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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 excellant in pulse response because of it's High–Impedance Input Pin.

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

Allowable Power Dissipation ($T_A \le$ +65°C), P_{dmax} 770mW
Operating Temperature Range, T_{opr} . . . . . –20° to +65°C
Storage Temperature Range, T_{stg} . . . . . –55° to +125°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°C unless otherwise specified)

Tuning Detector Section

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

Low–Pass Filter Section

Maximum Applied Voltage, V_{12max} 35V
Maximum Input Voltage, V_{11max} 5.9V

Recommended Operating Conditions: (T_A = +25°C unless otherwise specified)

Parameter	Symbol	Min	Typ	Max	Unit
Supply Voltage Range (V_{CC1})	V_{10}	9.0	12.0	14.0	V
(V_{CC2})	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°C, V_{CC1} = 12V, V_{CC2} = 12V 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	$F_{1\ to\ 4\ sat}$	I_O = –40mA	0	–	0.7	V
Input "H" Level Voltage	V_{6TH}, V_{7TH}		2.2	–	–	V
Input "L" Level Voltage	V_{6TL}, V_{7TL}		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 = –30mA	4.5	–	5.5	V
$\overline{RST}$ Output Voltage	V_{9sat}	I_9 = –100µA	4.5	–	5.5	V
Tuning Detection Section						
Input Threshold Voltage	V_{2TH}		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_{4sat}	I_{sink} = 2mA	0	0.33	0.7	V
	V_{5sat}	I_{sink} = 2mA	0	0.33	0.7	
Low–Pass Filter Output Current	I_{OL}		–1.8	–	–0.9	mA
LPF Section						
Output Saturation Voltage	V_{12sat}		0	–	0.3	V
Input Threshold Voltage	V_{11TH}		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

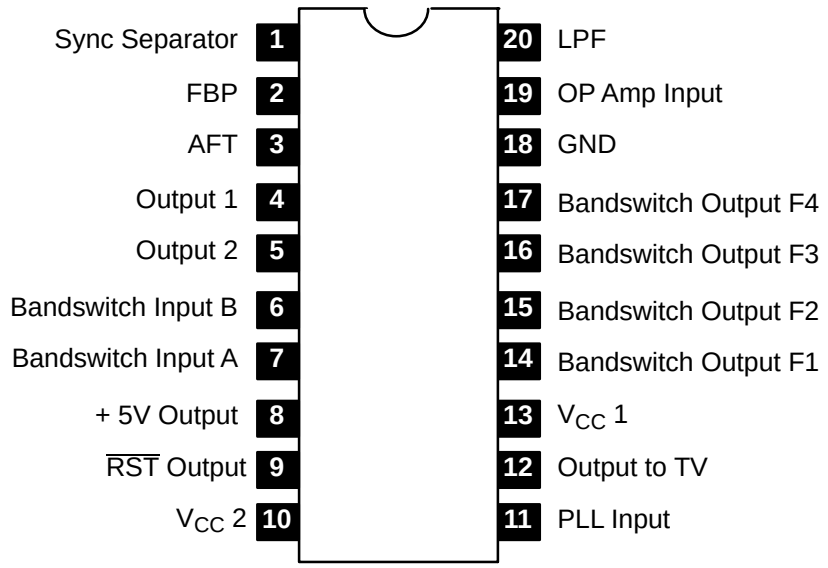
Z: High Impedance

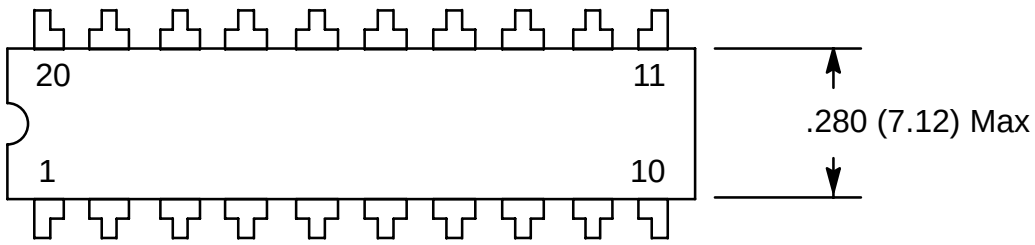
Operation of Tuning Detection Section

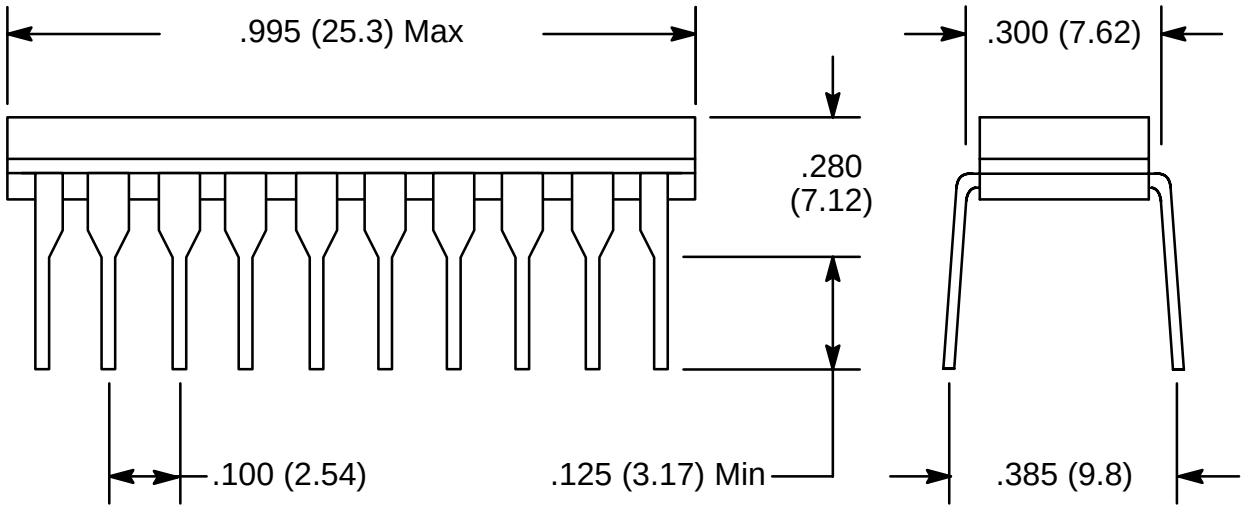
Tuning Mode	LPF Output	AFT	OUT1	OUT2
Unsynchronized	L	AFT–L	L	L
		AFT–C	L	L
		AFT–H	L	L
Synchronized	H	AFT–L	H	L
		AFT–C	H	H
		AFT–H	L	H

AFT–L: $V_{AFT} < V_{CL}$
AFT–C: $V_{CL} < V_{AFT} < V_{CH}$
AFT–H: $V_{AFT} > V_{CH}$

Pin Connection Diagram




20
11
1
10
.280 (7.12) Max


.995 (25.3) Max
.300 (7.62)
.280
(7.12)
.100 (2.54)
.125 (3.17) Min
.385 (9.8)