

## NTE853 Integrated Circuit Low Power, Narrow Band, FM IF System

### **Description:**

The NTE853 is a low power narrow band FM IF system which includes: Oscillator, Mixer, Limiting Amplifier, Quadrature Discriminator, Active Filter, Squelch, Scan Control and Mute Switch. The NTE853 is designed for use in FM dual conversion communications equipment.

### **Features:**

- Low Drain Current (3mA Typ @  $V_{CC} = 6V$ )
- Excellent Sensitivity: Input Limiting Voltage ( $-3.0dB$ ) =  $5.0\mu V$  (Typ)
- Low Number of External Parts Required

### **Absolute Maximum Ratings:** ( $T_A = +25^\circ C$ , unless otherwise specified)

|                                                     |                               |
|-----------------------------------------------------|-------------------------------|
| Power Supply Voltage (Pin4), $V_{CC(max)}$          | 12V                           |
| Operating Supply Voltage Range (Pin4), $V_{CC}$     | 4V to 8V                      |
| Detector Input Voltage (Pin8),                      | $1V_{p-p}$                    |
| Input Voltage ( $V_{CC} \geq 6V$ , Pin16), $V_{16}$ | $1V_{RMS}$                    |
| Mute Function (Pin14), $V_{14}$                     | $-0.5V$ to $5V_{pk}$          |
| Operating Junction Temperature, $T_J$               | $+150^\circ C$                |
| Operating Ambient Temperature Range, $T_A$          | $-30^\circ$ to $+70^\circ C$  |
| Storage Temperature Range, $T_{stg}$                | $-65^\circ$ to $+150^\circ C$ |

### **Electrical Characteristics:** ( $V_{CC} = 6V$ , $f_O = 10.7MHz$ , $\Delta f = \pm 3kHz$ , $f_{mod} = 1kHz$ , $T_A = +25^\circ C$ unless otherwise specified)

| Parameter                      | Pin | Test Conditions | Min | Typ | Max | Unit       |
|--------------------------------|-----|-----------------|-----|-----|-----|------------|
| Drain Current, Squelch OFF     | 4   |                 | —   | 2   | —   | mA         |
| Drain Current, Squelch ON      | 4   |                 | —   | 3   | 5   | mA         |
| Input Limiting Voltage         | 16  | $-3dB$ Limiting | —   | 5   | 10  | $\mu V$    |
| Detector Output Voltage        | 9   |                 | —   | 3   | —   | V          |
| Detector Output Impedance      | —   |                 | —   | 400 | —   | $\Omega$   |
| Recovered Audio Output Voltage | 9   | $V_{in} = 10mV$ | 200 | 350 | —   | $mV_{rms}$ |

**Electrical Characteristics (Cont'd):** ( $V_{CC} = 6V$ ,  $f_O = 10.7MHz$ ,  $\Delta f = \pm 3kHz$ ,  $f_{mod} = 1kHz$ ,  $T_A = +25^\circ C$  unless otherwise specified)

| Parameter               | Pin | Test Conditions         | Min | Typ | Max | Unit      |
|-------------------------|-----|-------------------------|-----|-----|-----|-----------|
| Filter Gain             | –   | $V_{in} = 10mV$ , 10kHz | 40  | 46  | –   | dB        |
| Filter Output Voltage   | 11  |                         | 1.8 | 2.0 | 2.5 | V         |
| Trigger Hysteresis      | –   |                         | –   | 100 | –   | mV        |
| Mute Function, LOW      | 14  |                         | –   | 15  | 50  | $\Omega$  |
| Mute Function, HIGH     | 14  |                         | 1   | 10  | –   | $M\Omega$ |
| Scan Function, LOW      | 13  | Mute OFF, $V_{12} = 2V$ | –   | 0   | 0.5 | V         |
| Scan Function, HIGH     | 13  | Mute ON, $V_{12} = GND$ | 5.0 | –   | –   | V         |
| Mixer Conversion Gain   | 3   |                         | –   | 20  | –   | dB        |
| Mixer Input Resistance  | 16  |                         | –   | 3.3 | –   | $k\Omega$ |
| Mixer Input Capacitance | 16  |                         | –   | 2.2 | –   | pF        |

**Pin Connection Diagram**

