

## NTE7004 Integrated Circuit Electronic Channel Select System Control

**Description:**

The NTE7004 contains CPU/PLL-excluded peripheral circuits such as band switch, +5V power supply (with  $\overline{RST}$ ), sync detector, low-pass filter for color TV/VCR frequency synthesizer channel select system use.

**Functions:**

- Band Switch (2-Input, 4-Output)
- Video Signal, Flyback Pulse, AFT Output-Used Detection of Tuning Mode and Horizontal Sync Mode
- +5V Power Supply, with  $\overline{RST}$  Output (for CPU)
- OP Amp for Low-Pass Filter (for Frequency Synthesizer)

**Features:**

- The Band Switch Truth Table can be changed in a short period of time at the user's option.
- The Band Switch is of PNP output type which need not be driven externally.
- The OP Amp for Low-Pass Filter is excellent in pulse response because of its High-Impedance Input Pin.

**Absolute Maximum Ratings:** ( $T_A = +25^\circ\text{C}$  unless otherwise specified)

Allowable Power Dissipation ( $T_A \leq +65^\circ\text{C}$ ), $P_{dmax}$ .....	770mW
Operating Temperature Range, $T_{opr}$ .....	$-20^\circ$ to $+65^\circ\text{C}$
Storage Temperature Range, $T_{stg}$ .....	$-55^\circ$ to $+125^\circ\text{C}$

**Band Switch Section**

$V_{CC1}$ Maximum Supply Voltage, $V_{13max}$ .....	15V
Maximum Load Current, $I_{14}$ , $I_{15}$ , $I_{16}$ , $I_{17max}$ .....	-50mA
Maximum Applied Voltage (Output OFF), $V_{14}$ , $V_{15}$ , $V_{16}$ , $V_{17max}$ .....	-15V
Maximum Applied Voltage (Input, $V_{CC} = 14V$ ), $V_{6max}$ , $V_{7ma}$ .....	12V

**+5V Power Supply Section**

$V_{CC2}$ Maximum Supply Voltage, $V_{10max}$ .....	15V
+5V Output Current, $I_{8max}$ .....	-38mA

**Absolute Maximum Ratings (Cont'd):** ( $T_A = +25^\circ\text{C}$  unless otherwise specified)

**Tuning Detector Section**

Maximum Input Voltage, $V_{2\text{max}}$ .....	3.5V
Maximum Input Voltage, $V_{3\text{max}}$ .....	$V_{\text{CC1}}$ V
Maximum Input Voltage (Negative Polarity), $-V_{2\text{max}}$ .....	-1.4V
Maximum Comparator Difference Voltage, $V_{19} - V_{20}$ .....	6V
Maximum Output Current, $I_{1\text{max}}$ .....	-3mA

**Low-Pass Filter Section**

Maximum Applied Voltage, $V_{12\text{max}}$ .....	35V
Maximum Input Voltage, $V_{11\text{max}}$ .....	5.9V

**Recommended Operating Conditions:** ( $T_A = +25^\circ\text{C}$  unless otherwise specified)

Parameter	Symbol	Min	Typ	Max	Unit
Supply Voltage Range ( $V_{\text{CC1}}$ ) ( $V_{\text{CC2}}$ )	$V_{10}$	9.0	12.0	14.0	V
	$V_{13}$	9.0	12.0	14.0	
Output Current (Tuning Detection Section)	$I_4, I_5$	-	-	3	mA
Load Current (LPF Section)	$I_{12}$	-	3	5	mA
Comparator Voltage Setting Range (Tuning Detector Section)	$V_{19}$	2.7	-	7.0	V

**Electrical Characteristics:** ( $T_A = +25^\circ\text{C}$ ,  $V_{\text{CC1}} = 12\text{V}$ ,  $V_{\text{CC2}} = 12\text{V}$  unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>Band Switch Section</b>						
Quiescent Current Dissipation	$I_{\text{CC1}}$		-	16.0	-	mA
Output Saturation Voltage	$F_{1 \text{ to } 4 \text{ sat}}$	$I_{\text{O}} = -40\text{mA}$	0	-	0.7	V
Input "H" Level Voltage	$V_{6\text{TH}}, V_{7\text{TH}}$		2.2	-	-	V
Input "L" Level Voltage	$V_{6\text{TL}}, V_{7\text{TL}}$		0	-	0.8	V
Output Leakage Current	$I_{\text{FL}}$	-15V	-	-	-50	$\mu\text{A}$
<b>+5V Power Supply Section</b>						
Quiescent Current Dissipation	$I_{\text{CC2}}$		-	3.6	-	mA
+5V Output Voltage	$V_8$	$I_8 = -30\text{mA}$	4.5	-	5.5	V
RST Output Voltage	$V_{9\text{sat}}$	$I_9 = -100\mu\text{A}$	4.5	-	5.5	V
<b>Tuning Detection Section</b>						
Input Threshold Voltage	$V_{2\text{TH}}$		0.4	0.72	1.5	V
Comparator Voltage	$V_{\text{C19}}$		3.7	4.0	4.3	V
Window Comparator "H" Voltage	$V_{\text{CH}}$		5.7	6.0	6.3	V
Window Comparator "L" Voltage	$V_{\text{CL}}$		2.7	3.0	3.3	V
Output Saturation Voltage	$V_{4\text{sat}}$	$I_{\text{sink}} = 2\text{mA}$	0	0.33	0.7	V
	$V_{5\text{sat}}$	$I_{\text{sink}} = 2\text{mA}$	0	0.33	0.7	
Low-Pass Filter Output Current	$I_{\text{OL}}$		-1.8	-	-0.9	mA
<b>LPF Section</b>						
Output Saturation Voltage	$V_{12\text{sat}}$		0	-	0.3	V
Input Threshold Voltage	$V_{11\text{TH}}$		2.0	-	2.4	V
Input Current	$I_{11}$		-	-	20	nA

### Band Switch Truth Table

Input		Output			
A (Pin7)	B (Pin6)	F <sub>1</sub> (Pin14)	F <sub>2</sub> (Pin15)	F <sub>3</sub> (Pin16)	F <sub>4</sub> (Pin17)
L	L	H	Z	Z	Z
H	L	Z	H	Z	Z
L	H	Z	Z	H	Z
H	H	Z	Z	Z	H

Z: High Impedance

### Operation of Tuning Detection Section

Tuning Mode	LPF Output	AFT	OUT1	OUT2
Unsynchronized	L	AFT-L	L	L
		AFT-C	L	L
		AFT-H	L	L
Synchronized	H	AFT-L	H	L
		AFT-C	H	H
		AFT-H	L	H

AFT-L:  $V_{AFT} < V_{CL}$

AFT-C:  $V_{CL} < V_{AFT} < V_{CH}$

AFT-H:  $V_{AFT} > V_{CH}$

### Pin Connection Diagram



