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NTE1536
Integrated Circuit
CB Transceiver PLL Frequency Synthesizer

Description:

The NTE1536 is a CMOS LSI device for the 27MH$_Z$ Citizen's Band Transceiver.

Function:

The NTE1536 composes a Phase Lock Loop (PLL) frequency synthesizer system with only one crystal for an AM CB transceiver.

Features:

- Only one crystal is required for AM CB transceiver.
- Two types of intermediate frequency can be selected:
  IF_1 = 10.695MH$_Z$
  IF_2 = 9.785MH$_Z$
- Two types of lock monitor outputs:
  $\overline{LM}$: When PLL is locked/unlocked, $\overline{LM}$ is high/low level.
  LM: When PLL is locked/unlocked, LM is low/high level.
- The amplifier for low pass filter.
- The amplifier for programmable counter input.
- The detecting circuit for the mis–programming.
- BCD code input to the programmable counter.
- The buffer output for the reference oscillator.
- The output for the half frequency of the reference oscillator.
- The reference frequency oscillation amplifier (with feedback resistance).

Absolute Maximum Ratings: (T_A = +25°C unless otherwise specified)

Maximum Supply Voltage, V_{DD}max . . . . . –0.3 to +9.0V
Input Voltage, V_{IN} . . . . . –0.3 to V_{DD}+0.3V
Output Voltage, V_{OUT} (Unload) . . . . . –0.3 to V_{DD}+0.3V
Operating Temperature Range, T_{opg} . . . . . –30° to +70°C
Storage Temperature Range, T_{stg} . . . . . –40° to +125°C

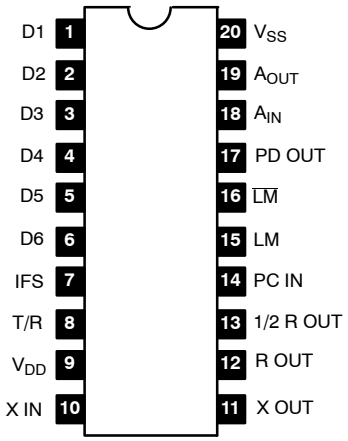
Available Operation Conditions: (T_A = +25°C, V_{DD} = 7V ±1V unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Supply Voltage	V_{DD}		6.0	7.0	8.0	V
High Level Input Voltage	V_{IH}		V_{DD}–1.5	–	–	V
Low Level Input Voltage	V_{IL}		–	–	1.5	V
Input Amplitude	V_{IN} (1)	10.25MH_Z, Duty 50±10% Sine Wave	3.0	–	0.9V_{DD}	Vp–p
	V_{IN} (2)	3.5MH_Z, Duty 50±10% Sine Wave	0.7	–	0.66V_{DD}	Vp–p
Input Frequency	f_{IN} (1)	3.0Vp–p, Duty 50±10% Sine Wave	–	–	10.25	MH_Z
	f_{IN} (2)	0.7Vp–p, Duty 50±10% Sine Wave	–	–	3.5	MH_Z

Electrical Characteristics: (T_A = +25°C, V_{DD} = 7V ±1V unless otherwise specified)

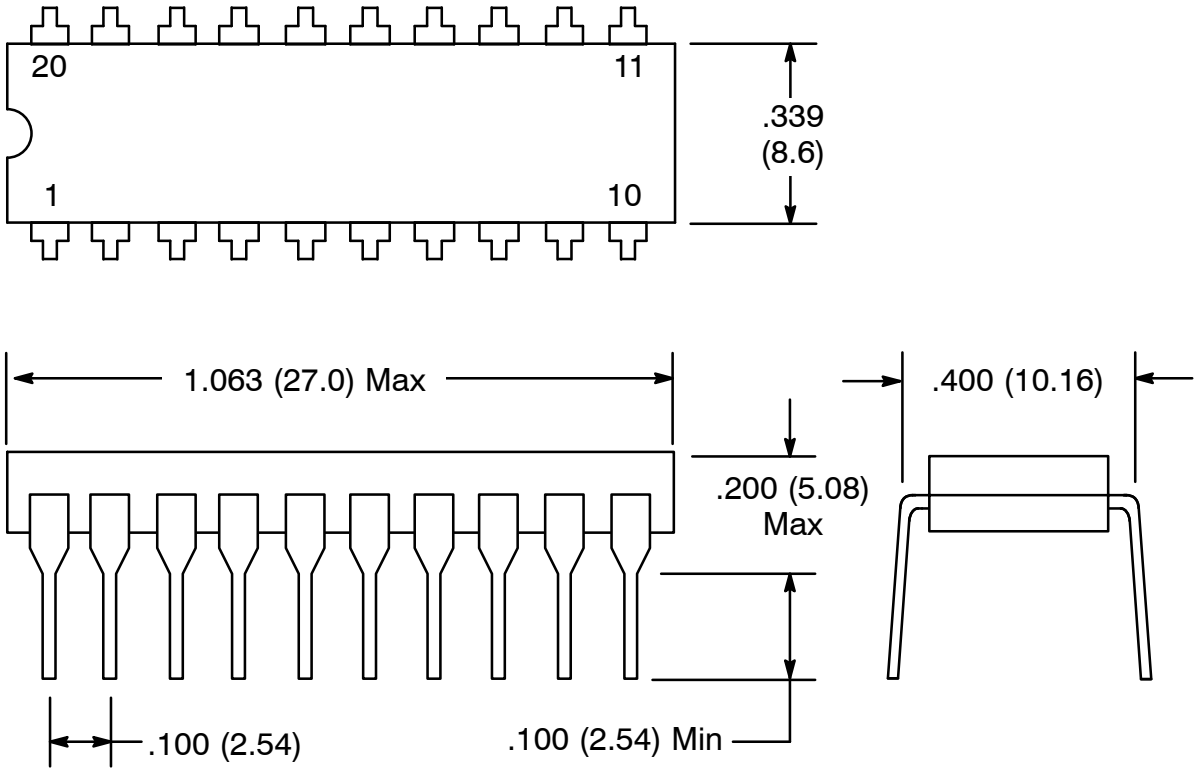
Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Feedback Resistance	R_f (1)		–	7.0	–	MΩ
	R_f (2)		–	3.0	–	MΩ
Pull–Down Resistance	RP		–	28	–	kΩ
Input Floating Voltage	V_{IF}	Pin Opened	–	1.0	–	V
3 State Off Leak Current	I_{OFF} (1)	$V_O = V_{DD}/2$	–	1.0	–	nA
Output Off Leak Current	I_{OFF} (2)	$V_O = V_{DD}$	–	–	3.0	μA
	I_{OFF} (3)	$V_O = V_{SS}$	–	–	3.0	μA
Input Current	I_{IN}	$V_I = V_{DD}$, $V_I = V_{SS}$	–	1.0	–	nA
Filter Amp Gain	VG	R_f = 1MΩ, f_{IN} = 10kH_Z, R_g = 600Ω	–	28	–	dB
Low Level Output Voltage	V_{OL}	I_O = 2mA	–	–	0.9	V
High Level Output Voltage	V_{OH}	I_O = 5mA	V_{DD}–0.9	–	–	V
Dissipation Current	I_{DD}	f_{IN} (1) = 10.24MH_Z, f_{IN} (2) = 3.5MH_Z, N = 182	–	–	20	mA

Pin Connection Diagram



Pin Functions

D1 – D6	Program Input (BCD) D1: LSB, D6: MSB	1/2 R OUT	1/2 Freq of Ref Osc
		PC IN	Programmable Divider Input
IFS	10.695/9.785MH_Z Sw	LM	Lock Monitor Output
T/R	TX/RX Sw	$\overline{LM}$	Lock Monitor Output
V_{DD}	Supply Voltage	PD OUT	Phase Detector Output
X IN	Crystal Oscillator	A_{IN}	Filter Amp Input
X OUT	Crystal Oscillator	A_{OUT}	Filter Amp Output
R OUT	Buffer Output of Ref Osc	V_{SS}	GND


20
11
1
10
.339
(8.6)
1.063 (27.0) Max
.400 (10.16)
.200 (5.08)
Max
.100 (2.54)
.100 (2.54) Min