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NTE7013
Integrated Circuit
Remote Control Preamp with Active “Low”

Description:

The NTE7013 is a bipolar integrated circuit in an 8–Lead DIP type package intended for infrared remote control applications. This device has an active “Low” output polarity and contains a high–gain amplifier, a limiter amplifier, a band–pass filter, a detector, and a pulse shaper.

Features:

- On–Chip Band–Pass Filter: Frequenct Range 30 to 60kHz
- High Gain Pre–Amplifier: 86dB Typ
- Detector for PCM Demodulation
- Low Current Consumption
- Minimum External Components

Absloute Maximum Ratings: (T_A = +25°C unless otherwise specified)

Supply Voltage (R_g = 0Ω), V_{CC} 5.6V
Output Voltage, V_{OUT} 15V
Input Voltage, V_{IN} . . . . $5V_{P-P}$
Supply Current, I_{CC} 6mA
Power Dissipation, P_D 270mW
Operating Temperature Range, T_{opr} . . . . –20° to +75°C
Storage Temperature Range, T_{stg} . . . . –40° to +125°C

Recommended Operating Conditions:

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Power Supply Voltage	V_{CC}	R_g = 0Ω	4.5	5.0	5.5	V
Power Supply Voltage	$V_{CC'}$	R_g = 1.5kΩ	11	12	13	V
Operating Frequency	f_O		30	–	60	kHz

Electrical Characteristics: (T_A = +25°C, V_{CC} = 5V unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Power Supply Current	I_{CC}		–	1.6	2.5	mA
Input Pin Voltage 1	V_{IN1}		2.0	2.5	3.1	V
Input Pin Voltage 2	V_{IN2}	I_1 = –100μA	0.5	0.9	1.7	V
Voltage Gain	A_v	38kHz CW, ν_i = 30μ$V_{P–P}$	74	86	89	dB
Frequency Response	A_{vQ}	28, 35, 41, 48kHz CW, ν_i = 30μ$V_{P–P}$, Note 1	4	10	–	dB
Input Impedance	r_{in}	38kHz CW, ν_i = 0.2$V_{P–P}$, Note 2	27	40	55	kΩ
Output Pulse Width 1	t_{PW1}	38kHz Burst, ν_i = 60μ$V_{P–P}$	440	–	770	μs
Output Pulse Width 2	t_{PW2}	V_{CC} = 4V, 38kHz Burst, ν_i = 50μ$V_{P–P}$	440	–	770	μs
Output Voltage	V_{OL}	E_1 = 1.0V	–	0.2	0.4	V
Output Leak Current	I_{OH}	E_1 = 2.5V, E_2 = 15V	–	–	2.0	μA

Note 1. Voltage gain difference $A_{vQ} = A_v\,(35\text{kHz}) – A_v\,(28\text{kHz})$
$A_{vQ} = A_v\,(41\text{kHz}) – A_v\,(48\text{kHz})$

Note 2. $r_{in} = \dfrac{47}{v_i/v_x - 1}$ (kΩ), v_x: Input voltage, v_i: SG output voltage

Pin Connection Diagram
(Front View)