

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.

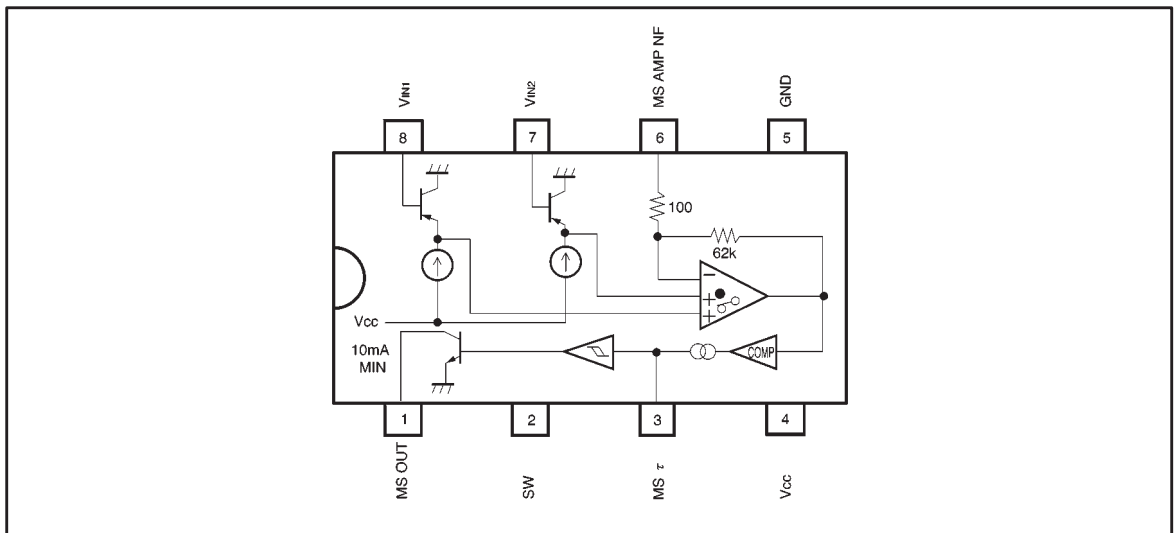
●Application

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

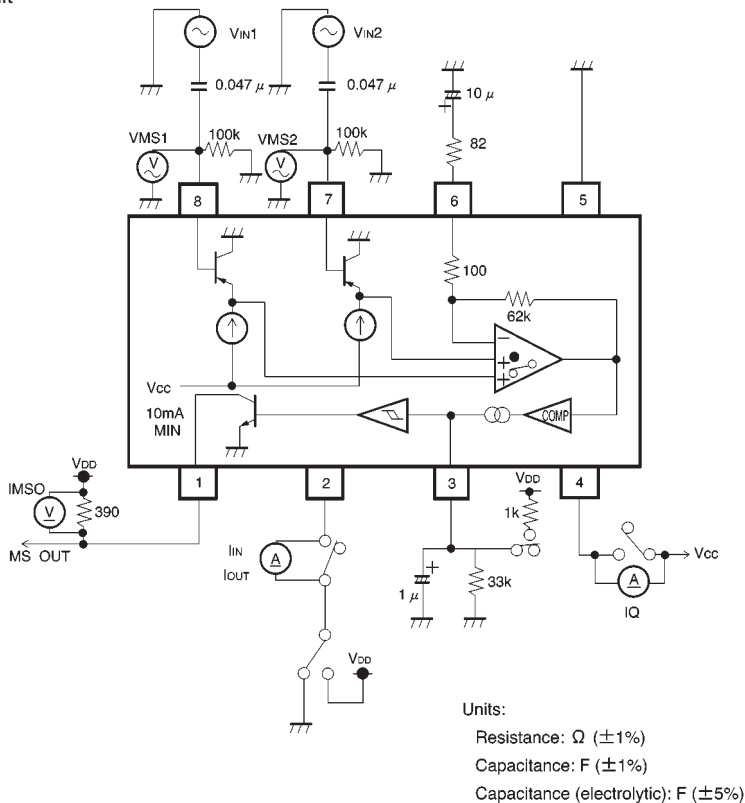


Fig. 1

●Application example

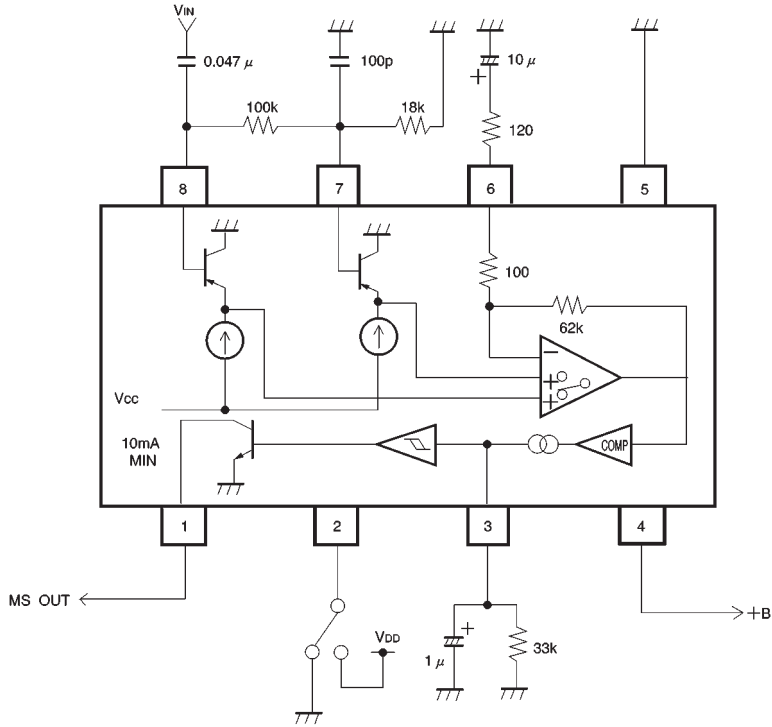


Fig. 2

●Electrical characteristic curves

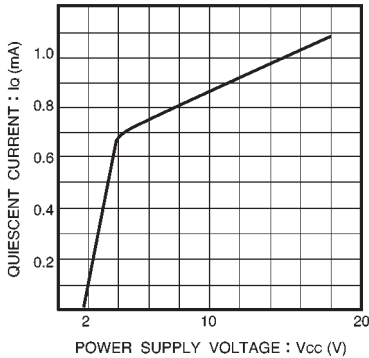


Fig. 3 Quiescent current vs. power supply voltage

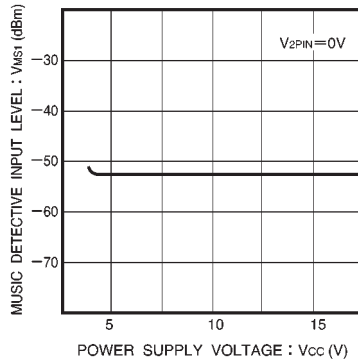


Fig. 4 Song detection input level 1 vs. power supply voltage

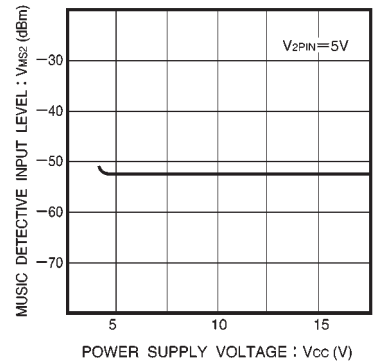


Fig. 5 Song detection input level 2 vs. power supply voltage

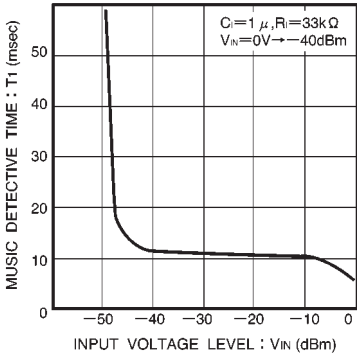


Fig. 6 Song detection time vs. input voltage level

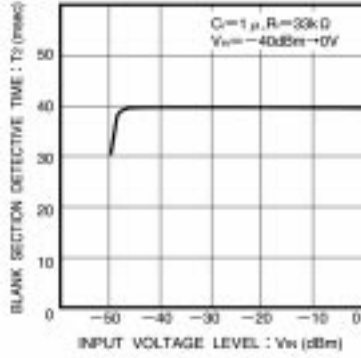


Fig. 7 Mute detection time vs. input voltage level

● External dimensions (Units: mm)

