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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 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°C unless otherwise specified)

Power Supply Voltage, V_{CC} 17V
Allowable Power Dissipation, P_D 715mW
Operating Temperature Range, T_{opr} . . . . . –20° to +75°C
Storage Temperature Range, T_{stg} . . . . . –55° to +150°C

Recommended Operating Voltage:

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

Electrical Characteristics: (T_A = +25°C, V_{CC} = +9V 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 = –5dB, f = 300Hz	5.5	7.0	8.5	dB
	V_{od}–2	V_i = –15dB, f = 300Hz	–14.5	–13.0	–11.5	dB
	V_{od}–3	V_i = –30dB, f = 300Hz	–44.5	–43.0	–41.5	dB
	V_{od}–4	V_i = 0dB, f = 1kHz	1.3	3.3	5.3	dB
	V_{od}–5	V_i = –10dB, f = 1kHz	–19.4	–17.4	–15.4	dB
	V_{od}–6	V_i = –20dB, f = 1kHz	–39.6	–37.6	–35.6	dB
	V_{od}–7	V_i = 0dB, f = 8kHz	–4.3	–1.8	0.7	dB
	V_{od}–8	V_i = –10dB, f = 8kHz	–30.9	–28.4	–25.9	dB
	V_{od}–9	V_i = –20dB, f = 8kHz	–45.2	–42.7	–40.2	dB

Electrical Characteristics (Cont'd): (T_A = +25°C, V_{CC} = +9V Reference Level: 0dB = –5dBm (436mVrms) unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
VCA Filter Characteristics	V_{fp}–1	f = 3kHz, V_i = 0dB, refer to 1kHz	–5.5	–4.0	–2.5	dB
	V_{fp}–2	f = 8kHz, V_i = 0dB, refer to 1kHz	–13.0	–11.0	–9.0	dB
Vemp. Filter Characteristics	V_{fg}–1	f = 5kHz, V_i = 0dB, refer to 8kHz	–9.4	–7.4	–5.4	dB
	V_{fg}–2	f = 2kHz, V_i = 0dB, refer to 8kHz	–32.3	–28.8	–25.3	dB
Total Harmonic Distortion Ratio	THD	f = 1kHz, V_i = –3dB	–	0.1	0.3	%
Maximum Output Voltage	V_{om}–1	f = 300Hz, THD = 1.5%	11.0	12.5	–	dB
	V_{om}–2	f = 8kHz, 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°C, V_{CC} = +9V Reference Level: 0dB = –5dBm (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	Von	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