



**ELECTRONICS, INC.**  
 44 FARRAND STREET  
 BLOOMFIELD, NJ 07003  
 (973) 748-5089

## NTE1167 Integrated Circuit Phase Lock Loop (PLL) Frequency Synthesizer

### Description:

The NTE1167 consists of a crystal oscillator, 10 bit divider, phase comparator, and a programmable divide-by-N 9-bit counter in a single CMOS 16-Lead DIP type integrated circuit.

This device is designed for use in frequency synthesizers and phase locked loop applications for CB transceivers since it includes a reference frequency selector pin.

### Absolute Maximum Ratings: ( $T_A = +25^\circ\text{C}$ unless otherwise specified)

Supply Voltage, $V_{DD} - V_{SS}$ .....	-0.3V to +7V
Input Voltage, $V_{IN}$ .....	$V_{SS} \leq V_{IN} \leq V_{DD}$
Power Dissipation, $P_D$ .....	250mW
Operating Temperature Range, $T_{opr}$ .....	$-30^\circ$ to $+70^\circ\text{C}$
Storage Temperature Range, $T_{stg}$ .....	$-55^\circ$ to $+125^\circ\text{C}$
Lead Temperature (During Soldering, 5sec Max), $T_L$ .....	$+260^\circ\text{C}$

### Electrical Characteristics: ( $V_{DD} - V_{SS} = 6V$ , $-30^\circ \leq T_A \leq +70^\circ\text{C}$ , $f_{in} \bullet Q_{in} = 10.24\text{MHz}$ unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit	
Input Voltage (All Inputs)		Note 1	-	-	0.5	V	
							Low Level
High Level	$V_{IH}$		5.5	-	-	V	
Pull-Up Resistance	$R_{UP} \bullet F_S$		-	2.0	0	$M\Omega$	
Pull-Down Resistance	$R_{DN} \bullet P_0 - P_8$		15	75	-	$k\Omega$	
Supply Current	$I_{DD}$	$V_{DD} = 5.5V$ , $V_{in} \bullet F_{in} = 1V_{P-P}$ Exclude sink current of preset pin	-	5.0	9.0	mA	
Output Voltage			5.5	-	-	V	
							High Level
Low Level	$V_{OL} \bullet LD$	$I_{OL} = 0.1\text{mA}$	0	-	0.5	V	
Output Current			400	-	-	$\mu\text{A}$	
							High Level
Low Level	$I_{SAT} \bullet L \bullet D_0$	$V_O = 0V$	400	-	-	$\mu\text{A}$	
Output Voltage		$V_{DD} = 5V$	1.7	2.2	2.8	V	
							$V_{IF} \bullet F_{in}$
							$V_{IF} \bullet F_S$
	$V_{IF} \bullet P_0 - P_8$		-	-	0.5	V	
Max Input Frequency			11	-	-	MHz	
							$f_{IN} \bullet \text{Max } Q_{in}$
	$f_{IN} \bullet \text{Max } F_{in}$		3.3	-	-	MHz	
Max Free Running Frequency	$f_{FR} \bullet \text{Max} \bullet F_{IN}$		3.5	-	-	MHz	
Operating Voltage	$V_{DD}$		5.0	-	6.5	V	

Note 1. All inputs refers to pins  $P_0$  to  $P_8$ ,  $F_S$ ,  $F_{in}$ , and  $Q_{in}$ . This parameter defines their input levels at DC coupling.

### Pin Connection Diagram

