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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°C) 750mW
Derate Linearly Above +55°C . . . . . 7.9mW/°C
Operating Ambient Temperature Range . . . . . –40° to +85°C
Storage Temperature Range . . . . . –65° to +150°C
Lead Temperature (During Soldering, 1/16” from case, 10sec max) . . . . . +265°C

Electrical Characteristics: (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
Power Supply Current	I_9	Measure Pin9	10	–	22	mA
Video Inverter Voltage	V_2	Pin1 to 14V, Pin2: 12kΩ to GND, Pin3: 27kΩ to GND, Measure Pin2	5.2	–	6.4	V
Sync Separator Output Voltage, High	V_{3H}	Pin1 to 14V, Pin2: 12kΩ to GND, Pin3: 27kΩ to GND, Measure Pin2	10.7	–	–	V
Sync Separator Output Voltage, Low	V_{3L}	Pin1 to 4V, Pin3: 27kΩ to GND, Measure Pin3		–	1.3	V
Video Noise Clamp Voltage	V_3	Pin1 to 3.1V, Pin3: 27kΩ to GND, Measure Pin3	10.7	–	–	V
AGC Discharge Current	I_{15}	Pin1 to 4.4V, Pin2: 10kΩ to GND, Pin15: 470Ω to 6V, Pin16: 27kΩ to 12V, Measure Pin15	0.6	–	1.4	mA
AGC Charge Current	I_{15}	Pin1 to 3.45V, Pin2: 10kΩ to GND, Pin15: 470Ω to 6V, Pin16: 27kΩ to 12V, Measure Pin15	–2.1	–	–4.8	mA
AGC Comparator Leakage Current	I_{15}	Pin1 to 3.45V, Pin2: 10kΩ to GND, Pin15: 4.7kΩ to 6V, Measure Pin15	–20	–	+20	µA
AGC Threshold Voltage	V_{1TH}	Adjust Pin1 for I_{15} = 0±0.1mA, Pin2: 10kΩ to GND, Pin15: 4.7kΩ to 6V, Pin16: 27kΩ to 12V, Measure Pin1	3.8	4.0	4.3	V
Minimum IF AGC	V_{13L}	Pin11: 10kΩ to GND, Pin12: 40kΩ to 12V, Pin13: 22kΩ to 5V, Pin14: 1kΩ to 2.95V, Pin16: 1kΩ to 2.2V, Measure Pin15	0.75	–	1.25	V
Forward Tuner AGC Leakage Current	I_{11}	Pin11: 10kΩ to GND, Pin12: 10kΩ to 12V, Pin13: 2.2kΩ to 5V, Pin14: 1kΩ to 2.95V, Pin15: 1kΩ to 5.3V, Measure Pin11	–20	–	+20	µA
Reverse Tuner Leakage Current	I_{12}	Pin11: 10kΩ to GND, Pin12: 10kΩ to 12V, Pin13: 2.2kΩ to 5V, Pin14: 1kΩ to 2.95V, Pin15: 1kΩ to 5.3V, Measure Pin12	–10	–	+10	µA
IF AGC High Voltage	V_{13H}	Pin11: 10kΩ to GND, Pin12: 10kΩ to 12V, Pin13: 2.2kΩ to 5V, Pin14: 1kΩ to 2.95V, Pin15: 1kΩ to 5.3V, Measure Pin13	3.65	–	4.15	V
Forward Tuner AGC Voltage, Low	V_{11L}	Pin11: 3.6kΩ to GND, Pin12: 3.16kΩ to 12V, Pin13: 2.2kΩ to 5V, Pin14: 1kΩ to 2.95V, Pin15: 1kΩ to 7.9V, Measure Pin11	0.8	–	3.2	V
Reverse Tuner AGC Voltage, Low	V_{12L}	Pin11: 3.6kΩ to GND, Pin12: 3.16kΩ to 12V, Pin13: 2.2kΩ to 5V, Pin14: 1kΩ to 2.95V, Pin15: 1kΩ to 7.9V, Measure Pin12	1.65	–	3.25	V
Maximum IF AGC Voltage	V_{13H}	Pin11: 10kΩ to GND, Pin12: 10kΩ to 12V, Pin13: 2.2kΩ to 5V, Pin14: 1kΩ to 2.95V, Pin15: 1kΩ to 7.9V, Measure Pin13	4.85	–	5.20	V
Phase Detector Leakage Current	I_{10L}	Pin2: 10kΩ to GND, Pin2 to GND, Pin4: 5kΩ to 3.8V, Pin10: 10kΩ 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