

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° to $+65^\circ\text{C}$
Storage Temperature Range, T_{stg}	-55° 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, $V_{CC} = 14\text{V}$), 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_{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_{CC1}) (V_{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: ($T_A = +25^\circ\text{C}$, $V_{CC1} = 12\text{V}$, $V_{CC2} = 12\text{V}$ unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Band Switch Section						
Quiescent Current Dissipation	I_{CC1}		-	16.0	-	mA
Output Saturation Voltage	$F_{1 \text{ to } 4 \text{ sat}}$	$I_O = -40\text{mA}$	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_{FL}	-15V	-	-	-50	μA
+5V Power Supply Section						
Quiescent Current Dissipation	I_{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
Tuning Detection Section						
Input Threshold Voltage	$V_{2\text{TH}}$		0.4	0.72	1.5	V
Comparator Voltage	V_{C19}		3.7	4.0	4.3	V
Window Comparator "H" Voltage	V_{CH}		5.7	6.0	6.3	V
Window Comparator "L" Voltage	V_{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_{OL}		-1.8	-	-0.9	mA
LPF Section						
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 ₁ (Pin14)	F ₂ (Pin15)	F ₃ (Pin16)	F ₄ (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



