

# 1.5V signal sensor

## BA3714F

The BA3714F is a signal sensor consisting of a sensor circuit which detects the presence of an input signal, a logic circuit which controls an output drive circuit based on the input signal, and an output drive circuit. The signal sensor circuit employs the dual-wave rectified current method for excellent response.

The outputs  $T_E$  of Pin 3 and  $T_{ON}$  of Pin 5 can be respectively set by choosing appropriate values for the capacitor between Pin 7 and ground and the capacitor between Pin 1 and ground.

Drive outputs include two systems OUT1 and OUT2 which are controlled by the logic block. These systems can be combined to enable a wide range of designs.

### ●Applications

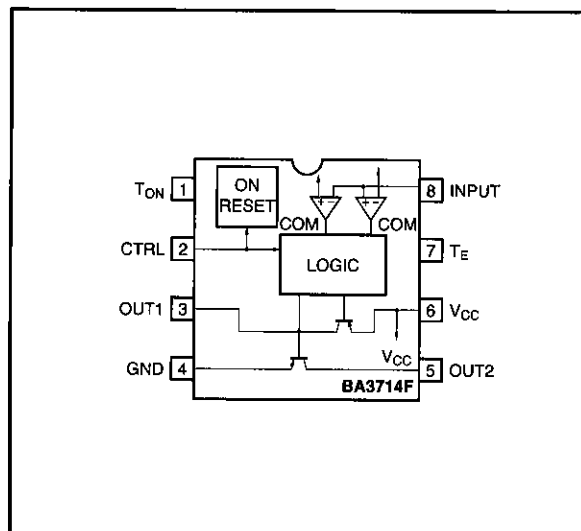
Tape end sensors for 1.5 to 3V headphone stereos

Song gap and song selection sensors

### ●Features

- 1) Operation possible at ultra-low voltages.
- 2) Minimal external components.
- 3) Uses dual rectified current method for excellent signal response.
- 4) Very low current consumption. ( $I_o = 0.9\text{mA}$ )
- 5) When used for a tape end sensor, can also be used with mechanical auto-off.
- 6) SOP 8-pin package allows space conservation on the board.

### ●Block diagram



● Absolute maximum ratings (Ta = 25°C)

Parameter	Symbol	Limits	Unit
Supply voltage	V <sub>CC</sub>	4.5	V
Power dissipation	P <sub>d</sub>	350*	mW
Operating temperature	T <sub>opr</sub>	-25~75	°C
Storage temperature	T <sub>stg</sub>	-55~125	°C

\* When used above Ta = 25°C, decreases 3.5 mW per degree.

● Recommended operating conditions (Ta = 25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit
Supply voltage	V <sub>CC</sub>	0.8	1.25	4.5	V

● Electrical characteristics (unless otherwise indicated, Ta = 25°C and V<sub>CC</sub> = 1.25V)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions	Measurement Circuit
Quiescent current	I <sub>Q</sub>	—	0.9	1.8	mA	V <sub>IN</sub> =0V <sub>rms</sub> , 2pin ; OPEN	Fig.1
ON detection time	T <sub>ON</sub>	3.1	4.4	5.7	s	—	Fig.1
END detection time	T <sub>E</sub>	0.98	1.4	1.82	s	—	Fig.1
Pin 3 output saturation voltage	V <sub>SAT3</sub>	—	0.11	0.3	V	I <sub>S</sub> =70 μA	Fig.1
Pin 3 source current	I <sub>SOURCE3</sub>	60	80	—	μA	—	Fig.1
Pin 5 output saturation voltage	V <sub>ONS</sub>	—	0.105	0.3	V	I <sub>S</sub> =10mA, input level is 1.0V <sub>P-P</sub>	Fig.1
Pin 5 sink current	I <sub>SINK5</sub>	—	—	7	mA	V <sub>S</sub> =0.3V	Fig.1
Input judgement level	V <sub>I</sub>	-22	-19	-16	dBm	f=100Hz	Fig.1
Input resistance	R <sub>IN</sub>	23	33	43	kΩ	V <sub>IN</sub> =100mV <sub>rms</sub>	Fig.1
Operation assurance input pulse width	W <sub>P Min.</sub>	200	—	—	ms	P <sub>W</sub> =0.5V <sub>P-P</sub> , T <sub>E</sub> ≥0.7s, V <sub>I</sub> ≤0.3V	Fig.1
Ripple rejection	RR	—	—	-20	dBm	V <sub>CC</sub> =0.9V, f <sub>RR</sub> =100Hz, I <sub>3</sub> =I <sub>5</sub> =0 μA	Fig.1

● Measurement circuit

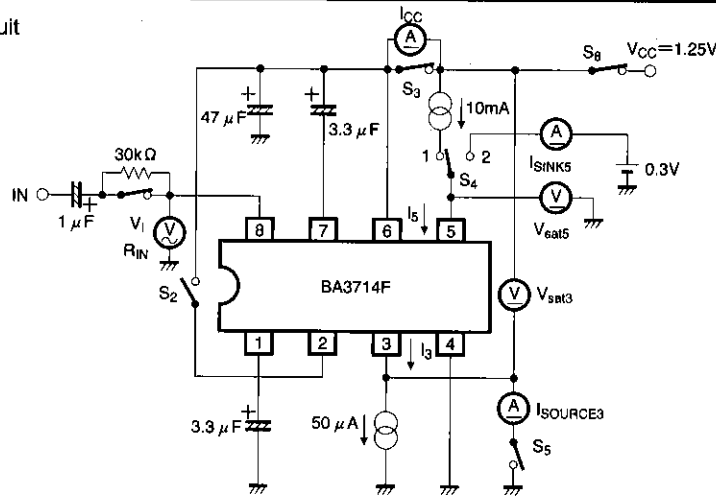


Fig. 1

●Timing chart

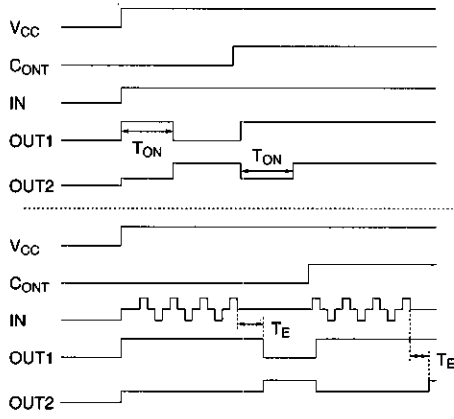


Fig. 2

●Application example

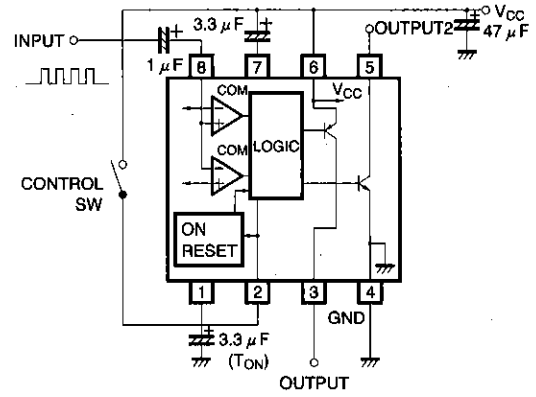
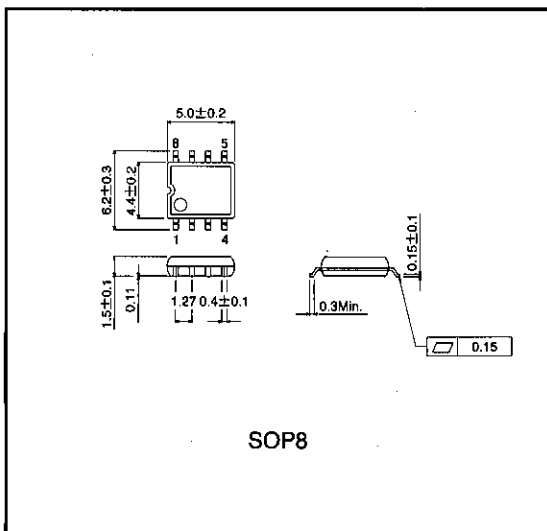


Fig. 3

●External dimensions (Unit: mm)



SOP8

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