

# 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  $V_{CC}$  and the capacitor between Pin 1 and ground.

Drive outputs include two systems OUT1 and OUT 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

Mute and song selection sensors

### ●Features

- 1) Operation possible at ultra-low voltages. ( $V_{CC} = 0.8$  to 4.5V)
- 2) Minimal attached components.
- 3) Uses dual rectified current method for excellent signal response.
- 4) Very low current dissipation. ( $I_Q = 0.9mA$ )
- 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.

### ●Absolute maximum ratings ( $T_a = 25^\circ C$ )

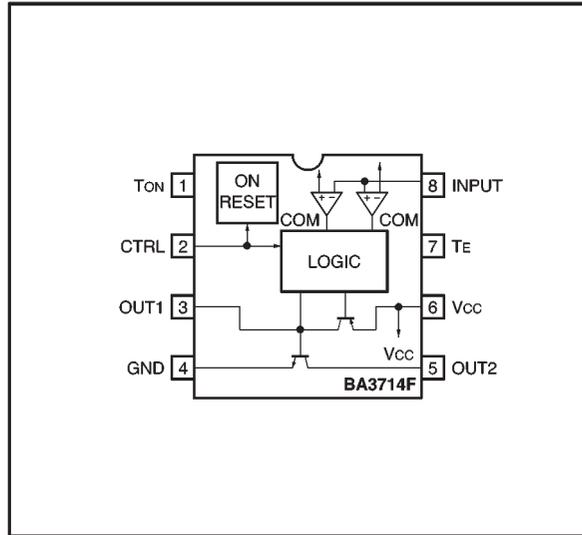
Parameter	Symbol	Limits	Unit
Power supply voltage	$V_{CC}$	4.5	V
Power dissipation	$P_d$	350*	mW
Operating temperature	$T_{opr}$	$-25 \sim +75$	$^\circ C$
Storage temperature	$T_{stg}$	$-55 \sim +125$	$^\circ C$

\* Reduced by 3.5mW for each increase in  $T_a$  of  $1^\circ C$  over  $25^\circ C$ .

### ●Recommended operating conditions ( $T_a = 25^\circ C$ )

Parameter	Symbol	Min.	Typ.	Max.	Unit
Power supply voltage	$V_{CC}$	0.8	1.25	4.5	V

## ●Block diagram

●Electrical characteristics (unless otherwise noted,  $T_a = 25^\circ\text{C}$  and  $V_{CC} = 1.25\text{V}$ )

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Quiescent current	$I_Q$	—	0.9	1.8	mA	$V_{IN}=0V_{rms}$ , 2pin : OPEN
ON detection time	$T_{ON}$	3.1	4.4	5.7	s	—
END detection time	$T_E$	0.98	1.4	1.82	s	—
Pin 3 output saturation voltage	$V_{sat3}$	—	0.11	0.3	V	$I_3=70\mu A$
Pin 3 source current	$I_{SOURCE3}$	60	80	—	$\mu A$	—
Pin 5 output saturation voltage	$V_{ON5}$	—	0.105	0.3	V	$I_5=10\text{mA}$ , input level is $1.0V_{P-P}$
Pin 5 sink current	$I_{SINK5}$	—	—	7	mA	$V_5=0.3\text{V}$
Input discrimination level	$V_I$	-22	-19	-16	dBm	$f=100\text{Hz}$
Input resistance	$R_{IN}$	23	33	43	k $\Omega$	$V_{IN}=100\text{mV}_{rms}$
Operation assurance input pulse width	$W_{P Min.}$	200	—	—	ms	$PW=0.5V_{P-P}$ , $T_E \geq 0.7\text{s}$ , $V_7 \leq 0.3\text{V}$
Ripple rejection ratio	RR	—	—	-20	dBm	$V_{CC}=0.9\text{V}$ , $f_{RR}=100\text{Hz}$ , $I_3=I_5=0\mu A$



● External dimensions (Units: mm)

