

NTE1738 Integrated Circuit TV Remote Control Receiver

Description:

The NTE1738 is a 29-function remote-control receiver circuit manufactured by aluminum-gate CMOS technology for use in television receivers, audio equipment, and the like using infrared for transmission. It enables direct control of 12 functions at the receiver.

Features:

- Single Power Supply
- Wide Supply Voltage Range: 8V to 14V
- Low Power Dissipation
- On-Chip Oscillator
- Low-Cost LC or Ceramic Oscillator used in Determining Reference Frequency (480kHz or 455kHz)
- Information is Transmitted by Pulse Code Modulation
- Good Noise Immunity—Instructions are not Executed unless the Same Code is Received Three or more Times in Succession
- Single Transmission Frequency (40kHz or 38kHz) for Carrier Wave
- 16 TV Channels Selected Directly
- Three Analog Functions — Volume, Brightness and Color Saturation — are Independently Controlled to 64 Stages by Three 6-Bit D/A Converters.
- 12 Instructions are Controlled at the NTE1738 Receiver, as well.
- Has Large Tolerance in Operating Frequency between the Transmitter and the Receiver

Application:

- Remote-Control Receiver for TV or other Applications

Function:

The NTE1738 is designed to decode and execute instructions after three successive receptions of the identical instruction code, providing a good noise immunity. Instructions comprise direct selection of 16 channels, channel position high and low, color saturation high and low, normalization of volume, brightness and color saturation, sound mute on and off, TV main power on and off, and output CALL on and off.

In addition, 12 functional instructions can be entered from the receiver.

Absolute Maximum Ratings:

Supply Voltage (With respect to V_{SS}), V_{DD}	-0.3V to 15V
Input Voltage, V_I	$V_{SS} \leq V_I \leq V_{DD}$
Output Voltage, V_O	$V_{SS} \leq V_O \leq V_{DD}$
Maximum Power Dissipation ($T_A = +25^\circ\text{C}$), P_D	300mW
Operating Free-Air Temperature Range, T_{opr}	-30° to $+70^\circ\text{C}$
Storage Temperature Range, T_{stg}	-40° to $+126^\circ\text{C}$

Recommended Operating Conditions:

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Supply Voltage	V_{DD}		8	12	14	V
Oscillation Frequency	f_{OSC}		–	455	–	kHz
			–	480	–	kHz
Input Voltage, SI	V_I		5	–	–	V_{P-P}

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Supply Voltage	V_{DD}	$T_A = -30^\circ$ to $+70^\circ\text{C}$, $f_{OSC} = 455\text{kHz}$	8	12	14	V
Supply Current	I_{DD}	$f_{OSC} = 455\text{kHz}$	–	2	5	mA
Pull-Up Resistance I_1 to I_3	R_I		–	20	–	$k\Omega$
Low Level Output Currents ϕA to ϕD	I_{OL}	$V_O = 12\text{V}$	5	–	–	mA
Low Level Output Currents CH UP, CH DOWN, CH RESET	I_{OL}	$V_O = 12\text{V}$	20	–	–	mA
Off-State Output Currents CH UP, CH DOWN, CH RESET	I_{OZH}	$V_O = 12\text{V}$	–	–	1	μA
Low Level Output Currents P_0 to P_3	I_{OL}	$V_O = 12\text{V}$	20	–	–	mA
Off-State Output Currents P_0 to P_3	I_{OZH}	$V_O = 12\text{V}$	–	–	1	μA
High Level Output Currents VO, BR, CS	I_{OH}	$V_O = 0\text{V}$	–7	–	–	mA
Low Level Output Currents VO, BR, CS	I_{OL}	$V_O = 12\text{V}$	7	–	–	mA
High Level Output Currents POWER ON/OFF, CALL MUTE	I_{OH}	$V_O = 0\text{V}$	–20	–	–	mA
Low Level Output Currents POWER ON/OFF, CALL MUTE	I_{OL}	$V_O = 12\text{V}$	5	–	–	mA
High Level Output Current IR	I_{OH}	$V_O = 0\text{V}$	–15	–	–	mA
Low Level Output Current IR	I_{OL}	$V_O = 12\text{V}$	5	–	–	mA

Pin Connection Diagram

Power ON Input	1	28	Reception Indication Output
(0V) V_{SS}	2	27	$\overline{\text{CH RESET}}$
Transmission Signal Input	3	26	$\overline{\text{CH UP}}$
Automatic Clear Input	4	25	$\overline{\text{CH RUN}}$
Key Input I_1	5	24	Channel Control Output P_0
Key Input I_2	6	23	Channel Control Output P_1
Key Input I_3	7	22	Channel Control Output P_2
Scanner Output ϕ_A	8	21	Channel Control Output P_3
Scanner Output ϕ_B	9	20	Power ON/OFF Control Output
Scanner Output ϕ_C	10	19	Call Control Output
Scanner Output ϕ_D	11	18	Sound Mute Indication Output
OSC Input	12	17	D/A Output VO
OSC Output	13	16	D/A Output BR
V_{DD}	14	15	D/A Output CS

