

NTE701 Integrated Circuit Video Signal Processor

Description:

The NTE701 is a monolithic integrated circuit TV signal processor in a 16-Lead DIP type package designed for use in color or monochrome receivers. Circuit functions include a horizontal oscillator with AFC, a sync separator, and a key AGC system. The AGC system provides output signals for IF (reverse) and tuner (forward and/or reverse). The wide frequency-range horizontal oscillator has high stability at 503.3kHz.

Features:

- Horizontal Oscillator with AFC
- Sync Separator with Noise Immunity
- Strobed AGC System
- IF AGC Output
- Delayed Outputs for Forward or Reverse AGC Tuners
- Internal Noise Threshold
- High-Impedance Video Input
- RF AGC Delay Externally Controlled
- Output Short-Circuit Protection

Absolute Maximum Ratings:

DC Supply Voltage	15V
Device Dissipation (Up to $T_A = +55^{\circ}\text{C}$)	750mW
Derate Linearly Above $+55^{\circ}\text{C}$	7.9mW/ $^{\circ}\text{C}$
Operating Ambient Temperature Range	-40° to $+85^{\circ}\text{C}$
Storage Temperature Range	-65° to $+150^{\circ}\text{C}$
Lead Temperature (During Soldering, 1/16" from case, 10sec max)	$+265^{\circ}\text{C}$

Electrical Characteristics: ($T_A = +25^{\circ}\text{C}$, Pin 5 to GND, Pin9 to 12V unless otherwise specified)

Parameter	Symbol	Test Conditions (Pins connected as Shown)	Min	Typ	Max	Unit
Power Supply Current	I_9	Measure Pin9	10	–	22	mA
Video Inverter Voltage	V_2	Pin1 to 14V, Pin2: 12k Ω to GND, Pin3: 27k Ω to GND, Measure Pin2	5.2	–	6.4	V
Sync Separator Output Voltage, High	V_{3H}	Pin1 to 14V, Pin2: 12k Ω to GND, Pin3: 27k Ω to GND, Measure Pin2	10.7	–	–	V
Sync Separator Output Voltage, Low	V_{3L}	Pin1 to 4V, Pin3: 27k Ω to GND, Measure Pin3		–	1.3	V
Video Noise Clamp Voltage	V_3	Pin1 to 3.1V, Pin3: 27k Ω to GND, Measure Pin3	10.7	–	–	V
AGC Discharge Current	I_{15}	Pin1 to 4.4V, Pin2: 10k Ω to GND, Pin15: 470 Ω to 6V, Pin16: 27k Ω to 12V, Measure Pin15	0.6	–	1.4	mA
AGC Charge Current	I_{15}	Pin1 to 3.45V, Pin2: 10k Ω to GND, Pin15: 470 Ω to 6V, Pin16: 27k Ω to 12V, Measure Pin15	–2.1	–	–4.8	mA
AGC Comparator Leakage Current	I_{15}	Pin1 to 3.45V, Pin2: 10k Ω to GND, Pin15: 4.7k Ω to 6V, Measure Pin15	–20	–	+20	μA
AGC Threshold Voltage	V_{1TH}	Adjust Pin1 for $I_{15} = 0 \pm 0.1\text{mA}$, Pin2: 10k Ω to GND, Pin15: 4.7k Ω to 6V, Pin16: 27k Ω to 12V, Measure Pin1	3.8	4.0	4.3	V
Minimum IF AGC	V_{13L}	Pin11: 10k Ω to GND, Pin12: 40k Ω to 12V, Pin13: 22k Ω to 5V, Pin14: 1k Ω to 2.95V, Pin15: 1k Ω to 2.2V, Measure Pin15	0.75	–	1.25	V
Forward Tuner AGC Leakage Current	I_{11}	Pin11: 10k Ω to GND, Pin12: 10k Ω to 12V, Pin13: 2.2k Ω to 5V, Pin14: 1k Ω to 2.95V, Pin15: 1k Ω to 5.3V, Measure Pin11	–20	–	+20	μA
Reverse Tuner Leakage Current	I_{12}	Pin11: 10k Ω to GND, Pin12: 10k Ω to 12V, Pin13: 2.2k Ω to 5V, Pin14: 1k Ω to 2.95V, Pin15: 1k Ω to 5.3V, Measure Pin12	–10	–	+10	μA
IF AGC High Voltage	V_{13H}	Pin11: 10k Ω to GND, Pin12: 10k Ω to 12V, Pin13: 2.2k Ω to 5V, Pin14: 1k Ω to 2.95V, Pin15: 1k Ω to 5.3V, Measure Pin13	3.65	–	4.15	V
Forward Tuner AGC Voltage, Low	V_{11L}	Pin11: 3.6k Ω to GND, Pin12: 3.16k Ω to 12V, Pin13: 2.2k Ω to 5V, Pin14: 1k Ω to 2.95V, Pin15: 1k Ω to 7.9V, Measure Pin11	0.8	–	3.2	V
Reverse Tuner AGC Voltage, Low	V_{12L}	Pin11: 3.6k Ω to GND, Pin12: 3.16k Ω to 12V, Pin13: 2.2k Ω to 5V, Pin14: 1k Ω to 2.95V, Pin15: 1k Ω to 7.9V, Measure Pin12	1.65	–	3.25	V
Maximum IF AGC Voltage	V_{13H}	Pin11: 10k Ω to GND, Pin12: 10k Ω to 12V, Pin13: 2.2k Ω to 5V, Pin14: 1k Ω to 2.95V, Pin15: 1k Ω to 7.9V, Measure Pin13	4.85	–	5.20	V
Phase Detector Leakage Cur- rent	I_{10L}	Pin2: 10k Ω to GND, Pin2 to GND, Pin4: 5k Ω to 3.8V, Pin10: 10k Ω to 6V, Limit GND at Pin3 to 10sec, Measure Pin10	–5	–	+5	μA
Phase Detector Bias Voltage	V_4		2.65	–	3.10	V
Oscillator Output Voltage	V_6	Connect OSC-loop to Pin6, Pin7, & Pin8, Pin3 to GND for 10sec max, Measure Pin6	0.6	–	1.6	V_{P-P}
Oscillator Free-Running Frequency	f_{6FR}	Connect OSC-loop to Pin6, Pin7, & Pin8, Pin3 to GND for 10sec max, Measure Pin6	475	–	535	kHz

Electrical Characteristics (Cont'd): (T_A = +25°C, Pin 5 to GND, Pin9 to12V unless otherwise specified)

Parameter	Symbol	Test Conditions (Pins connected as Shown)	Min	Typ	Max	Unit
Oscillator Frequency, High	f _{6H}	Connect OSC–CKT to Pin10, Pin7, & Pin8, Pin2: 10kΩ to GND, Pin4: 5kΩ to 18V, Measure Pin6	520	–	–	kHz
Oscillator Frequency, Low	f _{6L}	Connect OSC–CKT to Pin10, Pin7, & Pin8, Pin2: 10kΩ to GND, Pin4: 5kΩ to 3.8V, Measure Pin6	–	–	485	kHz
Sync Separator Short Circuit	I _{3Max}	Pin3: 10Ω to GND 10sec max	–	–	40	mA
Oscillator Output Short Circuit	I _{8Max}	Pin8: 10Ω to GND for 10sec max, Pin3: 10Ω to GND for 10sec max	–	–	130	mA

Pin Connection Diagram

