

NTE1800 Integrated Circuit TV Multiplex Sound Decoder

Description:

The NTE1800 Multiplexed Sound Decoder is a linear integrated circuit in a 30-Lead DIP type package that incorporates the SAP demodulation and the L, R matrix circuits required to demodulate multiplexed sound signals on the US NTSC system.

The NTE1800 also features mode switching to facilitate the use of remote control, and can be interfaced easily to the NTE1801 dbx Noise Reduction Decoder IC.

Features:

- Mode switching for remote control
- Built-in muting function
- Pilot cancel circuit
- 8.0 to 13.2V power supply
- 300mV_{rms} (MONO) composite signal input voltage
- 30-pin plastic shrink DIP
- Easily interfaced to the NTE1801

Functions:

- Pilot signal
- SAP signal
- Stereo demodulation
- SAP demodulation
- Mode switching
- Stereo and SAP display drivers
- Pilot canceler
- On-chip 4fH V_{CO}
- On-chip 5fH V_{CO}

Absolute Maximum Ratings:

Power Supply Voltage, V _{CCmax}	15V
Input Signal Voltage, V _{in}	5V _{p-p}
Control Signal Voltage, V _{in}	5V _{p-p}
Power Dissipation (T _A ≤ +70°C), P _{Dmax}	800mW
Lamp Driver Current, I _{lamp}	30mA
Operating Temperature Range, T _{opg}	–20° to +70°C
Storage Temperature Range, T _{stg}	–40° to +125°C

Recommended Operating Conditions: (T_A = +25°C unless otherwise specified)

Power Supply Voltage, V _{CC}	8 to 13.2V
Composite Signal Voltage, V _{in}	300mV _{rms}

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Circuit Current	I_{CC}	$V_{CC} = 12\text{V}$, no signal	27	39	52	mA
Stereo Capture Range	CC_1	Stereo demodulation input pin 30mV_{rms} pilot signal level	± 1.5	± 3.0	–	%
Stereo Switch Input Sensitivity	SW_{sense}	Measure pilot level at stereo demodulation input. Stereo lamp OFF→ON	12	18	22	mV_{rms}
Stereo Switch Hysteresis	Hy_1	Pilot level measured at stereo demodulation input. Stereo lamp ON→OFF, OFF→ON	5	7	9	dB
Stereo Switch L–R Output Voltage	Vo_{L-R}	$150\text{mV}_{\text{rms}}$ (MONO) stereo demodulation input voltage	380	430	480	mV_{rms}
Stereo Demodulation Output L+R Output Voltage	Vo_{L+R}	$150\text{mV}_{\text{rms}}$ (MONO) stereo demodulation input voltage	380	430	480	mV_{rms}
L+R Output Voltage Pilot Cancel Level	fH_{REJ}	$150\text{mV}_{\text{rms}}$ (MONO) stereo demodulation input voltage	30	35	–	dB
L–R Output Distortion	THD_{L-R}	$150\text{mV}_{\text{rms}}$ (MONO) stereo demodulation input voltage, $f = 1\text{kHz}$	–	0.2	0.7	%
L +R Output Distortion	THD_{L+R}	$150\text{mV}_{\text{rms}}$ (MONO) stereo demodulation input voltage, $f = 1\text{kHz}$	–	0.2	0.7	%
SAP Capture Range	CC_2	90mV_{rms} SAP input voltage	± 19	± 25	–	%
SAP Sensitivity	SAP_{SENSE}	Measure SAP input level. SAP lamp OFF→ON	25	35	45	mV_{rms}
SAP Switch Hysteresis	Hy_2	Measure SAP input level. SAP Lamp OFF→ON, ON→OFF	2.5	4.5	6.5	dB
SAP Output Distortion	THD_{SAP}	90mV_{rms} SAP input voltage, $f = 1\text{kHz}$, $\Delta f = 10\text{kHz}$	–	0.3	1.0	%
SAP Output Voltage	$V_{0\text{SAP}}$	90mV_{rms} SAP input voltage, $f = 1\text{kHz}$, $\Delta f = 10\text{kHz}$	380	430	480	mV_{rms}
Mode Switch Crosstalk	CT	$150\text{mV}_{\text{rms}}$ stereo input, 90mV_{rms} SAP input	45	60	–	dB
L,R Matrix Separation	SEP	$150\text{mV}_{\text{rms}}$ (MONO) composite input	30	40	–	dB
Matrix Output Voltage (MONO)	V_{OMONO}	$215\text{mV}_{\text{rms}}$ matrix input. Same phase input	450	500	550	mV_{rms}
Matrix Output Voltage (STEREO)	V_{OL}	$215/2\text{mV}$ matrix input. Same phase input	450	500	550	mV_{rms}
Matrix Output Voltage (STEREO)	V_{OR}	$215/2\text{mV}_{\text{rms}}$ matrix input. Reverse phase input	450	500	550	mV_{rms}
Matrix Output Voltage (SAP)	V_{OMSAP}	$215\text{mV}_{\text{rms}}$ matrix input.	450	500	550	mV_{rms}
Matrix Output Voltage (MUTE)	MUTE	Pin17 Open	–	–70	–60	dB

Pin Connection Diagram

GND	1	30	SAP Lamp
Limiter Amp Input	2	29	Stereo Lamp
Filter Cap	3	28	Phase Comp Cap
Filter Cap	4	27	Phase Comp Cap
5f _h VCO Cap	5	26	Phase Comp Input
5f _h Adjust	6	25	Phase Comp
Phase Detector Cap	7	24	Phase Comp
L-R SAP Output	8	23	4f _h Adjust
Mode Switch	9	22	Pilot Regeneration Cap
Mono Switch	10	21	Pilot Input
L-R SAP Input	11	20	Stereo Input
L-R Input	12	19	Preamp Output
R Output	13	18	Preamp Input
L Output	14	17	Mute
V _{CC}	15	16	L-R Output

