

Pulse width controller for portable CD players

BA3890F

The BA3890F is an interface IC that provides gain for the PWM signal pulses used in digital servo systems, and allows gain adjustment to eliminate the dependence on battery voltage.

●Applications

Portable CD players CD-ROM, and MD players

●Features

- 1) Amplifies the pulse width in accordance with the battery voltage.
- 2) Gain switching is possible via the control pin.

●Absolute maximum ratings (Ta = 25°C)

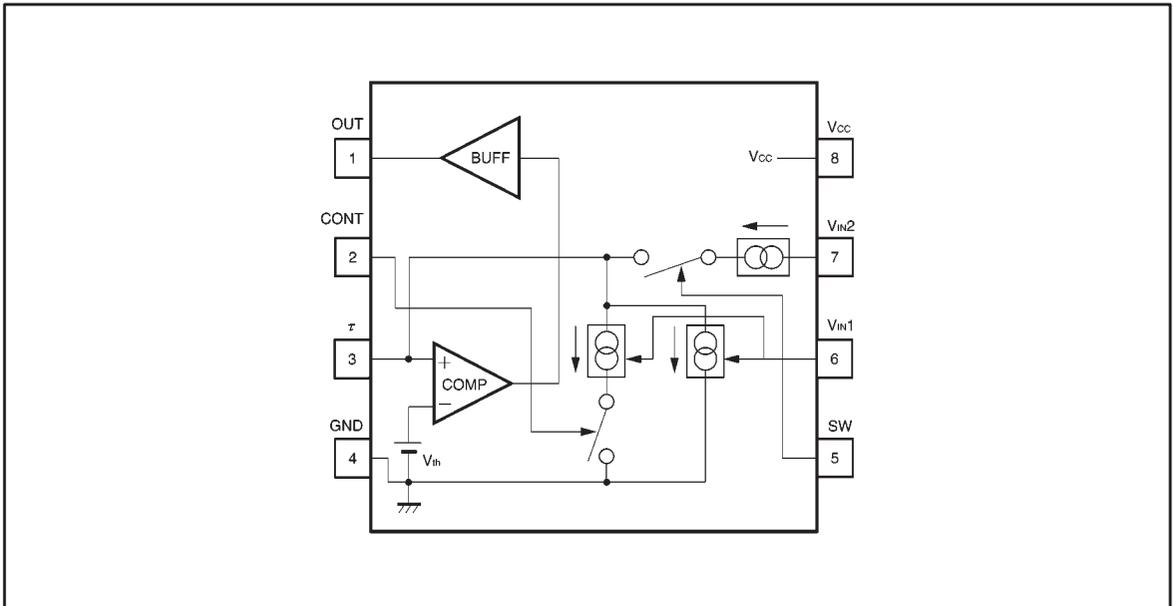
| Parameter | Symbol | Limits | Unit |
|-----------------------|------------------|----------|------|
| Power supply voltage | V _{CC} | 4.5 | V |
| Power dissipation | P _d | 450* | mW |
| Operating temperature | T _{opr} | -15~+50 | °C |
| Storage temperature | T _{stg} | -55~+125 | °C |
| Input pin voltage | V _{IN1} | 9.0 | V |

* Reduced by 4.5mW for each increase in Ta of 1°C over 25°C.

●Recommended operating conditions

| Parameter | Symbol | Limits | Unit |
|----------------------|-----------------|---------|------|
| Power supply voltage | V _{CC} | 2.9~3.6 | V |

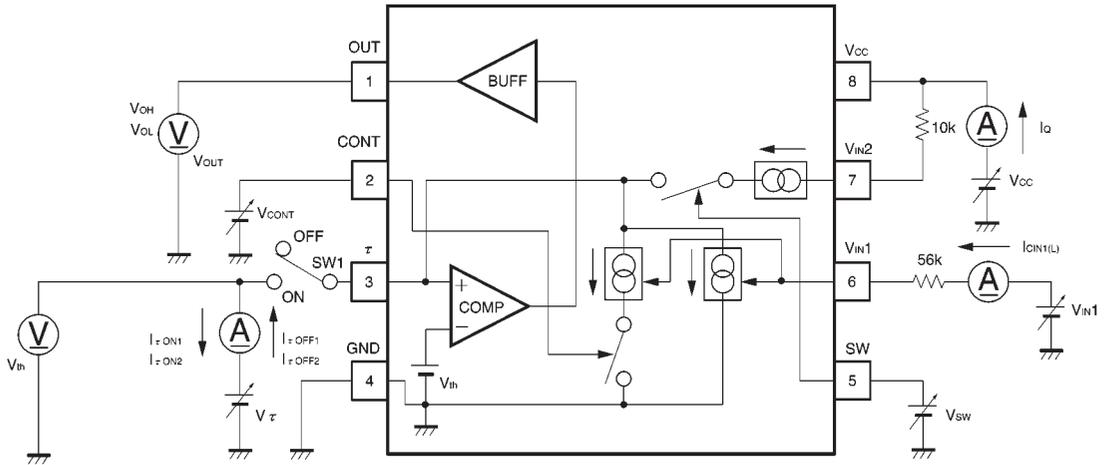
●Block diagram

●Electrical characteristics (Unless otherwise noted, $T_a = 25^\circ\text{C}$ and $V_{CC} = 3.0\text{V}$)

| Parameter | | Symbol | Min. | Typ. | Max. | Unit | Conditions |
|-----------------------------------|------|-----------------|-------|-------|-------|---------------|--|
| Circuit current | | I_Q | 1.4 | 2.1 | 2.8 | mA | $V_{IN1}=3.0\text{V}$ $V_{SW}=0.4\text{V}$, $V_{CONT}=0.4\text{V}$ |
| τ pin current 1 | ON | $I_{\tau ON1}$ | -150 | -130 | -110 | μA | $V_{IN1}=3.0\text{V}$, $V_{\tau}=1.0\text{V}$ $V_{SW}=1.2\text{V}$, $V_{CONT}=0.4\text{V}$ |
| | OFF | $I_{\tau OFF1}$ | 70 | 85 | 100 | μA | $V_{IN1}=3.0\text{V}$, $V_{\tau}=1.0\text{V}$ $V_{SW}=0.4\text{V}$, $V_{CONT}=0.4\text{V}$ |
| τ pin current 2 | ON | $I_{\tau ON2}$ | -65 | -50 | -35 | μA | $V_{IN1}=3.0\text{V}$, $V_{\tau}=1.0\text{V}$ $V_{SW}=1.2\text{V}$, $V_{CONT}=1.2\text{V}$ |
| | OFF | $I_{\tau OFF2}$ | 135 | 160 | 185 | μA | $V_{IN1}=3.0\text{V}$, $V_{\tau}=1.0\text{V}$ $V_{SW}=0.4\text{V}$, $V_{CONT}=1.2\text{V}$ |
| Comparator threshold | | V_{th} | 0.100 | 0.125 | 0.150 | V | $V_{IN1}=3.0\text{V}$, $V_{OUT}=1.5\text{V}$ $V_{SW}=0.4\text{V}$, $V_{CONT}=0.4\text{V}$ |
| Output voltage | High | V_{OH} | 2.8 | 3.0 | — | V | $V_{IN1}=3.0\text{V}$, $V_{\tau}=0.15\text{V}$ $V_{SW}=0.4\text{V}$, $V_{CONT}=0.4\text{V}$ |
| | Low | V_{OL} | — | 0.12 | 0.5 | V | $V_{IN1}=3.0\text{V}$, $V_{\tau}=0.10\text{V}$ $V_{SW}=0.4\text{V}$, $V_{CONT}=0.4\text{V}$ |
| V_{IN1} leak current at standby | | $I_{IN1(L)}$ | — | 0 | 5 | μA | $V_{IN1}=0\text{V}$, $V_{IN1}=3.0\text{V}$ $V_{SW}=0.4\text{V}$, $V_{CONT}=0.4\text{V}$ |
| Switch pin input detector level | High | V_{SWH} | 1.2 | — | — | V | — |
| | Low | V_{SWL} | — | — | 0.4 | V | — |
| CONT pin control voltage | High | V_{CONTH} | 1.2 | — | — | V | — |
| | Low | V_{CONTL} | — | — | 0.4 | V | — |

©Not designed for radiation resistance.

● Measurement circuit



SW1 is only off when I_{α} and $I_{IN1(L)}$ are being measured.

Fig.1

● Application example

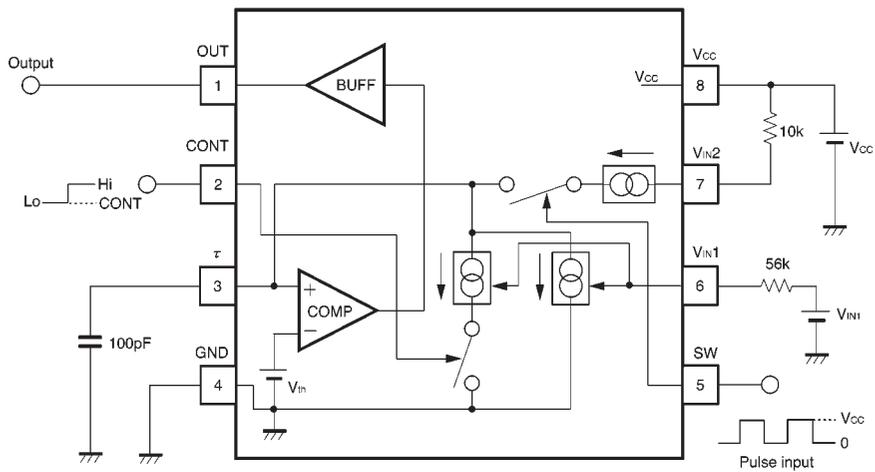


Fig.2

●Electrical characteristic curves

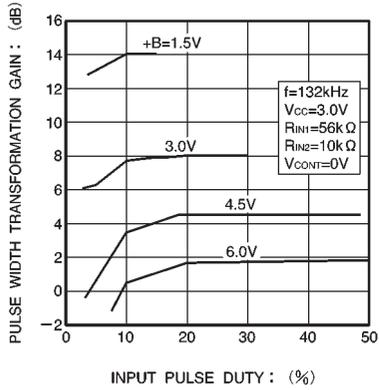


Fig.3 Gain vs. duty

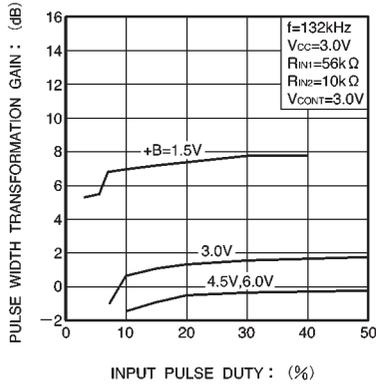
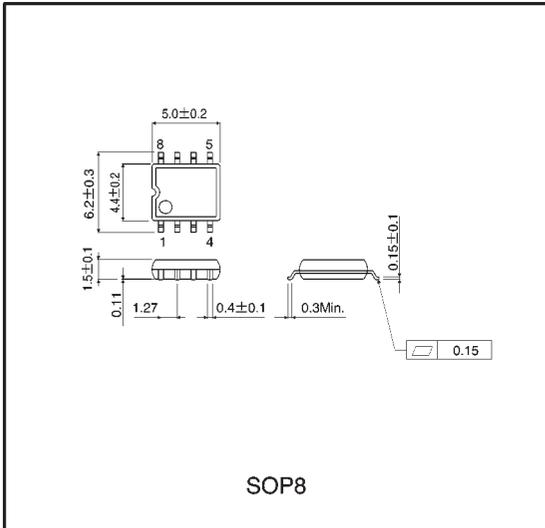


Fig.4 Gain vs. duty

●External dimensions (Units: mm)



SOP8