

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.

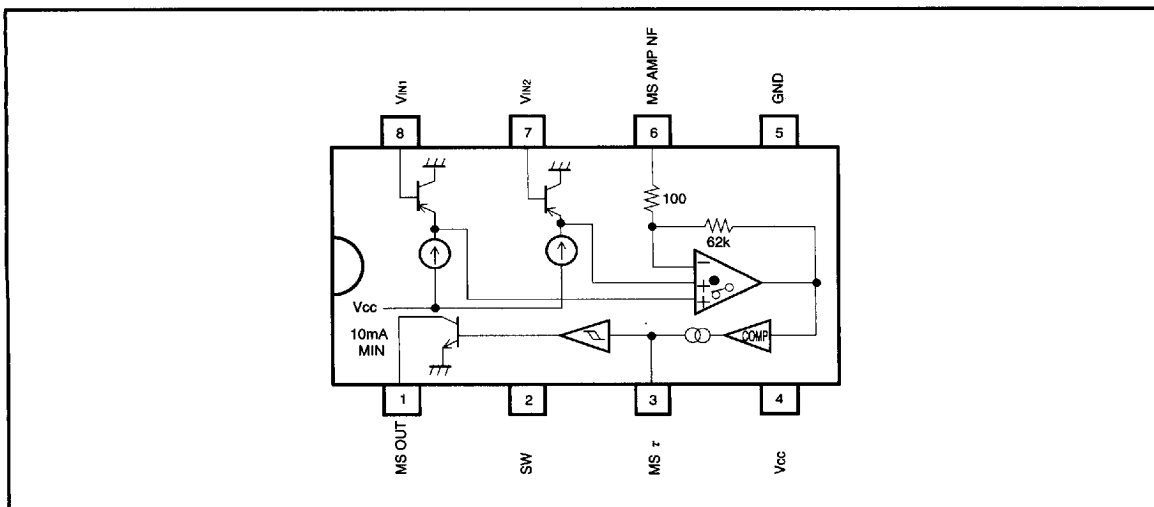
●Application

Car stereos

●Features

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

●Block diagram



●Absolute maximum ratings (Ta = 25°C)

Parameter	Symbol	Limits	Unit
Supply voltage	Vcc	18	V
Power dissipation	Pd	550*	mW
Operating temperature	Topr	-30~85	°C
Storage temperature	Tstg	-55~125	°C

* Reduced by 5.5mW for each increase in Ta of 1°C over 25°C.

●Recommended power supply voltage range (Ta = 25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit
Supply voltage	Vcc	6.0	—	16.0	V

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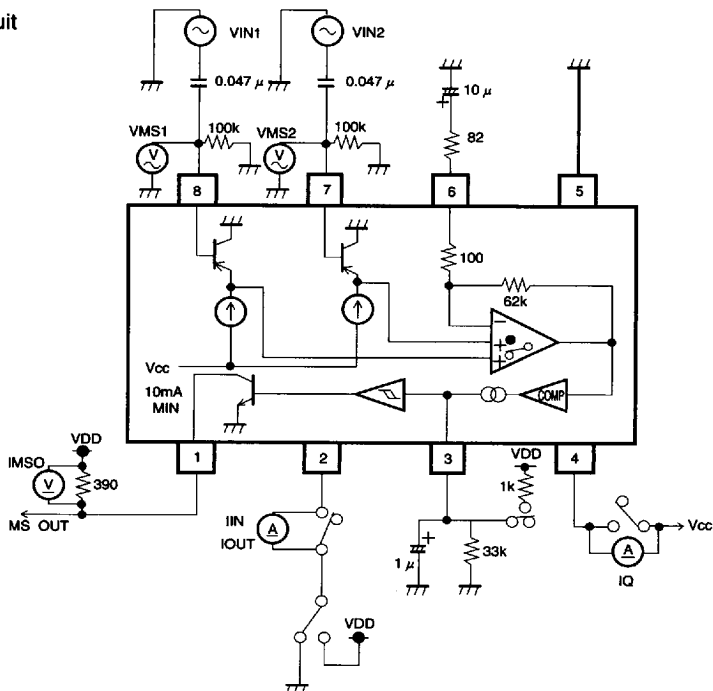
- Electrical characteristics (unless otherwise indicated, $T_a = 25^\circ\text{C}$, $V_{CC} = 9\text{V}$, $V_{DD} = 5\text{V}$, $f = 1\text{kHz}$,
Measurement circuit : Fig. 1)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Quiescent current	I_Q	—	0.85	2.0	mA	$V_{2PIN}=0\text{V}$, $V_{IN}=0\text{Vrms}$
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	msec	$C\tau = 1\mu\text{F}$, $R\tau = 33\text{k}\Omega$ $V_{IN}=0\text{Vrms} \rightarrow -40\text{dBm}$
Mute detection time *2	T_2	30	40	50	msec	$C\tau = 1\mu\text{F}$, $R\tau = 33\text{k}\Omega$ $V_{IN} = -40\text{dBm} \rightarrow 0\text{Vrms}$
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 max. input current	I_{MSO}	10	—	—	mA	$V_{3PIN} \geq 4.2\text{V}$
MS OUT leak 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



Units:

Resistance: Ω ($\pm 1\%$)

Capacitance: F ($\pm 1\%$)

Capacitance (electrolytic): F ($\pm 5\%$)

Fig. 1

● Application example

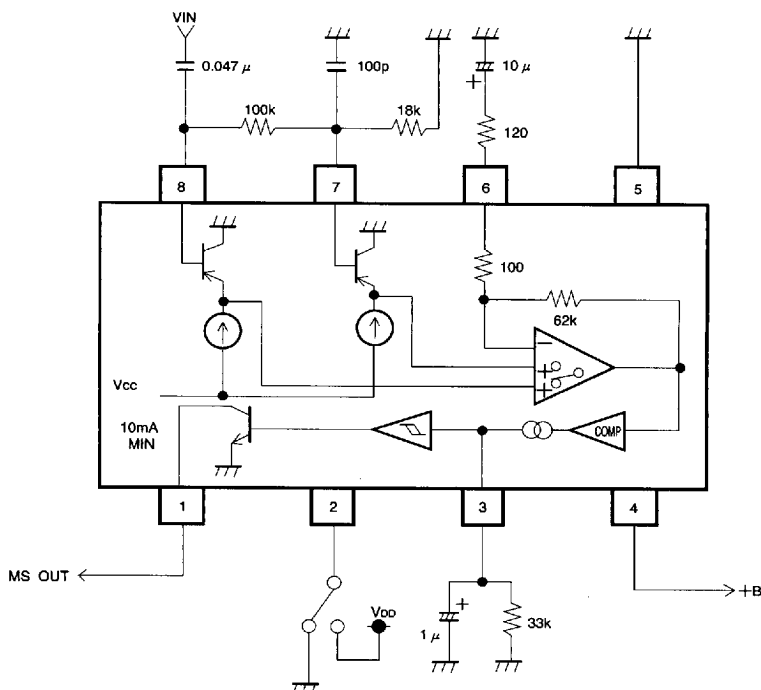


Fig. 2

● Electrical characteristic curves

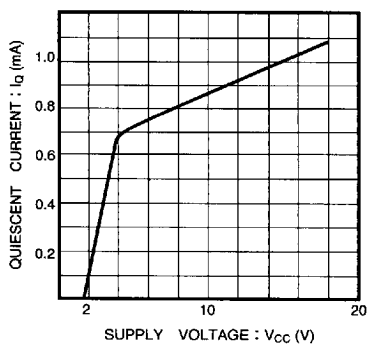


Fig. 3 Quiescent current vs. supply voltage

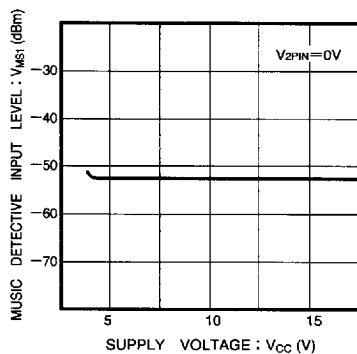


Fig. 4 Song detection input level 1 vs. supply voltage

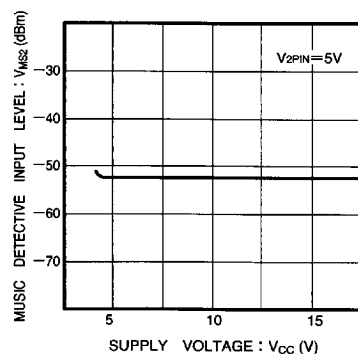


Fig. 5 Song detection input level 2 vs. supply voltage

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Mute detectors

Audio accessory components

● Electrical characteristic curves

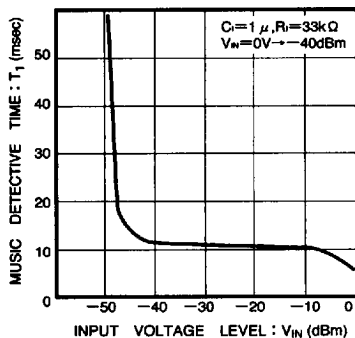


Fig. 6 Song detection time vs. input voltage level

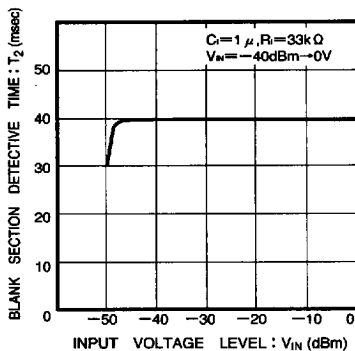
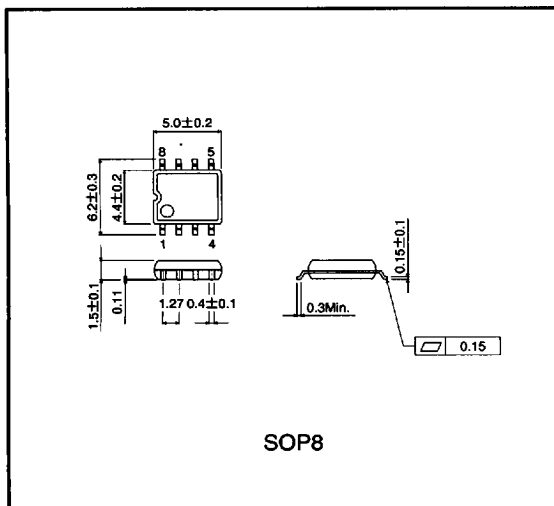


Fig. 7 Mute detection time vs. input voltage level

● External dimensions (Unit: mm)



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