



HARWIN

Test Report Summary

HT09101

Mechanical and Electrical Testing of P70-2XX0045R
(SMT & Through board spring loaded pogo pins)

1. Introduction

1.1. Description and Purpose

The following tests were performed on the P70-24X0045R, P70-25X0045R, P70-26X0045R and P70-27X0045R SMT and Through board spring loaded Pogo Pins for Durability, Temperature Rise and Contact Resistance.

1.2. Conclusion

The following test data is a summary of the testing documented under QA000507.

Temperature rise demonstrates the importance of considering temperature rise when determining safe operating currents for component variants. By using the current rating table provided by Harwin, operators can reliably determine the maximum current to be used while maintaining temperature rise below 30°C.

Contact resistance testing shows that this contact is confirmed to have low contact resistance in addition to the durability test which illustrates a minimum of 10,000 operating cycles.

2. Test Method, Requirements and Results

2.1. Specification Parameters

The purpose of this testing was to determine the future specification of this product, so no initial target figures existed for the contact.

2.2. List of Test Samples

For testing, the pogo pins were mounted and soldered to a test board, in the following configurations:

P70-2400045R mounted to HM2393-240
P70-2410045R mounted to HM2393-241
P70-2500045R mounted to HM2394-250
P70-2510045R mounted to HM2394-251
P70-2520045R mounted to HM2394-252
P70-2530045R mounted to HM2394-253
P70-2540045R mounted to HM2394-254
P70-2550045R mounted to HM2394-255
P70-2560045R mounted to HM2394-256
P70-2570045R mounted to HM2394-257
P70-2600045R mounted to HM2395-260
P70-2610045R mounted to HM2395-261
P70-2620045R mounted to HM2395-262
P70-2630045R mounted to HM2395-263
P70-2700045R mounted to HM2396-270

For contact resistance, both assembled and loose samples were used.

3.0. Test Method and Results

3.1. Durability: EIA-364-09C.

Methodology: Contacts assembled to boards were compressed vertically. The test was performed at a speed of 25mm/min for 10,000 cycles. Compression forces were measured. Samples were also tested post-conditioning.

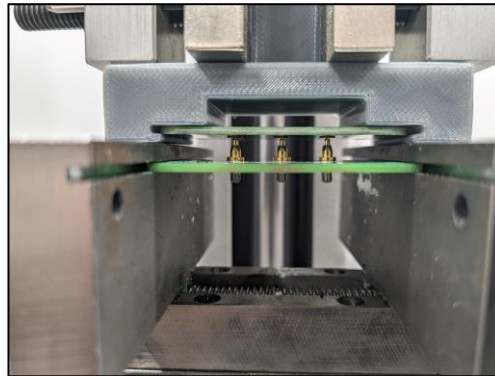


Fig 1: Durability Test set up.

Results: All values are the forces measured in N. Results shown in the table are of individual specimens.

No. Cycles	Part No.	Insertion (N)			
		Initial Force	Maximum force	Minimum force	Final force
10,000 Cycles	P70-2400045R	1.76	1.83	1.70	1.79
	P70-2410045R	1.78	2.12	1.78	1.84
	P70-2500045R	0.80	0.84	0.74	0.83
	P70-2510045R	0.85	0.86	0.85	0.84
	P70-2520045R	0.83	0.90	0.83	0.86
	P70-2530045R	0.83	0.94	0.83	0.88
	P70-2540045R	0.86	1.49	0.86	1.04
	P70-2550045R	0.91	1.83	0.91	1.23
	P70-2560045R	1.32	1.97	1.32	1.60
	P70-2570045R	1.36	1.91	1.36	1.67
	P70-2600045R	0.85	0.92	0.85	0.86
	P70-2610045R	0.79	0.90	0.79	0.83
	P70-2620045R	0.85	1.07	0.84	1.03
	P70-2630045R	0.88	1.06	0.88	1.04
	P70-2700045R	2.63	2.73	2.29	2.43
	P70-2400045R	1.76	1.83	1.70	1.79
	P70-2410045R	1.78	2.12	1.78	1.84
	P70-2500045R	0.80	0.84	0.74	0.83
	P70-2510045R	0.85	0.86	0.85	0.84
	P70-2520045R	0.83	0.90	0.83	0.86
	P70-2530045R	0.83	0.94	0.83	0.88
	P70-2540045R	0.86	1.49	0.86	1.04
	P70-2550045R	0.91	1.83	0.91	1.23
	P70-2560045R	1.32	1.97	1.32	1.60
	P70-2570045R	1.36	1.91	1.36	1.67
	P70-2600045R	0.85	0.92	0.85	0.86
P70-2610045R	0.79	0.90	0.79	0.83	
P70-2620045R	0.85	1.07	0.84	1.03	

3.2. Temperature vs Current: EIA-364-70A.

Methodology: Pogo pin contacts were assembled to test boards and mated with an opposing test board which were wired to create a complete circuit. The spacing of the two boards was constrained at the respective recommended working height of the contact and a current was passed through to observe the corresponding temperature rise of the component. The current applied was increased in increments of 2A, leaving the temperature to stabilise between each stage.

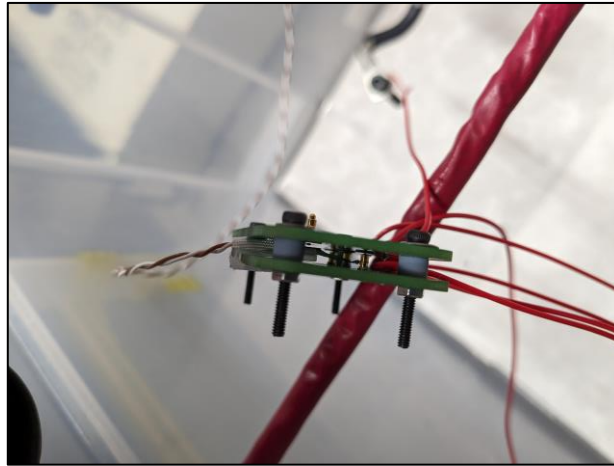
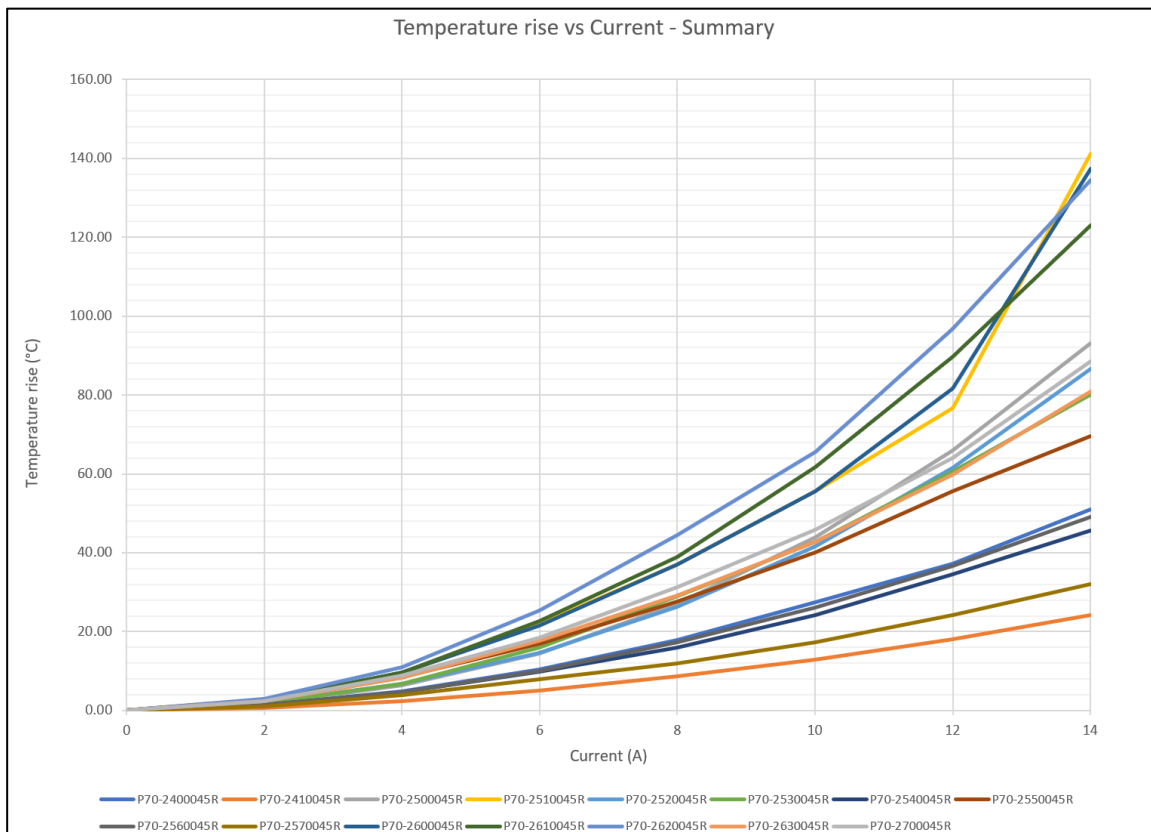
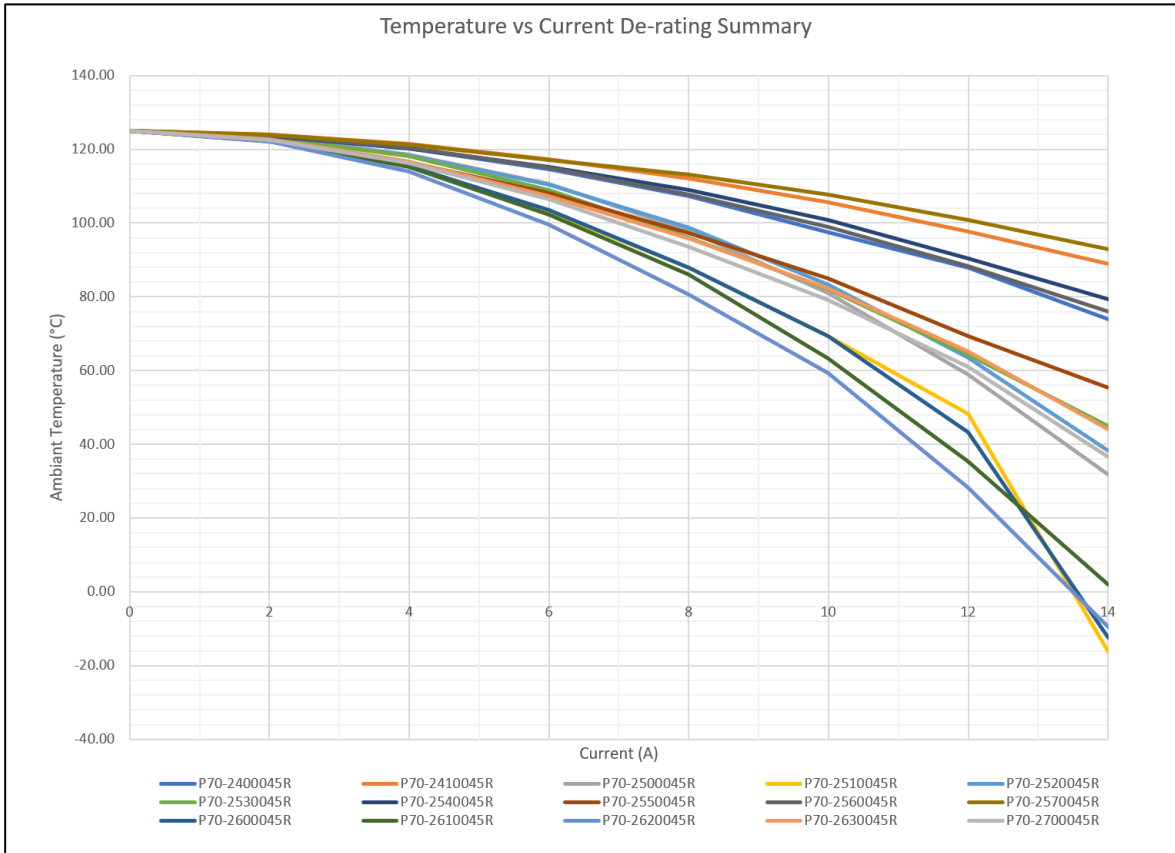


Fig 2: Temp v current Test Set Up.

Results:



Results: Temperature vs current de-rating curves are based on the recommended maximum operating of 125°C.



3.3. Contact Resistance EIA-364-06C.

Methodology: Pogo pin contacts were assembled onto a PCB and measured for contact resistance pre cycling. The samples are then through 10,000 cycles and measured contact resistance post cycling. Loose samples were also tested. See Fig 3/4.

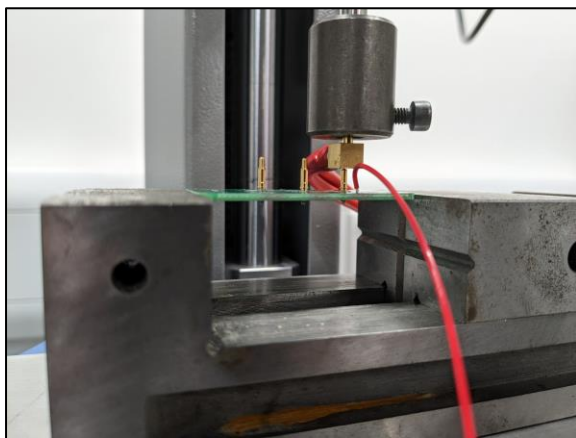


Fig 3: Contact Resistance (Assembled samples) Test Set Up.



Fig 4: Contact Resistance (Loose samples) Test Set Up.

Results:

Assembly Part No.'s	Contact Resistance (mΩ)			
	Loose sample	Set up assembly		Plain board + wire
		Pre-Cycling sample	Post cycling sample	
P70-2400045R	1.93	7.30	5.90	17.10
P70-2410045R	1.55	5.00	13.00	
P70-2500045R	0.21	9.80	10.00	15.80
P70-2510045R	0.33	11.70	11.40	
P70-2520045R	0.66	14.60	8.60	
P70-2530045R	0.99	8.10	5.90	
P70-2540045R	0.83	7.60	3.30	
P70-2550045R	0.86	11.90	7.80	
P70-2560045R	1.00	8.30	9.20	
P70-2570045R	0.89	3.90	3.90	
P70-2600045R	1.06	14.60	14.10	20.90
P70-2610045R	3.00	12.40	6.30	
P70-2620045R	3.40	15.80	3.80	
P70-2630045R	2.80	8.60	4.80	
P70-2700045R	1.94	6.10	10.20	16.60