

NTE1859 Integrated Circuit dbx TV Noise Reduction Integrated Circuit

Description:

The NTE1859 is an integrated circuit designed for the dbx-TV noise reduction decode circuit for multi-channel 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

