

## NTE1799 Integrated Circuit Electronics Switch for VCR & Audio Applications

### Description:

The NTE1799 is a 3-channel 2-position high-performance analog switch in a 16-Lead DIP type package having wide applications from audio band to video band. It is also provided with 2 channels of muting function.

### Features:

- 3-Channel 2-Position Switch
- Wide Input Dynamic Range
- Low Distortion
- Good Frequency Characteristic
- Muting Available

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

Maximum Supply Voltage,  $V_{CCmax}$  ..... 15V  
Allowable Power Dissipation ( $T_A \leq +65^\circ\text{C}$ ),  $P_{dmax}$  ..... 500mW  
Operating Temperature Range,  $T_{opg}$  .....  $-20^\circ$  to  $+65^\circ\text{C}$   
Storage Temperature Range,  $T_{stg}$  .....  $-40^\circ$  to  $+125^\circ\text{C}$

### Operating Characteristics: ( $T_A = +25^\circ\text{C}$ , $V_{CC} = 12\text{V}$ unless otherwise specified)

| Parameter                        | Symbol           | Test Conditions                                                                                           | Min  | Typ   | Max  | Unit      |
|----------------------------------|------------------|-----------------------------------------------------------------------------------------------------------|------|-------|------|-----------|
| Current Dissipation              | $I_{CC}$         |                                                                                                           | –    | 30    | 39   | mA        |
| Total Harmonic Distortion        | THD              | $R_g = 600\Omega$ , $4.5V_{P-P}$ , $f = 1\text{kHz}$ , $R_L = \infty$ , Note 1                            | –    | 0.007 | 0.1  | %         |
| Noise Voltage                    | $V_N$            | $R_g = 600\Omega$ , $f = 20$ to $20\text{kHz}$ , $R_L = \infty$ , Note 1                                  | –    | –93   | –80  | dB        |
| Crosstalk<br>Ch1                 | CR1              | Input 1: $R_g = 50\Omega$ , $2V_{P-P}$ ,<br>$f = 3.58\text{MHz}$ , Input 2: $R_g = 500\Omega$ ,<br>Note 2 | –    | –50   | –    | dB        |
| Ch2                              | CR2              |                                                                                                           | –    | –60   | –    | dB        |
| Ch3                              | CR3              |                                                                                                           | –    | –50   | –    | dB        |
| Pedestal Level                   | $\Delta V_{ped}$ | $V_{CTL}$ (Pin10, Pin13, Pin15) = 0 to 12V, Note 1                                                        | –100 | 0     | +100 | mV        |
| Maximum Input Voltage            | $V_{INmax}$      | $R_g = 600\Omega$ , $f = 1\text{kHz}$ , $R_L = \infty$ , THD = 1%, Note 1                                 | 5.0  | –     | –    | $V_{P-P}$ |
| 2 <sup>nd</sup> Harmonic Voltage | H2               | $R_g = 50\Omega$ , $4V_{P-P}$ , $f = 1\text{MHz}$ , $R_L = \infty$ , Note 1                               | –46  | –55   | –    | dB        |
| 3 <sup>rd</sup> Harmonic Voltage | H3               |                                                                                                           | –46  | –55   | –    | dB        |

Note 1. Measurements are made for each of Ch1, Ch2, and Ch3 using input A and input B.  
Input A:  $V_{CTL}$  (Pin10, Pin13, Pin15) is 12V at the measurement mode.  
Input B:  $V_{CTL}$  is 0V at the measurement mode.

**Operating Characteristics (Cont'd):** ( $T_A = +25^{\circ}\text{C}$ ,  $V_{CC} = 12\text{V}$  unless otherwise specified)

| Parameter                         | Symbol     | Test Conditions                                                                                                              | Min | Typ | Max | Unit             |
|-----------------------------------|------------|------------------------------------------------------------------------------------------------------------------------------|-----|-----|-----|------------------|
| Switch Changeover Voltage         | $V_{CTLs}$ | Note 1                                                                                                                       | 2.6 | 3.1 | 4.0 | V                |
| Mute Threshold Voltage            | $V_{ML}$   | Low Level, Note 3                                                                                                            | 1.2 | 1.6 | 1.9 | V                |
|                                   | $V_{MH}$   | High Level, Note 3                                                                                                           | 5.5 | 6.9 | 8.2 | V                |
| Crosstalk Between Channels<br>Ch1 |            | $R_g = 500\Omega$ , $R_L = \infty$ ,<br>Other channel input $R_g = 50\Omega$ , $2V_{P-P}$ ,<br>$f = 3.58\text{MHz}$ , Note 4 | -50 | -68 | -   | dB               |
| Ch2                               |            |                                                                                                                              | -50 | -68 | -   | dB               |
| Ch3                               |            |                                                                                                                              | -50 | -60 | -   | dB               |
| Mute Compression Ratio            |            | $R_g = 600\Omega$ , $2V_{P-P}$ , $f = 1\text{kHz}$ , $R_L = \infty$ ,<br>Series Resistance $10\text{k}\Omega$ , Note 3       | -   | -60 | -   | dB               |
| Control Pin Flow-In Current       | $I_{CTL}$  | Note 1                                                                                                                       | -   | 3.8 | -   | $\mu\text{A}$    |
| Input Impedance                   | $Z_{in}$   | Note 1                                                                                                                       | -   | 10  | -   | $\text{k}\Omega$ |
| Output Impedance                  | $Z_{out}$  | Note 1                                                                                                                       | -   | 29  | -   | $\Omega$         |
| Pin Voltage (Pin1)                | $V_1$      | $V_{15} = 0\text{V}$                                                                                                         | -   | 7.9 | -   | V                |
|                                   |            | $V_{15} = 12\text{V}$                                                                                                        | -   | 7.9 | -   | V                |
| Pin Voltage (Pin2)                | $V_2$      |                                                                                                                              | -   | 7.2 | -   | V                |
| Pin Voltage (Pin5)                | $V_5$      | $V_{13} = 0\text{V}$                                                                                                         | -   | 7.9 | -   | V                |
|                                   |            | $V_{13} = 12\text{V}$                                                                                                        | -   | 7.9 | -   | V                |
| Pin Voltage (Pin6)                | $V_6$      |                                                                                                                              | -   | 7.2 | -   | V                |
| Pin Voltage (Pin7)                | $V_7$      |                                                                                                                              | -   | 7.2 | -   | V                |
| Pin Voltage (Pin8)                | $V_8$      | $V_{10} = 0\text{V}$                                                                                                         | -   | 7.9 | -   | V                |
|                                   |            | $V_{10} = 12\text{V}$                                                                                                        | -   | 7.9 | -   | V                |
| Pin Voltage (Pin9)                | $V_9$      | $V_{10} = 0\text{V}$                                                                                                         | -   | 7.9 | -   | V                |
|                                   |            | $V_{10} = 12\text{V}$                                                                                                        | -   | 7.9 | -   | V                |
| Pin Voltage (Pin12)               | $V_{12}$   | $V_{13} = 0\text{V}$                                                                                                         | -   | 7.9 | -   | V                |
|                                   |            | $V_{13} = 12\text{V}$                                                                                                        | -   | 7.9 | -   | V                |
| Pin Voltage (Pin16)               | $V_{16}$   | $V_{15} = 0\text{V}$                                                                                                         | -   | 7.9 | -   | V                |
|                                   |            | $V_{15} = 12\text{V}$                                                                                                        | -   | 7.9 | -   | V                |

Note 1. Measurements are made for each of Ch1, Ch2, and Ch3 using input A and input B.

Input A:  $V_{CTL}$  (Pin10, Pin13, Pin15) is 12V at the measurement mode.

Input B:  $V_{CTL}$  is 0V at the measurement mode.

Note 2. Measurements are made using input A and input B.

Note 3. Measurements are made for Ch2, Ch3.

Note 4. Measurements are made for each of Ch1, Ch2, and Ch3 using input A and input B on other channel.

## Pin Connection Diagram

