

NTE1693 Integrated Circuit Telephone Pulse Dialer (CMOS)

Description:

The NTE1693 is a CMOS LSI pulse dialer in a 16-Lead DIP type package with redial which integrates a ceramic resonator as a frequency reference.

Features:

- Make Ratio: 33/39% Pin-Selectable.
- Pulse Output: "1" True
- Mute Output: "0" True
- 17-Digit Redial with either * or # Input
- Uses a Ceramic Oscillator as a Frequency Reference
- Direct Telephone Line Operation
- Uses either a Standard 2-of-7 Matrix Keyboard or a Single Contact Keyboard
- Mute Signal Generated on Pulse Signal

Absolute Maximum Ratings:

Supply Voltage (Note 1), V_{DD}	-0.3 to +6.2V
Maximum Pin Voltage	
V_{IN1} (Note 2)	-0.3V
V_{IN2} (Note 3)	+0.3V
Maximum Power Dissipation ($T_A = +25^\circ\text{C}$), P_D	500mW
Operating Temperature Range, T_{opr}	-30° to $+60^\circ\text{C}$
Storage Temperature Range, T_{stg}	-55° to $+150^\circ\text{C}$

Note 1. Referenced to GND

Note 2. The maximum applicable voltage or any pin with respect to GND

Note 3. The maximum applicable voltage on any pin with respect to V_{DD}

Recommended Operating Conditions:

Supply Voltage, V_{DD}	2.5 to 6.0V
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DC Electrical Characteristics: ($T_A = -30^\circ$ to $+60^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Key Contact Resistance	R_{KI}		–	–	1	$k\Omega$
Keyboard Capacitance	C_{KI}		–	–	30	μF
Input Voltage	K_{1H}	2-of-7 input mode, Note 4	$0.8V_{DD}$	–	V_{DD}	V
			GND	–	$0.2V_{DD}$	V
Key Pull-Up Resistance	K_{IRU}	$V_{DD} = 6.0\text{V}$, $V_{IN} = 4.8\text{V}$	–	4	–	$k\Omega$
Key Pull-Down Resistance	K_{IRD}		–	100	–	$k\Omega$
$\overline{\text{MUTE}}$ Sink Current	I_M	$V_{DD} = 2.5\text{V}$, $V_{OUT} = 0.5\text{V}$, Note 5	500	–	–	μA
Pulse Output Sink Current	I_P	$V_{DD} = 2.5\text{V}$, $V_{OUT} = 0.5\text{V}$, Note 6	1.0	–	–	mA
$V_{DD}-V_{RFF}$ Value	V_{REF}	$I_{SUPPLY} = 150\mu\text{A}$, Note 7	1.5	2.5	3.5	V
Memory Retention Current	I_{MR}	All outputs in no-load state	–	0.7	–	μA
Operating Current	I_{OP}	All outputs in no-load state	–	100	150	μA
$\overline{\text{MUTE}}$, PULSE Leakage	I_{LKG}	$V_{DD} = 6.0\text{V}$, $V_{OUT} = 6.0\text{V}$, Note 5, Note 6	–	0.001	1	μA

Note 4. Applies to key input pins (ROW1–ROW4 COL1–COL3)

Note 5. Applies to $\overline{\text{MUTE}}$ output pin.

Note 6. Applies to PULSE output pin

Note 7. Applies to V_{REF} pin.

AC Electrical Characteristics:

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Oscillator Frequency	f_{OSC}	Note 8	–	480	–	kHz
Keyboard Debounce Time	t_{DB}		–	10	–	ms
Time for Valid Key Entry	t_{KD}		40	–	–	ms
Oscillator Start-Up Time	t_{ON}	Note 9	–	6	–	ms
Pulse Rate	P_R		–	10	–	pps
Break Time	t_B	Pin9 tied to V_+	–	61	–	ms
		Pin9 tied to V_-	–	67	–	ms
Inter-Digital Pause	t_{IDP}		–	800	–	ms

Note 8. Typical values are exact with a nominal 480kHz frequency reference (except for oscillator start-up time)

Note 9. Ceramic resonator should have the following equivalent values: $R < 20\Omega$, $R_A \geq 70k\Omega$, $C_O \leq 500\text{pF}$.

Pin Connection Diagram

