Test Report: ICL-16L

16A Slim Type AC Inrush Current Limter

■ DESIGN VERIFY TEST

Output Function Test
Input Function Test
Protection Function Test
Control Function Test
Component Stress Test

■ SAFETY & E.M.C. TEST

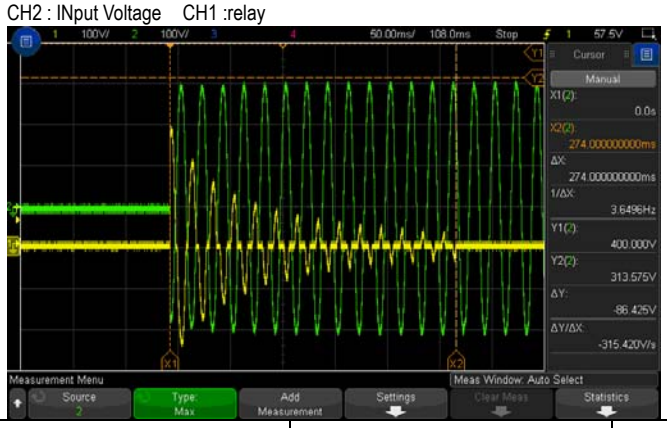
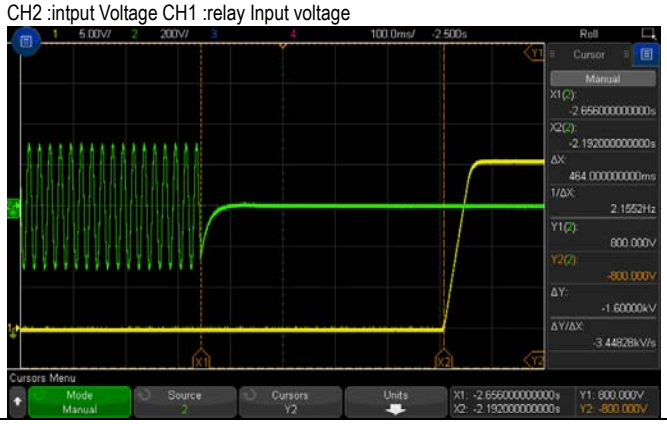
Safety Test
E.M.C. Test

■ RELIABILITY TEST

ENVIRONMENT TEST

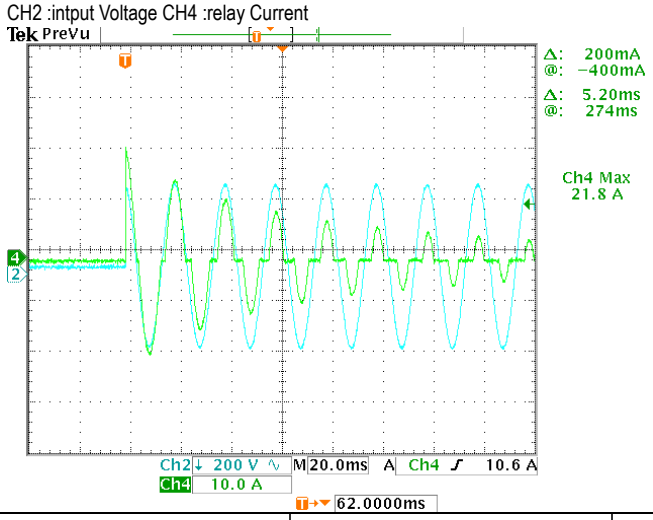
■ DESIGN VERIFY TEST

OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	INTERNAL RELAY LIMITING TIME (TON POWER ON)	230VAC/300±50ms	I/P： 230 VAC O/P：FULL LOAD Ta：25℃	230VAC/ 274ms
	INPUT=230VAC/50HZ @ FULL LOAD CH2 : INput Voltage CH1 :relay 			
2	INTERNAL RELAY RELEASE TIME	230VAC/500±50ms	I/P： 230 VAC O/P：FULL LOAD Ta：25℃	230VAC/ 464ms
	INPUT=230VAC/50HZ @ FULL LOAD CH2 :intput Voltage CH1 :relay Input voltage 			

INPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	INPUT VOLTAGE RANGE	180VAC~264VAC	I/P:TESTING O/P:FULL LOAD Ta:25℃	160V~264V
			I/P: LOW-LINE-3V=177 V HIGH-LINE+15%=300 V O/P:FULL/MIN LOAD (PLEASE CHECK DERATING CURVE) ON: 30 Sec OFF: 30 Sec 10MIN (POWER ON/OFF NO DAMAGE)	TEST:OK
2	INPUT FREQUENCY RANGE	47HZ ~63 HZ NO DAMAGE	I/P:180 VAC ~264 VAC O/P:FULL~MIN LOAD Ta:25℃	TEST: OK

3	INRUSH CURRENT (Typ.)	230V/ 23A	I/P： 230 VAC O/P：FULL LOAD Ta：25℃	I =21.8A/ 230VAC
	INPUT=230VAC/50HZ @ FULL LOAD CH2 :intput Voltage CH4 :relay Current 			
4	NO LOAD CONSUMPTION	<1 W	I/P：264VAC O/P：NO LOAD Ta：25℃	0.68W

COMPONENT STRESS TEST

1	Input Capacitor Voltage	C5 Rated: 220 μ / 35V	I/P:High-Line +3V =267V O/P: (1)Full Load input on/off (2) Min load input on /Off Ta:25℃	(1) 24.0V (2) 24.2V
2	Input Capacitor Voltage	C6 Rated: 100 μ / 50 V	I/P:High-Line +3V =267V O/P: (1)Full Load input on/off (2) Min load input on /Off Ta:25℃	(1) 26.7V (2) 26.1V
3	RELAY	RY1 Rated: 36V	I/P:High-Line +3V =267V O/P: (1)Full Load input on/off (2) Min load input on /Off Ta:25℃	(1) 24.2V (2) 24.0V

PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	INTERNAL PROTECTION	Protection type : Thermal fuse protects overload and fire	I/P: 230VAC O/P:FULL LOAD	TEST:OK

E.M.C TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	HARMONIC	EN61000-3-2 □CLASS A	I/P:230VAC/50HZ O/P:FULL LOAD Ta:25℃	☑PASS □FAIL
2	CONDUCTION	☑EN55032 □EN55011 CLASS B	I/P： 230 VAC (50HZ) O/P：FULL/50% LOAD Ta：25℃	PASS Test by certified Lab

3	RADIATION	☑EN55032 □EN55011 CLASS B	I/P： 230 VAC (50HZ) O/P：FULL LOAD Ta：25℃	PASS Test by certified Lab
4	E.S.D	EN61000-4-2 Level 3 AIR：8KV / Contact：4KV	I/P： 230 VAC/50HZ O/P：FULL LOAD Ta：25℃	☑CRITERIA A □CRITERIA B
5	E.F.T	EN61000-4-4 Level 3	I/P： 230 VAC/50HZ O/P：FULL LOAD Ta：25℃	☑CRITERIA A □CRITERIA B
6	SURGE	IEC61000-4-5 Level 4 L-N ：2KV	I/P： 230 VAC/50HZ O/P：FULL LOAD Ta：25℃	☑CRITERIA A □CRITERIA B
7	Test by certified Lab & Test Report Prepare Any contradictions of the test results, please refer to the latest EMC test report			

■ RELIABILITY TEST

ENVIRONMENT TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	TEMPERATURE RISE TEST	MODEL： ICL-16L 1. ROOM AMBIENT BURN-IN：2 HRS I/P： 230VAC O/P： FULL LOAD Ta= 22.6 ℃ 2. HIGH AMBIENT BURN-IN：2 HRS I/P： 230VAC O/P： FULL LOAD Ta= 71.0 ℃		
2	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR	I/P： 264VAC/100VAC O/P： 100 % LOAD Ta= -35 ℃	TEST：OK
3	HIGH HUMIDITY HIGH TEMPERATURE HIGH VOLTAGE TURN ON TEST	AFTER 12 HOURS IN CHAMBER ON CONTROL 70 ℃ / 95 %R.H NO DAMAGE	I/P： 272 VAC O/P：FULL LOAD Ta= 70 ℃ HUMIDITY= 95 %R.H	TEST：OK
4	TEMPERATURE COEFFICIENT	± 0.03 %/℃ (0~50℃)	I/P： 230 VAC O/P：FULL LOAD	± 0.0006%/℃ (0~50℃)

NO	Position	ROOM AMBIENT Ta=22.6 ℃	HIGH AMBIENT Ta=71.0 ℃
1	ZNR1	52.2℃	100.7℃
2	C1	53.2℃	101.1℃
3	RY1	70.3℃	117.4℃
4	R8	58.5℃	105.2℃
5	FS1	56.5℃	103.5℃
6	C5	53.5℃	100.1℃
7	BD1	48.2℃	96.1℃
8	TB1	52.4℃	101.8℃
9	PCB(N)	72.8℃	120.1℃
10	PCB(L)	67.9℃	117.1℃

5	STORAGE TEMPERATURE TEST	1. Thermal shock Temperature： -45℃~ +90℃ 2. Temperature change rate ：25℃ / MIN 3. Dwell time low and high temperature ： 30 MIN/EACH 4. Total test cycle：10 CYCLE 5. Input/Output condition： STATIC	TEST：OK
6	THERMAL SHOCK TEST	1. Thermal shock Temperature： -35℃~ +75℃ 2. Temperature change rate ：25℃ / MIN 3. Dwell time low and high temperature ： 30 MIN/EACH 4. Total test cycle：16 CYCLE 5. Input/Output condition： 15cycle:230V/ FULL LOAD AC ON 3sec/AC OFF 1sec TEST 1cycle:230V/ FULL LOAD Burn In Test	TEST：OK
7	VIBRATION TEST	1 Carton & 1 Set (1) Waveform： Sine Wave (2) Frequency：10~500Hz (3) Sweep Time：10min/sweep cycle (4) Acceleration：3G (5) Test Time：180min in each axis (X.Y.Z) (6) Ta：25℃	TEST：OK
8	CAPACITOR LIFE CYCLE	SUPPOSE C5 IS THE MOST CRITICAL COMPONENT (1) I/P： 230VAC O/P：FULL LOAD Ta= 25 ℃ LIFE TIME (2) I/P： 230VAC O/P：FULL LOAD Ta= 70 ℃ LIFE TIME (3) I/P： 230VAC O/P：75% LOAD Ta= 70 ℃ LIFE TIME (4) I/P： 230VAC O/P：50% LOAD Ta= 70 ℃ LIFE TIME	(1) 240518 HRS (2) 12042HRS (3) 32223HRS (4) 51984HRS
9	MTBF	Conducted by Parts Stress Analysis Prediction 2508.62K hrs min. MIL-HDBK-217F (25℃)	

TEST RESULT	TESTER	REVIEW	APPROVAL
PASS	LIUTT		WANGDZ

2018.4.30 GP-A50-F010