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NTE610 thru NTE614 Voltage Variable Capacitance Diode (Tuning Diode)

Description:

These diodes are designed for high volume requirements of FM Radio and TV tuning and AFC, general frequency control and tuning applications; providing solid-state reliability in replacement of mechanical tuning methods.

Features:

- High Q with Guaranteed Minimum Values
- Controlled and Uniform Tuning Ratio
- Standard Capacitance Tolerance – 10%

Absolute Maximum Ratings:

Reverse Voltage, V_R 30V
 Forward Current, I_F 200mA
 Device Dissipation ($T_A = 25^\circ\text{C}$), P_D 280mW
 Derate Above 25°C 2.8mW/ $^\circ\text{C}$

Note 1. The **NTE611** is a **discontinued** device and no longer available.

Electrical Characteristics: ($T_A = +25^\circ\text{C}$ unless otherwise specified)

| Parameter | Symbol | Test Conditions | Min | Typ | Max | Unit |
|---|-------------|---|------|------|------|-----------------------|
| Reverse Breakdown Voltage | $V_{(BR)R}$ | $I_R = 10\mu\text{A}$ | 30 | – | – | V |
| Reverse Voltage Leakage Current | I_R | $V_R = 25\text{V}, T_A = +25^\circ\text{C}$ | – | – | 0.1 | μA |
| Series Inductance | L_S | $f = 250\text{MHz}, \text{Lead Length} \sim 1/16''$ | – | 6 | – | nH |
| Case Capacitance | C_C | $f = 1\text{MHz}, \text{Lead Length} \sim 1/16''$ | – | 0.18 | – | pF |
| Diode Capacitance Temperature Coefficient | TC_C | $V_R = 4\text{V}, f = 1\text{MHz}$ | – | 280 | 400 | ppm/ $^\circ\text{C}$ |
| Diode Capacitance | C_T | $V_R = 4\text{V}, f = 1\text{MHz}$ | 6.1 | 6.8 | 7.5 | pF |
| NTE610 | | | 9.0 | 10.0 | 11.0 | pF |
| NTE611 | | | 10.8 | 12.0 | 13.2 | pF |
| NTE612 | | | | | | |

| Parameter | Symbol | Test Conditions | Min | Typ | Max | Unit |
|-----------|--------|-----------------|------|------|------|------|
| NTE613 | | | 19.8 | 22.0 | 24.2 | pF |
| NTE614 | | | 29.7 | 33.0 | 36.3 | pF |

Electrical Characteristics (Cont'd): ($T_A = +25^\circ\text{C}$ unless otherwise specified)

| Parameter | Symbol | Test Conditions | Min | Typ | Max | Unit |
|---------------------------|--------|-------------------------------------|-----|-----|-----|------|
| Figure of Merit NTE610 | Q | $V_R = 4\text{V}, f = 50\text{MHz}$ | 450 | - | - | |
| NTE611, NTE612 | | | 400 | - | - | |
| NTE613 | | | 350 | - | - | |
| NTE614 | | | 200 | - | - | |
| Tuning Ratio NTE610 | TR | $C_2/C_{30}, f = 1\text{MHz}$ | 2.5 | 2.7 | 3.2 | |
| NTE611, NTE612, NTE613 | | | 2.5 | 2.9 | 3.2 | |
| NTE614 | | | 2.5 | 3.0 | 3.2 | |

