failure(Expected Life) : 20,000 hours @ Tcase 75°C; 50,000 hours @ Tcase 60°C		P

DATE	SAMPLE	TEST RESULT	TESTER	APPROVAL
2013/07/10	PRODUCT SAMPLE	PASS	ZOULF	HOWAY

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