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 (Ta = 25°C)

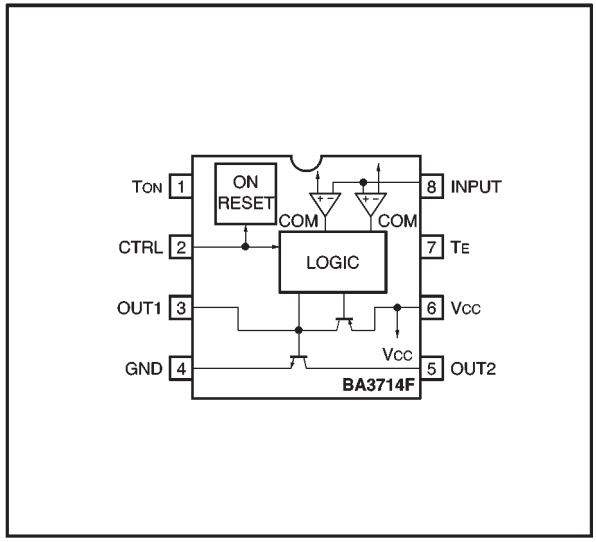
Parameter	Symbol	Limits	Unit
Power supply voltage	V_{CC}	4.5	V
Power dissipation	P_d	350*	mW
Operating temperature	Topr	−25～+75	℃
Storage temperature	Tstg	−55～+125	℃

* Reduced by 3.5mW for each increase in Ta of 1℃ over 25℃.

●Recommended operating conditions (Ta = 25°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, Ta = 25°C and V_{CC} = 1.25V)

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 μA
Pin 3 source current	$I_{SOURCE3}$	60	80	—	μA	—
Pin 5 output saturation voltage	V_{ON5}	—	0.105	0.3	V	I_5=10mA, input level is 1.0V_{P-P}
Pin 5 sink current	I_{SINK5}	—	—	7	mA	V_5=0.3V
Input discrimination level	V_I	−22	−19	−16	dBm	f=100Hz
Input resistance	R_{IN}	23	33	43	kΩ	V_{IN}=100mV_{rms}
Operation assurance input pulse width	$W_{P\ Min.}$	200	—	—	ms	Pw=0.5V_{P-P}, T_E≧0.7s, V_7≦0.3V
Ripple rejection ratio	RR	—	—	−20	dBm	V_{CC}=0.9V, f_{RR}=100Hz, I_3=I_5=0 μA

●Measurement circuit

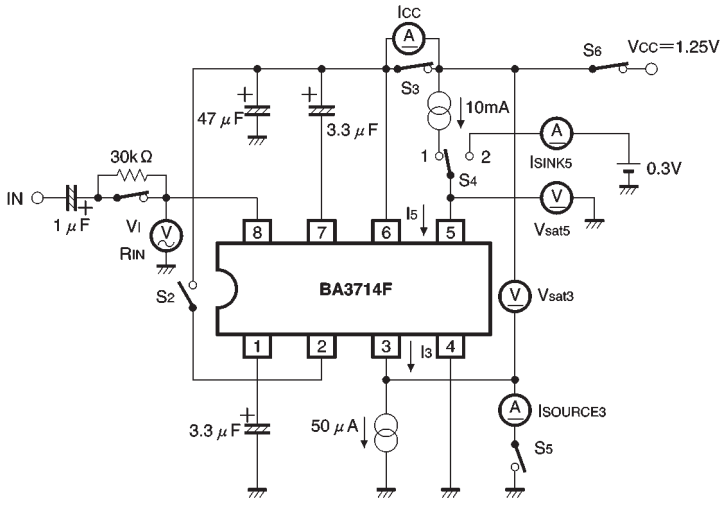


Fig. 1

●Timing chart

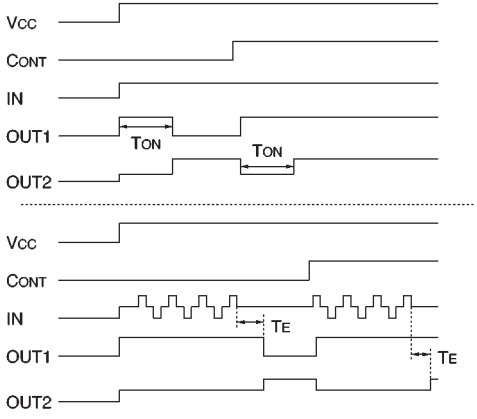


Fig. 2

●Application example

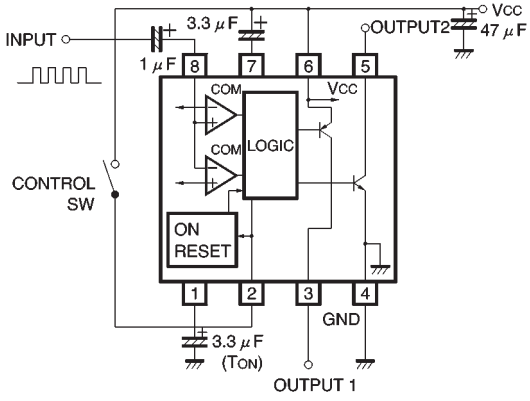
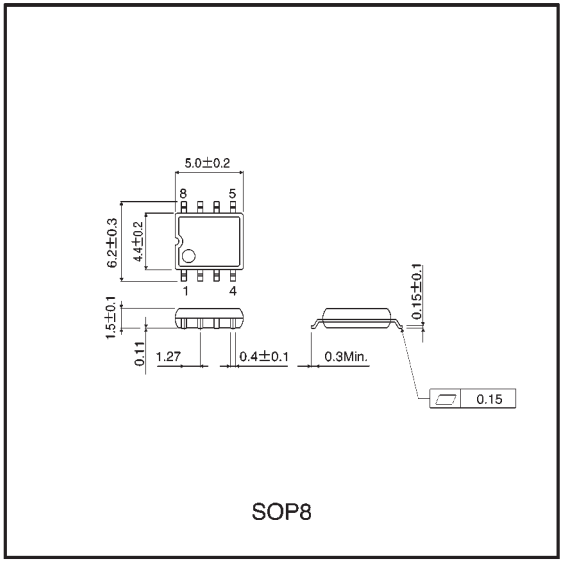


Fig. 3

●External dimensions (Units: mm)



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