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

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

Pin Connection Diagram

