

NTE851 Integrated Circuit VHF/UHF Prescaler

Description:

The NTE851 is an integrated circuit prescaler in a 14-Lead DIP type package intended for use in TV frequency synthesis tuning systems over an input frequency range of 90 to 1000MHz. It performs division by 256 in the UHF mode and division by 64 in the VHF mode.

The mode of operation can be selected by means of the bandswitch and the separate UHF and VHF input pins provided. The output is a complementary emitter-coupled stage with controlled slew rate for harmonic suppression.

All input pins should be AC coupled to the appropriate input signal source. Because of high sensitivity, unbuffered coupling from the local oscillator is possible in most cases. In the UHF mode, which is activated by applying a high level to the bandswitch input pin, all eight divider stages are operative, resulting in division by 256. In the VHF mode, activated by a low level at the VHF input pin, two divider stages are bypassed, resulting in division by 64. As a result, approximately the same range of output frequencies are generated for both the UHF and VHF TV bands. An internal amplifier/multiplexer provides this control while isolating both inputs and amplifying the VHF signal. In addition, harmonic output is reduced above 40MHz by limiting output signal rise and fall times and maintaining a balanced load.

Features:

- Broadband Operation: 90 to 1000MHz
- High Sensitivity
- Standard 5V Power Supply
- Dual Mode Operation: VHF/UHF
- Complementary ECL Outputs
- Independent VHF & UHF Input Pins

Absolute Maximum Ratings:

| | |
|---|----------------|
| DC Supply Voltage | 5.5V |
| DC bandswitch Voltage | 20V |
| RMS Input Voltage | 500mV |
| Device Dissipation ($T_A \leq +70^\circ\text{C}$) | 600mW |
| Derate Linearly Above 70°C | 7.5mW/°C |
| Operating Ambient Temperature Range | 0° to +70°C |
| Storage Temperature Range | -55° to +150°C |
| Lead Temperature (During Soldering, 1/16" from case, 10sec max) | +265°C |

Electrical Characteristics: ($T_A = +25^\circ\text{C}$, $V_+ = 5\text{V}$, $V_- = 0$ unless otherwise specified)

| Parameter | Symbol | Test Conditions | Min | Typ | Max | Unit |
|-------------------------------------|---------------|---|------|-----|-----|--------------------------|
| Supply Current | I_+ | Pin1 and Pin2 | 30 | 60 | 90 | mA |
| UHF Bandswitch Input Voltage | V_{BH} | High Level | 2.4 | - | - | V |
| VHF Bandswitch Input Voltage | V_{BL} | Low Level | - | - | 0.8 | V |
| UHF Bandswitch Input Current | I_{BH} | $V_{BH} = 20\text{V}$ | - | - | 0.5 | mA |
| VHF Bandswitch Input Current | I_{BL} | $V_{BL} = 0$ | - | - | -1 | mA |
| UHF Sensitivity Level Input Voltage | $V_{IN(U)}$ | $f_{IN} = 450 \text{ to } 950\text{MHz}$, $f_{OUT} = f_{IN}/256$ | - | - | 80 | mV_{rms} |
| VHF Sensitivity Level Input Voltage | $V_{IN(V)}$ | $f_{IN} = 90 \text{ to } 275\text{MHz}$, $f_{OUT} = f_{IN}/64$ | | | | mV_{rms} |
| Output Voltage | V_O | Pin4 or Pin5 | 0.65 | 1.0 | - | V_{P-P} |
| Output Voltage Rise and Fall Time | t_r , t_f | | - | 70 | - | ns |

Pin Connection Diagram

