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## 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, $T_{opr}$ .....	$-30^\circ$ to $+70^\circ\text{C}$
Storage Temperature Range, $T_{stg}$ .....	$-40^\circ$ 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 $\phi A$ to $\phi D$	$I_{OL}$	$V_O = 12\text{V}$	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	$\mu\text{A}$
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	$\mu\text{A}$
High Level Output Currents $V_O$ , BR, CS	$I_{OH}$	$V_O = 0\text{V}$	–7	–	–	mA
Low Level Output Currents $V_O$ , 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	<b>1</b>	<b>28</b>	Reception Indication Output
(0V) $V_{SS}$	<b>2</b>	<b>27</b>	$\overline{\text{CH RESET}}$
Transmission Signal Input	<b>3</b>	<b>26</b>	$\overline{\text{CH UP}}$
Automatic Clear Input	<b>4</b>	<b>25</b>	$\overline{\text{CH RUN}}$
Key Input $I_1$	<b>5</b>	<b>24</b>	Channel Control Output $P_0$
Key Input $I_2$	<b>6</b>	<b>23</b>	Channel Control Output $P_1$
Key Input $I_3$	<b>7</b>	<b>22</b>	Channel Control Output $P_2$
Scanner Output $\phi_A$	<b>8</b>	<b>21</b>	Channel Control Output $P_3$
Scanner Output $\phi_B$	<b>9</b>	<b>20</b>	Power ON/OFF Control Output
Scanner Output $\phi_C$	<b>10</b>	<b>19</b>	Call Control Output
Scanner Output $\phi_D$	<b>11</b>	<b>18</b>	Sound Mute Indication Output
OSC Input	<b>12</b>	<b>17</b>	D/A Output VO
OSC Output	<b>13</b>	<b>16</b>	D/A Output BR
$V_{DD}$	<b>14</b>	<b>15</b>	D/A Output CS

