

**ATTACHMENT 1**  
**AEC - Q200 - 001 - REV B**  
**FLAME RETARDANCE TEST**

**NOTICE**

AEC documents contain material that has been prepared, reviewed, and approved through the AEC Technical Committee.

AEC documents are designed to serve the automotive electronics industry through eliminating misunderstandings between manufacturers and purchasers, facilitating interchangeability and improvement of products, and assisting the purchaser in selecting and obtaining with minimum delay the proper product for use by those other than AEC members, whether the standard is to be used either domestically or internationally.

AEC documents are adopted without regard to whether or not their adoption may involve patents or articles, materials, or processes. By such action AEC does not assume any liability to any patent owner, nor does it assume any obligation whatever to parties adopting the AEC documents. The information included in AEC documents represents a sound approach to product specification and application, principally from the automotive electronics system manufacturer viewpoint. No claims to be in conformance with this document shall be made unless all requirements stated in the document are met.

Inquiries, comments, and suggestions relative to the content of this AEC document should be addressed to the AEC Technical Committee on the link <http://www.aecouncil.com>.

Published by the Automotive Electronics Council.

This document may be downloaded free of charge, however AEC retains the copyright on this material. By downloading this file, the individual agrees not to charge for or resell the resulting material.

Printed in the U.S.A.  
All rights reserved

Copyright © 2010 by the Automotive Electronics Council. This document may be freely reprinted with this copyright notice. This document cannot be changed without approval from the AEC Component Technical Committee.

**METHOD - 001**

**PASSIVE COMPONENT  
FLAME RETARDANCE TEST**

**1.0 SCOPE**

**1.1 DESCRIPTION:**

The purpose of this specification is to assure a device will not flame due to self-heating when full automotive battery potential is applied. This test applies to all devices which, under normal operation, are not intended to be used at full automotive battery potential.

**1.2 Reference Documents:**

Not Applicable

**2.0 EQUIPMENT:**

**2.1 Test Apparatus:**

The following items are required when performing this test:

- a) A circuit board suitable for mounting test devices
- b) A regulated, variable voltage power supply capable of maintaining 32VDC at a clamp current up to 500ADC.
- c) A temperature sensing and recording system capable of continuous monitoring of temperatures to a maximum of 500C.
- d) A visual method of monitoring flame duration.

**3.0 TEST PROCEDURE:**

**3.1 Sample Size:**

The total number of components and lots to be tested is listed in Table 1 of AEC-Q200 specification.

Automotive Electronics Council  
Component Technical Committee

3.2 Test Environment:

Devices shall be mounted to the test board in their normal mounting configuration and subjected to voltages from 9.0 to 32.0 VDC (current clamped up to 500A) in 1.0 VDC increments. Each voltage level shall be applied for one hour minimum, or until the device is either electrically open or a failure described in Paragraph 4.0 occurs. The test board shall be horizontal, with the component on the underside if a leaded device and on the top side if a surface mounted device. The test shall be conducted at  $22C \pm 5C$  in still air. The temperature sensor shall be placed in contact with, but not adhered to, the outer surface of the device centered along its body for parts rated at one Watt and below, or at a distance of 1mm from the outer surface of the device body for devices rated above one Watt, as illustrated in Figure 1.

3.3 Measurement:

Prior to Flame Retardance testing, complete the electrical characterization (TST NO. 19) functional tests. The DC current shall be monitored continuously during the test to determine when the device is electrically open. The temperature sensing and recording system shall monitor temperature throughout the test.

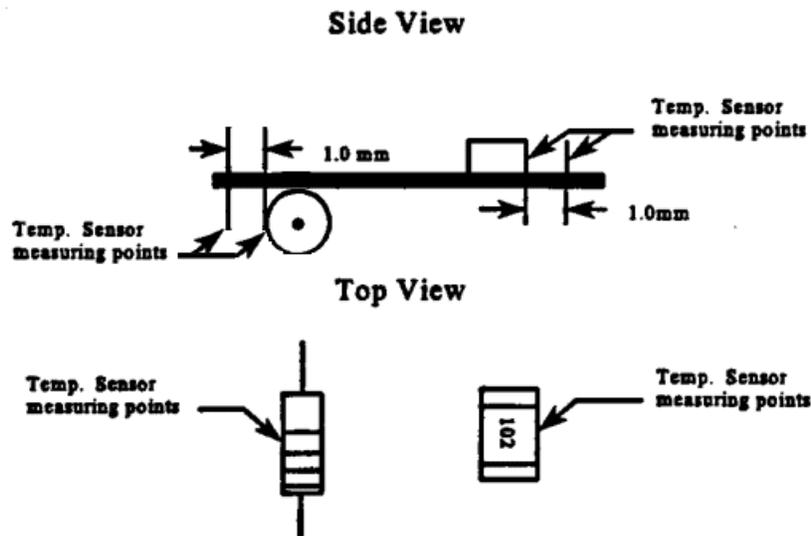


Figure 1 Led and Surface Mount Device Temperature Sensor contact points

#### **4.0 FAILURE CRITERIA**

The following constitutes a failure:

- a) A flame over 3.0 seconds duration
- b) An explosion
- c) A temperature above 350C sustained for over 10 seconds

Any device that electrically opens or changes value outside part tolerance without causing any of the above shall not be considered a failure. Should a device open prior to attaining the maximum voltage or current described in 3.0, that device shall be replaced. The replaced device shall be subjected to 32 VDC current clamped up to 500 ADC and decreased in 1.0 VDC/hour increments until the voltage at which the first device opened is attained or until all parts are open, whichever occurs first. This assures that the part will meet specification requirements throughout the required test voltage range.

## **Revision History**

<u>Rev #</u>	<u>Date of change</u>	<u>Brief summary listing affected paragraphs</u>
-	April 30, 1996	Initial Release.
A	March 15, 2000	Removed CDF designation through document. Removed Chrysler, Delco, and Ford logo from each heading. Add Component Technical Committee to each heading. Finger 1 (Side View): Change leaded component and temperature sensor measuring point to the bottom side of the circuit board.
B	June 1, 2010	Notice Statement (Page 2) Added. Format Updated.