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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) = 5.0μV (Typ)
- Low Number of External Parts Required

Absolute Maximum Ratings: (T_A = +25°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°C
Operating Ambient Temperature Range, T_A . . . . . –30° to +70°C
Storage Temperature Range, T_{stg} . . . . . –65° to +150°C

Electrical Characteristics: (V_{CC} = 6V, f_O = 10.7MHz, $\Delta f = \pm$ 3kHz, f_{mod} = 1kHz, T_A = +25°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	μV
Detector Output Voltage	9		–	3	–	V
Detector Output Impedance	–		–	400	–	Ω
Recovered Audio Output Voltage	9	V_{in} = 10mV	200	350	–	mV_{rms}

Electrical Characteristics (Cont'd): (V_{CC} = 6V, f_O = 10.7MHz, Δf = ± 3kHz, f_{mod} = 1kHz, T_A = +25°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	Ω
Mute Function, HIGH	14		1	10	–	MΩ
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	–	kΩ
Mixer Input Capacitance	16		–	2.2	–	pF

Pin Connection Diagram