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NTE743 Integrated Circuit Phase Lock Loop (PLL) Stereo Decoder

Description:

The NTE743 requires only a single, non critical resistive tuning adjustment. This device derives left and right audio channels from the standard composite stereo decoder can also be used in a number of subscription TV decoder schemes or in various proposed TV stereo systems.

Using phase-lock techniques, the subcarrier (38 KHz for FM stereo) is regenerated in phase with and at exactly twice the frequency of the transmitted pilot signal. Switching between monaural and stereo operation is accomplished automatically by the presence of the pilot signal.

Low-impedance emitter-follower outputs and an internal voltage regulator for increased stability make the NTE743 suitable for both line-operated and automotive applications. It is designed to operate over a wide supply-voltage range and will function with supplies as low as 9V.

Features:

- Internal Temperature Compensation
- Single-Adjustment Tuning
- Automatic Stereo/Mono Switching
- Stereo Indicator Lamp Driver
- 70dB SCA Rejection
- Operating Voltage- 9 to 16V
- Low Harmonic Distortion

Absolute Maximum Ratings:

Supply Voltage, V_{CC}	
Continous	+16V
$\leq 15s$	+22V
Lamp Supply Voltage, V_{LAMP}	+22V
Lamp Current, I_{LAMP}	150mA
Output Current, I_4 or I_5	10mA
Package Power Dissipation, P_D	670mW
Derate Above 70°C	8.3mW/°C
Operating Temperature Range, T_A	-20° to +85°C
Storage Temperature Range, T_{stg}	-65° to +150°C

Electrical Characteristics:

($T_A = +25^\circ\text{C}$, $V_{CC} = +12\text{V}$, Composite Input = $300\text{mV}_{\text{rms}}$ (L = R, Pilot OFF), Pilot Level = 30mV_{rms} , $f_m = 400\text{Hz}$ or 1kHz , unless otherwise indicated)

Characteristics	Test Conditions	Min	Typ	Max	Unit
Input Impedance	Pin2	2	353	–	$\text{k}\Omega$
Output Impedance	Pin4 or Pin5	–	50	–	Ω
Audio Voltage Gain	Desired Channel	0.7	1.0	1.4	V
Stereo Channel Separation	$f_m = 100\text{Hz}$	–	30	–	dB
	$f_m = 400\text{Hz}$	30	40	–	dB
	$f_m = 10\text{kHz}$	–	30	–	dB
Monaural Channel Balance	Pilot Level = 0V	–	0.1	1.5	dB
Total Harmonic Distortion	Multiplex Level = 600mV	–	0.4	1.5	%
Ultrasonic Frequency Rejection	19kHz	25	35	–	dB
	38kHz	25	40	–	dB
SCA Rejection	67kHz, Note 1	–	70	–	dB
Stereo Switch Level	Pilot Only, Lamp On	–	14	25	mV_{rms}
	Pilot Only, Lamp Off	2.0	7.0	–	mV_{rms}
VCO Tuning Resistance	Pin15, Note 2	20	23	26	$\text{k}\Omega$
VCO Frequency Drift	$-20^\circ\text{C} < T_A < +25^\circ\text{C}$	–	± 0.5	± 2.0	%
	$+25^\circ\text{C} < T_A < +70^\circ\text{C}$	–	± 0.5	± 2.0	%
Stereo Lamp Hysteresis	Lamp Off to Lamp On	3.0	6.0	–	dB
Capture Range	Permissible Tuning Error	–	4.0	–	%
Output Voltage Shift	Stereo to Mono Operation	–	± 30	–	mV
Lamp Output Current	Short Circuit, Lamp On	50	100	–	mA
	Lamp Off	–	1.0	100	mA
Lamp Driver Terminal Voltage	$I_{\text{LAMP}} = 50\text{mA}$	–	1.3	2.0	V
Supply Current	Lamp Off	–	20	40	mA
Power Supply Rejection	200Hz, $200\text{mV}_{\text{rms}}$	–	40	–	dB

Note 1. Measured with a stereo composite signal of 80% stereo, 10% pilot, and 10% SCA.

Note 2. Total resistance from Pin15 to GND, to set reference frequency at Pin11 to $19\text{kHz} \pm 10\text{Hz}$

Pin Connection Diagram

