



Test Report: CXLPA320F-36

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

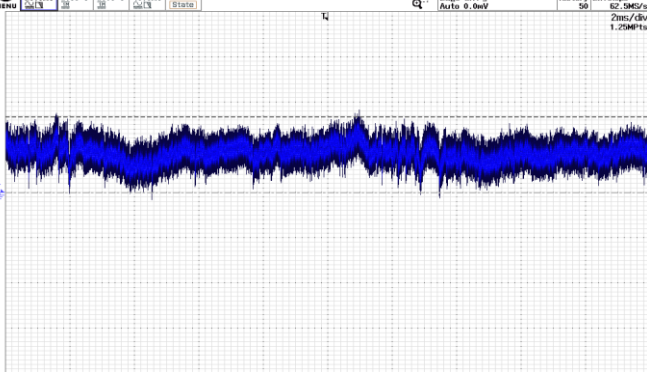
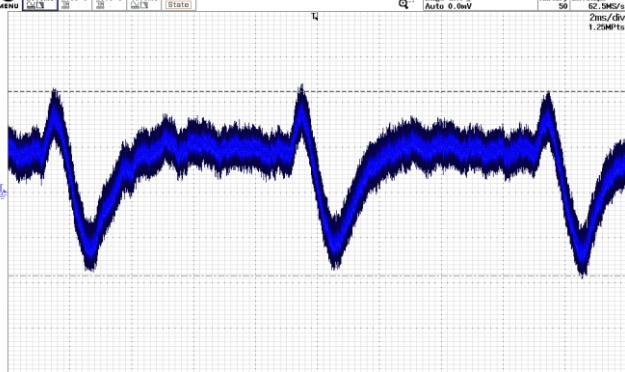
Environment Test

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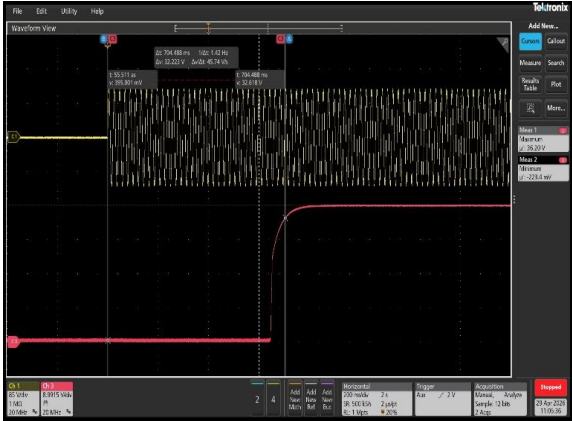
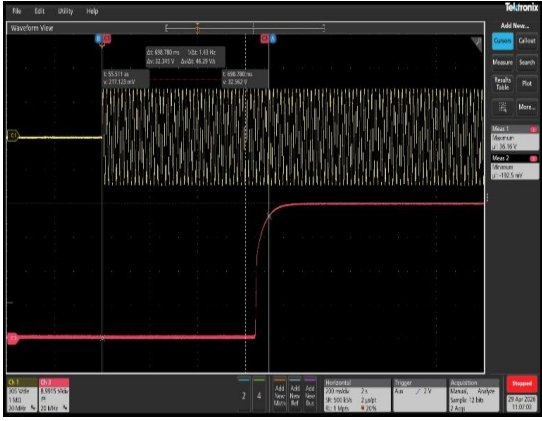
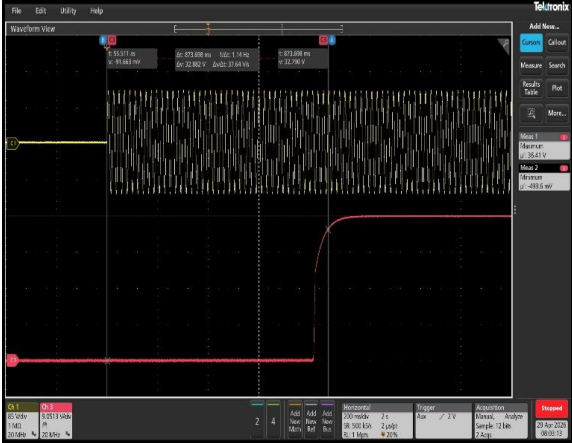
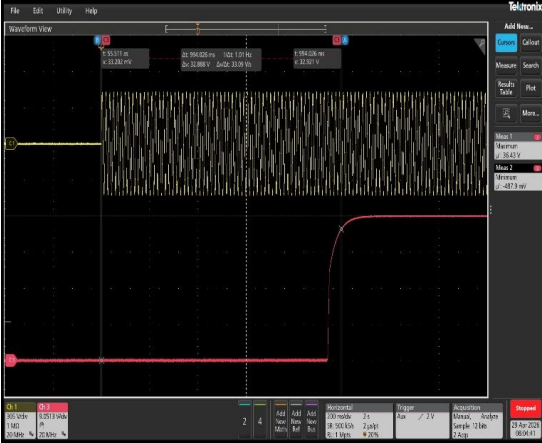
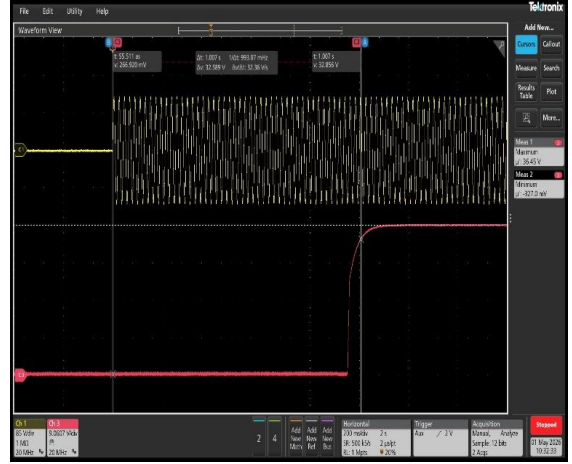
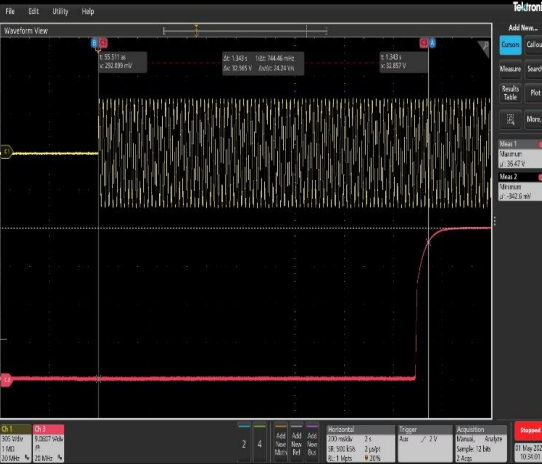
DESIGN VERIFY TEST

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	35.91 ~ 36.28V	
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	-0.15% ~ +0.15%	
4	RIPPLE & NOISE	250mVp-p	I/P: 85VAC I/P: 305VAC O/P: FULL LOAD Ta: 25°C	85VAC	33.6mVp-p
				305VAC	81.6mVp-p
	85VAC/ FULL LOAD			305VAC/ FULL LOAD	
25°C 33.6mV			25°C 81.6mV		
					
V1 33.6mV V2 0.0mV AV 33.6mV Acquire 2ms/div, 62.5MS/s, 1.25MPpoints, Envelope GH1 10:1 20.0mV/div ACTIMQ 20M			V1 44.8mV V2 -36.8mV AV 81.6mV Acquire 2ms/div, 62.5MS/s, 1.25MPpoints, Envelope GH1 10:1 20.0mV/div ACTIMQ 20M		

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5	START UP TIME		3000ms	I/P: 85VAC I/P: 305VAC O/P: FULL LOAD Ta: -30°C, 25°C, 50°C	85VAC 305VAC	1007.0ms 1343.0ms
	INPUT=85VAC/47HZ @ FULL LOAD			INPUT=305V/63HZ @ FULL LOAD		
	-30°C: 704.5ms CH1: AC Input Voltage, CH3: Output Voltage			-30°C: 698.8ms CH1: AC Input Voltage, CH3: Output Voltage		
						
	25°C: 873.7ms CH1: AC Input Voltage, CH3: Output Voltage			25°C: 994.1ms CH1: AC Input Voltage, CH3: Output Voltage		
						
	50°C: 1007.0ms CH1: AC Input Voltage, CH3: Output Voltage			50°C: 1343.0ms CH1: AC Input Voltage, CH3: Output Voltage		
						

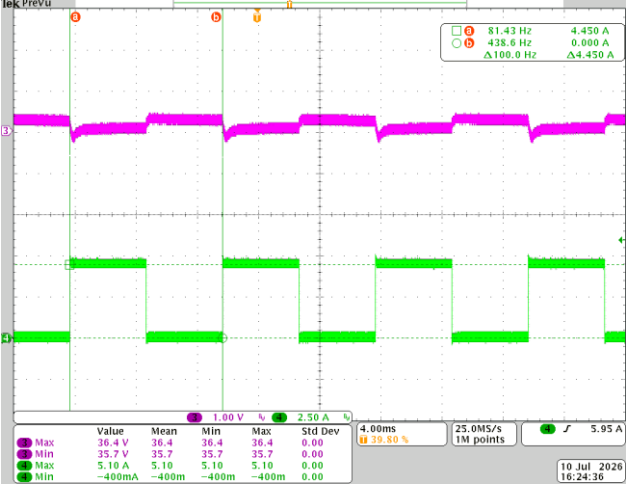
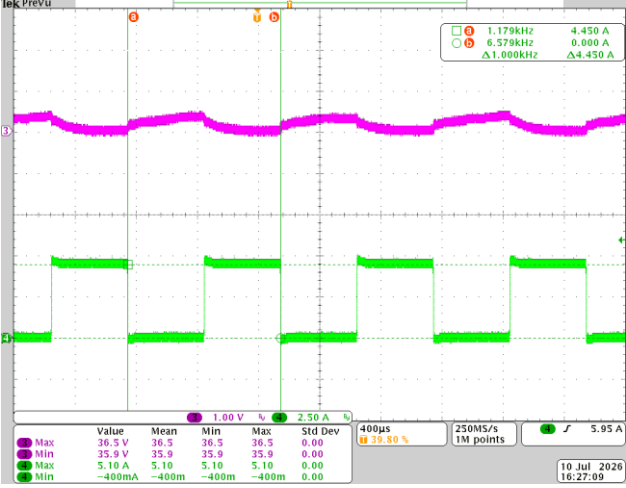
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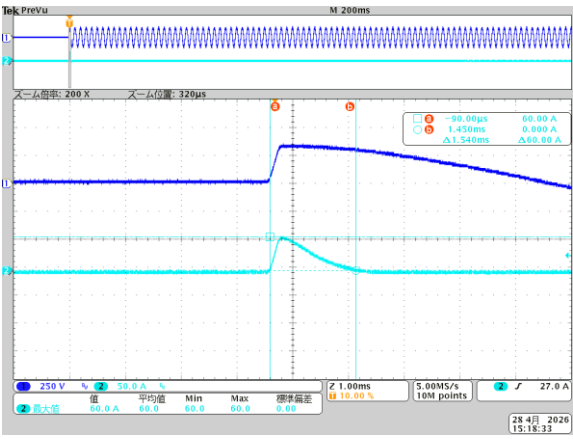
6	RISE TIME	80ms	I/P: 85VAC I/P: 305VAC O/P: FULL LOAD Ta: 25°C	85VAC 51.03ms 305VAC 50.58ms
	INPUT=85VAC/47HZ @ FULL LOAD		INPUT=305V/63HZ @ FULL LOAD	
	25°C: 51.03ms		25°C: 50.58ms	
7	HOLD UP TIME	> 16ms / 115VAC	I/P: 115VAC O/P: FULL LOAD Ta: 25°C	23.50ms
	INPUT=115VAC/60HZ @ FULL LOAD			
	25°C CH1: 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	3.234A @115VAC 1.550A @230VAC
2	LEAKAGE CURRENT	< 1mA / 240VAC	I/P: 240VAC O/P: FULL LOAD Ta: 25°C	L-FG: 0.137mA N-FG: 0.140mA
3	STANDBY POWER	No specification	I/P: 115VAC I/P: 230VAC O/P: NO LOAD Ta: 25°C	115VAC/1.37W 230VAC/1.23W
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, CH4: Input Current 			
5	EFFICIENCY	91.5% / FULL LOAD at 230VAC	I/P: 115VAC I/P: 230VAC O/P: FULL LOAD Ta: 25°C	115VAC/88.68% 230VAC/91.00%
6	POWER FACTOR	> 0.9	I/P: 115VAC I/P: 230VAC O/P: FULL LOAD Ta: 25°C	115VAC/0.998 230VAC/0.995

PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OVER CURRENT PROTECTION	105%~135% rated current 9.345A<OCP<12.015A	I/P: 85VAC I/P: 305VAC O/P: TESTING Ta: 25°C	85VAC/9.87A 305VAC/9.86A
2	OVER VOLTAGE PROTECTION	120% to 150% of Rated Voltage	I/P: 85VAC I/P: 305VAC O/P: NO LOAD Ta: 25°C	85VAC/46.8V 305VAC/46.8V
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 64.7°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) 426.6V (2) 1.845A

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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: >100MΩ I/P-FG: 500VDC: >100MΩ O/P-FG: 500VDC: >100MΩ	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: ±8KV, Contact: ±4KV CRITERIA A	I/P: 230VAC O/P: FULL LOAD Ta: 25°C	PASS
5	E. F. T	EN61000-4-4 INPUT: ±2KV CRITERIA A	I/P: 230VAC O/P: FULL LOAD Ta: 25°C	PASS
6	SURGE	EN61000-4-5 L-N: ±1KV L, N-PE: ±2KV 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

■ 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= 167,298 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		4,533,317 hours @ 115VAC 5,687,869 hours @ 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	82.7	Pass
2	L002	85.1	Pass
3	L003	91.0	Pass
4	D050	100.6	Pass
5	L010	77.0	Pass
6	L201	64.9	Pass
7	Q010	94.4	Pass
8	D010	82.4	Pass
9	C051	61.0	Pass
10	C054	56.0	Pass
11	C056	55.9	Pass
12	C060	55.5	Pass
13	T050(C)	79.2	Pass
14	T050(W)	89.6	Pass
15	C501	64.7	Pass
16	C502	64.9	Pass
17	C207	62.0	Pass
18	C208	59.8	Pass
19	C209	60.4	Pass
20	C210	63.3	Pass
21	Q050	68.3	Pass
22	Q210	75.0	Pass
23	Q2	74.9	Pass
24	IC201	71.0	Pass

TEST RESULT	TESTER	REVIEW	APPROVAL
PASS	Jalen Wu	Arvin Wang	Senne Xu