

2N6138 - 1

Silicon  
Programmable  
Unijunction  
Transistor  
(PUT)

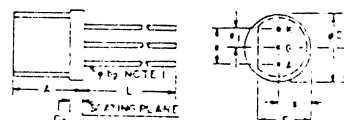
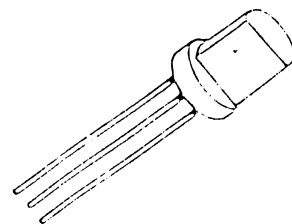


absolute maximum ratings: (25°C unless otherwise specified)

|                                                                        |                 |
|------------------------------------------------------------------------|-----------------|
| Voltage                                                                |                 |
| *Gate-Cathode Forward Voltage                                          | +40 V           |
| *Gate-Cathode Reverse Voltage                                          | -5 V            |
| *Gate-Anode Reverse Voltage                                            | +40 V           |
| *Anode-Cathode Voltage                                                 | ±40 V           |
| Current                                                                |                 |
| *DC Anode Current†                                                     | 150 mA          |
| Peak Anode, Recurrent Forward<br>(100 μsec pulse width, 1% duty cycle) | 1 A             |
| *(20 μsec pulse width, 1% duty cycle)                                  | 2 A             |
| Peak Anode, Non-recurrent Forward<br>(10 μsec)                         | 5 A             |
| *Gate Current                                                          | ±20 mA          |
| Capacitive Discharge Energy††                                          | 250 μJ          |
| Power                                                                  |                 |
| *Total Average Power†                                                  | 300 mW          |
| Temperature                                                            |                 |
| *Operating Ambient†                                                    |                 |
| Temperature Range                                                      | -50°C to +100°C |

†Derate currents and powers 1%/°C above 25°C

††E = ½ CV² capacitor discharge energy with no current limiting



| SYMBOL | INCHES |      | MILLIMETERS |      |
|--------|--------|------|-------------|------|
|        | MIN    | MAX  | MIN         | MAX  |
| A      | .170   | .285 | 4.32        | 7.25 |
| #12    | .018   | .018 | .46         | .46  |
| #10    | .165   | .265 | 4.15        | 6.73 |
| E      | .110   | .155 | 2.79        | 3.94 |
| #      | .045   | .105 | 1.14        | 2.67 |
| #1     | .045   | .055 | 1.14        | 1.40 |
| L      | .500   |      | 12.70       |      |
| C2     |        | .075 |             | 1.9  |
| #      | .045   | .115 | 1.14        | 2.92 |

NOTE: LEAD DIAMETER IS CONTROLLED IN THE ZONE BETWEEN .070 AND .250 FROM THE SEATING PLANE. BETWEEN .250 AND END OF LEAD A MAX OF .021 IS ALLOWED.

electrical characteristics: (25°C unless otherwise specified)

|                                                                                                                 | Fig. No.    | Min.     | Max.            |                |
|-----------------------------------------------------------------------------------------------------------------|-------------|----------|-----------------|----------------|
| *Peak Current ( $V_s = 10$ Volts)<br>( $R_G = 1$ Meg)<br>( $R_G = 10$ k)                                        | $I_P$ 3     |          | 2<br>5          | μA<br>μA       |
| *Offset Voltage ( $V_s = 10$ Volts)<br>( $R_G = 1$ Meg)<br>( $R_G = 10$ k)                                      | $V_T$ 3     | .2<br>.2 | 1.6<br>.6       | Volts<br>Volts |
| *Valley Current ( $V_s = 10$ Volts)<br>( $R_G = 1$ Meg)<br>( $R_G = 10$ k)<br>( $R_G = 200 \Omega$ )            | $I_V$ 3     |          | 50<br>70<br>1.5 | μA<br>μA<br>mA |
| Anode Gate-Anode Leakage Current<br>*( $V_s = 40$ Volts, $T = 25^\circ\text{C}$ )<br>( $T = 75^\circ\text{C}$ ) | $I_{GAO}$ 4 |          | 10<br>100       | nA<br>nA       |
| Gate to Cathode Leakage Current<br>( $V_s = 40$ Volts, Anode-cathode short)                                     | $I_{GKS}$ 5 |          | 100             | nA             |
| *Forward Voltage ( $I_P = 50$ mA)                                                                               | $V_F$       |          | 1.5             | Volts          |
| *Pulse Output Voltage                                                                                           | $V_O$ 6     | 6        |                 | Volts          |
| Pulse Voltage Rate of Rise                                                                                      | $t_r$ 6     |          | 80              | nsecs.         |

