

## 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  $25^\circ\text{C}$  ..... 2.8mW/ $^\circ\text{C}$

Note 1. The **NTE611** & **NTE612** are **discontinued** devices 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	$\mu\text{A}$
Series Inductance	$L_S$	$f = 250\text{MHz}$ , Lead Length ~ 1/16"	–	6	–	nH
Case Capacitance	$C_C$	$f = 1\text{MHz}$ , Lead Length ~ 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			19.8	22.0	24.2	pF
NTE613			29.7	33.0	36.3	pF
NTE614						

**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	

