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NTE1691 & NTE1692 Integrated Circuit Telephone Pulse Dialer ^w/Redial

Description:

The NTE1691 and NTE1692 are monolithic CMOS integrated circuits in an 18-Lead DIP type package that provide all the features required for implementing a pulse dialer with redial.

Functions:

- Mute Output Logic “0”
- $\overline{\text{Pulse}}$ Output Logic “0”
- RC Oscillation for Reference Frequency
- Designed to Operate Directly from the Telephone Line
- Used CMOS Technology for Low Voltage, Low Power Operation
- Power Up Clear Circuitry
- NTE1691 Pin2: V_{REF}
- NTE1692 Pin2: Tone Out

Features:

- Uses Either a Standard 2 of 7 Matrix Keyboard with Negative True Common or the Inexpensive Form A-Type Keyboard
- Make/Break Ratio Can Be Selected
- Redial with * or #
- Tone Signal Output or On-Chip Reference Voltage by Bonding Option on Chip
- 10pps/20pps Can be Selected

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

DC Supply Voltage, V_{CC}	6.2V
Voltage on Any Pin, V_{IN}	$V_{CC}+0.3, \text{GND}-0.3\text{V}$
Power Dissipation, P_D	500mW
Operating Temperature Range, T_{opr}	-30° to $+60^\circ\text{C}$
Storage Temperature Range, T_{stg}	-65° to $+150^\circ\text{C}$

DC Electrical Characteristics: ($T_A = +25^\circ\text{C}$, Note 1 unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Supply Voltage	V_{CC}		2.5	–	6.0	V
Key Contact Resistance	R_{KI}	Note 2	–	–	1	$k\Omega$
Keyboard Capacitance	C_{KI}	Note 2	–	–	30	pF
Key Input Voltage	K_{IH}	2 of 7 input mode, Note 2	$0.8V_{CC}$	–	V_{CC}	V
	K_{IL}		GND	–	$0.2V_{CC}$	V
Key Pull-Up Resistance	K_{IRU}	$V_{CC} = 6V$	–	100	–	$k\Omega$
Key Pull-Down Resistance	K_{IRD}	$V_{IN} = 4.8V$	–	4.0	–	$k\Omega$
Mute Sink Current	I_M	$V_{CC} = 2.5V$, $V_O = 500mV$, Note 3	500	–	–	μA
Pulse Output Sink Current	I_P	$V_{CC} = 2.5V$, $V_O = 500mV$, Note 4	1.0	–	–	mA
Tone Output Sink Current	I_{TL}	$V_{CC} = 2.5V$, $V_O = 500mV$, Note 5	250	–	–	μA
Tone Output Source Current	I_{TH}	$V_{CC} = 2.5V$, $V_O = 500mV$, Note 5	250	–	–	μA
Memory Retention Current	I_{MR}	All outputs under no load, Note 7	–	0.7	–	μA
Operating Current	I_{OP}	All outputs under no load	–	100	150	μA
Mute or Pulse Off Leakage	I_{LKG}	$V_{CC} = 6V$, $V_O = 6V$, Note 3, Note 4	–	0.001	1.0	μA
V_{REF} Output Source Current	I_{REF}	Note 6	1.0	7.0	–	mA

Note 1. Typical values are to be used as a design aid and are not subject to production testing.

Note 2. Applies to key input pin (R_1 – R_4 , C_1 – C_3).

Note 3. Applies to \overline{MUTE} output pin.

Note 4. Applies to \overline{PULSE} output pin.

Note 5. Applies to TONE pin (NTE1692 only).

Note 6. Applies to V_{REF} pin (NTE1691 only).

Note 7. Current necessary for memory to be maintained. All outputs unloaded.

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Oscillator Frequency	F_{OSC}	Note 8	–	4	–	kHz
Key Input Debounce Time	T_{DB}	Note 10, Note 11	–	10	–	ms
Key Down Time for Valid Entry	T_{KD}	Note 11, Note 12	40	–	–	ms
Key Down Time During Two-Key Roll Over	t_{KR}	Note 11	5	–	–	ms
Oscillator Start-Up Time	t_{os}	$V_{CC} = 2.5V$	–	1	–	ms
Mute Valid After Last Outpulses	t_{MO}	Note 10, Note 11	–	5	–	ms
Pulse Output Pulse Rate	P_R	Note 9	–	10	–	PPS
On-Hook Time Required to Clear Memory	t_{OH}	Note 11	300	–	–	ms
Pre-Digital Pause	T_{PDP}	Note 10, Note 11	–	800	–	ms
Inter-Digital Pause	T_{IDP}	Note 10, Note 11	–	800	–	ms
Frequency Stability	Δf	$V_{CC} = 2.5$ to $3.5V$	–	± 4	–	%
		$V_{CC} = 2.5$ to $6.0V$	–	± 4	–	%
Tone Output Frequency	F_{TONE}	Note 11, Note 13	–	1	–	kHz

Note 8. $R_S = 2M\Omega$, $R = 220k\Omega$, $C = 390pF$.

Note 9. If Pin10 is tied to V_{CC} , the output pulse rate will be 20pps.

Note 10. If the 20pps option is selected, the time will be $1/2$ these shown.

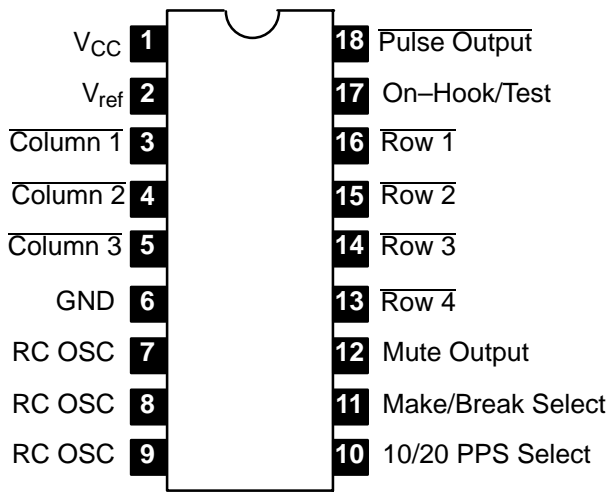
Note 11. These times are directly proportional to the oscillator frequency.

Note 12. Debounce plus oscillator start-up time $\leq 40ms$.

Note 13. If the 20pps option is selected, the tone output frequency will be 2kHz (NTE1692 only).

Pin Connection Diagram

NTE1691



NTE1692

