



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

NTE15023 Integrated Circuit dbx TV Noise Reduction Integrated Circuit

Description:

The NTE15023 is an integrated circuit designed for the dbx-TV noise reduction decode circuit for multichannel TV sound systems. This device contains a voltage controlled amplifier, a variable de-emphasis circuit with new configuration and RMS detectors with completely integrated active band pass filters, and offers the complete dbx-TV noise reduction decoder only with a few external components.

Features:

- Integrated Band Pass Filters using Active Filtering Technique and Thin Film Structure with High Capacitance
- Variable De-emphasis Circuit with New Circuit Configuration
- Minimum Number of External Components
- Wide Operation Voltage Range: 4.7V to 16V

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

Power Supply Voltage, V_{CC} 17V
 Allowable Power Dissipation, P_D 715mW
 Operating Temperature Range, T_{opr} -20° to $+75^\circ\text{C}$
 Storage Temperature Range, T_{stg} -55° to $+150^\circ\text{C}$

Recommended Operating Voltage:

Power Supply Voltage, V_{CC} 5V to 15V

Electrical Characteristics: ($T_A = +25^\circ\text{C}$, $V_{CC} = +9\text{V}$ Reference Level: 0dB = -5dBm (436mVrms) unless otherwise specified)

| Parameter | Symbol | Test Conditions | Min | Typ | Max | Unit |
|------------------------|------------|---|-------|-------|-------|------|
| Consumption Current | I_{CC} | No Signal | 4.0 | 5.0 | 6.3 | mA |
| Decode Characteristics | V_{od-1} | $V_i = -5\text{dB}$, $f = 300\text{Hz}$ | 5.5 | 7.0 | 8.5 | dB |
| | V_{od-2} | $V_i = -15\text{dB}$, $f = 300\text{Hz}$ | -14.5 | -13.0 | -11.5 | dB |
| | V_{od-3} | $V_i = -30\text{dB}$, $f = 300\text{Hz}$ | -44.5 | -43.0 | -41.5 | dB |
| | V_{od-4} | $V_i = 0\text{dB}$, $f = 1\text{kHz}$ | 1.3 | 3.3 | 5.3 | dB |
| | V_{od-5} | $V_i = -10\text{dB}$, $f = 1\text{kHz}$ | -19.4 | -17.4 | -15.4 | dB |
| | V_{od-6} | $V_i = -20\text{dB}$, $f = 1\text{kHz}$ | -39.6 | -37.6 | -35.6 | dB |
| | V_{od-7} | $V_i = 0\text{dB}$, $f = 8\text{kHz}$ | -4.3 | -1.8 | 0.7 | dB |
| | V_{od-8} | $V_i = -10\text{dB}$, $f = 8\text{kHz}$ | -30.9 | -28.4 | -25.9 | dB |
| | V_{od-9} | $V_i = -20\text{dB}$, $f = 8\text{kHz}$ | -45.2 | -42.7 | -40.2 | dB |

Electrical Characteristics (Cont'd): ($T_A = +25^\circ\text{C}$, $V_{CC} = +9\text{V}$ Reference Level: $0\text{dB} = -5\text{dBm}$ (436mVrms) unless otherwise specified)

| Parameter | Symbol | Test Conditions | Min | Typ | Max | Unit |
|---------------------------------|------------|--|-------|-------|-------|---------------|
| VCA Filter Characteristics | V_{fp-1} | $f = 3\text{kHz}$, $V_i = 0\text{dB}$, refer to 1kHz | -5.5 | -4.0 | -2.5 | dB |
| | V_{fp-2} | $f = 8\text{kHz}$, $V_i = 0\text{dB}$, refer to 1kHz | -13.0 | -11.0 | -9.0 | dB |
| Vemp. Filter Characteristics | V_{fg-1} | $f = 5\text{kHz}$, $V_i = 0\text{dB}$, refer to 8kHz | -9.4 | -7.4 | -5.4 | dB |
| | V_{fg-2} | $f = 2\text{kHz}$, $V_i = 0\text{dB}$, refer to 8kHz | -32.3 | -28.8 | -25.3 | dB |
| Total Harmonic Distortion Ratio | THD | $f = 1\text{kHz}$, $V_i = -3\text{dB}$ | - | 0.1 | 0.3 | % |
| Maximum Output Voltage | V_{om-1} | $f = 300\text{Hz}$, THD = 1.5% | 11.0 | 12.5 | - | dB |
| | V_{om-2} | $f = 8\text{kHz}$, THD = 1.5% | -2.0 | 1.0 | - | dB |
| Output Noise Level | V_{on} | A weight | - | -104 | -80 | dB |
| Timing Current | I_{time} | | (7.1) | 7.5 | (7.9) | μA |
| Center Potential | $V_{CC}/2$ | | 4.3 | 4.5 | 4.7 | V |

Electrical Characteristics: ($T_A = +25^\circ\text{C}$, $V_{CC} = +9\text{V}$ Reference Level: $0\text{dB} = -5\text{dBm}$ (436mVrms) Note 1 unless otherwise specified)

| Parameter | Symbol | Switch Condition | | | | | | | |
|---------------------------------|--------------|------------------|----|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | |
| Consumption Current | I_{CC} | OFF | - | - | - | - | b | b | |
| Decoding Characteristics | 300Hz, -5dB | V_{od-1} | ON | - | b | b | b | b | b |
| | 300Hz, -15dB | V_{od-2} | ON | - | b | b | b | b | b |
| | 300Hz, -30dB | V_{od-3} | ON | - | b | b | b | b | b |
| | 1kHz, 0dB | V_{od-4} | ON | - | b | b | b | b | b |
| | 1kHz, -10dB | V_{od-5} | ON | - | b | b | b | b | b |
| | 1kHz, -20dB | V_{od-6} | ON | - | b | b | b | b | b |
| | 8kHz, 0dB | V_{od-7} | ON | - | b | b | b | b | b |
| | 8kHz, -10dB | V_{od-8} | ON | - | b | b | b | b | b |
| | 8kHz, -15dB | V_{od-9} | ON | - | b | b | b | b | b |
| VCA Filter Characteristics | 3kHz | V_{fp-1} | ON | a | a | b | b | b | b |
| | 8kHz | V_{fp-2} | ON | a | a | b | b | b | b |
| Vemp Filter Characteristics | 5kHz | V_{fg-1} | ON | b | a | b | b | b | b |
| | 2kHz | V_{fg-2} | ON | b | a | b | b | b | b |
| Total Harmonic Distortion Ratio | THD | ON | - | b | b | b | b | b | |
| Maximum Output Voltage | 300Hz | V_{om-1} | ON | - | b | b | b | b | b |
| | 8kHz | V_{om-2} | ON | - | b | b | b | b | b |
| Output Noise Level | V_{on} | OFF | - | b | a | a | b | b | |
| Middle Point Potential | $V_{CC}/2$ | OFF | - | - | - | - | b | b | |

Note 1. It suffices that a or b is inserted into (-).

Pin Connection Diagram

