



Test Report: ICL-28R

28A AC Inrush Current Limiter

■ 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

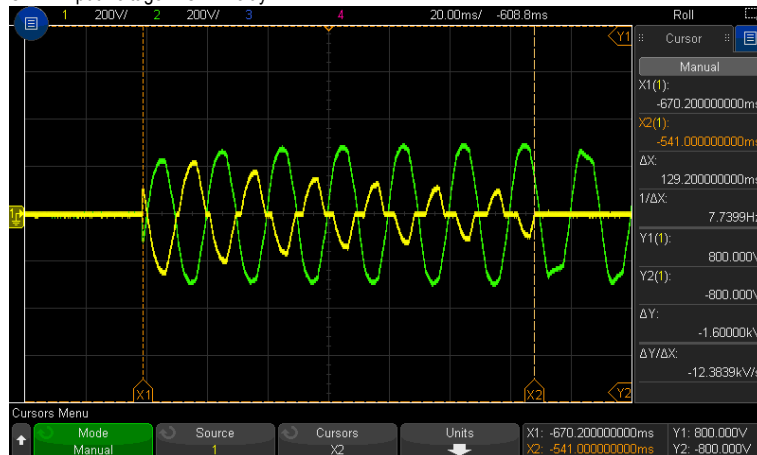
DESIGN VERIFY TEST

OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	AC CONTINUOUS RATED CURRENT	28A continuous	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	TEST:OK
2	ALLOWED CAPACITIVE LOAD	6000μ F max.	I/P : 230 VAC O/P : 6000μ F Ta : 25°C	TEST:OK
3	INTERNAL RELAY LIMITING TIME (TON POWER ON)	230VAC/150±50ms	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	230VAC/ 129.2ms

INPUT=230VAC/50HZ @ FULL LOAD

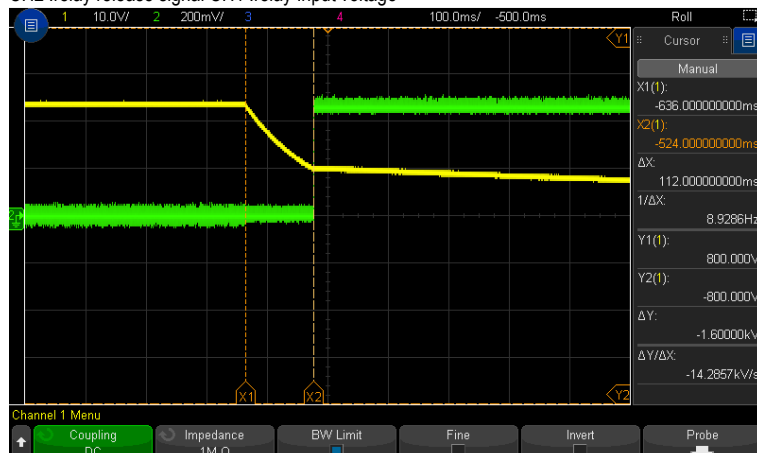
CH2 : INput Voltage CH1 :relay



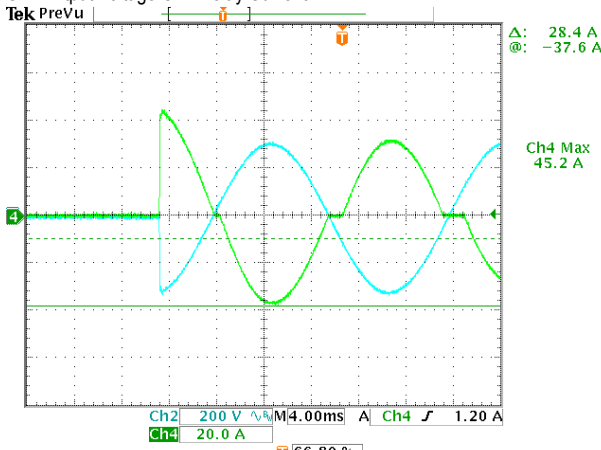
4	INTERNAL RELAY RELEASE TIME	230VAC/100±50ms	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	230VAC/ 112ms
---	-----------------------------	-----------------	---	---------------

INPUT=230VAC/50HZ @ FULL LOAD

CH2 :relay release signal 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°C	156V~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°C	TEST: OK
3	INRUSH CURRENT (Typ.)	230V/ 48A	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	I=45.2A/ 230VAC
INPUT=230VAC/50HZ @ FULL LOAD CH2 :input Voltage CH4 :relay Current 				
4	NO LOAD CONSUMPTION	<2 W	I/P : 264VAC O/P : NO LOAD Ta : 25°C	1.26W

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°C	(1) 25.8V (2) 25.4V (3) 25.8V
2	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°C	(1) 25.6V (2) 25.4V (3) 25.6V

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°C	☒ PASS ☐ FAIL
2	CONDUCTION	☒ EN55032 ☐ EN55011 CLASS B	I/P : 230 VAC (50HZ) O/P : FULL/50% LOAD Ta : 25°C	PASS Test by certified Lab
3	RADIATION	☒ EN55032 ☐ EN55011 CLASS B	I/P : 230 VAC (50HZ) O/P : FULL LOAD Ta : 25°C	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°C	☒ CRITERIA A ☐ CRITERIA B
5	E.F.T	EN61000-4-4 Level 3	I/P : 230 VAC/50HZ O/P : FULL LOAD Ta : 25°C	☒ 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°C	☒ 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-28L 1. ROOM AMBIENT BURN-IN : 2 HRS I/P : 230VAC O/P : FULL LOAD Ta= 23.4 °C 2. HIGH AMBIENT BURN-IN : 2 HRS I/P : 230VAC O/P : FULL LOAD Ta= 61.9 °C																																																										
		<table><tr><th>NO</th><th>Position</th><th>ROOM AMBIENT Ta=23.4°C</th><th>HIGH AMBIENT Ta=61.9°C</th></tr><tr><td>1</td><td>ZNR1</td><td>67.0°C</td><td>99.6°C</td></tr><tr><td>2</td><td>C1</td><td>62.3°C</td><td>95.1°C</td></tr><tr><td>3</td><td>FS1</td><td>65.7°C</td><td>97.7°C</td></tr><tr><td>4</td><td>R8</td><td>63.0°C</td><td>94.6°C</td></tr><tr><td>5</td><td>BD1</td><td>63.4°C</td><td>94.7°C</td></tr><tr><td>6</td><td>ZD2</td><td>66.1°C</td><td>97.4°C</td></tr><tr><td>7</td><td>C5</td><td>62.7°C</td><td>95.1°C</td></tr><tr><td>8</td><td>ZD7</td><td>70.0°C</td><td>101.3°C</td></tr><tr><td>9</td><td>Q2</td><td>78.0°C</td><td>96.2°C</td></tr><tr><td>10</td><td>ZD1</td><td>73.9°C</td><td>104.7°C</td></tr><tr><td>11</td><td>RY1</td><td>81.2°C</td><td>111.6°C</td></tr><tr><td>12</td><td>C2</td><td>64.7°C</td><td>95.2°C</td></tr><tr><td>13</td><td>PCB</td><td>73.4°C</td><td>105.1°C</td></tr></table>			NO	Position	ROOM AMBIENT Ta=23.4°C	HIGH AMBIENT Ta=61.9°C	1	ZNR1	67.0°C	99.6°C	2	C1	62.3°C	95.1°C	3	FS1	65.7°C	97.7°C	4	R8	63.0°C	94.6°C	5	BD1	63.4°C	94.7°C	6	ZD2	66.1°C	97.4°C	7	C5	62.7°C	95.1°C	8	ZD7	70.0°C	101.3°C	9	Q2	78.0°C	96.2°C	10	ZD1	73.9°C	104.7°C	11	RY1	81.2°C	111.6°C	12	C2	64.7°C	95.2°C	13	PCB	73.4°C	105.1°C
NO	Position	ROOM AMBIENT Ta=23.4°C	HIGH AMBIENT Ta=61.9°C																																																									
1	ZNR1	67.0°C	99.6°C																																																									
2	C1	62.3°C	95.1°C																																																									
3	FS1	65.7°C	97.7°C																																																									
4	R8	63.0°C	94.6°C																																																									
5	BD1	63.4°C	94.7°C																																																									
6	ZD2	66.1°C	97.4°C																																																									
7	C5	62.7°C	95.1°C																																																									
8	ZD7	70.0°C	101.3°C																																																									
9	Q2	78.0°C	96.2°C																																																									
10	ZD1	73.9°C	104.7°C																																																									
11	RY1	81.2°C	111.6°C																																																									
12	C2	64.7°C	95.2°C																																																									
13	PCB	73.4°C	105.1°C																																																									

2	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR	I/P : 264VAC/100VAC O/P : 100 % LOAD Ta= -35 °C	TEST : OK
3	HIGH HUMIDITY HIGH TEMPERATURE HIGH VOLTAGE TURN ON TEST	AFTER 12 HOURS IN CHAMBER ON CONTROL 60 °C /95 %R.H NO DAMAGE	I/P : 272 VAC O/P : FULL LOAD Ta= 60 °C HUMIDITY= 95 %R.H	TEST : OK
4	TEMPERATURE COEFFICIENT	± 0.03 %/°C (0~60°C)	I/P : 230 VAC O/P : FULL LOAD	± 0.0005%/°C (0~60°C)
5	STORAGE TEMPERATURE TEST	1. Thermal shock Temperature : -45°C~ +90°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 : STATIC		TEST : OK
6	THERMAL SHOCK TEST	1. Thermal shock Temperature : -35°C~ +65°C 2. Temperature change rate : 25°C / 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°C		TEST : OK
8	CAPACITOR LIFE CYCLE	SUPPOSE C5 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= 60 °C LIFE TIME (3) I/P : 230VAC O/P : 75% LOAD Ta= 60 °C LIFE TIME (4) I/P : 230VAC O/P : 50% LOAD Ta= 60 °C LIFE TIME		(1) 156211 HRS (2) 15860 HRS (3) 32613 HRS (4) 53719 HRS
9	MTBF	Conducted by Parts Stress Analysis Prediction 1601.76K hrs min. MIL-HDBK-217F (25°C)		

TEST RESULT	TESTER	REVIEW	APPROVAL
PASS	LIUTT		WANGDZ

2018.4.30 GP-A50-F010