

## NTE617 Varactor Diode

### **Description:**

The NTE617 is a dual voltage-variable capacitance diode designed for FM tuning, general frequency control and tuning, or any top-of-the-line application requiring back-to-back diode configurations for minimum signal distortion and detuning. This device is supplied in the popular TO92 type plastic package for high volume, economical requirements of consumer and industrial applications.

### **Features:**

- High Figure of Merit:  $Q = 140$  (Typ) @  $V_R = 3V$ ,  $f = 100MHz$
- Guaranteed Capacitance Range:  $34 - 39pF$  @  $V_R = 3V$
- Dual Diodes – Save Space and Reduce Cost
- Monolithic Chip Provides Near Perfect Matching: Guaranteed  $\pm 1\%$  (Max) Over Specified Tuning Range

### **Absolute Maximum Ratings (Each Device):**

Reverse Voltage, $V_R$ .....	32V
Forward Current, $I_F$ .....	200mA
Total Power Dissipation ( $T_A = +25^\circ C$ ), $P_D$ .....	280mW
Derate Above $25^\circ C$ .....	2.8mW/ $^\circ C$
Junction Temperature, $T_J$ .....	$+125^\circ C$
Storage Temperature Range, $T_{stg}$ .....	$-65^\circ$ to $+150^\circ C$

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Reverse Breakdown Voltage	$BV_R$	$I_R = 10\mu A$	32	–	–	V
Reverse Voltage Leakage Current	$I_R$	$T_A = +25^\circ C$	–	–	50	nA
		$T_A = +60^\circ C$	–	–	500	nA
Series Inductance	$L_S$	$f = 250MHz$ , Lead Length $\approx 1/16"$	–	6	–	nH
Case Capacitance	$C_C$	$f = 1MHz$ , Lead Length $\approx 1/16"$	–	0.18	–	pF
Diode Capacitance Temperature Coefficient	$TC_C$	$V_R = 4V$ , $f = 1MHz$	–	280	400	ppm/ $^\circ C$
Diode Capacitance	$C_T$	$V_R = 3V$ , $f = 1MHz$	34	–	39	pF
Figure of Merit	$Q$	$V_R = 3V$ , $f = 100MHz$ , Note 1	100	–	140	
Capacitance Ratio	$C_R$	$C_3/C_{30}$ , $f = 1MHz$	2.5	–	2.8	

Note 1.  $Q = \frac{1}{2 \pi f C_T R_S}$

