



Test Report: CXLPA320F-24

320W AC-DC Enclosed

■ DESIGN VERIFY TEST

Output Function Test

Input Function Test

Protection Function Test

Component Stress Test

■ SAFETY & E.M.C. TEST

Safety Test

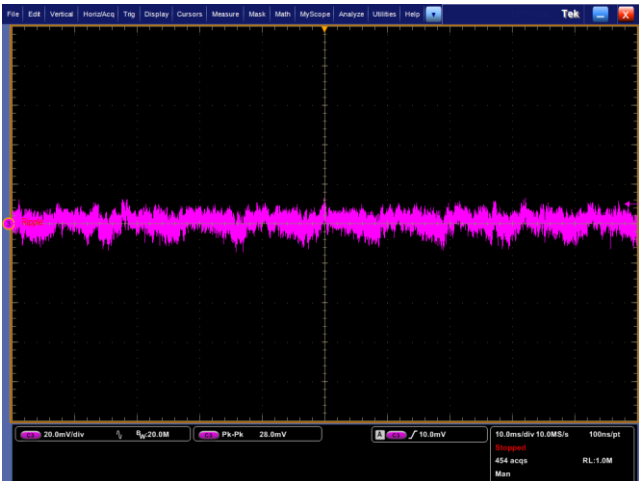
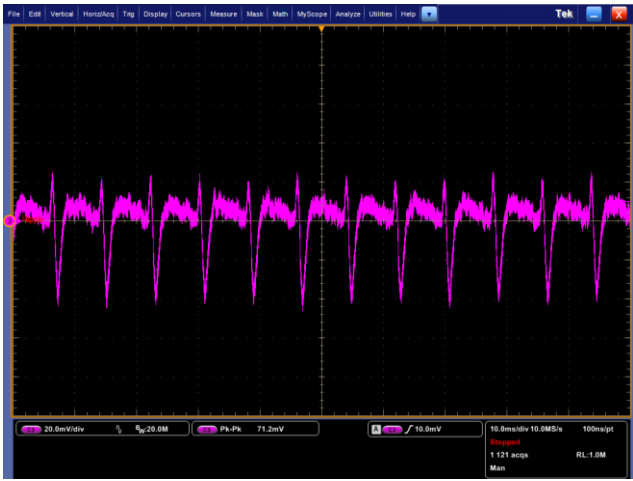
E.M.C. Test

■ RELIABILITY TEST

Environment Test

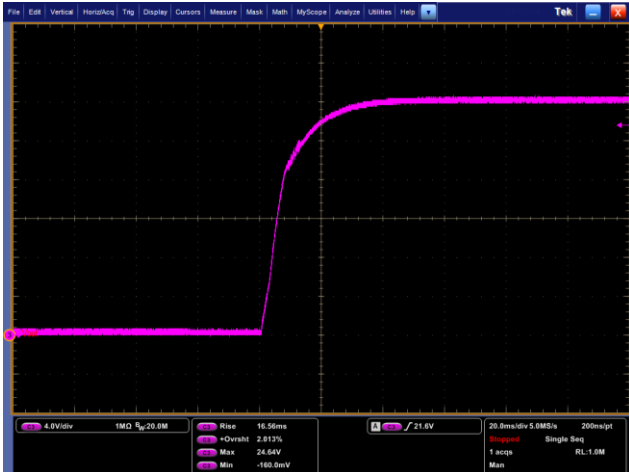
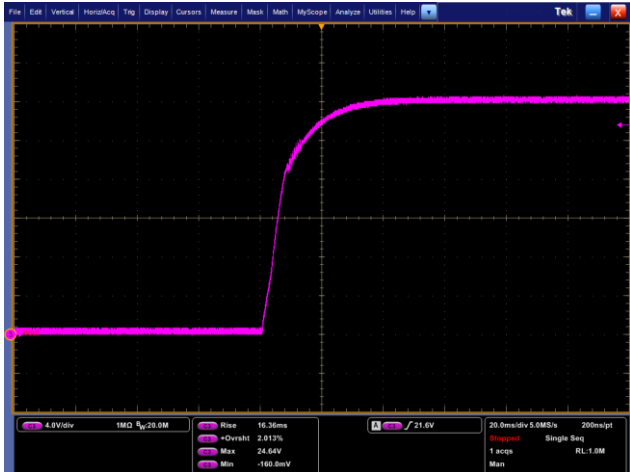
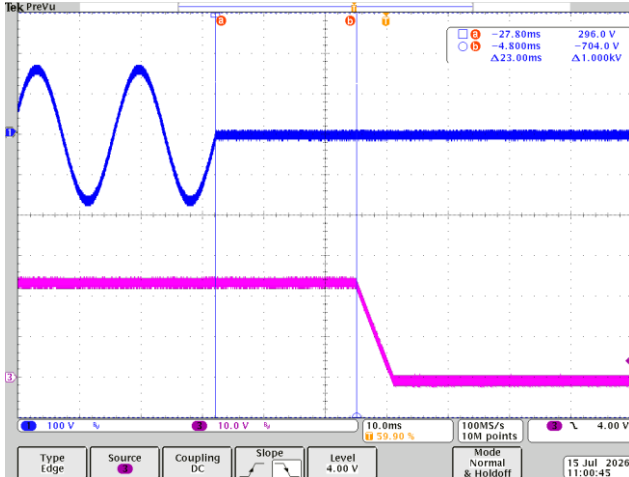
DESIGN VERIFY TEST

OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	
1	OUTPUT VOLTAGE TOLERANCE.	No specification	I/P: 85VAC ~ 305VAC O/P: NO ~ FULL LOAD Ta: -30°C, 25°C, 50°C	24.054~ 24.190V	
2	LINE REGULATION	-0.5%~-+0.5%	I/P: 85VAC ~ 305VAC O/P: NO ~ FULL LOAD Ta: -30°C, 25°C, 50°C	85 to 115VAC	-0.01% ~ +0.01%
				230 to 305VAC	-0.01% ~ +0.01%
3	LOAD REGULATION	-1%~-+1%	I/P: 85VAC I/P: 305VAC O/P: NO ~ FULL LOAD Ta: 25°C	-0.19% ~ +0.19%	
4	RIPPLE & NOISE	150mVp-p	I/P: 85VAC I/P: 305VAC O/P: FULL LOAD Ta: 25°C	85VAC	28mVp-p
				305VAC	71.2mVp-p
	85VAC/ FULL LOAD		305VAC/ FULL LOAD		
	25°C 28mV		25°C 71.2mV		
					

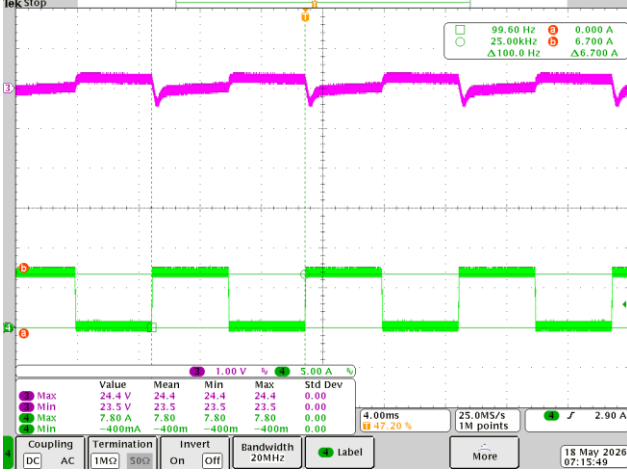
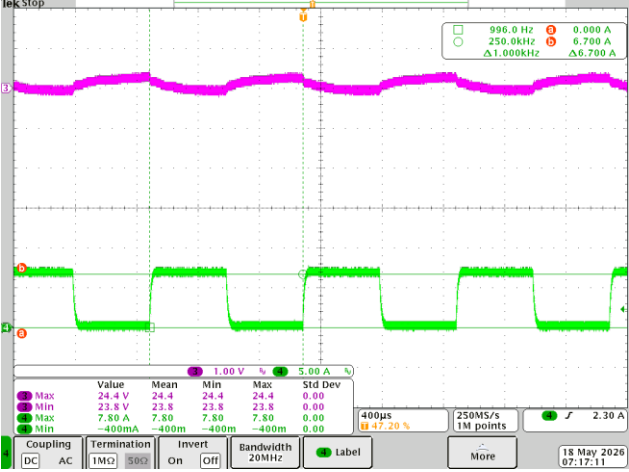
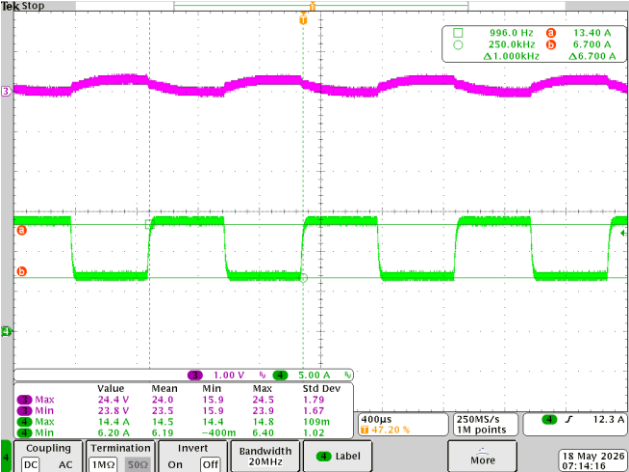
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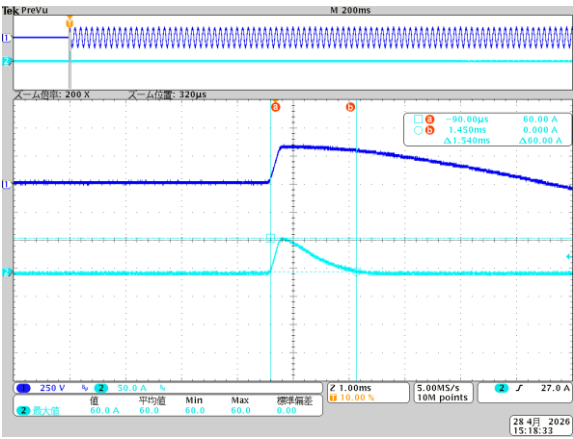
6	RISE TIME		80ms	I/P: 85VAC I/P: 305VAC O/P: FULL LOAD Ta: 25°C	85VAC 305VAC	16.56ms 16.36ms
	INPUT=85VAC/47HZ @ FULL LOAD			INPUT=305V/63HZ @ FULL LOAD		
	25°C: 16.56ms 			25°C: 16.36ms 		
7	HOLD UP TIME		> 16ms / 115VAC	I/P: 115VAC O/P: FULL LOAD Ta: 25°C	23.00ms	
	INPUT=115VAC/60HZ @ FULL LOAD 25°C CH1: AC Input Voltage, CH3: Output Voltage 					

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DYNAMIC LOAD		No specification	I/P: 85VAC O/P: (1) LOAD 0%~50% 50%DUTY / 100HZ (2) LOAD 50%~100% 50%DUTY / 100HZ (3) LOAD 0%~50% 50%DUTY / 1KHZ (4) LOAD 50%~100% 50%DUTY / 1KHZ Ta: 25°C	-
(1) INPUT=85VAC/47HZ @ LOAD 0%~50% 50%DUTY / 100HZ		(3) INPUT=85VAC/47HZ @ LOAD 0%~50% 50%DUTY / 1KHZ		
25°C CH3: Output Voltage, CH4: Output Current		25°C CH3: Output Voltage, CH4: Output Current		
				
(2) INPUT=85VAC/47HZ @ LOAD 50%~100% 50%DUTY / 100HZ		(4) INPUT=85VAC/47HZ @ LOAD 50%~100% 50%DUTY / 1KHZ		
25°C CH3: Output Voltage, CH4: Output Current		25°C CH3: Output Voltage, CH4: Output Current		
				

INPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	INPUT CURRENT	4.0A/115VAC 2.0A/230VAC	I/P: 115VAC I/P: 230VAC O/P: FULL LOAD Ta: 25°C	3.18A @115VAC 1.53A @230VAC
2	LEAKAGE CURRENT	< 1mA / 240VAC	I/P: 240VAC O/P: FULL LOAD Ta: 25°C	L-FG: 0.164mA N-FG: 0.160mA
3	STANDBY POWER	No specification	I/P: 115VAC I/P: 230VAC O/P: NO LOAD Ta: 25°C	115VAC/1.42W 230VAC/1.26W
4	INRUSH CURRENT	60A at 230Vac (cold start)	I/P: 230VAC O/P: FULL LOAD Ta: 25°C	60.0A
	INPUT=230VAC/50HZ @ FULL LOAD CH1: AC Input Voltage, CH2: Input Current 			
5	EFFICIENCY	91.0% / FULL LOAD at 230VAC	I/P: 115VAC I/P: 230VAC O/P: FULL LOAD Ta: 25°C	115VAC/89.39% 230VAC/91.80%
6	POWER FACTOR	> 0.9	I/P: 115VAC I/P: 230VAC O/P: FULL LOAD Ta: 25°C	115VAC/0.997 230VAC/0.992



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PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OVER CURRENT PROTECTION	105%~135% rated current 14.07A<OCP<18.09A	I/P: 85VAC I/P: 305VAC O/P: TESTING Ta: 25°C	85VAC/15.82A 305VAC/15.87A
2	OVER VOLTAGE PROTECTION	120% to 150% of Rated Voltage	I/P: 85VAC I/P: 305VAC O/P: NO LOAD Ta: 25°C	85VAC/32.08V 305VAC/31.92V
3	SHORT CIRCUIT PROTECTION	NO DAMAGE (auto-recovery)	I/P: 85VAC ~ 305VAC O/P: NO LOAD, FULL LOAD Ta: 25°C	PASS
4	OVER TEMPERATURE PROTECTION	NO DAMAGE (auto-recovery)	I/P: 85VAC ~ 305VAC O/P: FULL LOAD	O.T.P. Active at 55.7°C Shut down o/p voltage recovers automatically after temperature goes down

COMPONENT STRESS TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	PWM Power Transistor	Q050 Rated 12A/600V	O/P: (1) Peak voltage at I/P: 305VAC (2) Peak current at I/P: 85VAC	(1) 434.8V (2) 1.566A
2	PFC Power Transistor	Q010 Rated 18A/600V	O/P: (1) Peak voltage at I/P: 305VAC (2) Peak current at I/P: 85VAC	(1) 430.4V (2) 2.235A
3	Input Capacitor	C051 Rated 180uF/450V	O/P: (1) Peak voltage at I/P: 305VAC (2) Peak current at I/P: 85VAC	(1) 430V (2) 2.49A

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SAFETY TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	WITHSTAND VOLTAGE	I/P-O/P: 3.0KVAC/min I/P-FG: 2.0KVAC/min O/P-FG: 0.5KVAC/min	I/P-O/P: 3.0KVAC/min I/P-FG: 2.0KVAC/min O/P-FG: 0.5KVAC/min Ta: 25°C	PASS
2	ISOLATION RESISTANCE	I/P-O/P: 500VDC: >100M Ω I/P-FG: 500VDC: >100M Ω O/P-FG: 500VDC: >100M Ω	I/P-O/P: 500VDC I/P-FG: 500VDC O/P-FG: 500VDC Ta: 25°C	PASS

E.M.C TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	HARMONIC	EN61000-3-2 CLASS A	I/P: 115VAC I/P: 230VAC O/P: FULL LOAD Ta: 25°C	PASS
2	RADIATION	EN55032 CLASS B	I/P: 115VAC I/P: 230VAC O/P: FULL LOAD Ta: 25°C	PASS
3	CONDUCTION	EN55032 CLASS B	I/P: 115VAC I/P: 230VAC O/P: FULL LOAD Ta: 25°C	PASS
4	E. S. D	EN61000-4-2 Air: ± 8 KV, Contact: ± 4 KV CRITERIA A	I/P: 230VAC O/P: FULL LOAD Ta: 25°C	PASS
5	E. F. T	EN61000-4-4 INPUT: ± 2 KV CRITERIA A	I/P: 230VAC O/P: FULL LOAD Ta: 25°C	PASS
6	SURGE	EN61000-4-5 L-N: ± 1 KV L, N-PE: ± 2 KV CRITERIA A	I/P: 230VAC O/P: FULL LOAD Ta: 25°C	PASS
7	VOLTAGE DIPS	IEC61000-4-11 (1) < 5 % residual voltage, 0.5 cycle CRITERIA A (2) 70% residual voltage, 25 cycles (at 50Hz) CRITERIA A (3) < 5 % residual voltage, 250 cycles (at 50 Hz) CRITERIA B	I/P: 230VAC O/P: FULL LOAD Ta: 25°C	PASS

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8	Conducted Immunity	IEC61000-4-6 0.15-10 MHz, 3V, 80% AM (1kHz), 10-30 MHz, 3V-1V, 80% AM (1kHz), 30-80 MHz, 1V, 80% AM (1kHz), CRITERIA A	I/P: 230VAC O/P: FULL LOAD Ta: 25°C	PASS
9	Radiated Immunity	IEC61000-4-3 (1) 80 to 1000(MHz), 3 V/m, 80 % AM (1 kHz) (2) 1800, 2600, 3500, 5000 MHz (± 1 %), 3V/m, 80% AM (1kHz) CRITERIA A	I/P: 230VAC O/P: FULL LOAD Ta: 25°C	PASS
10	Power Frequency Magnetic Field	IEC61000-4-8 1A/m, 50Hz CRITERIA A	I/P: 230VAC O/P: FULL LOAD Ta: 25°C	PASS

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■ RELIABILITY TEST

ENVIRONMENT TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	TEMPERATURE	No components damaged	I/P: 85VAC @ 47Hz O/P: FULL LOAD Ta: 50°C	PASS*Table 1
2	CAPACITOR LIFE CYCLE	The electrolytical capacitor life is greater than 43,800 hours	I/P: 230 VAC @ 50Hz O/P: FULL LOAD Ta: 50°C	LIFETIME= 104,635 hours
3	MTBF	The power supply reliability, when calculated by SR332 exceeds 2,000,000 hours with all output at 100% of maximum load and at ambient temperature of 25°C		5,966,709hours @ 115VAC 6,289,948hours @ 230VAC
4	HUMIDITY	Storage: 25°C / 10 ~ 95% RH Working: 25°C/ 20 ~ 90% RH I/P: 100~277VAC (Working) O/P: 100% load (Working)		PASS
5	VIBRATION TEST	Ware form: Random Acceleration: 2Grms Axis/Time: X, Y, Z / 10min per axis Frequency: 10~500Hz No functional, mechanical and safety fail.		PASS
6	ALTITUDE	Operational and Non-operational Altitude: 5000 meters Temperature: -5°C Dwell time: 24Hrs I/P: 100~277VAC (Operational) O/P: 100% load (Operational)		PASS
7	OVERLOAD BURN-IN TEST	I/P: 115VAC/ 60Hz O/P: Just before OCP kicks in Ta: 50°C		PASS

*1 All component temperatures should not exceed maximum operation temperature.

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Table 1. Components temperature @ 50°C 100% Load. (Unit °C)

No.	Location	85VAC	Result
1	L001	78.2	Pass
2	L002	90.5	Pass
3	L003	100.8	Pass
4	D050	102.9	Pass
5	L010	87.1	Pass
6	L201	72.1	Pass
7	Q010	91.6	Pass
8	D010	93.5	Pass
9	C051	62.1	Pass
10	C054	56.4	Pass
11	C056	54.9	Pass
12	C060	55.2	Pass
13	T050C	80.4	Pass
14	T050W	83.6	Pass
15	C501	68.1	Pass
16	C502	69.3	Pass
17	C207	66.6	Pass
18	C208	63.0	Pass
19	C209	64.1	Pass
20	C210	68.8	Pass
21	Q050	68.1	Pass
22	Q210	80.3	Pass
23	Q2	77.8	Pass
24	IC201	73.5	Pass

TEST RESULT	TESTER	REVIEW	APPROVAL
PASS	Guanliang Li \ KrisYc Wu	Hilton Lu	Jone Cheng