REQUIREMENTS:

1. GENERAL:
   A. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-78227.
   B. SUPPLIER SHALL CONFORM TO THE QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 101S404, CLASS 1.
   C. UNITS SHALL BE CAPABLE OF MEETING ALL THE QUALIFICATION REQUIREMENTS OF ND 100555, UNLESS MODIFIED OR AMENDED BY DEFENSE REQUIREMENT OF THIS DRAWING.
   D. UNIT PACKAGING AND PACKING SHALL BE IN ACCORDANCE WITH MIL-P-19491 LEVEL A.
   E. UNITS SHALL BE IN ACCORDANCE WITH MIL-S-33500 IN ADDITION TO THE REQUIREMENTS SPECIFIED HEREIN.

2. INSPECTION AND ACCEPTANCE:
   A. MECHANICAL REQUIREMENTS:
      1) LEAD DATA: KOVAR WITH GOLD PLATING PER ND 101S402
      2) MARKING: THE MANUFACTURER'S NAME, TRADEMARK OR CODE; MANUFACTURER'S TYPE DESIGNATION; DATE CODE; LOT CODE AND SERIAL NUMBER SHALL BE PERMANENTLY AND LEGIBLY MARKED ON THE PART PER MIL-STD-130. MARKING OF UNIT PACKAGES AND EXTERNAL SHIPPING CONTAINERS SHALL BE IN ACCORDANCE WITH MIL-P-19491 AND SHALL INCLUDE THE NASA DRAWING NUMBER AND REVISION LETTER.
      3) MECHANICAL DIMENSIONS PER OUTLINE SHOWN.
   B. ELECTRICAL REQUIREMENTS: PER TABLE II & III
      1) COLLECTOR CUTOFF CURRENT (IcBO) AT 100°C
      2) EMMITER CUTOFF CURRENT (ibe0)
      3) SWITCHBACK VOLTAGE (LYe0)
      4) STATIC FORWARD CURRENT TRANSFER RATIO (hfe)
      5) STATIC FORWARD CURRENT TRANSFER RATIO, RATIO.
      6) BASE VOLTAGE DIFFERENTIAL.
      7) COLLECTOR SATURATION VOLTAGE Vce(SAT)

3. DESIGN REQUIREMENTS:
   A. ELECTRICAL RATINGS: PER TABLE I
   B. ELECTRICAL CHARACTERISTICS: PER TABLES II & III
   C. STORAGE AND OPERATING JUNCTION TEMPERATURE: -65°C TO +200°C
   D. POWER DISSIPATION: (EACH ELEMENT)
      1) AT 25°C CASE TEMPERATURE: 1.5 WATTS.
      2) AT 100°C CASE TEMPERATURE: 860 MILLIWATTS.
      3) AT 25°C AMBIENT TEMPERATURE: 500 MILLIWATTS.
   E. POWER DISSIPATION (DUAL) TOTAL:
      1) AT 25°C CASE TEMPERATURE: 3 WATTS.
      2) AT 100°C CASE TEMPERATURE: 1.7 WATTS.
      3) AT 25°C AMBIENT TEMPERATURE: 600 MILLIWATTS.
   F. LIFE TEST CONDITIONS FOR ND 1002055 SAME AS BURN-IN CONDITIONS.

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND1020234 FOR THIS DRAWING ONLY.

4. SPECIAL CONDITIONING BY SUPPLIER:
   A. BURN-IN: UNITS SHALL BE BURNED-IN FOR 240 HOURS AT THE FOLLOWING CONDITIONS:
      1) AMBIENT TEMPERATURE: 20°C ± 5°C
      2) COLLECTOR VOLTAGE Vce: 45 ± 5 VDC PER ELEMENT
      3) POWER DISSIPATION: 150 MW ± 10% PER ELEMENT
   B. THE MANUFACTURER SHALL RECORD THE FOLLOWING ELECTRICAL CHARACTERISTICS PRIOR TO AND FOLLOWING BURN-IN:
      1) EMMITER CUTOFF CURRENT, IeBo.
      2) COLLECTOR CUTOFF CURRENT, IcBo.
      3) COLLECTOR SATURATION VOLTAGE, Vce(SAT).
      4) STATIC FORWARD CURRENT TRANSFER RATIO, hfe, SEE NOTE 3.
   C. THE DATA SHALL BE PRESENTED IN A MANNER THAT PROVIDES POSITIVE IDENTIFICATION OF EACH INDIVIDUAL TRANSISTOR WITH THE INITIAL TEST READING, THE FINAL READING AND THE PERCENT CHANGE BETWEEN THE FINAL AND INITIAL READING. THE TEST DATA SUBMITTED SHALL ALSO IDENTIFY PARTS THAT FAIL TO MEET THE SPECIFIED REQUIREMENTS. HISTOGRAMS SHALL BE PLOTTED TO SHOW THE FREQUENCY DISTRIBUTION OF THE ABSOLUTE VALUE OF EACH CHARACTERISTIC AND TO SHOW THE FREQUENCY DISTRIBUTION OF THE PERCENT CHANGE OF EACH CHARACTERISTIC FROM ITS INITIAL READING. UNITS FAILING TO MEET INITIAL DRAWING REQUIREMENTS OR HAVING CHANGED MORE THAN 20% IN hfe, OR HAVING INCREASED MORE THAN 3 TIMES IN Icuo (THE ABSOLUTE CHANGE MUST BE GREATER THAN 5 NANOAMPERE) SHALL NOT BE ACCEPTABLE.

5. CONDITIONING BY SUPPLIER:
   A. BURN-IN: UNITS SHALL BE BURNED-IN FOR 240 HOURS AT THE FOLLOWING CONDITIONS:
      1) AMBIENT TEMPERATURE: 20°C ± 5°C
      2) COLLECTOR VOLTAGE Vce: 45 ± 5 VDC PER ELEMENT
      3) POWER DISSIPATION: 150 MW ± 10% PER ELEMENT
   B. THE MANUFACTURER SHALL RECORD THE FOLLOWING ELECTRICAL CHARACTERISTICS PRIOR TO AND FOLLOWING BURN-IN:
      1) EMMITER CUTOFF CURRENT, IeBo.
      2) COLLECTOR CUTOFF CURRENT, IcBo.
      3) COLLECTOR SATURATION VOLTAGE, Vce(SAT).
      4) STATIC FORWARD CURRENT TRANSFER RATIO, hfe, SEE NOTE 3.
   C. THE DATA SHALL BE PRESENTED IN A MANNER THAT PROVIDES POSITIVE IDENTIFICATION OF EACH INDIVIDUAL TRANSISTOR WITH THE INITIAL TEST READING, THE FINAL READING AND THE PERCENT CHANGE BETWEEN THE FINAL AND INITIAL READING. THE TEST DATA SUBMITTED SHALL ALSO IDENTIFY PARTS THAT FAIL TO MEET THE SPECIFIED REQUIREMENTS. HISTOGRAMS SHALL BE PLOTTED TO SHOW THE FREQUENCY DISTRIBUTION OF THE ABSOLUTE VALUE OF EACH CHARACTERISTIC AND TO SHOW THE FREQUENCY DISTRIBUTION OF THE PERCENT CHANGE OF EACH CHARACTERISTIC FROM ITS INITIAL READING. UNITS FAILING TO MEET INITIAL DRAWING REQUIREMENTS OR HAVING CHANGED MORE THAN 20% IN hfe, OR HAVING INCREASED MORE THAN 3 TIMES IN Icuo (THE ABSOLUTE CHANGE MUST BE GREATER THAN 5 NANOAMPERE) SHALL NOT BE ACCEPTABLE.

GRAPHICAL SYMBOL COLLECTOR-1 BASE-2 EMMITER-2 40° _t COLLECTOR-2 BASE-1 EMITTER-1 50° _t

ELEMENTS INSULATED FROM CASE

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND1020234 FOR THIS DRAWING ONLY.

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TRANSPORT, NPN, SILICON, DUAL SECTION
SPECIFICATION CONTROL DRAWING
M-1 INSTRUMENTATION LAB
M-5 APPARATUS LAB
M-7 DOCUMENT LAB
M-10 TF LAB
M-15 WAFER LAB
M-20 TRIM LAB
M-25 RHEOSTAT LAB
M-30 & 31 TEST CHAMBER LAB
M-40 & 41 MEASUREMENT LAB
M-50 & 51 TEST CHAMBER LAB
M-60 & 61 TEST CHAMBER LAB
M-70 & 71 TEST CHAMBER LAB
M-80 & 81 TEST CHAMBER LAB
M-90 & 91 TEST CHAMBER LAB

F REPLACES REV(E) WITH CHANGE
## Table III Continued

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<tr>
<th>NASA PART NUMBER</th>
<th>TYPE DESIGNATION (FOR REF ONLY)</th>
<th>NO. OR ELEMENTS PER DEVICE</th>
<th>PARAMETER</th>
<th>TEST CONDITIONS</th>
<th>SYMBOL</th>
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<th>LIMITS MAX</th>
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<td>SWITCHBACK VOLTAGE</td>
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<td>VOLTS</td>
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<td>STATIC FORWARD CURRENT TRANSFER RATIO</td>
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<td>COLLECTOR TO Emitter BREAKDOWN VOLTAGE PULSED - SEE NOTE</td>
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<td>BVCE</td>
<td>600</td>
<td>-</td>
<td>VOLTS</td>
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**THIS SHEET ADDED**

UNLESS OTHERWISE SPECIFIED

Dimens. are in Inches

Fractions, Decimals, Angles

INSTRUMENTATION LAB

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TRANSISTOR

NPN, SILICON, DUALSECTION

SPECIFICATION CONTROL DRAWING

CODE IDENT NO.

NRTAM

INCHES

PHOTOGRAPHIC SCALE ONLY

SCALE 0.375" = 1"