

## Absolute Maximum Ratings

Supply Voltage ( $V_{V+} - V_{V-}$ )	36V or $\pm 18V$
Differential Input Voltage ( $V_{IN+} - V_{IN-}$ )	$\pm 36V$
Input Voltage	$-0.3V$ to $+36V$
Input Current ( $V_{IN} < -0.3V$ )	50mA
Output Short-Circuit to GND, <b>Note 1</b>	$\infty$
Storage Temperature ( $T_s$ )	$-65^{\circ}C$ to $+150^{\circ}C$
Lead Temperature (soldering, 10sec.)	$260^{\circ}C$

## Operating Ratings<sup>(2)</sup>

Supply Voltage	2V to $+36V$
Ambient Temperature ( $T_A$ )	$-40^{\circ}C$ to $+85^{\circ}C$
Thermal Resistance	
SOT-23-5 ( $\theta_{JA}$ )	$220^{\circ}C/W$
(mounted to printed circuit board)	

## Electrical Characteristics

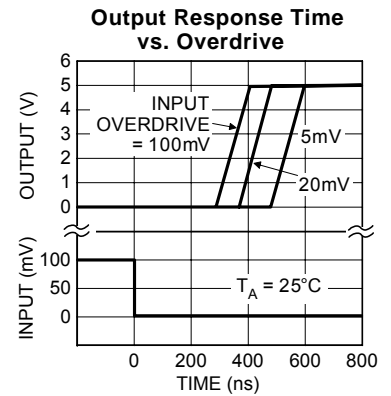
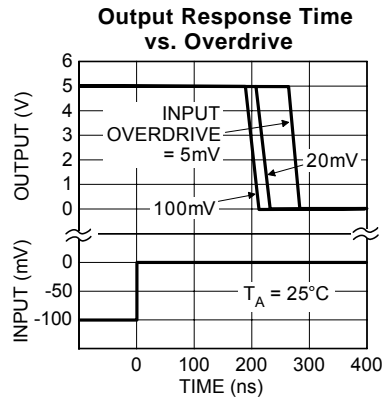
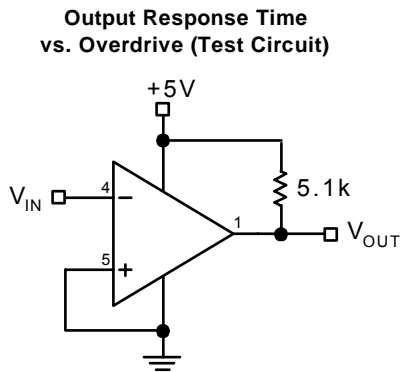
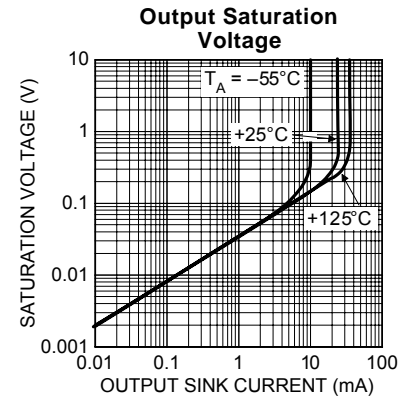
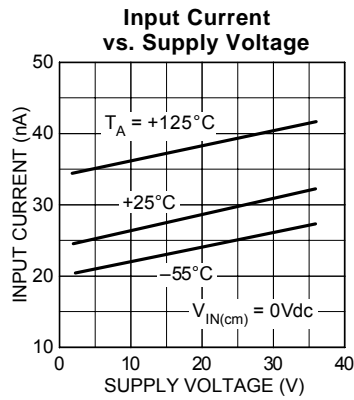
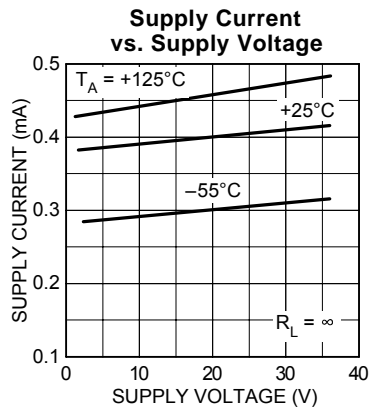
$V_+ = 5V$ ;  $T_A = 25^{\circ}C$ , **bold** values indicate  $-40^{\circ}C \leq T_A \leq +85^{\circ}C$ ,  $T_A = T_J$ ; unless noted.

Symbol	Parameter	Condition	Min	Typ	Max	Units
$V_{OS}$	Input Offset Voltage	<b>Note 2</b>		2	5 <b>9</b>	mV mV
$I_B$	Input Bias Current	$I_{IN(+)}$ or $I_{IN(-)}$ with output in linear range, $V_{CM} = 0V$ , <b>Note 3</b>		25	250 <b>400</b>	nA nA
$I_{OS}$	Input Offset Current	$I_{IN(+)} - I_{IN(-)}$ , $V_{CM} = 0V$		5	50 <b>150</b>	nA nA
$V_{CM}$	Input Voltage Range	$V_+ = 30V$ , <b>Note 4</b>	0		$V_+ - 1.5$ <b><math>V_+ - 2</math></b>	V V
$I_S$	Supply Current	$R_L = \infty$ $R_L = \infty$ , $V_+ = 36V$		0.3 0.4	0.9 1.2	mA mA
	Voltage Gain	$R_L \geq 15k\Omega$ , $V_+ = 15V$ $V_O = 1V$ to $11V$	50	200		V/mV
	Large Signal Response Time	$V_{IN} = \text{TTL logic swing}$ , $V_{REF} = 1.4V$ $V_{RL} = 5V$ , $R_L = 5.1k\Omega$		300		ns
	Response Time	$V_{RL} = 5V$ , $R_L = 5.1k\Omega$ , <b>Note 5</b>		0.6		$\mu s$
	Output Sink Current	$V_{IN(-)} = 1V$ , $V_{IN(+)} = 0$ , $V_O \leq 1.5V$	10	20		mA
	Output Pull-Up Current			15	50	$\mu A$
	Saturation Voltage	$V_{IN(-)} = 1V$ , $V_{IN(+)} = 0$ , $I_{SINK} \leq 4mA$		250	400 <b>700</b>	mV mV
	Differential Input Voltage	$V_{IN(+)}$ , $V_{IN(-)} \geq 0V$ (or $V_-$ , if used), <b>Note 6</b>			36	V

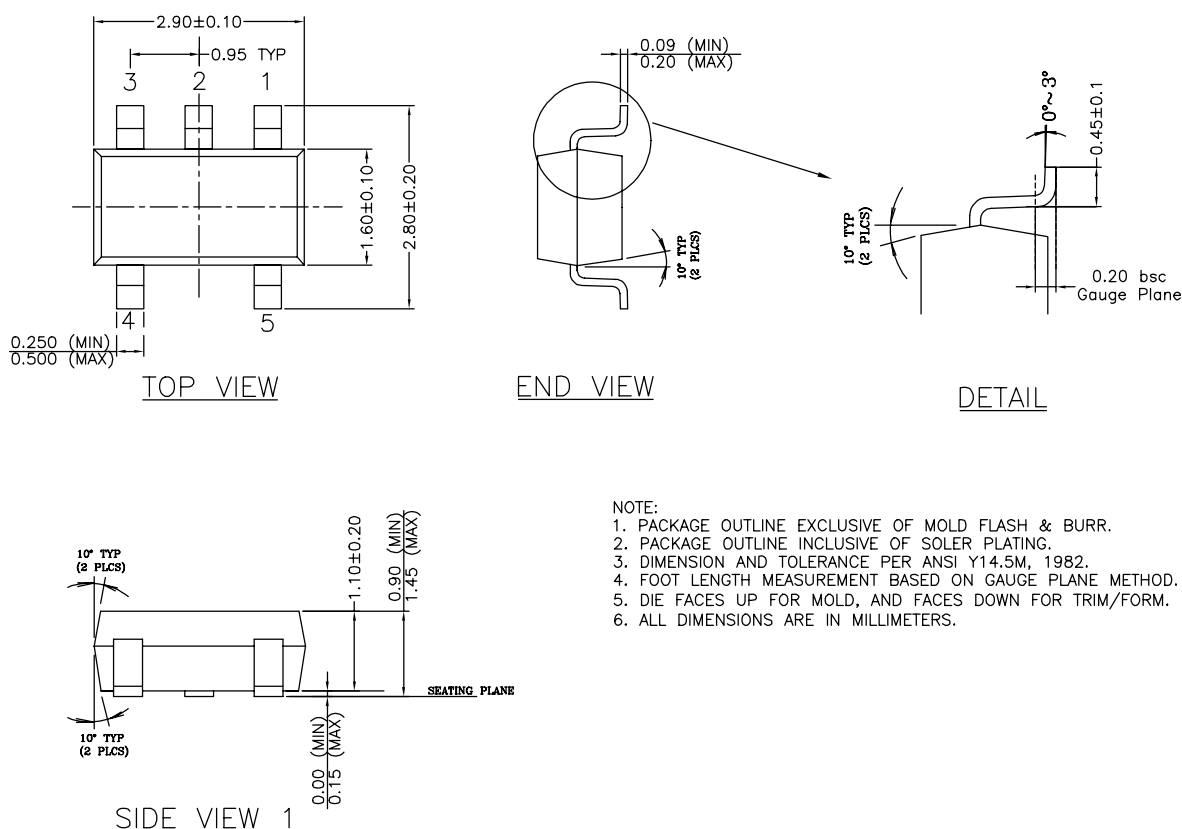
**General Note:** Devices are ESD protected; however, handling precautions are recommended.

1. A short circuit from OUT to  $V_+$  can cause excessive heating and damage the device. The maximum short circuit output current (OUT to  $V_-$ ) is approximately 20mA, independent of  $V_{V+}$ .
2. Measured at the output switch point where  $V_{OUT} \cong 1.4V_{dc}$  with  $R_S = 0\Omega$ ,  $V_+ = 5V_{dc}$  to  $30V_{dc}$ , and over the full input common-mode range ( $0V_{dc}$  to  $V_+ - 1.5V_{dc}$ ).
3. The direction of input current is out of the device due to its PNP input.
4. The input common-mode voltage,  $V_{IN+}$ , or  $V_{IN-}$  must not go below  $-0.3V$ . The upper end of the common-mode voltage range is  $V_+ - 1.5V$  at  $25^{\circ}C$ , but either or both inputs can go to  $+36V_{dc}$  without damage, independent of  $V_{V+}$ .
5. The response time measured using a 100mV input step with 5mV overdrive. With greater overdrive, 300ns can be obtained. See "Typical Characteristics."
6. Positive excursions of input voltage may exceed the power supply level. As long as the other voltage remains within the common-mode range, the comparator will provide a proper output state. The low input voltage state must not be below  $-0.3V_{dc}$  (or  $0.3V_{dc}$  below  $V_{V-}$ ).

## Typical Characteristics



## Package Information



## NOTE:

1. PACKAGE OUTLINE EXCLUSIVE OF MOLD FLASH & BURR.
2. PACKAGE OUTLINE INCLUSIVE OF SOLDER PLATING.
3. DIMENSION AND TOLERANCE PER ANSI Y14.5M, 1982.
4. FOOT LENGTH MEASUREMENT BASED ON GAUGE PLANE METHOD.
5. DIE FACES UP FOR MOLD, AND FACES DOWN FOR TRIM/FORM.
6. ALL DIMENSIONS ARE IN MILLIMETERS.

### 5-Pin SOT-23 (M5)

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