

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

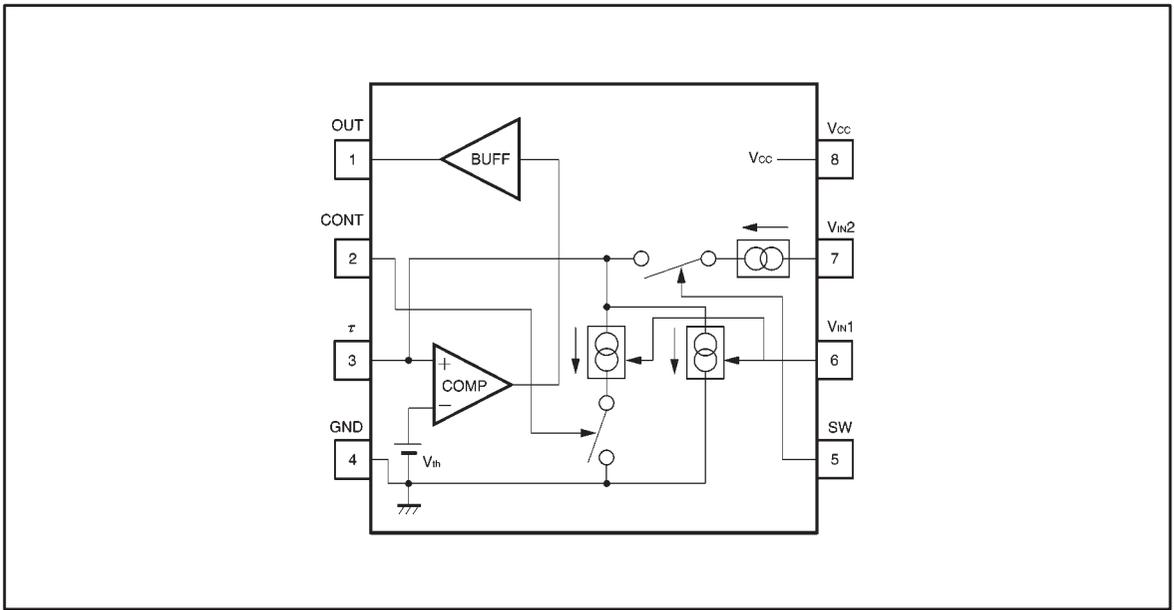
* Reduced by 4.5mW for each increase in Ta of 1°C over 25°C.

●Recommended operating conditions

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



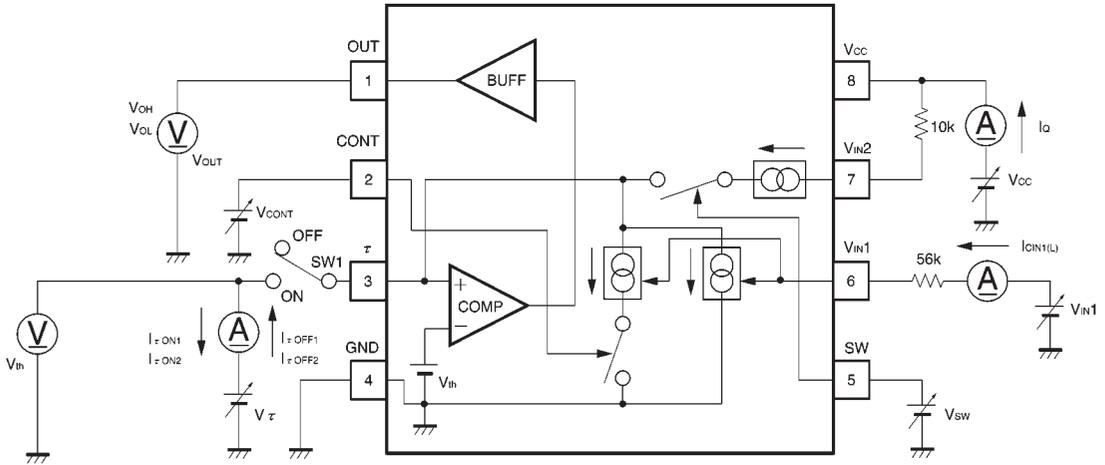
● Block diagram



● 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	—

● Measurement circuit



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

Fig.1

● Application example

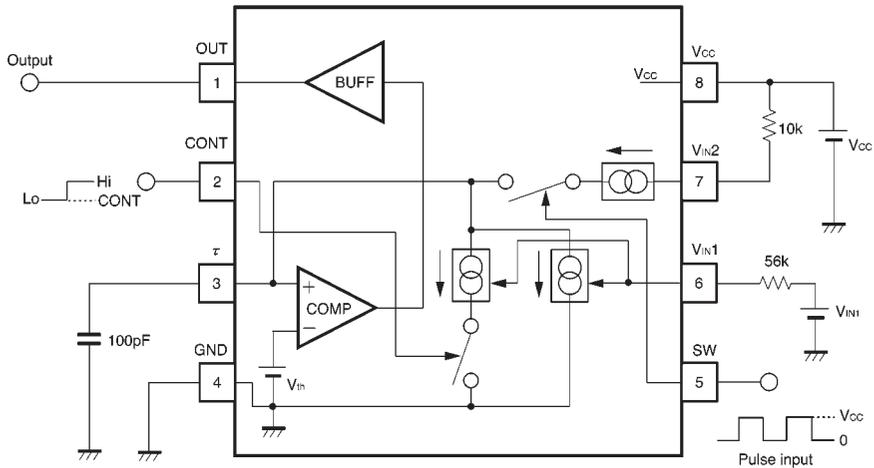


Fig.2

●Electrical characteristic curves

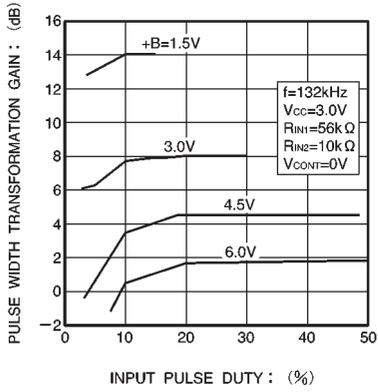


Fig.3 Gain vs. duty

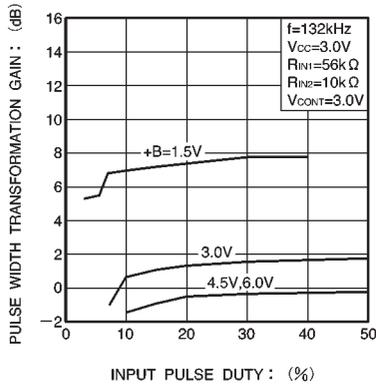


Fig.4 Gain vs. duty

●External dimensions (Units: mm)

