**REQUIREMENTS:**

1. **GENERAL:**
   a. Interpret drawing in accordance with standards prescribed by MIL-D-70327.
   b. Units shall meet the general specification requirements of MIL-S-19500 except as modified herein.
   c. Suppliers shall conform to the quality assurance provisions of ND 101504, Class 2.
   d. The parts shall be capable of meeting the qualification requirements of ND 100001.
   e. Part marking: units shall be marked, in accordance with ND 102207 with the manufacturer's name, type designation, lot code, and NASA part number (drawing number and revision letter). Polarity shall also be marked.
   f. Preparation for delivery: unit packaging and packing shall be in accordance with MIL-P-24941, Level A. Units shall not be packed in any manner which may cause damage to leads. Package marking shall be in accordance with ND 102215.

2. **INSPECTION AND ACCEPTANCE:**
   a. Mechanical requirements:
      1. Dimensions: as delineated herein.
      2. Terminal: lead shall be alloy No. 52 solder dipped.
      3. Marking: as specified herein.
   b. Electrical characteristics: per Table 1.
      1. Reverse current ($I_R$)
      2. Forward voltage ($V_F$)
      3. Recovery time ($t_R$)
      4. Maximum overshoot ($I_{os}$)
      5. Reverse breakdown ($V_{BR}$)
   c. Vendor supplied data: Each shipment of parts shall be accompanied by the following data:
      1. Certificate of compliance with lead material.

3. **DESIGN REQUIREMENTS:**
   a. Electrical ratings at 25°C:
      1. Maximum RMS voltage ($V_{rms}$): 140 volts (into resistive load).
      3. Maximum forward surge current: 150 amps, 1/2 cycle, 60 CPS, operating at case temperature ($T_c$) 100°C.
   b. Temperature ratings:
      1. Operating case temperature ($T_c$) without derating: -65°C to +100°C.
      2. Storage temperature: -65°C to +75°C.
      3. Thermal resistance: junction to case 2°C/Watt.
   c. Construction:
      1. Semiconductor material: Silicon.
      2. Case material: Nickel plated steel.

**PACKAGE REF D-4**

**SEMICONDUCTOR DEVICE, RECTIFIER, POWER-FAST SWITCHING**

**SPECIFICATION CONTROL DRAWING**

**REVISIONS**

**INITIAL RELEASE CLASS A PER TORR 11/14/72**
### Table 1 - Electrical Characteristics

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Limits</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reverse Voltage, Peak</td>
<td>$V_{r}$</td>
<td>200</td>
<td>Volts</td>
</tr>
<tr>
<td>Reverse Current</td>
<td>$I_{r}$</td>
<td>10</td>
<td>mA</td>
</tr>
<tr>
<td>Forward Voltage</td>
<td>$V_{f}$</td>
<td>1.3</td>
<td>VDC</td>
</tr>
<tr>
<td>Recovery Time, Reverse</td>
<td>$t_{rr}$</td>
<td>200</td>
<td>Nano-sec</td>
</tr>
<tr>
<td>Peak Overshoot</td>
<td>$I_{op}$</td>
<td>3</td>
<td>A</td>
</tr>
</tbody>
</table>

**Note:** All test conditions $T_C = 25^\circ C \pm 5^\circ C$ unless specified.

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**Figure 1: Typical Recovery Pattern**

- Zero Current-Ref.

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**Figure 2: Recovery Time Test Circuit**

- Batteries - 5 Burgess 4Ah (6 Volt) Series
- $C_1, C_2$ - 1 UF @ 10V 500 VDC Oil Filled
- $R_1$ - 10 K 2 W 5%
- $R_3$ - 30 ohm 30 watts 10K Carbon Film Non-Inductive
- $R_4$ - 9 ohm 10 W 10% Carbon Film, Non-Inductive
- $K_1$ - HSP-1002 Clare 14V
- $F_1$ - SLO-601-1 AMP
- Scope - Tektronix 541 or 545 with 53/54 Preamplifier
- Power Supply - 36 Volts at 1.0 Amps Minimum, Ripple 3 Millivolts or less, Output Impedance 1/2 Ohm Maximum, DC to 2000 CPS.