

### Features

- Wide Supply Voltage Range  
Single Supply: 2V to 36V  
Dual Supplies:  $\pm 1V$  to  $\pm 18V$
- Low Supply Current at  $V_{CC}=5V$ : 0.4mA
- Low Input Bias Current: 25nA (Typical)
- Open-Drain Output for Maximum Flexibility
- RoHS and Halogen free compliance
- package: SOT23-5

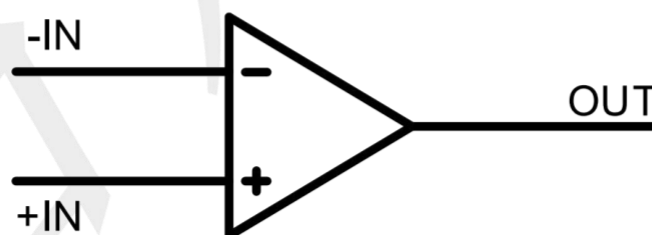
### Applications

- Battery Chargers
- DC-DC Modules
- PC Motherboards
- Cordless Telephones
- Switching Power Supplies
- Communication Equipment

### Pin Configurations

Pin Number	Pin Name	Pin Function
1	IN-	Channel Inverting Input
2	V-	Chip Supply Voltage(Negative)/GND
3	IN+	Channel Non-inverting Input
4	OUT	Channel Output
5	V+	Chip Supply Voltage(Positive)

### SIMPLIFIED SCHEMATIC

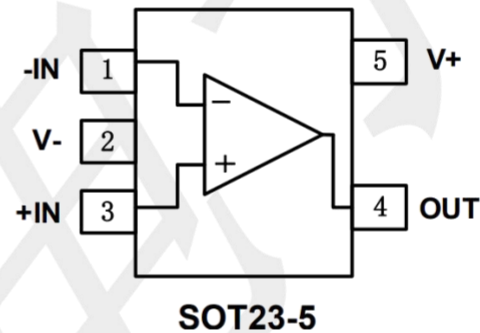


Simplified Schematic

### General Description

The consists of a single precision voltage . It is specifically designed to operate from a single power supply over wide range of voltages. Operation from split power supply is also possible and the low power supply current drain is independent of the magnitude of the power supply voltage.

### Pinout (top view)

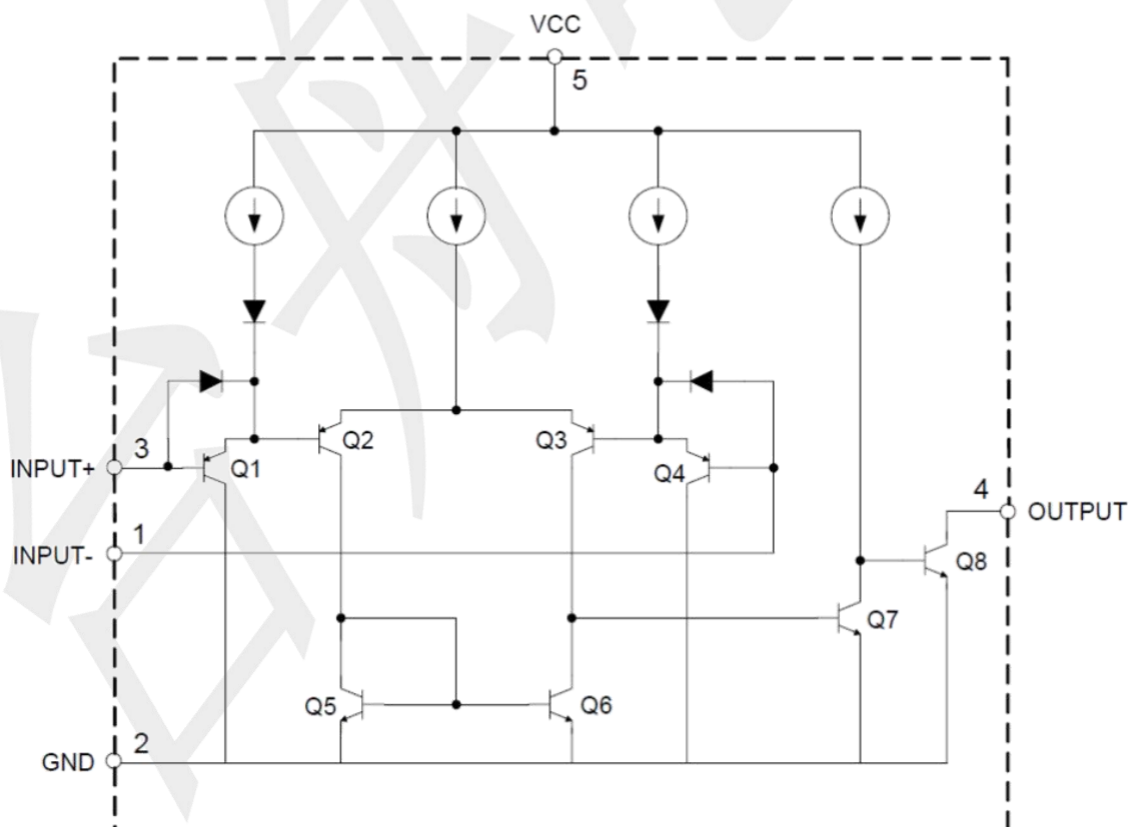


### Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Supply Voltage	$V_{CC}$	40	V
Differential Input Voltage	$V_{ID}$	40	V
Input Voltage	$V_{IN}$	-0.3 to 40	V
Input Current ( $V_{IN} < -0.3V$ ) (Note 5)	$I_{IN}$	50	mA
Output Short-circuit Current to Ground	--	Continuous	--
Power Dissipation ( $T_A = 25^\circ C$ )	$P_D$	620	mW
Operating Junction Temperature	$T_J$	150	$^\circ C$
Storage Temperature	$T_{STG}$	-65 to 120	$^\circ C$
Lead Temperature (Soldering, 10sec)	$T_{LEAD}$	260	$^\circ C$

Notes: Stresses greater than those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated under "Recommended Operating Conditions" is not implied. Exposure to "Absolute Maximum Ratings" for extended periods may affect device reliability.

### BLOCK DIAGRAM



### Recommended Operating Conditions

(@  $T_A = +25^\circ\text{C}$ , unless otherwise specified.)

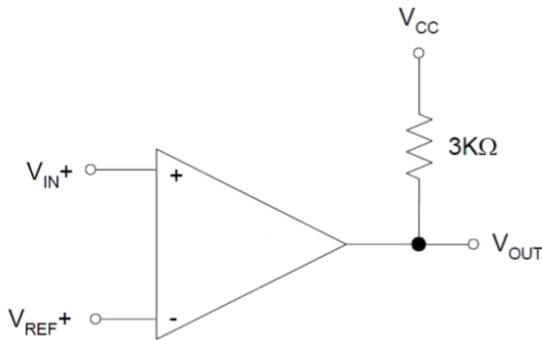
Symbol	Parameter	Min	Max	Unit
$V_{CC}$	Supply Voltage	2	36	V
$T_A$	Operating Ambient Temperature Range	-40	85	$^\circ\text{C}$

### Electrical Characteristics

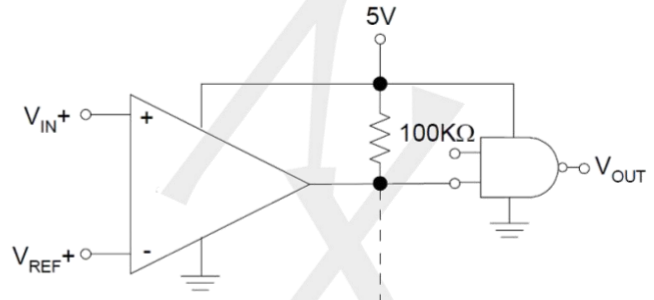
( $V_{CC}=5\text{V}$ ,  $\text{GND}=0\text{V}$ ,  $T_A=25^\circ\text{C}$ )

Parameter	Symbol	Conditions	Min	Typ	Max	Unit		
Input Offset Voltage	$V_{OS}$	$V_{OUT}=1.4\text{V}$ , $V_{CC}=5$ to $30\text{V}$	--	1	5	mV		
			--	--	7			
Input Bias Current	$I_B$	$I_{IN+}$ or $I_{IN-}$ with output in linear range, $V_{CM} = 0\text{V}$	--	25	250	nA		
			--	--	400			
Input Offset Current	$I_{IO}$	$I_{IN+}-I_{IN-}$ , $V_{CM}=0\text{V}$	--	5	50	nA		
			--	--	200			
Input Common Mode Voltage Range	—	$V_{CC}=30\text{V}$	0	--	$V_{CC}-1.5$	V		
Supply Current	$I_{CC}$	$R_L=\infty$	$V_{CC}=5\text{V}$		--	0.4	1	mA
			$V_{CC}=30\text{V}$		--	--	2	
			$V_{CC}=5\text{V}$		--	0.5	1.7	
			$V_{CC}=30\text{V}$		--	--	3	
Voltage Gain	$G_V$	$V_{CC}=15\text{V}$ , $R_L \geq 15\text{k}\Omega$ , $V_{OUT}=1$ to $11\text{V}$	50	200	--	V/mV		
Large Signal Response Time	—	$V_{IN}=\text{TTL Logic Swing}$ , $R_L=5.1\text{k}\Omega$	--	200	--	ns		
Response Time	—	$R_L=5.1\text{k}\Omega$	--	1.3	--	$\mu\text{s}$		
Output Sink Current	$I_{SINK}$	$V_{IN-}=1\text{V}$ , $V_{IN+}=0\text{V}$ , $V_{OUT}=1.5\text{V}$	6	16	--	mA		
Output Leakage Current	$I_{LEAK}$	$V_{IN-}=0\text{V}$ , $V_{IN+}=1\text{V}$ , $V_{OUT}=5\text{V}$	--	0.1	--	nA		
		$V_{IN-}=0\text{V}$ , $V_{IN+}=1\text{V}$ , $V_{OUT}=30\text{V}$	--	--	1	$\mu\text{A}$		
Saturation Voltage	$V_{SAT}$	$V_{IN-}=1\text{V}$ , $V_{IN+}=0\text{V}$ , $I_{SINK} \leq 4\text{mA}$	--	200	400	mV		
			--	--	500			

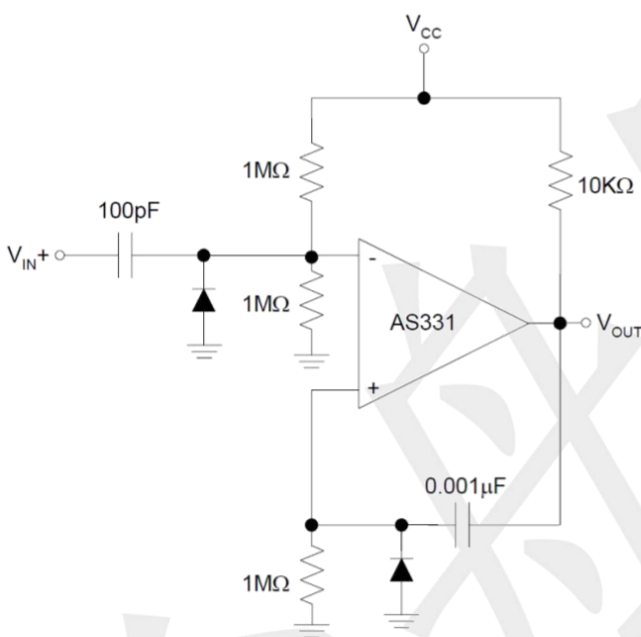
### Typical Application



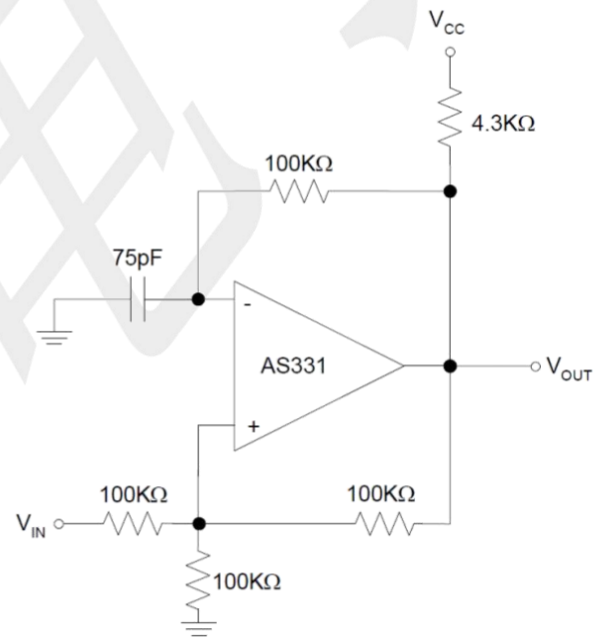
Basic Comparator



Driving CMOS



One Shot Multivibrator



Squarewave Oscillator

### Layout Guidelines

For accurate comparator applications without hysteresis it is important maintain a stable power supply with minimized noise and glitches, which can affect the high-level input common mode voltage range. In order to achieve this, it is best to add a bypass capacitor between the supply voltage and ground. This should be implemented on the positive power supply and negative supply (if available). If a negative supply is not being used, do not put a capacitor between the IC's GND pin and system ground.

### Typical Performance Characteristics

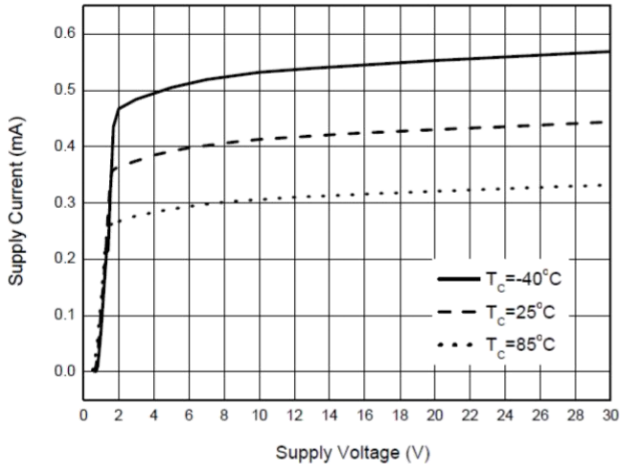


Fig. 1 Supply Current vs. Supply Voltage

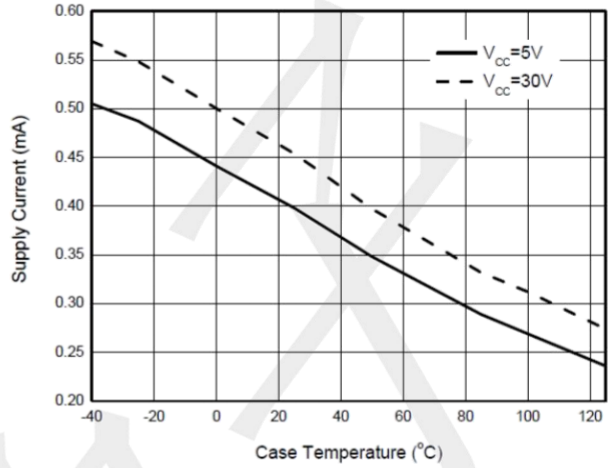


Fig. 2 Supply Current vs. Case Temperature

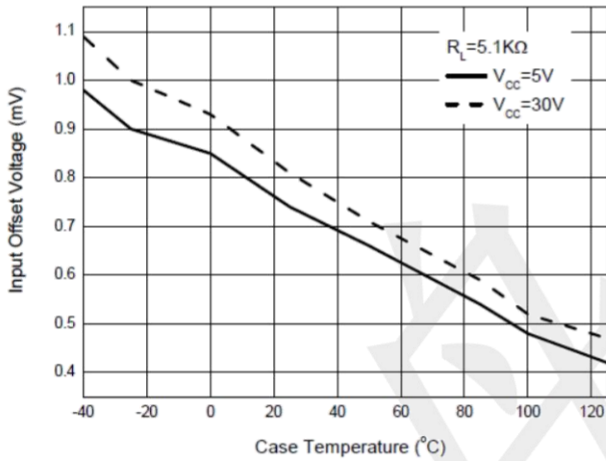


Fig. 3 Input Offset Voltage vs. Case Temperature

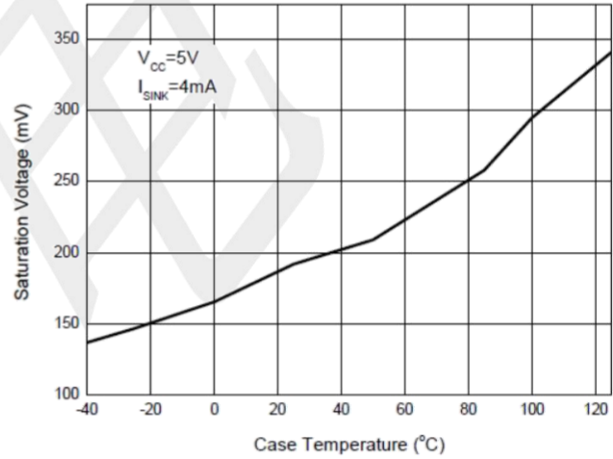


Fig. 4 Saturation Voltage vs. Case Temperature

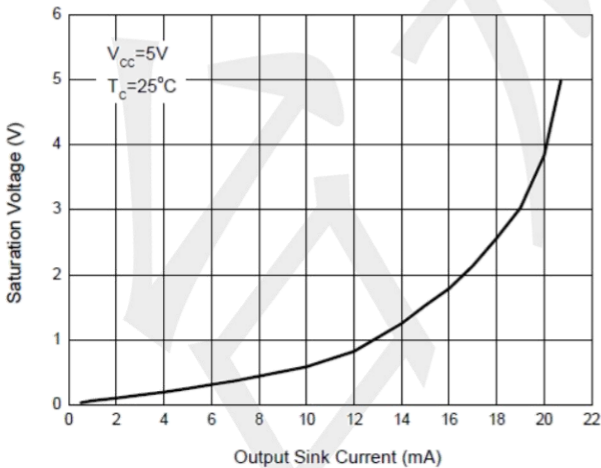


Fig. 5 Saturation Voltage vs. Output Sink Current

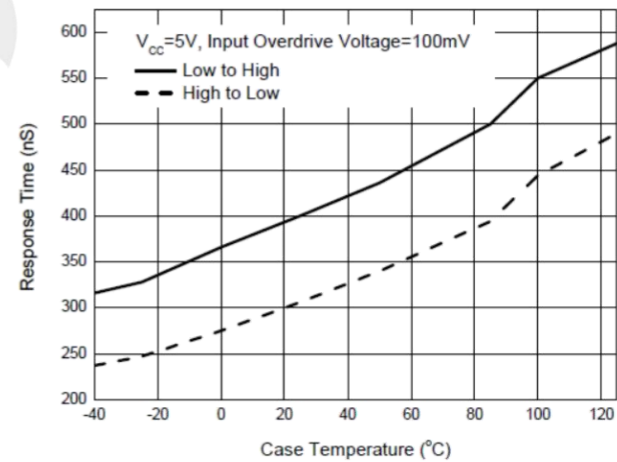
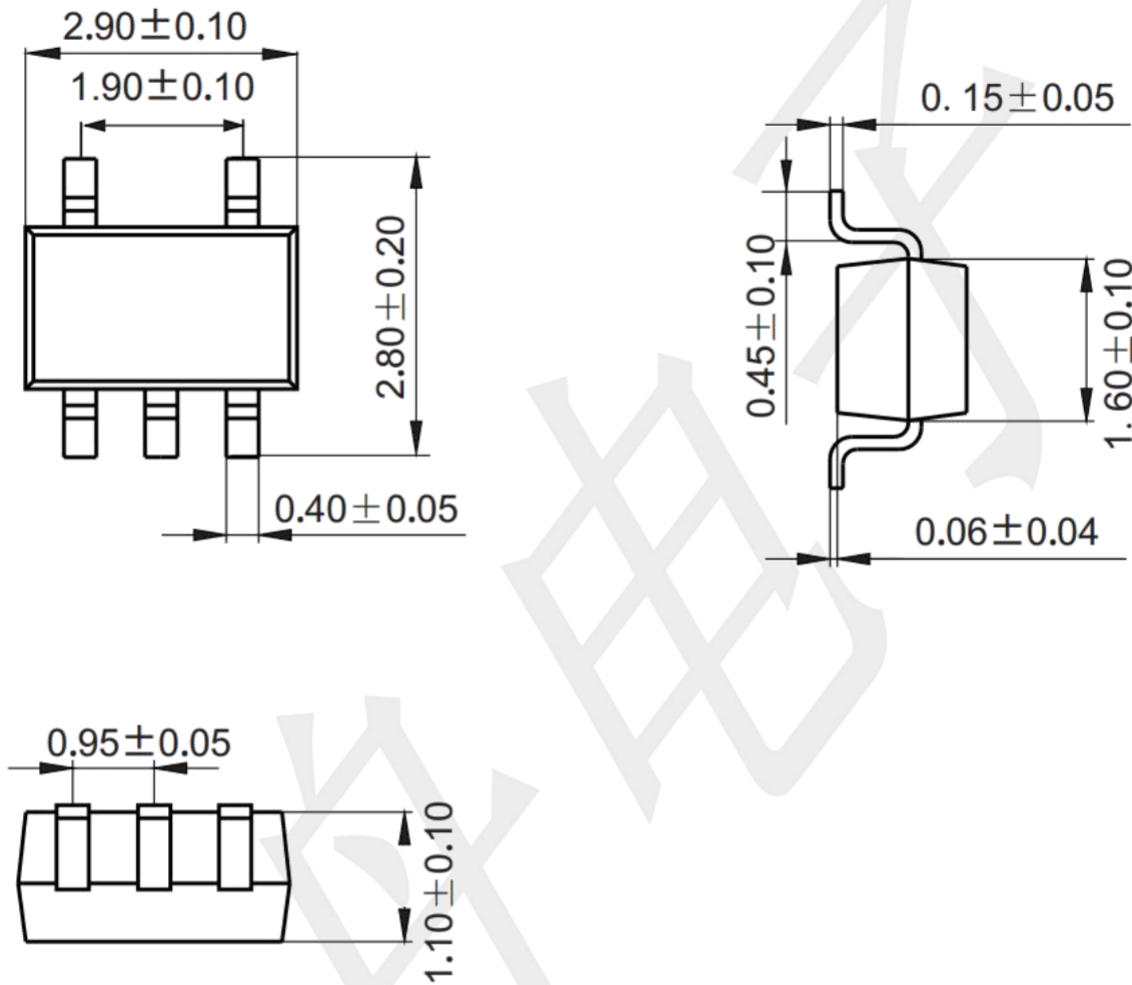


Fig. 6 Response Time vs. Case Temperature

**Package information (Unit: mm)**

SOT23-5



**Mounting Pad Layout (Unit: mm)**

