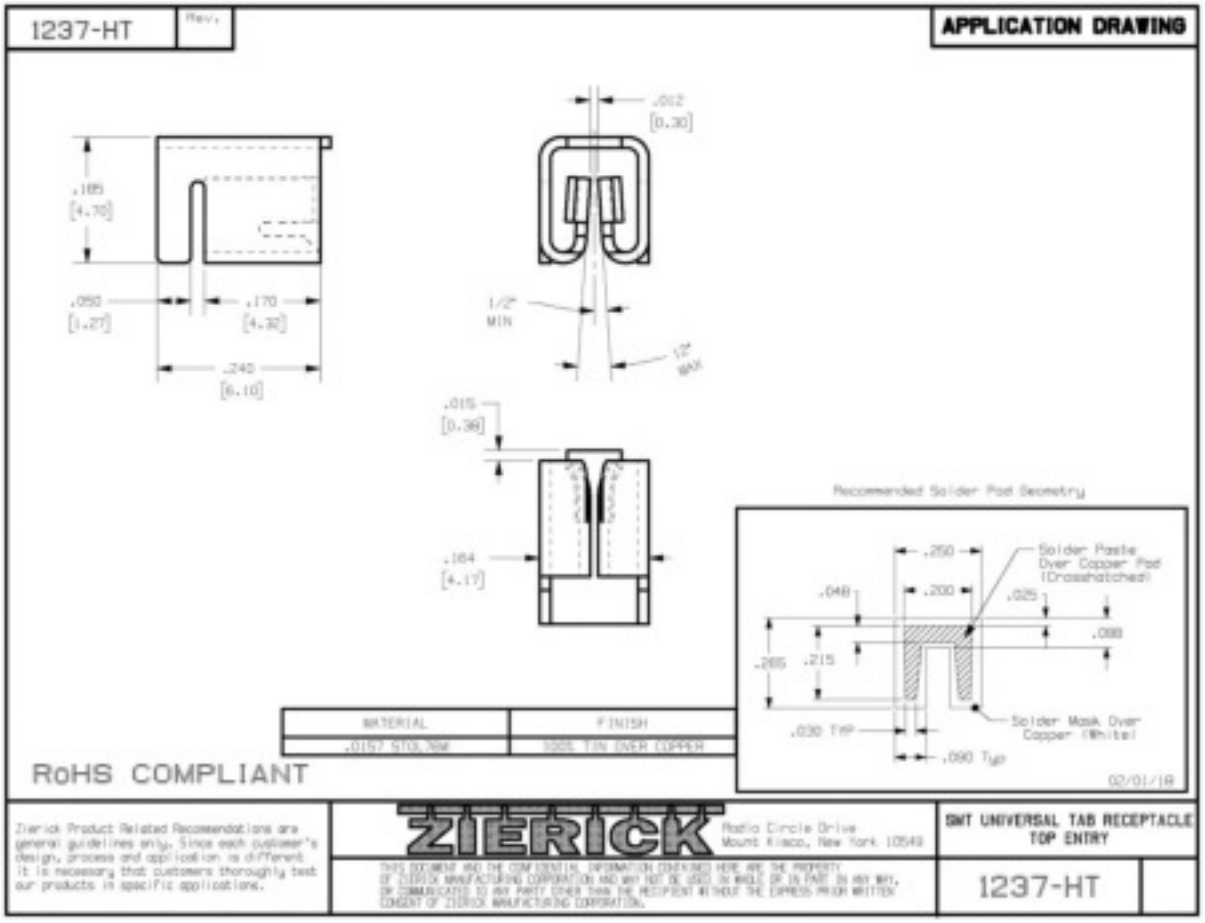
ZMC Test Document
New Part 1237-HT

HIGH TEMPERATURE SMT
TAB RECEPTACLE ELECTRONIC CONNECTOR

Uses and Advantages

- Engineered for use in under-hood automotive or other high temperature applications.
- This part uses a new high temp brass alloy with remarkable heat resistant capabilities.
- This receptacle mates with common quick disconnect tabs up to .032 inch thick, and can be used as a board edge connector. Can be mounted with typical surface mount processes during board assembly.
- Spring contact exhibits stress relaxation resistance comparable to standard brass or phosphor bronze even in high ambient temperature applications.
- Material exhibits 57% IACS, good thermal conductivity, is antimicrobial, and has excellent corrosion resistance characteristics for medical applications.
- Supplied in loose-piece or pocket tape for Pick and Place machines (1237-HT-T)

Application Print



Scope of This Document

This document contains the following test data:

X	**Contact Resistance Before and After Thermal Shock**
X	**Heat Rise –LLCR Ampacity Testing**
X	**Heat Rise - High Temperature Ampacity Cycle Test**
X	**Insertion Force**

Low-Level Contact Resistance (LLCR) Before and After Thermal Shock Environmental Test

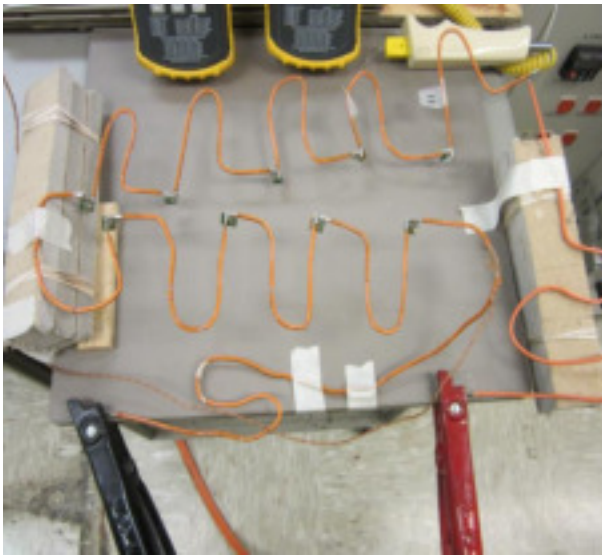
Test Specifications:	Part Number:	1237-HT
Description:	This test determines a baseline for LLCR, Thermal Shock	
Follows Standards:	EIA/ECA-364-23 (LLCR), EIA/ECA-364-32E Method A, Condition 3 (Thermal Shock)	
Wire Gauge:	12 AWG	
Wire Type:	Southwire E23919 (UL) AWG 12 Cu Solid (UL) T90 Nylon insulation	
Temp Range:	-65° to +125° Celsius	
Cycles:	25	
Ambient Air C	20	

Test Method

Connectors are re-flowed to a pad on a standard FR-4 PCB in a series of 10 samples. ZMC 0.250 brass tabs are soldered to a 12 AWG wire and inserted into the connectors in series. Current is applied.

Contact Resistance tests were performed per EIA specs before and after Thermal Shock testing at 25 cycles.

Test Setup



Test Table 1: LLCR 12AWG

Sample Number	Baseline Low Level Contact Resistance, (milliohm)	Resistance After 25 Thermal Shock, (milliohm)
1	3.0	5.0
2	2.0	2.0
3	2.0	2.0
4	3.0	2.0
5	3.0	5.0
6	1.0	5.0
7	1.0	2.0
8	1.0	2.0
9	2.0	2.0
10	2.0	2.0
Maximum	3.0	5.0

LLCR Conclusions/Interpretations

The difference, in milliohms, is not significant after 25 Thermal Shock Cycles. There was no observed physical degradation due to temperature changes.

Ambient AND High Temp Heat Rise (Ampacity) Testing

1. Ambient Air Heat Rise Test

Test Specifications:
Test Method, Setup and Picture the same as for LLCR
Ambient Air=20C

Temperature Rise, Degrees C, For 10 Samples

Current Applied (Amps)	Wire Temp C	1	2	3	4	5	6	7	8	9	10
5	20.5	1.1	1.2	1.0	0.8	1.1	1.2	1.1	1.4	1.5	1.9
10	20.6	2.8	2.7	2.8	3.0	1.7	1.6	2.7	2.9	2.8	2.8
15	25.8	6.8	6.8	6.9	6.7	6.2	5.5	5.6	6	5.9	6.1
20	31.2	12.2	11.8	10.8	12	9.8	11.7	10.8	8.9	10.9	8.9
25	35.2	17.4	17.5	18.7	18.9	16.1	16.2	17.1	16.9	17.2	18.1
30	41.3	28.4	22.5	24.3	25.3	20.1	21.8	23.4	21.8	23.6	21.0

Ambient Heat Rise Conclusions

The data shows the connector will not exceed the specified 30 degree C temperature rise with even up to 30 Amps.

2. High Temperature Heat Rise Test

NOTE: This is a Zierick-Specific test (non-EIA) that includes 10 repeated cycles on one sample at increasing amperages.

Test Specifications

Cooling Interval: A one hour interval was allowed between individual cycles
Base Air Temperatureat start of each test cycle=125 degrees C

Connector Temperature, By Cycle, Degrees C

Current (Amps)	Amb Temp	1	2	3	4	5	6	7	8	9	10
10	125	128.9	129.8	129.2	128.1	128.2	128.3	128.0	128.0	128.3	128.0
15	125	133.3	133.6	132.9	131.7	131.3	131.2	131.6	130.9	131.8	131.2
20	125	138.6	138.7	137.7	136.1	135.9	135.9	136.2	135.1	136.1	135.5
25	125	145.0	144.0	143.6	141.6	141.1	141.2	141.4	140.4	141.4	140.7
30	125	152.6	150.6	150.2	148.4	148.8	147.7	147.4	147.2	147.2	147.2

High Temp Heat Rise Conclusions

The temperature rise is minimal and there are no signs of physical degradation after 10 cycles of repeated amperage applications. The connector meets the EIA Heat Rise standards limit of 30 degrees, even when repeatedly subjected to 30 Amps.

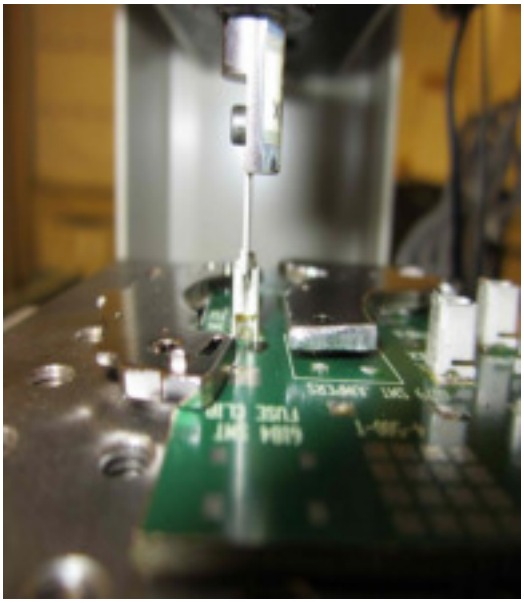
Insertion/Withdrawal Force Test

Test Specifications		Part Number:	1237-HT
Description:	Mating and Unmating Force		
Follows Standard:	EIA/ECA 364-13D Method B at a rate of 38.1mm/min		
Wire Gauge:	0.250"x 0.025" polished Steel Tab		
Wire Type:	Not Applicable		
Samples Tested:	10		

Test Method

A ZMC standard brass .250" blade is inserted into the High Temperature Connector. Blades may be inserted horizontally or vertically. The force of insertion is measured with a calibrated force gauge.

Test Setup



Y-Axis Insertion and Withdrawal

Sample Number	Insertion Force Y-Axis, (lbs)	Withdraw Force Y-Axis, (lbs)
1	2.4	1.8
2	3.2	2.6
3	2.9	1.8
4	3.2	2.7
5	3.3	3.1
6	3.6	3.0
7	3.6	3.6
8	3.5	3.4
9	2.7	1.9
10	2.9	2.1
	3.6 Max	1.8 Min

Conclusions/Interpretations

The recorded insertion forces will not stress a standard PCB nor the wire.

Fact
All electronic connectors and components on a PCB are part of an engineered system. Variations in the wire, the type of board, proximity of other components and the soldering/manufacturing processes will influence test results.

Our Engineers
Zierick's Engineers are available to discuss the specifics of your application.

Samples
Are available for your testing protocols

A Solution for High Temp Applications
When a HIGH TEMPERATURE solution is required, the 1237-HT or 1237-HT-T is designed to provide an economical connector to terminate a blade, wire or pin to a PCB. This design offers both vertical and horizontal insertions as well as removability/reconnection.

Contact Zierick
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