

## NTE593 Silicon Diode, High Speed Switch

### **Description:**

The NTE593 is a silicon epitaxial high-speed diode in an SOT-23 type surface mount package. This device is intended for high-speed switching in hybrid thick-film circuits.

### **Absolute Maximum Ratings:**

|   |                |
|---|----------------|
| Continuous Reverse Voltage, $V_R$ .....   | 75V            |
| Repetitive Peak Reverse Voltage, $V_{RRM}$ .....  | 85V            |
| Non-Repetitive Peak Forward Current ( $t = 1s$ ), $I_{FSM}$ .....                           | 500mA          |
| Average Rectified Forward Current (Average over any 20ms period, Note 1), $I_{F(AV)}$ ..... | 250mA          |
| DC Forward Current ( $T_A \leq +25^\circ C$ , Note 2), $I_F$ .....                          | 250mA          |
| Repetitive Peak Forward Current, $I_{FRM}$ .....  | 250mA          |
| Total Power Dissipation ( $T_A \leq +25^\circ C$ ), $P_{tot}$ .....                         | 200mW          |
| Operating Junction Temperature, $T_J$ .....   | +150°C         |
| Storage Temperature Range, $T_{stg}$ .....  | -65° to +150°C |
| Thermal Resistance, Junction-to-Ambient (Note 2), $R_{thJA}$ .....                          | 430K/W         |

Note 1. Measured under pulse conditions:  $t_p \leq 0.5ms$ ,  $I_{F(AV)} = 150mA$ ,  $t_{(av)} \leq 1ms$ , for sinusoidal operation.

Note 2. Mounted on a ceramic substrate of .314 (8mm) x .393 (10mm) x .027 (0.7mm).

### **Electrical Characteristics:** ( $T_J = +25^\circ C$ unless otherwise specified)

| Parameter  | Symbol   | Test Conditions                                | Min | Typ | Max  | Unit    |
|--|----------|--|-----|-----|------|---------|
| Forward Voltage  | $V_F$    | $I_F = 1mA$                                    | -   | -   | 715  | mV      |
|  |          | $I_F = 10mA$                                   | -   | -   | 855  | mV      |
|  |          | $I_F = 50mA$                                   | -   | -   | 1000 | mV      |
|  |          | $I_F = 150mA$                                  | -   | -   | 1250 | mV      |
| Reverse Current  | $I_R$    | $V_R = 75V$                                    | -   | -   | 1    | $\mu A$ |
|  |          | $V_R = 75V, T_J = +150^\circ C$                | -   | -   | 50   | $\mu A$ |
| Diode Capacitance  | $C_d$    | $V_R = 0, f = 1MHz$                            | -   | -   | 2    | pF      |
| Reverse Recovery Time<br>(When switched from<br>$I_F = 30mA$ to $I_R = 30mA$ ) | $t_{rr}$ | measured at $I_R = 1mA$ ,<br>$R_L = 100\Omega$ | -   | -   | 6    | ns      |
| Recovery Charge<br>(When switched from<br>$I_F = 10mA$ to $V_R = 5V$ )         | $Q_s$    | $R_L = 100\Omega$                              | -   | -   | 45   | pC      |

