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A		Initial Release			07/24/95
B		New Format, Clerical Updates, New Number	B. Klatt	M. Bautz	07/16/14

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Testing of Discrete Electronic Parts

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Revision B
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Table of Contents

Preface

Revision A was the Initial Release of 99-02008 written by Mary Briggs on 07/24/95. Please note that this document entitled Receiving Inspection Testing of Discrete Parts was erroneously assigned to the document number 99-02008 on 07/24/95. This number (99-02008) was already in use for a document entitled Fasteners. This document is being reassigned to 99-02011 during Revision B.

Revision B issued a new format, clerical revisions, a new title and new number on 07/16/14.

1.0 Scope

The purpose of this procedure is to document testing required, as applicable, to verify vendor's compliance to procurement specifications, regarding purchased transistors, diodes, capacitors and resistors.

2.0 Operator Requirements

- Basic Electronic Theory
- Basic Math
- Experience with a curve tracer
- Experience with an ohm meter
- Experience with a capacitance meter

3.0 Applicable Documents

- MIT 99-02006 Receiving Inspection
- MIT 99-01003 Electrostatic Discharge Handling Procedure
- Approved Flight Parts List
- Part procurement specifications and the latest slash sheet
- Operator manuals for the test equipment

4.0 Equipment Required

- Curve Tracer, Tektronix 576 or 577-177
- RCL meter, Phillips PM 6304
- Surface mount fixture PM 9542a
- Axial lead fixture
- Radial lead fixture
- Transistor fixture A1007
- Electrostatic Discharge station and wrist strap

5.0 Acceptance Quality Level (A.Q.L.)

5.1 Random Sampling

A random and impartial sample of 10% may be tested from each lot.

5.2 Failed Device

In the event of a failed device, a second 10% sample shall be tested.

5.3 Additional Failures

In the event of one or more additional failures from the new sample, the entire lot shall be tested.

6.0 Electrical Characteristics

6.1 Transistors

DC gain of a transistor is determined by adjusting the base current to the specified collector voltage and collector current. Read the current. Next, read the base current. Divide the collector current by the base current. The quotient is the amount of DC gain. Compare this number to the requirement of the procurement specification. Do not exceed the specified current or voltage; this would damage the part. (Hfe=IC/IB)

6.2 Diodes

To test the forward voltage of a diode, set the specified current and read the voltage. Compare this to the requirement of the procurement specification. Do not exceed the current; this would damage the part. (VF @ IF)

6.3 Electrolytic Capacitors

To measure the capacitance of an electrolytic capacitor, set the specified AC voltage and frequency, as required by the procurement specification. Activate the DC bias. Verify that the tolerance has not been exceeded.

6.4 Ceramic Capacitors

To test the capacitance of a ceramic capacitor, set the voltage, per the procurement specification. When measuring small capacitances, stray capacitances of the test fixture become significant. Press the "TRIM" button for three (3) seconds, with the contacts open. The RCL adjusts to compensate for the stray capacitance. Assure that the value is within tolerance limits.

6.5 Dissipation Factor

To calculate the % of dissipation factor, first set the specified DC voltage; next set the frequency. Typically the frequency is low, around 1Khz, The values of Q & D not only depend on the component, but also on the test frequency used, (D=1/Q where Q=xs/xr)

6.6 Resistors

When measuring resistance set the voltage specified by the procurement spec. Verify that the value is within the level of tolerance. {R=E/I}

7.0 Final Disposition

7.1 Accepted Devices

For parts which are dispositioned as Multi-Stage parts, proceed per instructions of the particular project procedure regarding multi-stage parts, such as MIT document 36-01315 for ACIS.

All other acceptable parts shall be placed in appropriate bins in bonded stock.

7.2 Rejected Devices

Test failures shall be initially disposition as HOLD, and segregated in locked storage.

Non-conforming hardware, shall be reported n the Nonconforming Material Report form per MIT 99-02004, for further disposition.