



Test Report: CXLPA320F-15

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

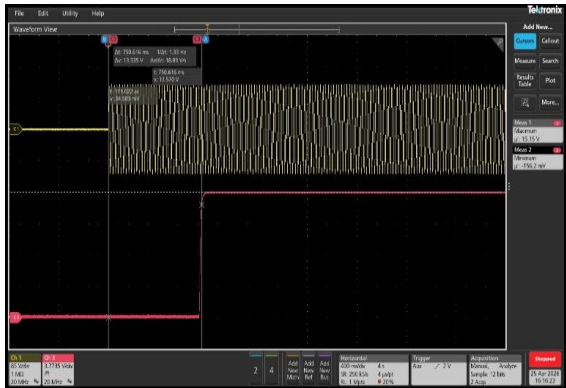
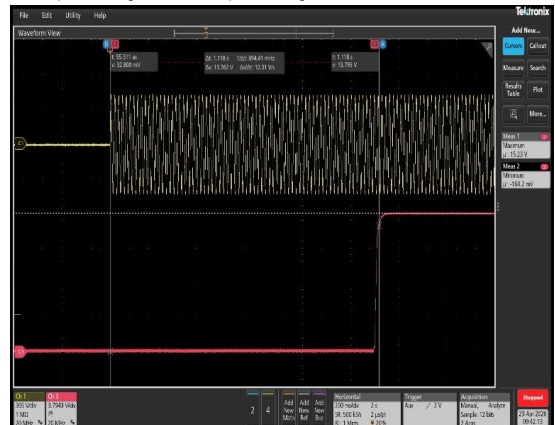
DESIGN VERIFY TEST

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	15.01 ~ 15.10V	
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	-0.08% ~ +0.08%
				230 to 305VAC	-0.08% ~ +0.08%
3	LOAD REGULATION	-1%~+1%	I/P: 85VAC I/P: 305VAC O/P: NO ~ FULL LOAD Ta: 25°C	-0.20% ~ +0.20%	
4	RIPPLE & NOISE	150mVp-p	I/P: 85VAC I/P: 305VAC O/P: FULL LOAD Ta: 25°C	85VAC	33.5mVp-p
				305VAC	47.8mVp-p
	85VAC/ FULL LOAD		305VAC/ FULL LOAD		
	25°C 33.5mV		25°C 47.8mV		

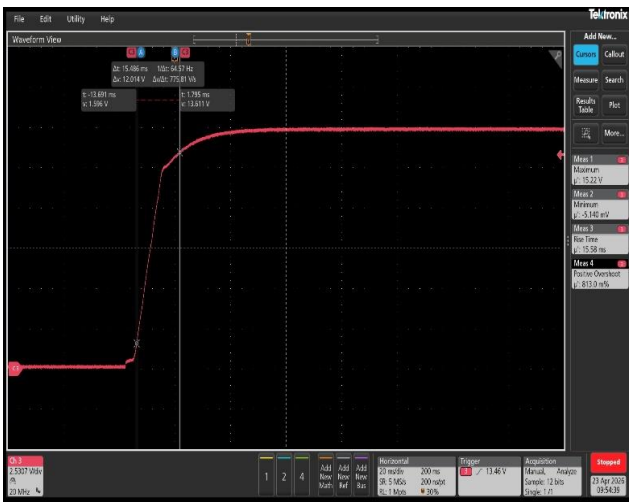
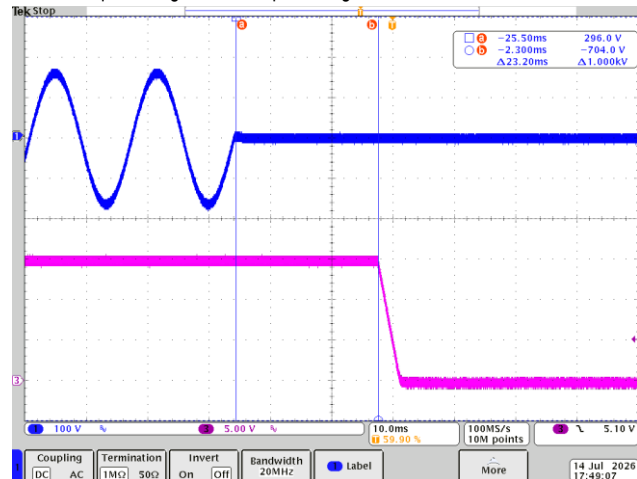
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5	START UP TIME		3000ms	I/P: 85VAC I/P: 305VAC O/P: FULL LOAD Ta: -30°C, 25°C, 50°C	85VAC 305VAC	1078.0ms 1404.0ms
	INPUT=85VAC/47HZ @ FULL LOAD			INPUT=305V/63HZ @ FULL LOAD		
	-30°C: 750.7ms CH1: AC Input Voltage, CH3: Output Voltage			-30°C: 765.1ms CH1: AC Input Voltage, CH3: Output Voltage		
						
	25°C: 899.4ms CH1: AC Input Voltage, CH3: Output Voltage			25°C: 1118.0ms CH1: AC Input Voltage, CH3: Output Voltage		
						
50°C: 1078.0ms CH1: AC Input Voltage, CH3: Output Voltage			50°C: 1404.0ms CH1: AC Input Voltage, CH3: Output Voltage			
						

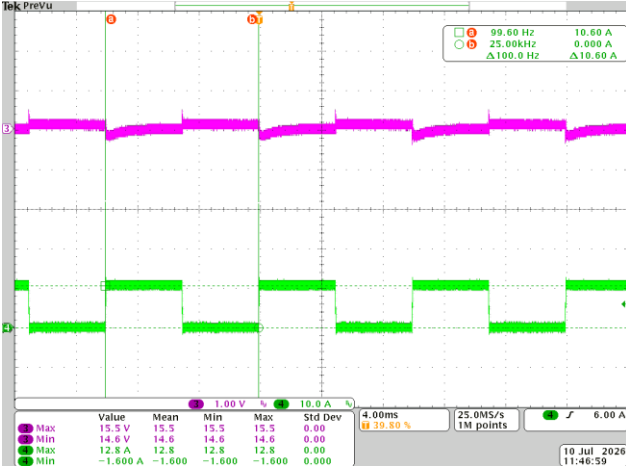
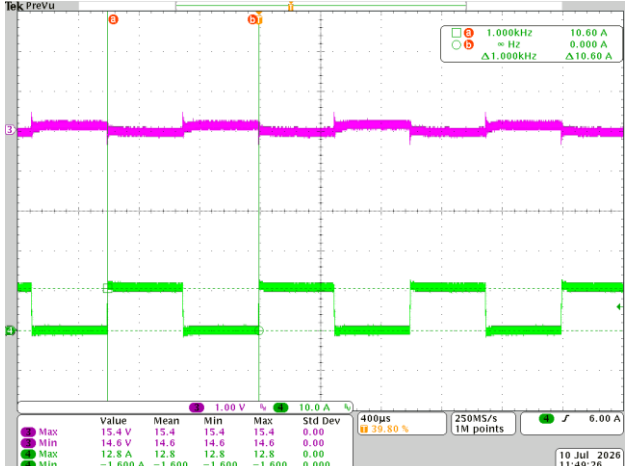
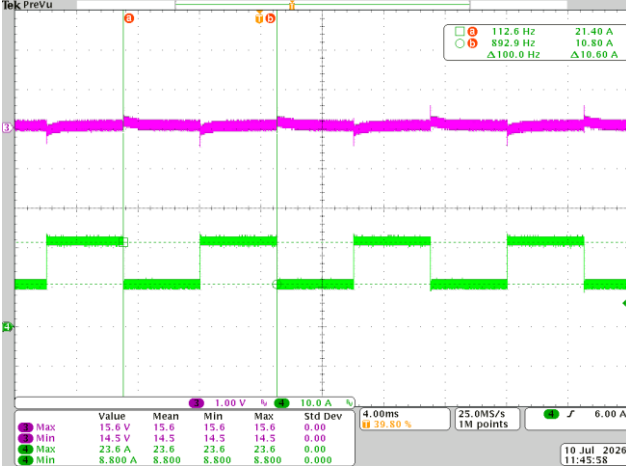
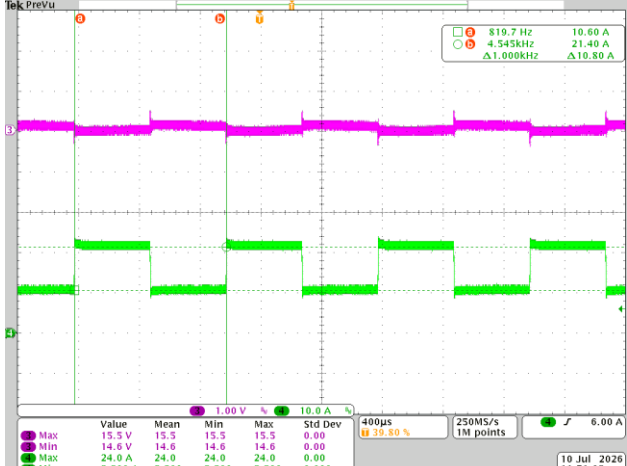
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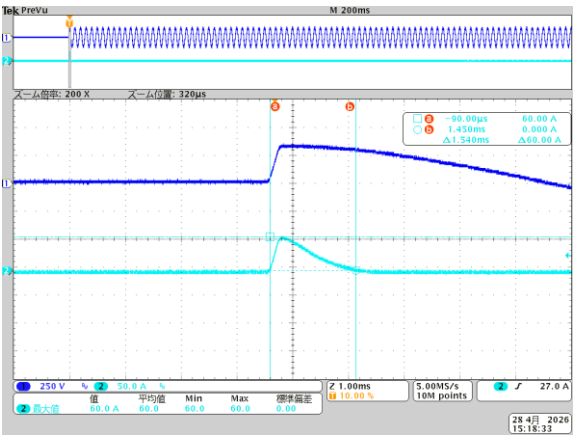
6	RISE TIME	80ms	I/P: 85VAC I/P: 305VAC O/P: FULL LOAD Ta: 25°C	85VAC 305VAC	16.12ms 15.49ms
	INPUT=85VAC/47HZ @ FULL LOAD		INPUT=305V/63HZ @ FULL LOAD		
	25°C: 16.12ms		25°C: 15.49ms		
					
7	HOLD UP TIME	> 16ms / 115VAC	I/P: 115VAC O/P: FULL LOAD Ta: 25°C	23.20ms	
	INPUT=115VAC/60HZ @ FULL LOAD				
	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	-																																																												
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25°C CH3: Output Voltage, CH4: Output Current			25°C CH3: Output Voltage, CH4: Output Current																																																													
 <table><tr><th></th><th>Value</th><th>Mean</th><th>Min</th><th>Max</th><th>Std Dev</th></tr><tr><td>Max</td><td>15.3 V</td><td>15.3</td><td>15.3</td><td>15.3</td><td>0.00</td></tr><tr><td>Min</td><td>14.6 V</td><td>14.6</td><td>14.6</td><td>14.6</td><td>0.00</td></tr><tr><td>Max</td><td>12.8 A</td><td>12.8</td><td>12.8</td><td>12.8</td><td>0.00</td></tr><tr><td>Min</td><td>-1.600 A</td><td>-1.600</td><td>-1.600</td><td>-1.600</td><td>0.000</td></tr></table>				Value	Mean	Min	Max	Std Dev	Max	15.3 V	15.3	15.3	15.3	0.00	Min	14.6 V	14.6	14.6	14.6	0.00	Max	12.8 A	12.8	12.8	12.8	0.00	Min	-1.600 A	-1.600	-1.600	-1.600	0.000	 <table><tr><th></th><th>Value</th><th>Mean</th><th>Min</th><th>Max</th><th>Std Dev</th></tr><tr><td>Max</td><td>15.4 V</td><td>15.4</td><td>15.4</td><td>15.4</td><td>0.00</td></tr><tr><td>Min</td><td>14.6 V</td><td>14.6</td><td>14.6</td><td>14.6</td><td>0.00</td></tr><tr><td>Max</td><td>12.8 A</td><td>12.8</td><td>12.8</td><td>12.8</td><td>0.00</td></tr><tr><td>Min</td><td>-1.600 A</td><td>-1.600</td><td>-1.600</td><td>-1.600</td><td>0.000</td></tr></table>			Value	Mean	Min	Max	Std Dev	Max	15.4 V	15.4	15.4	15.4	0.00	Min	14.6 V	14.6	14.6	14.6	0.00	Max	12.8 A	12.8	12.8	12.8	0.00	Min	-1.600 A	-1.600	-1.600	-1.600	0.000
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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	3.361A @115VAC 1.615A @230VAC
2	LEAKAGE CURRENT	< 1mA / 240VAC	I/P: 240VAC O/P: FULL LOAD Ta: 25°C	L-FG: 0.155mA N-FG: 0.158mA
3	STANDBY POWER	No specification	I/P: 115VAC I/P: 230VAC O/P: NO LOAD Ta: 25°C	115VAC/1.46W 230VAC/1.25W
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	88.5% / FULL LOAD at 230VAC	I/P: 115VAC I/P: 230VAC O/P: FULL LOAD Ta: 25°C	115VAC/87.06% 230VAC/89.83%
6	POWER FACTOR	> 0.9	I/P: 115VAC I/P: 230VAC O/P: FULL LOAD Ta: 25°C	115VAC/0.994 230VAC/0.993

PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OVER CURRENT PROTECTION	105%~135% rated current 22.47A<OCP<28.89A	I/P: 85VAC I/P: 305VAC O/P: TESTING Ta: 25°C	85VAC/25.26A 305VAC/25.21A
2	OVER VOLTAGE PROTECTION	120% to 150% of Rated Voltage	I/P: 85VAC I/P: 305VAC O/P: NO LOAD Ta: 25°C	85VAC/21.8V 305VAC/21.8V
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 58.6°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) 1.684A
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) 425.6V (2) 1.900A

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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: >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= 83,776 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		4,294,543 hours @ 115VAC 4,892,353 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	87.5	Pass
2	L002	109.7	Pass
3	L003	90.0	Pass
4	D050	106.0	Pass
5	L010	78.6	Pass
6	Q010	93.1	Pass
7	D010	73.9	Pass
8	C051	61.1	Pass
9	C054	57.6	Pass
10	C056	56.1	Pass
11	C060	54.8	Pass
12	T050(C)	107.4	Pass
13	T050(W)	92.8	Pass
14	C501	75.4	Pass
15	C502	76.6	Pass
16	C207	77.9	Pass
17	C208	71.9	Pass
18	C209	73.3	Pass
19	C210	76.6	Pass
20	Q050	80.2	Pass
21	Q210	94.7	Pass
22	Q2	105.5	Pass
23	IC201	86.4	Pass

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