



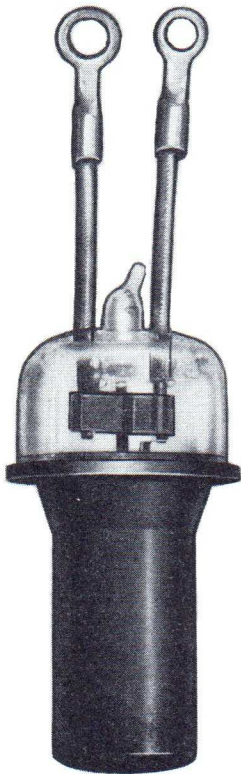
3

# MINIATURIZED POWER DIODES

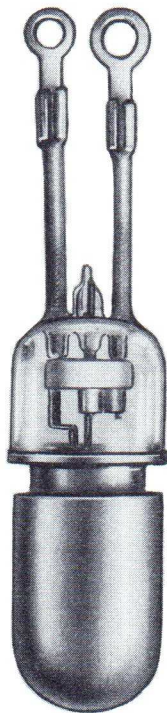
HIGH VACUUM THERMIONIC TYPES

ILLUSTRATIONS ARE ACTUAL SIZE

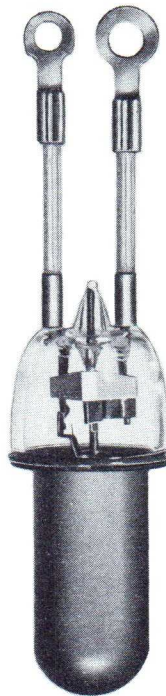
3  
1958



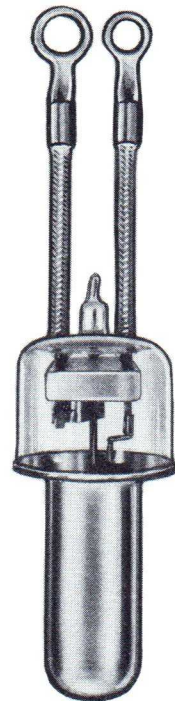
TYPE 554



TYPE 6339



TYPE 589



TYPE 545

UNITED ELECTRONICS offers these four external anode rectifier-clipper diode tubes for missile and other special airborne instrumentation.

It will be worthwhile for engineers engaged in evaluation of *semi-conductors vs. tubes* in such usage, to watch for new miniaturized high vacuum power tubes now under development by UNITED, with severe high temperature environment in mind.

# UNITED ELECTRONICS COMPANY

42 SPRING STREET

Since 1934

NEWARK 4, N. J.



# MINIATURIZED THERMIONIC POWER DIODES

| CHARACTERISTICS AND RATINGS | RECTIFIER TYPE<br><b>545</b> | CLIPPER DIODE RECTIFIER TYPE<br><b>554</b> | CLIPPER DIODE RECTIFIER TYPE<br><b>589</b> | CLIPPER DIODE RECTIFIER TYPE<br><b>6339</b> |
|-----------------------------|------------------------------|--|--|---|
|-----------------------------|------------------------------|--|--|---|

## MECHANICAL DATA

### Nominal Overall Dimensions:

|   |                |                |                |                |
|---|----------------|----------------|----------------|----------------|
| Length (less Leads) — Inches.....         | 1.87           | 2.35           | 1.87           | 1.96           |
| Lead Lengths — Inches .....               | 1.50           | 1.50           | 1.50           | 1.50           |
| Diameter — Inches .....                   | 0.87           | 1.13           | 0.87           | 0.87           |
| <b>Anode Dimensions:</b>                  |                |                |                |                |
| Contact Length — Inches .....             | 0.75           | 1.00           | 0.75           | 0.75           |
| Diameter — Inches .....                   | 0.49           | 0.68           | 0.59           | 0.75           |
| Bulb .....                                | Per Drawing    | Per Drawing    | Per Drawing    | Per Drawing    |
| Mounting Position Supported by Anode..... | Any            | Any            | Any            | Any            |
| Filament Terminals .....                  | Per Drawing    | Per Drawing    | Per Drawing    | Per Drawing    |
| Type of Cooling.....                      | Liquid or Air  | Liquid or Air  | Liquid or Air  | Liquid or Air  |
| Net Weight .....                          | 0.7 oz.        | 1.2 oz.        | 0.8 oz.        | 1.1 oz.        |
| Shock Rating .....                        | 300 g          | 300 g          | 300 g          | 300 g          |
| Vibration Rating 10-500 cps.....          | 10 g           | 10 g           | 10 g           | 10 g           |
| Maximum Bulb Temperature.....             | 265°C          | 265°C          | 265°C          | 265°C          |
| Maximum Coolant Temperature Range.....    | —60°C to 165°C | —60°C to 165°C | —60°C to 165°C | —60°C to 165°C |

## ELECTRICAL DATA

### General:

|                            |              |              |              |              |
|----------------------------|--------------|--------------|--------------|--------------|
| Heater Voltage — Vac ..... | 6.3          | 6.3          | 6.3          | 6.3          |
| Heater Current — Aac ..... | 1.3          | 3.5          | 1.6          | 1.6          |
| Cathode .....              | Unipotential | Unipotential | Unipotential | Unipotential |
| Cathode Preheat Time.....  | 60 sec.      | 60 sec.      | 60 sec.      | 60 sec.      |

### Maximum Ratings:

#### Liquid Cooled Rectifier:

|                              |         |          |          |          |
|------------------------------|---------|----------|----------|----------|
| 1. Peak Inverse Voltage..... | 5 kv    | 17 kv    | 16 kv    | 16 kv    |
| Peak Plate Current.....      | 160 ma  | 470 ma   | 250 ma   | 250 ma   |
| Average Plate Current.....   | 50 mAac | 150 mAac | 65 mAac  | 65 mAac  |
| 2. Peak Inverse Voltage..... | —       | —        | 10 kv    | 10 kv    |
| Peak Plate Current.....      | —       | —        | 400 ma   | 400 ma   |
| Average Plate Current.....   | —       | —        | 100 mAac | 100 mAac |

#### Radiation Cooled Rectifier\*\*:

|                            |         |         |         |         |
|----------------------------|---------|---------|---------|---------|
| Peak Inverse Voltage.....  | 5 kv    | 17 kv   | 16 kv   | 16 kv   |
| Peak Plate Current.....    | 65 ma   | 225 ma  | 125 ma  | 125 ma  |
| Average Plate Current..... | 20 mAac | 70 mAac | 33 mAac | 33 mAac |

#### Liquid Cooled Clipper Diode:

|                               |   |          |          |          |
|-------------------------------|---|----------|----------|----------|
| Peak Inverse Voltage.....     | * | 16 kv    | 10 kv    | 10 kv    |
| Peak Plate Current.....       | — | 12 a     | 8 a      | 8 a      |
| Root Mean Square Current..... | — | 450 mAac | 300 mAac | 300 mAac |

#### Radiation Cooled Clipper Diode\*\*:

|                               |   |          |          |          |
|-------------------------------|---|----------|----------|----------|
| Peak Inverse Voltage.....     | * | 16 kv    | 10 kv    | 10 kv    |
| Peak Plate Current.....       | — | 12 a     | 8 a      | 8 a      |
| Root Mean Square Current..... | — | 225 mAac | 150 mAac | 150 mAac |

\*Clipper Diode ratings for type 545 available upon request.

\*\*Higher ratings apply if heat sink is used.

# TENTATIVE RATINGS

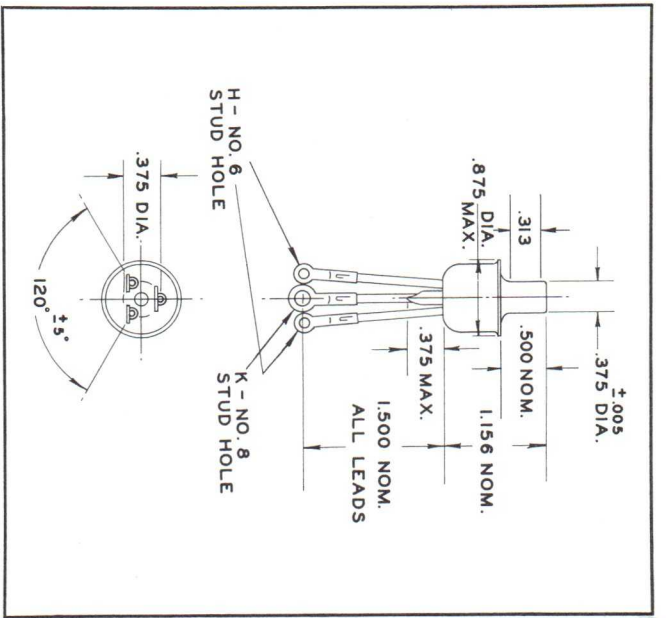
## NEW EXTERNAL ANODE DIODES

| CHARACTERISTICS & RATINGS             | RECTIFIER<br>TYPE<br>X-4 | RECTIFIER<br>CLIPPER<br>541       | RECTIFIER<br>CLIPPER<br>548  | RECTIFIER<br>TYPE<br>552     | RECTIFIER<br>CLIPPER<br>7159 |
|---------------------------------------|--------------------------|-----------------------------------|------------------------------|------------------------------|------------------------------|
| <b>MECHANICAL DATA</b>                |                          |                                   |                              |                              |                              |
| Dimensions .....                      | Per<br>Drawing           | Per<br>Drawing                    | Per<br>Drawing               | Per<br>Drawing               | Per<br>Drawing               |
| Mounting Position .....               | Any                      | Any                               | Any                          | Any                          | Any                          |
| Type of Cooling .....                 | Radiation                | Liquid                            | Liquid                       | Radiation                    | Liquid                       |
| Shock Rating .....                    | 300 g                    | —                                 | 300 g                        | 300 g                        | 300 g                        |
| Vibration Ratings 10-500<br>cps ..... | 10 g                     | —                                 | 10 g                         | 10 g                         | 10 g                         |
| Maximum Bulb Temperature .....        | 265°C                    | 265°C                             | 265°C                        | 265°C                        | 265°C                        |
| Coolant Temperature .....             | —                        | -60°C+165°C                       | -60°C+165°C                  | —                            | -60°C+165°C                  |
| Net Weight .....                      | 0.5 oz.                  | 3.6 oz.                           | 5.3 oz.                      | 0.7 oz.                      | 1.4 oz.                      |
| <b>ELECTRICAL DATA</b>                |                          |                                   |                              |                              |                              |
| <b>Rectifier Ratings</b>              |                          |                                   |                              |                              |                              |
| Heater Voltage Vac.....               | 6.3                      | 5.0                               | 11.5                         | 2.5                          | 6.3                          |
| Heater Current Aac.....               | .63                      | 14.0                              | 15.25                        | 1.67                         | 3.5                          |
| Cathode .....                         | coated<br>unipotential   | thoriated<br>tungsten<br>filament | bonded<br>thoria<br>filament | bonded<br>thoria<br>filament | coated<br>unipotential       |
| Peak Inverse Voltage.....             | 3 kv                     | 25 kv                             | 33 kv                        | 20 kv                        | 17 kv                        |
| Peak Plate Current.....               | .280 a                   | 2.5 a                             | 2.7 a                        | .04 a                        | .470 a                       |
| Average Plate Current.....            | 70 mAdc                  | 500 mAdc                          | 860 mAdc                     | 10 mAdc                      | 150 mAdc                     |
| <b>Clipper Diode Ratings</b>          |                          |                                   |                              |                              |                              |
| Heater Voltage Vac.....               | —                        | 5.4                               | 11.5                         | —                            | 6.3                          |
| Heater Current Aac.....               | —                        | 15.0                              | 15.25                        | —                            | 3.5                          |
| Peak Inverse Voltage.....             | —                        | 25 kv                             | 33 kv                        | —                            | 16 kv                        |
| Peak Plate Current.....               | —                        | 12 a                              | 50 a                         | —                            | 12 a                         |
| RMS Current .....                     | —                        | 800 mAac                          | 1.25 Aac                     | —                            | 450 mAac                     |

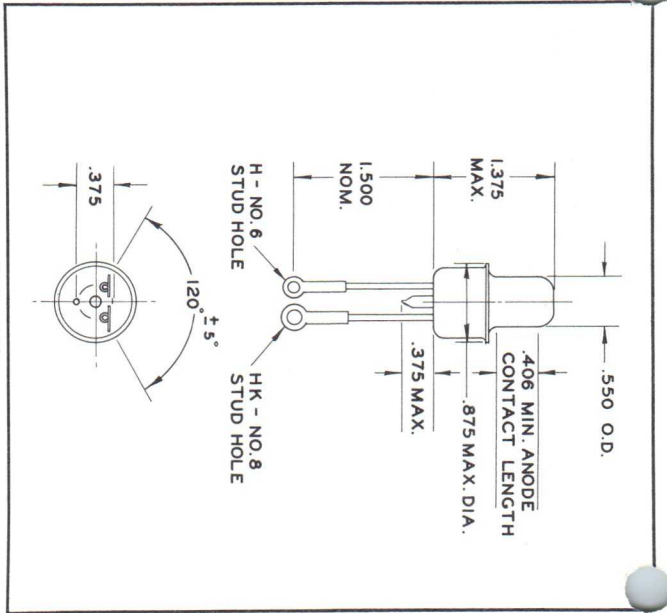


### UNITED ELECTRONICS COMPANY

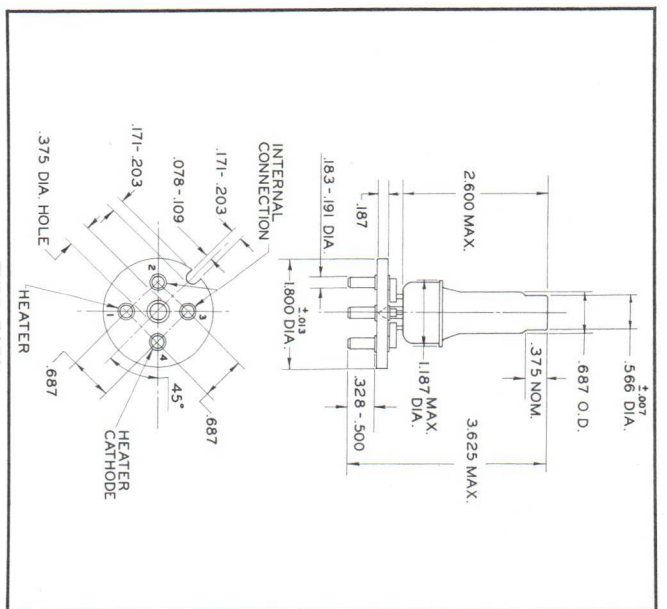
42 SPRING STREET • NEWARK 4, N. J.  
HUMBOLDT 2-0576



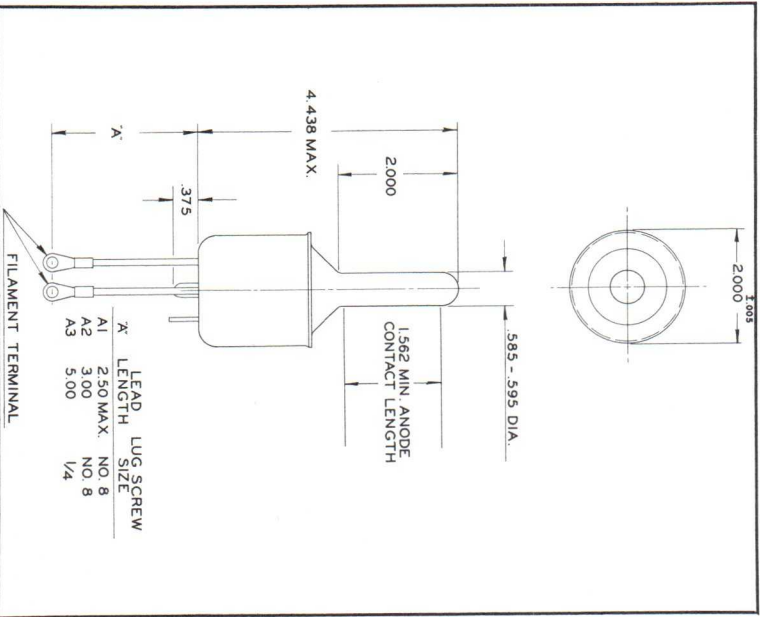
TYPE X-4



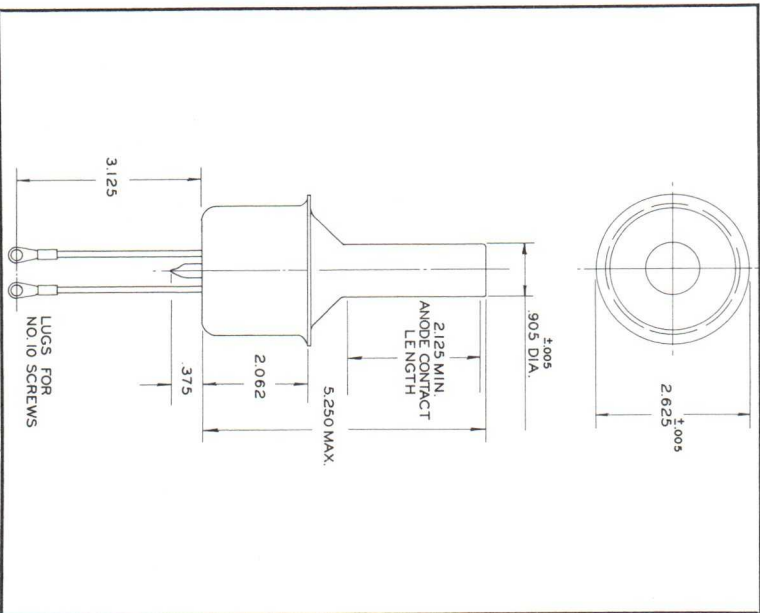
TYPE 552



TYPE 7159



TYPE 541



TYPE 548

Type 7159 is physically and electrically interchangeable with type 719A in applications where the peak inverse voltage does not exceed 17 kv.

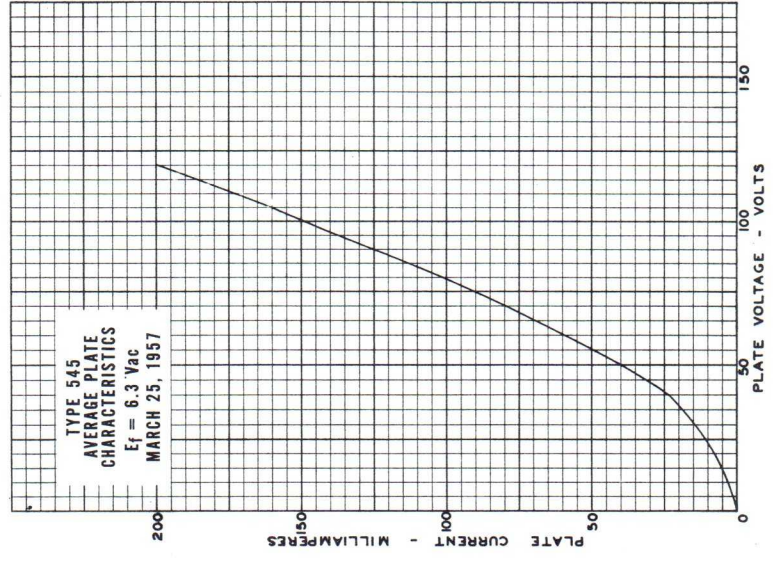
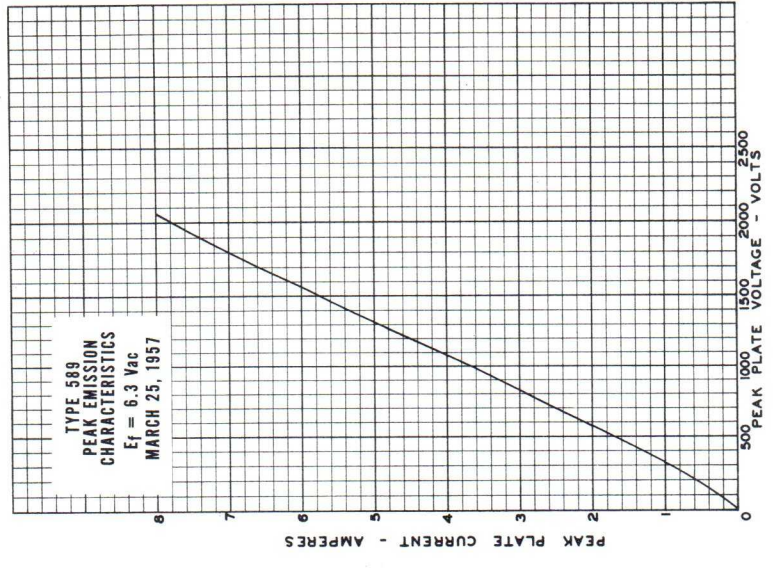
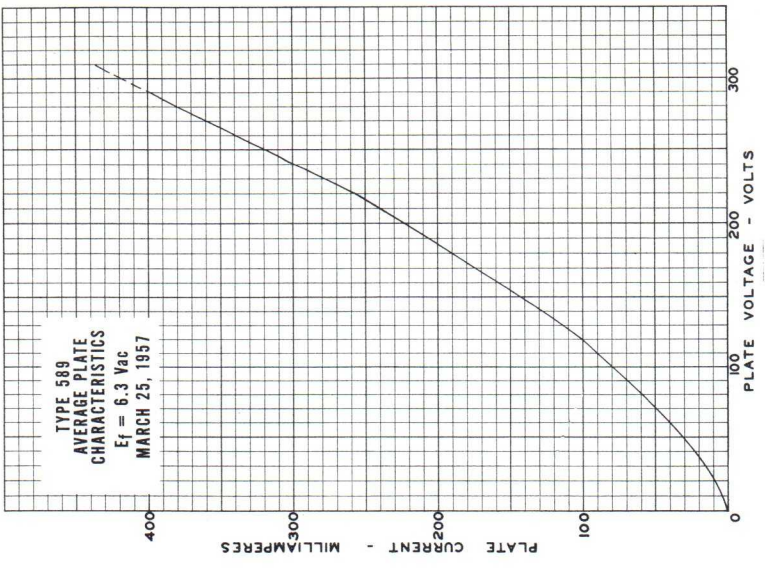
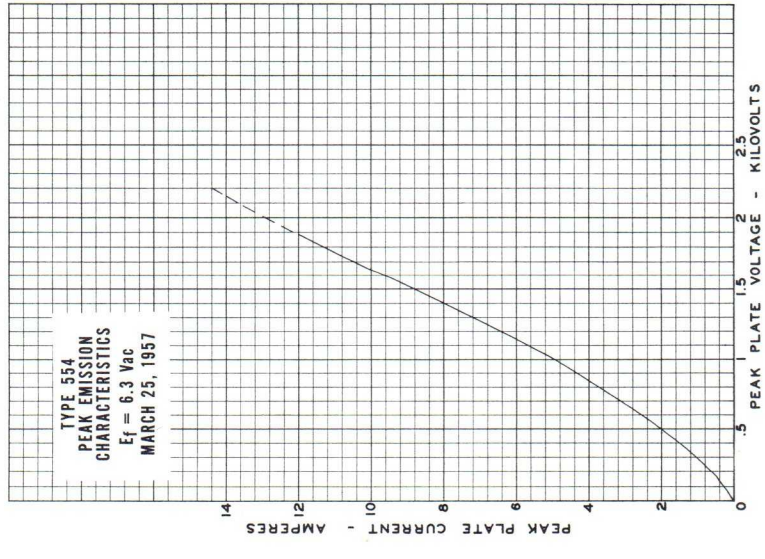
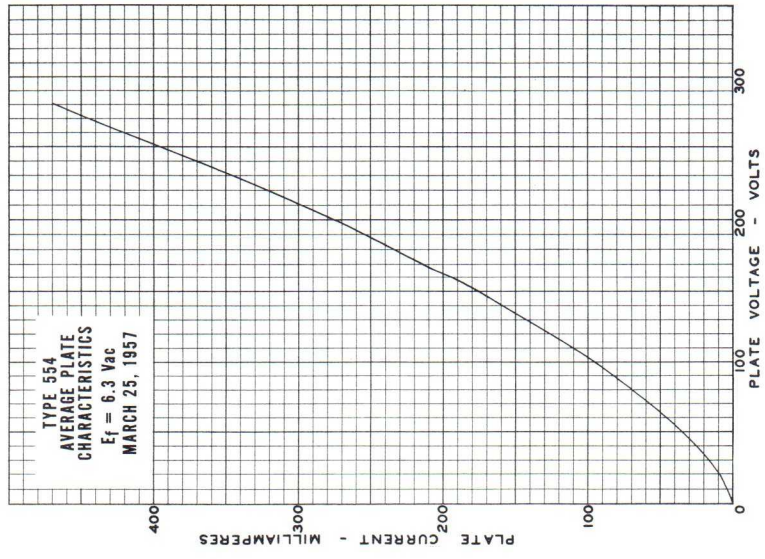
For use at maximum ratings radiating fins are required on liquid cooled types.

# CHARACTERISTICS CURVES

## TYPES

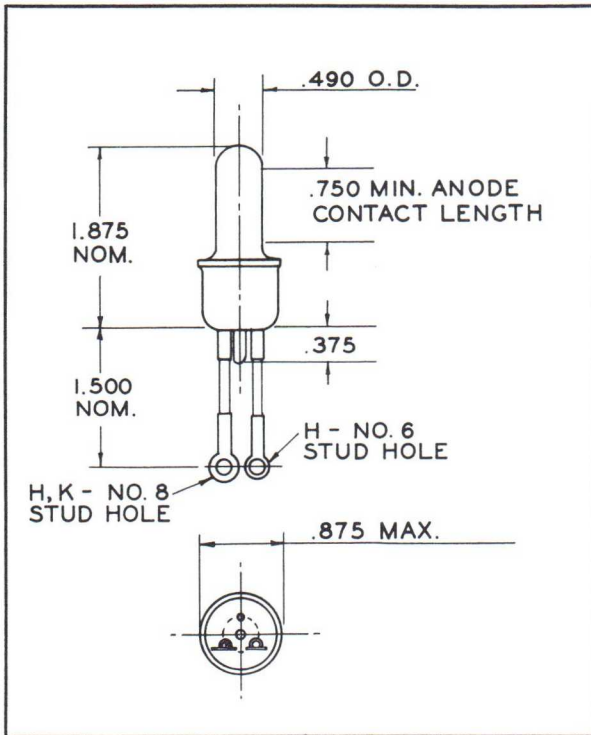
- 545
- 554
- 589
- \*6339

\*589 curves apply

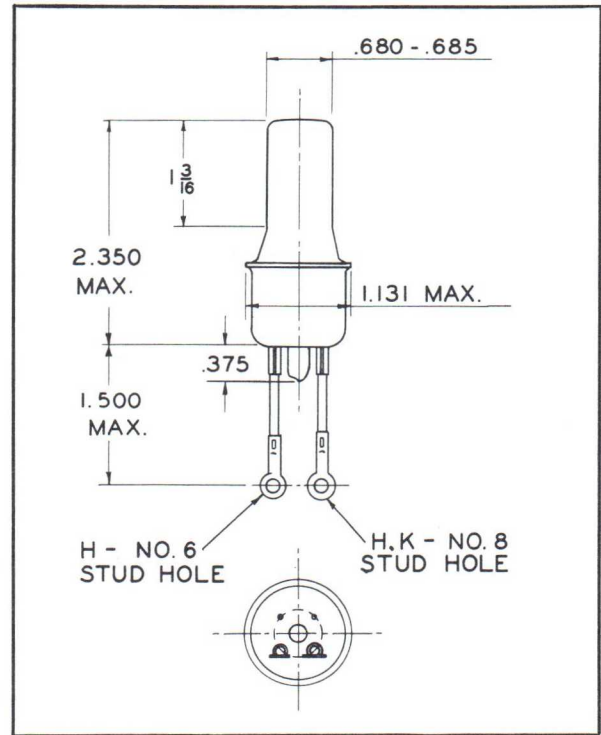


# OUTLINE DRAWINGS

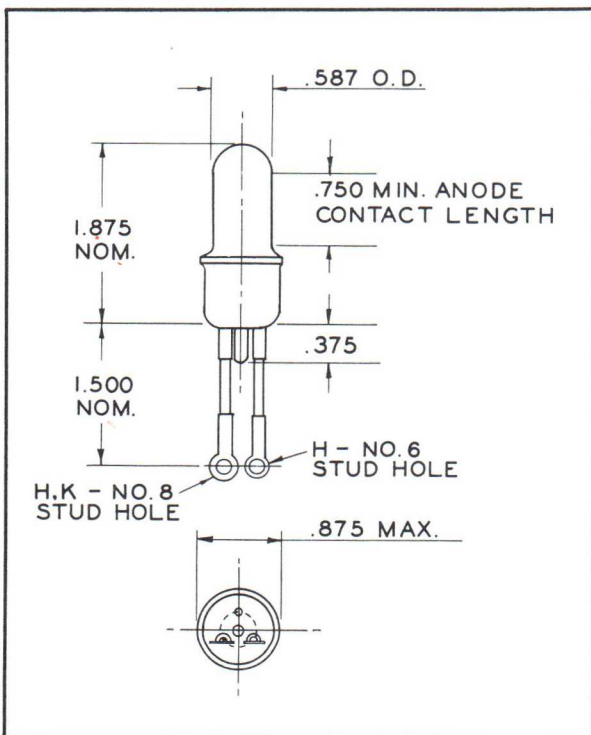
## TYPE 545



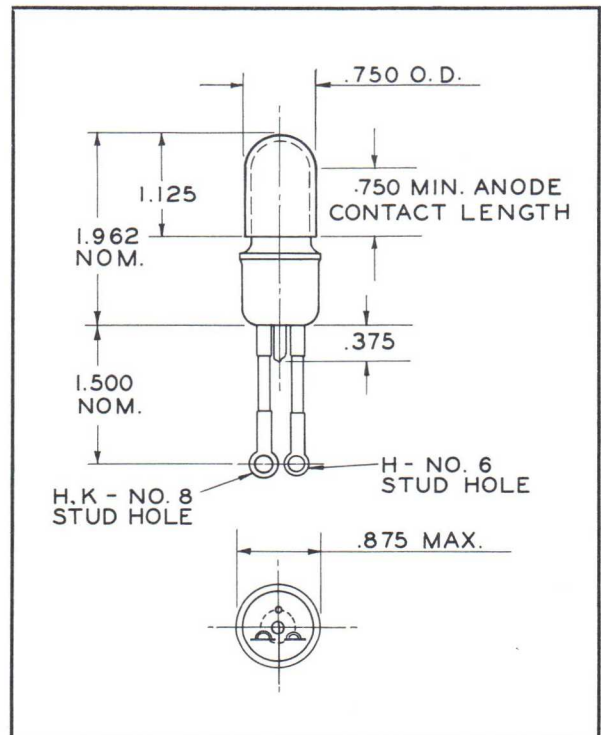
## TYPE 554



## TYPE 589



## TYPE 6339



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