

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY FOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONFERRING ANY RIGHTS OR PERMISSION TO REPRODUCE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

1006838

| REVISIONS |  |          |          |
|-----------|--|----------|----------|
| SYM       | DESCRIPTION  | DATE     | APPROVAL |
| B         | REDRAWN AND UPGRADED TO CLASS "A" WITH CHANGES PER TDRR 1637 | 4/16/63  | S.S.T.   |
| C         | REVISED PER TDRR 04905                                       | 12/10/62 | DP       |

REQUIREMENTS:

1. GENERAL:

- A. UNITS SHALL MEET THE GENERAL SPECIFICATION REQUIREMENTS OF MIL-S-19500 EXCEPT AS MODIFIED HEREIN.
- B. SUPPLIERS SHALL CONFORM TO THE QUALITY ASSURANCE PROVISIONS OF ND 1015404, CLASS 2.
- C. UNITS SHALL BE CAPABLE OF MEETING THE QUALIFICATION REQUIREMENTS OF ND1002054.
- D. UNIT PACKAGING AND PACKING SHALL BE IN ACCORDANCE WITH MIL-P-19491, LEVEL A.
- E. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.

2. INSPECTION & ACCEPTANCE:

A. MECHANICAL REQUIREMENTS:

- (1) LEAD DATA: LEADS SHALL BE IRON-NICKEL ALLOY (DUMET) PER ND 1015401. CERTIFICATION OF COMPLIANCE WITH THIS REQUIREMENT SHALL ACCOMPANY EACH SHIPMENT.
- (2) MARKING: UNIT PACKAGES SHALL BE MARKED PER MIL-STD-129 WITH THE MANUFACTURER'S NAME AND/OR SYMBOL, TYPE DESIGNATION, NASA DRAWING NUMBER, REVISION LETTER, DASH NUMBER, AND LOT CODE IDENTIFICATION. THE DIODES SHALL BE MARKED ONLY WITH COLOR CODED IDENTIFYING BANDS IN ACCORDANCE WITH MIL-S-19500 AND MIL-STD-174.

B. ELECTRICAL CHARACTERISTICS PER TABLE I:

- (1) ZENER VOLTAGE ( $V_Z$ )
- (2) ZENER IMPEDANCE ( $Z_{ZT}$ ) ( $Z_{ZK}$ )
- (3) LEAKAGE CURRENT ( $I_{R1}$ ) ( $I_{R2}$ )

3. DESIGN REQUIREMENTS:

A. MAXIMUM RATINGS:

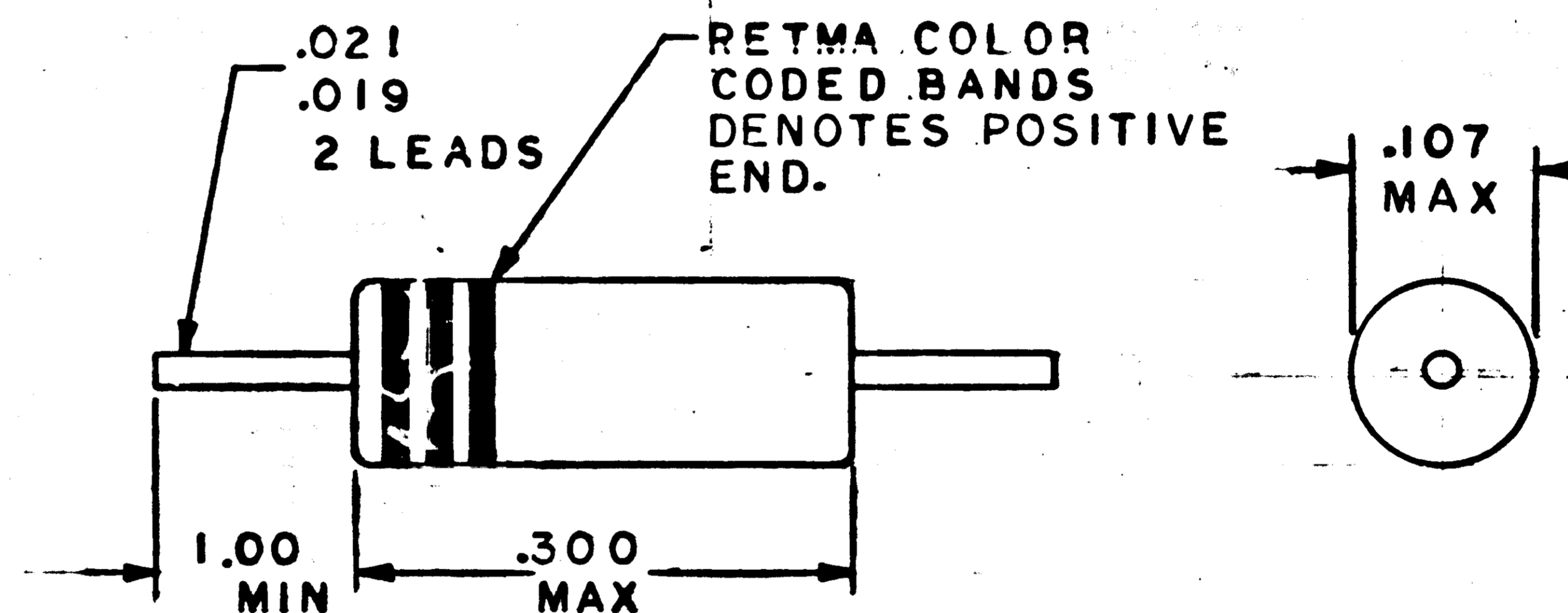
- (1) POWER DISSIPATION: 400 MILLIWATTS (SEE DERATING CURVE).
- (2) STORAGE TEMPERATURE:  $-65^{\circ}\text{C}$  TO  $+150^{\circ}\text{C}$ .
- (3) OPERATING TEMPERATURE:  $-65^{\circ}\text{C}$  TO  $+125^{\circ}\text{C}$  (AT 7.5 MA).
- (4) TEMPERATURE COEFFICIENT:  $\pm .002\%/^{\circ}\text{C}$  WITH A ZENER CURRENT OF 7.5 ma OVER THE TEMPERATURE RANGE OF  $-55^{\circ}\text{C}$  TO  $+100^{\circ}\text{C}$ .  $T_{REF} = 25^{\circ}\text{C}$
- (5) ENCLOSURE: GLASS, HERMETICALLY SEALED.

4. SPECIAL CONDITIONING BY SUPPLIER:

- A. UNITS SHALL BE BURNED IN FOR 240 HOURS AT THE FOLLOWING CONDITIONS:
  - (1) AMBIENT TEMPERATURE  $100^{\circ}\text{C} \pm 5^{\circ}\text{C}$  AT ZENER CURRENT OF 15 MA.
- B. THE MANUFACTURER SHALL RECORD THE ELECTRICAL CHARACTERISTICS PER TABLE I PRIOR TO AND FOLLOWING BURN IN. DATA SHALL BE SUPPLIED WITH THE PARTS.
- C. PARAMETRIC CHANGE LIMITS:
  - (1) ZENER VOLTAGE:  $\pm 1.0\%$  OF INITIAL MEASURED VALUE.
  - (2) DYNAMIC IMPEDANCE: ( $Z_{ZK}$ )  $\pm 10\%$  OF INITIAL MEASURED VALUE. ( $Z_{ZT}$ )  $\pm 10\%$  OF INITIAL MEASURED VALUE OR 1 OHM WHICH EVER IS GREATER.
  - (3) LEAKAGE CURRENT: SHALL NOT EXCEED 100% OF INITIAL MEASURED VALUE OR 10 MICROAMPERES, WHICHEVER IS GREATER.
- D. UNITS WHICH FAIL TO MEET ALL INITIAL REQUIREMENTS OR WHICH EXCEED THE SPECIFIED LIMITS FOR PARAMETRIC CHANGES FOLLOWING BURN IN SHALL NOT BE SHIPPED.

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

NOTES



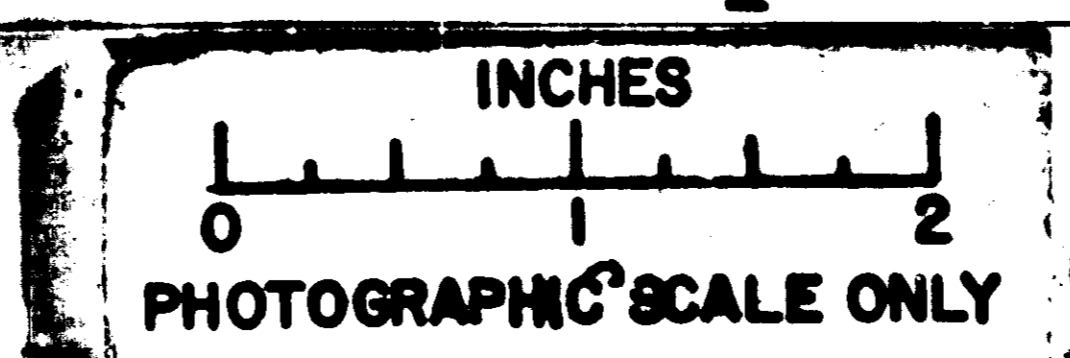
|                           |         |
|---------------------------|---------|
| C                         | C       |
| B                         | B       |
| A                         | A       |
| -                         | -       |
| SHEET 1                   | SHEET 2 |
| REVISION STATUS OF SHEETS |         |

(B) REPLACES REV A WITH CHANGES

|   |
|---|
| UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES |
| TOLERANCES ON FRACTIONS DECIMALS ANGLES             |
| $\pm$ $\pm$ $\pm$                                   |
| DO NOT SCALE THIS DRAWING                           |
| MATERIAL  |
| SEE NOTES   |
| HEAT TREATMENT                                      |
| FINAL FINISH  |
| NEXT ASSY USED ON APPLICATION                       |

|  |
|--|
| MIT INSTRUMENTATION LAB<br>CAMBRIDGE, MASS.          |
| DRAWN BY <i>[Signature]</i> DATE <i>11/17/62</i>     |
| CHECKED BY <i>[Signature]</i> DATE <i>11/17/62</i>   |
| APPROVAL <i>[Signature]</i> DATE <i>6/19/63</i>      |
| APPROVAL <i>[Signature]</i> DATE <i>12/10/62</i>     |
| NASA APPROVAL <i>[Signature]</i> DATE <i>6/19/63</i> |
| MIT APPROVAL <i>[Signature]</i> DATE <i>6/19/63</i>  |

|  |                         |                               |          |
|--|-------------------------|-------------------------------|----------|
| QTY REQD                                   | PART OR IDENTIFYING NO. | NOMENCLATURE OR DESCRIPTION   | FIND NO. |
|  |                         | SEMICONDUCTOR DEVICE, DIODE   |          |
| LIST OF MATERIALS                          |                         |                               |          |
| MANNED SPACECRAFT CENTER<br>HOUSTON, TEXAS |                         | SPECIFICATION CONTROL DRAWING |          |
| CODE IDENT NO.                             | SIZE                    | NASA DRAWING NO.              |          |
|  | C                       | 1006838                       |          |
| SCALE NONE                                 | WT                      | SHEET 1 OF 2                  |          |



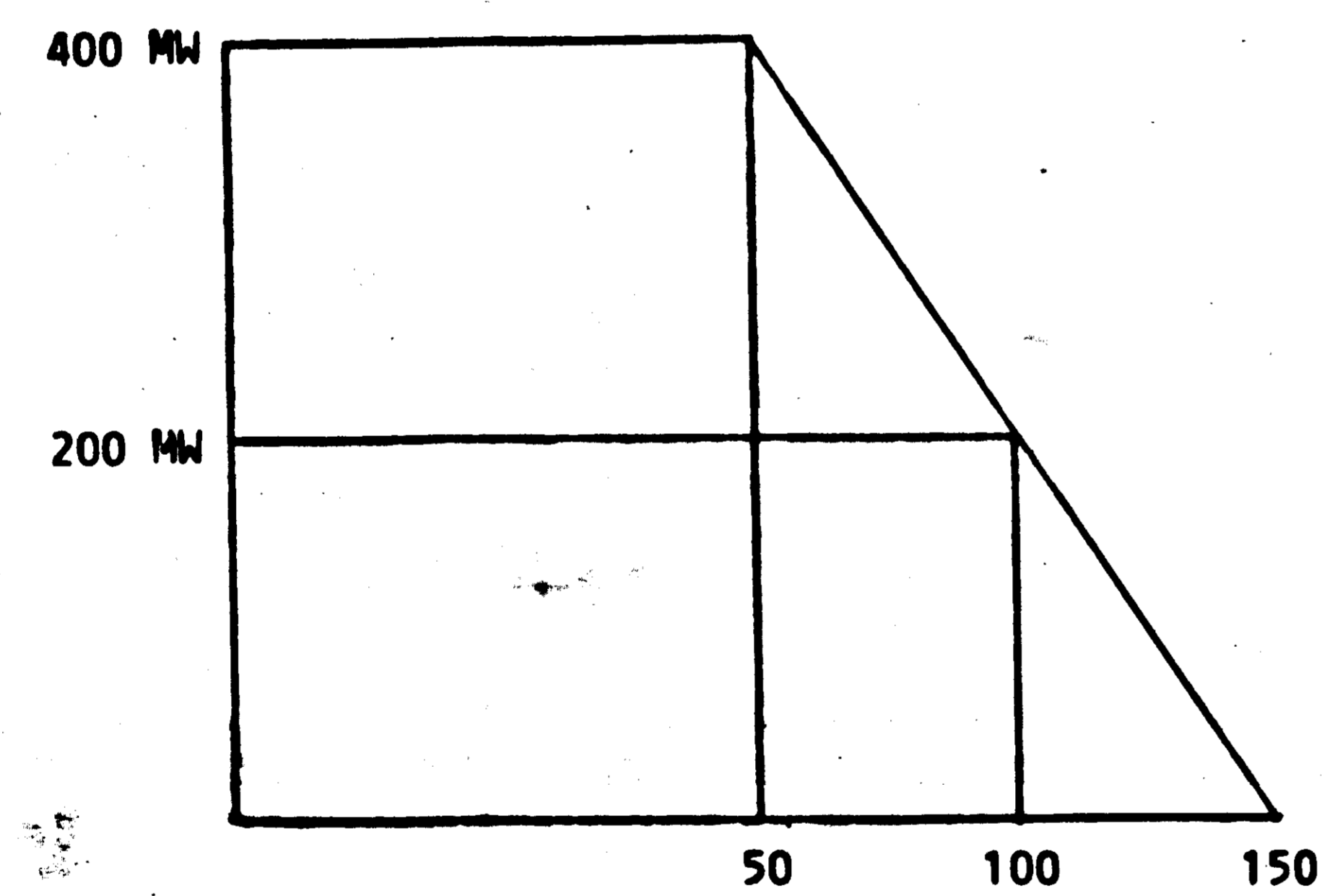
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|-----------|--|-----------|----------|
| SYM       | DESCRIPTION  | DATE      | APPROVAL |
| B         | REDRAWN AND UPGRADED TO CLASS "A" WITH CHANGES PER TDRR 1637 | 4/16/63   | J.F.L.   |
| C         | REVISED PER TDRR 04905                                       | 12/12/62  | J.W.     |

TABLE I

| PARAMETER       | CONDITIONS                                     | SYMBOL   | SPECIFICATION LIMITS |     |       |
|-----------------|--|----------|----------------------|-----|-------|
|                 |  |          | MIN                  | MAX | UNITS |
| ZENER VOLTAGE   | $I_{ZT} = 7.5 \text{ MA}$                      | $V_Z$    | 5.9                  | 6.5 | VOLTS |
| ZENER IMPEDANCE | $I_{ZT} = 7.5 \text{ MA}$                      | $Z_{ZT}$ | -                    | 10  | OHMS  |
| ZENER IMPEDANCE | $I_{ZK} = 1 \text{ MA}$                        | $Z_{ZK}$ | -                    | 150 | OHMS  |
| LEAKAGE CURRENT | $V_Z = 5.0 \text{ VOLTS}$                      | $I_{R1}$ | -                    | 10  | ua    |
| LEAKAGE CURRENT | $V_Z = 3.0 \text{ VOLTS @ } 100^\circ\text{C}$ | $I_{R2}$ | -                    | 100 | ua    |



(T<sub>A</sub>) AMBIENT TEMP (°C)  
DERATING CURVE

ⓑ REPLACES REV. A WITH CHANGES

MASTER

|   |                         |  |            |
|---|-------------------------|--|------------|
| QTY REQD  | PART OR IDENTIFYING NO. | NOMENCLATURE OR DESCRIPTION                          | FIND NO.   |
| LIST OF MATERIALS                               |                         |  |            |
| MIT INSTRUMENTATION LAB<br>CAMBRIDGE, MASS.     |                         | MANNED SPACECRAFT CENTER<br>HOUSTON, TEXAS           |            |
| DRAWN <i>[Signature]</i> DATE <i>4/16/63</i>    |                         | SEMICONDUCTOR DEVICE, DIODE                          |            |
| CHECKED <i>[Signature]</i> DATE <i>4/16/63</i>  |                         | SPECIFICATION CONTROL DRAWING                        |            |
| APPROVAL <i>[Signature]</i> DATE <i>4/16/63</i> |                         | NASA DRAWING NO. 1006838                             |            |
| HEAT TREATMENT                                  |                         | CODE IDENT NO.                                       | SIZE       |
| MATERIAL  |                         |  | C          |
| NEXT ASSY                                       |                         | NASA APPROVAL <i>[Signature]</i> DATE <i>4/16/63</i> | SCALE NONE |
| USED ON   |                         | MIT APPROVAL <i>[Signature]</i> DATE <i>4/16/63</i>  | WT         |
| APPLICATION                                     |                         | SHEET 2 OF 2   |            |

