

Mute detector IC

BA3703F

The BA3703F is a mute detector designed for car stereos. It features low external parts count, and can detect mute whether the tape is playing or being fast-forwarded.

It features a wide power supply voltage range (6.0V to 16.0V) and is ideal for use in car stereos and other audio equipment.

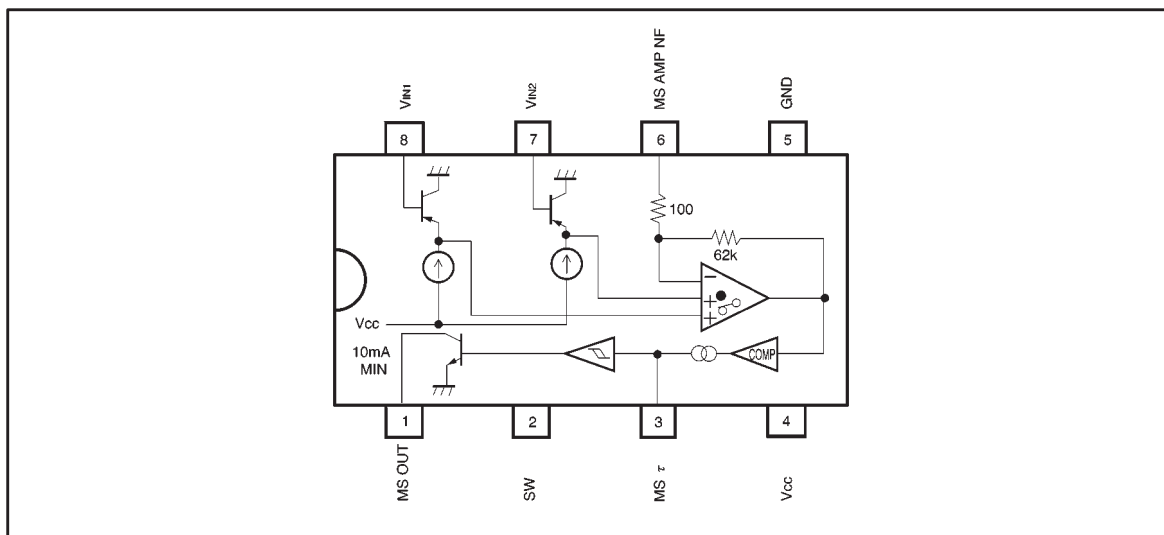
●Application

Car stereos

●Features

- 1) Can detect mute during playback and fast-forward.
- 2) The signal detect and mute detect times can be set using attached components.
- 3) Wide operating voltage range (6.0V to 16.0V).

●Block diagram



●Absolute maximum ratings (Ta = 25°C)

| Parameter | Symbol | Limits | Unit |
|-----------------------|------------------|----------|------|
| Power supply voltage | V _{CC} | 18 | V |
| Power dissipation | P _d | 550* | mW |
| Operating temperature | T _{opr} | -30~+85 | °C |
| Storage temperature | T _{stg} | -55~+125 | °C |

* When mounted on a 70mm×70mm×1.6mm glass epoxy board.
Reduced by 5.5mW for each increase in Ta of 1°C over 25°C.

●Recommended operating conditions (Ta = 25°C)

| Parameter | Symbol | Min. | Typ. | Max. | Unit |
|----------------------|-----------------|------|------|------|------|
| Power supply voltage | V _{CC} | 6.0 | — | 16.0 | V |

●Electrical characteristics (unless otherwise noted, $T_a = 25^\circ\text{C}$, $V_{CC} = 9\text{V}$, $V_{DD} = 5\text{V}$, $f = 1\text{kHz}$, measurement circuit : Fig. 1)

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Conditions |
|------------------------------|-----------|------|------|------|---------------|--|
| Quiescent current | I_Q | — | 0.85 | 2.0 | mA | $V_{2PIN}=0\text{V}$, $V_{IN}=0V_{rms}$ |
| Song detection level 1 | V_{MS1} | -55 | -52 | -49 | dBm | $V_{2PIN}=0\text{V}$, pin 8 input voltage |
| Song detection level 2 | V_{MS2} | -55 | -52 | -49 | dBm | $V_{2PIN}=5\text{V}$, pin 7 input voltage |
| Song detection time*1 | T_1 | 7.7 | 11 | 14.3 | ms | $C_\tau = 1\ \mu\text{F}$, $R_\tau = 33\text{k}\Omega$ $V_{IN}=0V_{rms} \rightarrow -40\text{dBm}$ |
| Mute detection time*2 | T_2 | 30 | 40 | 50 | ms | $C_\tau = 1\ \mu\text{F}$, $R_\tau = 33\text{k}\Omega$ $V_{IN}=-40\text{dBm} \rightarrow 0V_{rms}$ |
| Control pin high level | V_{THH} | 4.2 | — | — | V | — |
| Control pin low level | V_{THL} | — | — | 1.4 | V | — |
| Control pin input current | I_{IN} | — | 100 | 200 | μA | $V_{2PIN}=5\text{V}$ |
| Control pin output current | I_{OUT} | — | 140 | 270 | μA | $V_{2PIN}=0\text{V}$ |
| MS OUT maximum input current | I_{MSO} | 10 | — | — | mA | $V_{3PIN} \geq 4.2\text{V}$ |
| MS OUT leakage current | I_{MS} | — | 0.5 | 2.0 | μA | — |

*1 The time from when V_{IN} is input until MS OUT goes low.

*2 The time from when V_{IN} becomes $V_{IN} = 0$ until MS OUT goes high.

●Measurement circuit

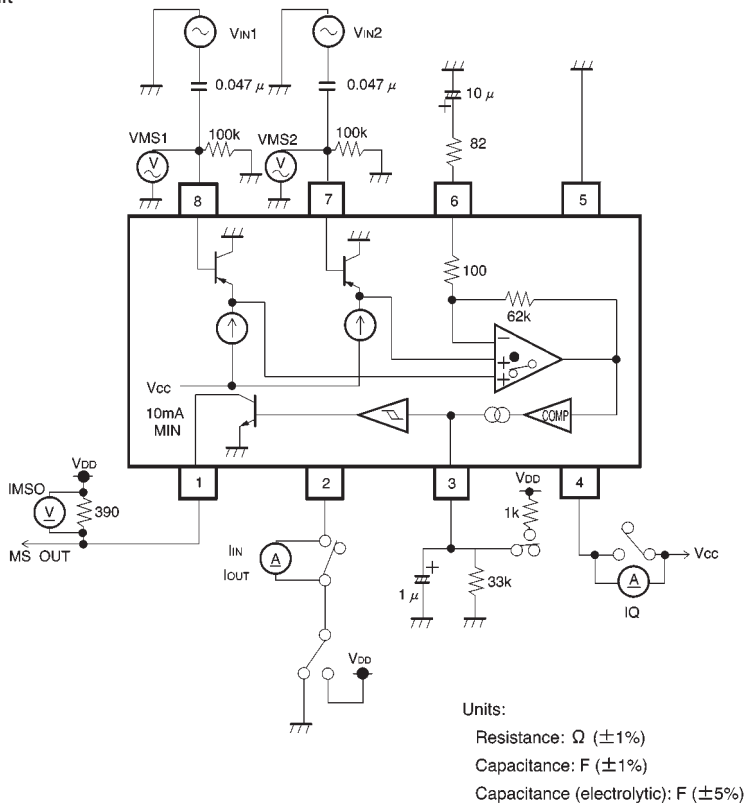


Fig. 1

● Application example

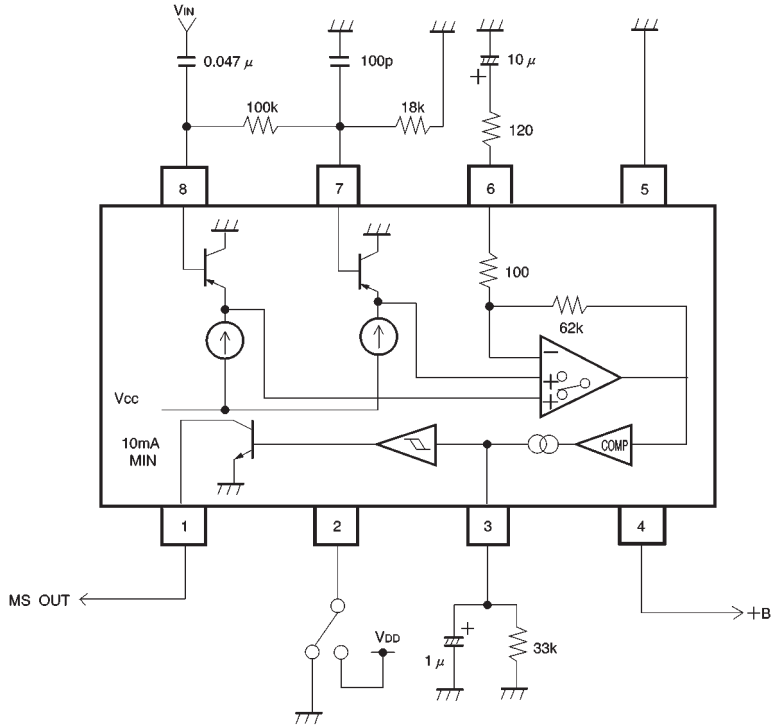


Fig. 2

● Electrical characteristic curves

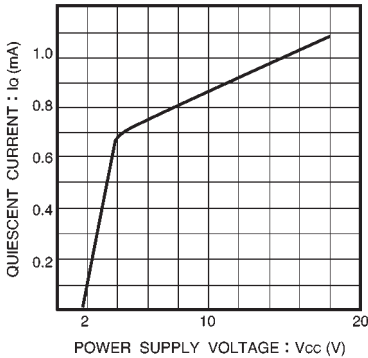


Fig. 3 Quiescent current vs. power supply voltage

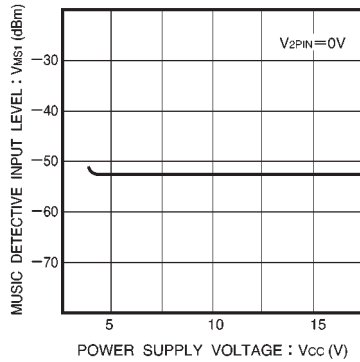


Fig. 4 Song detection input level 1 vs. power supply voltage

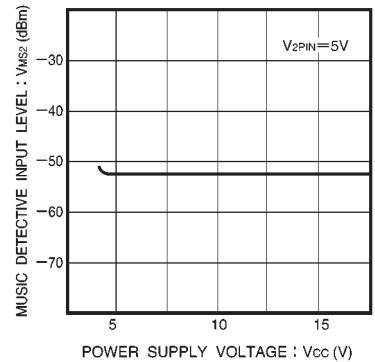


Fig. 5 Song detection input level 2 vs. power supply voltage

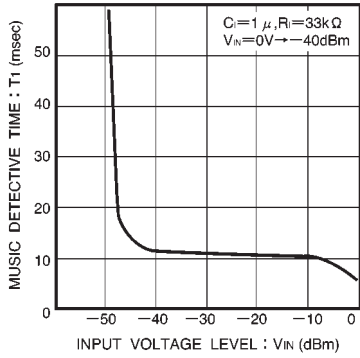


Fig. 6 Song detection time vs. input voltage level

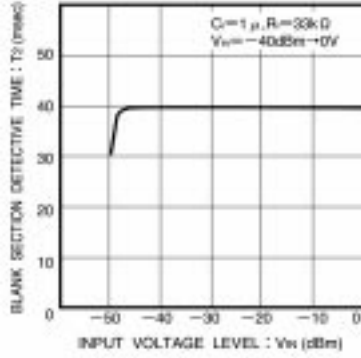


Fig. 7 Mute detection time vs. input voltage level

● External dimensions (Units: mm)

