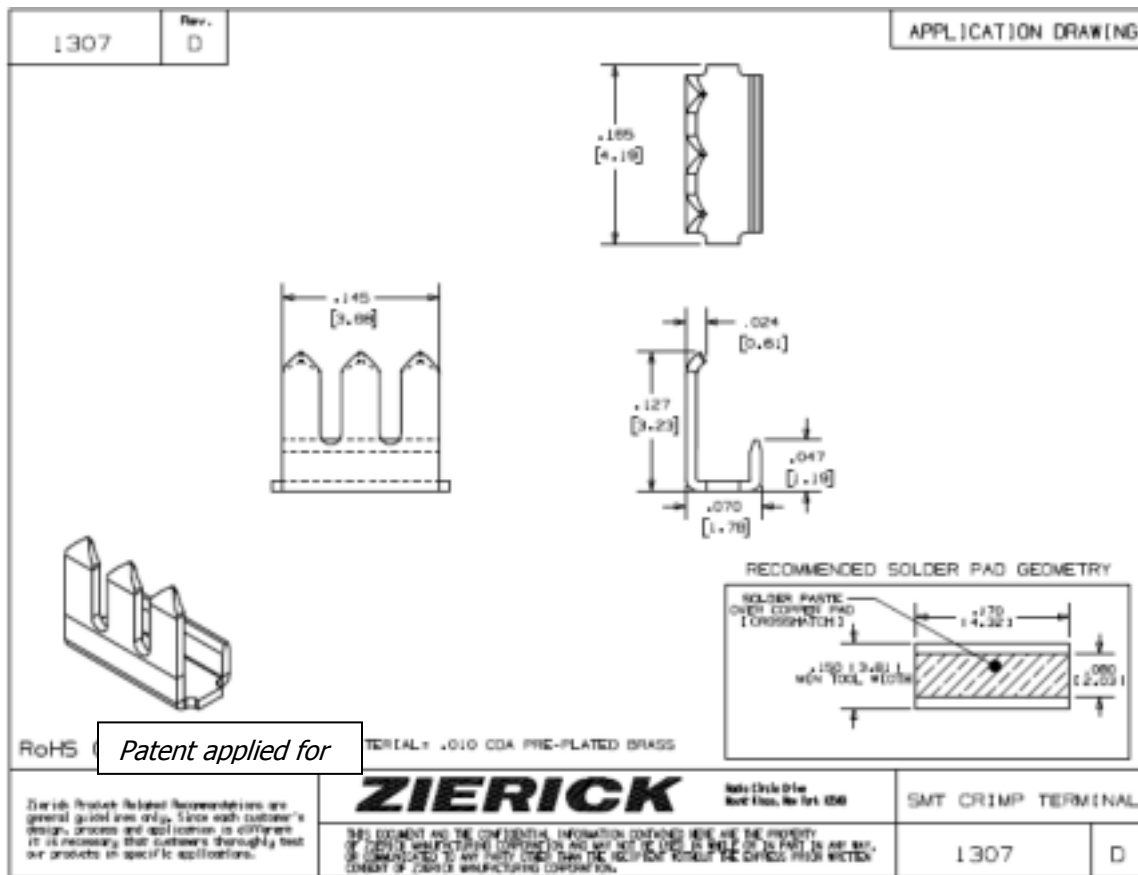


1307 Electronic Connector Test Report

24 AWG SMT Wire-to-Board Crimp Connector



Zierick Part Number 1307: SMT 24G Wire-to-Board Crimp Connector

Uses and Advantages

This connector features a patent-pending design that wraps over and pierces the wire insulation. It offers excellent strain relief as well as a connection with very low contact resistance. Zierick also offers a variety of hand-held and automated crimping tools.

Scope of Document

This document contains the following test data:

X	Contact Resistance Before and After Thermal Shock
X	Heat Rise
X	Pull Force, X-Y-Z Axes

Executive Summary

- Data indicate a very low Contact Resistance both before and after Thermal Shock exposure. There was no visible degradation on any part as per specifications after the Thermal Shock test.
- Heat Rise testing indicates the connector will accept additional amperage above that recommended for a 24 gauge wire. (AMW UL1061, CSA AMW I A/B)
- Force testing indicates the solder connection to the PCB is likely to break before the connector releases the wire

A. Low-Level Contact Resistance (LLCR) Before and After Thermal Shock Environmental Testing

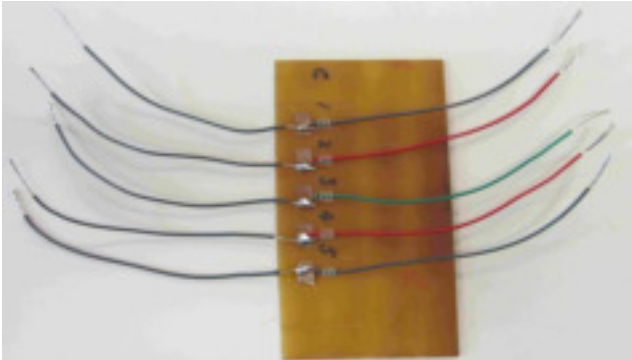
Test Specifications	Part Number:	1307
Description:	CONTACT RESISTANCE MEASUREMENT PRIOR TO AND AFTER ENVIRONMENTAL TESTING	
Follows Standard:	Contact Resistance: EIA364-23C Thermal Shock: EIA 364-32E, Method A, Test Condition 1 Thermal Shock Duration: A-1, 25 Cycles	
Wire Gauge:	24 (AMW UL1061 , CSA AMW I A/B)	
Wire Type:	PVC Insulated, Stranded	

Test Methods

Low Level Contact Resistance testing was performed per EIA spec before and after Thermal Shock test EIA-364-32-E, at 25 cycles.

A lead wire and the terminal were soldered to pads on a standard FR-4 PCB. A 24G wire was crimped to the connector.

Test Setup



Test Results

Sample Number	Baseline Low Level Contact Resistance, mOhms	Resistance After 25 Thermal Cycles, mOhms
1	12.7	13.6
2	12.6	14.5
3	13.6	14.6
4	13.5	14.2
5	13.9	15.6

6	13.5	14.0
7	14.6	15.4
8	13.0	13.7
9	14.0	14.9
10	12.6	13.3
Average	13.4	14.4

Conclusions/Interpretations

- LLCR: Note that EIA specifies a 6" wire lead on each side of the test points and this wire contributes to the total resistance. The initial resistance is minimal and the average increase after 25 Thermal Shock cycles is only 1 milliohm.
- Thermal Shock: There were no mechanical failures observed (as described by EIA Standard) after Thermal Shock treatment.

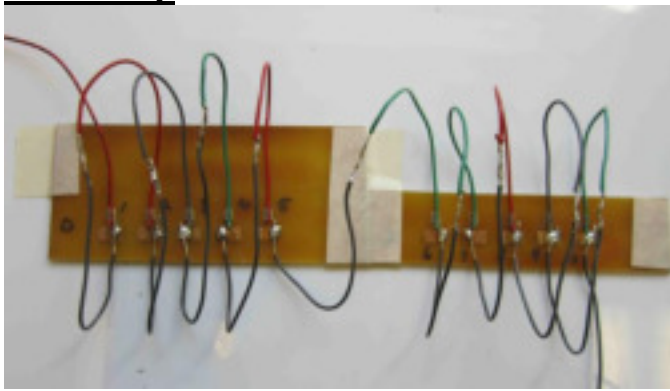
B. Heat Rise Testing

Test Specifications	Part Number:	1307
Description:	APPROXIMATE PEAK AMPACITY	
Follows Standard:	EIA/ECA-364-70B, Test Condition 5, Test Method 3, Free Air	
Wire Gauge:	24 (AMW UL1061 , CSA AMW I A/B)	
Wire Type:	PVC Insulated, Stranded	
Ambient Temp, Degrees C	20.4	

Test Methods

As with the LLCR Tests, connectors are re-flowed to a pad on the PCB. One wire is crimped to the connector and another soldered to the pad. The second wire is crimped to the next connector in series for a total of 10 samples. Current is attached to the end of the red wire in the upper left and the end of the dark wire in lower right. Temperature measurements made at each connector.

Test Setup



Test Results

Current	2A	3.5A	4A
Sample Number	Temperature Rise, degrees C	Temperature Rise, degrees C	Temperature Rise, degrees C
1	5.6	12.5	19.0
2	5.0	11.5	17.5
3	5.4	11.9	18.2
4	5.6	12.3	20.0
5	6.0	12.4	19.2
6	9.1	17.5	26.8
7	6.2	13.3	20.8
8	5.4	11.8	18.3
9	5.2	10.3	16.9
10	5.1	10.1	16.6
Average	5.9	12.4	19.3

Conclusions/Interpretations

The Heat Rise (Ampacity) Test was conducted in open air. The test connectors easily handled 3.5 amps without exceeding the accepted temperature increase of 30 degrees C. Terminal is suitable for 24 Gauge wire as this is typically rated at a maximum of 3.5 Amps.

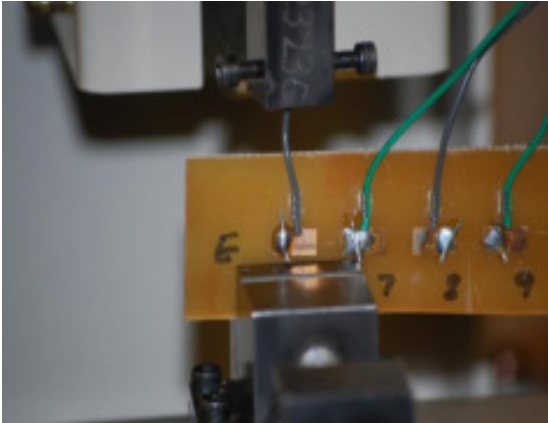
C. Pull Force Testing

Test Specifications	Part Number: 1307
Description: Pulling the wire in three different directions	
Follows Standard: EIA 364-08	
Wire Gauge: 24 (AMW UL1061 , CSA AMW I A/B)	
Wire Type: PVC Insulated, Stranded	
Samples Tested: 5 per axis	

Test Method

The connector was soldered to a PCB using standard procedures then subjected to pull forces on the X, Y and Z axes as pictured below. The X-axis test pulls the wire on the long axis of the connector, or the way the wire was inserted. The Y-axis test pulls sideways, or on the short axis of the connector. The Z-axis test pulls the wire perpendicular to the PCB.

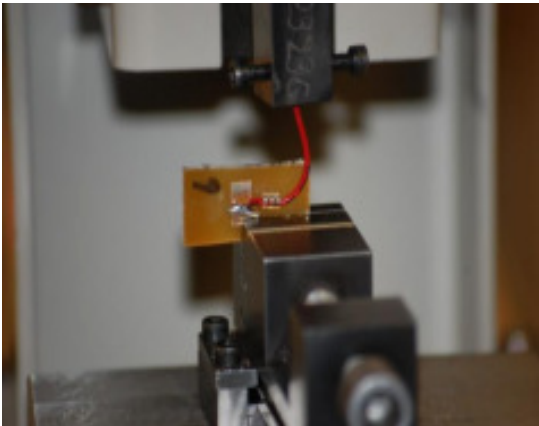
X-Axis Test Setup



X-Axis Test Results

Sample Number	Force Withstood X-Axis, Lbs
1	9.3
2	8.1
3	9.2
4	8.2
5	11.4
Minimum	8.1

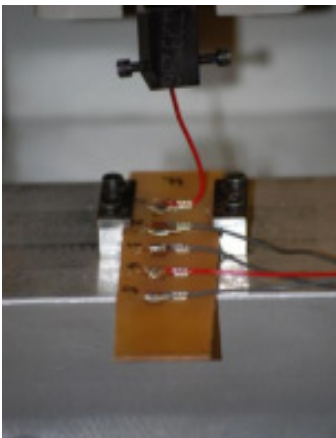
Y-Axis Test Setup



Y-Axis Test Results

Sample Number	Force Withstood Y-Axis, Lbs
1	8.2
2	8.8
3	8.9
4	9.4
5	8.0
Minimum	8.0

Z-Axis Test Setup



Z-Axis Test Results

Sample Number	Force Withstood Y-Axis, Lbs
1	4.6
2	2.7
3	7.5
4	6.3
5	5.6
Minimum	2.7

Conclusions/Interpretations

In every case, the connector held the wire and failure occurred when the connector separated from the pad on the PCB (broken solder joint).

D. Disclaimer

All connectors on a board are part of a system design that includes other components. Variations in the wire, the type of PCB, the proximity of other components as well as the soldering and manufacturing processes can all impact the results.

Our engineers are available to discuss the specifics of your application.

E. Final Thoughts

The Zierick Part Number 1307 is designed for use where a small and extremely cost-effective connector is required for either serial or wire-end connections to the board. Zierick also offers hand crimp tools and a small pneumatic crimp press for use with this connector.

F. Contact Us

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