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# KA319

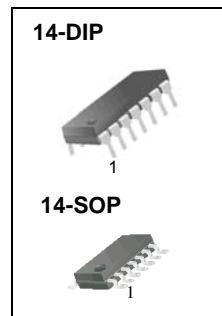
## Dual Comparator

### Features

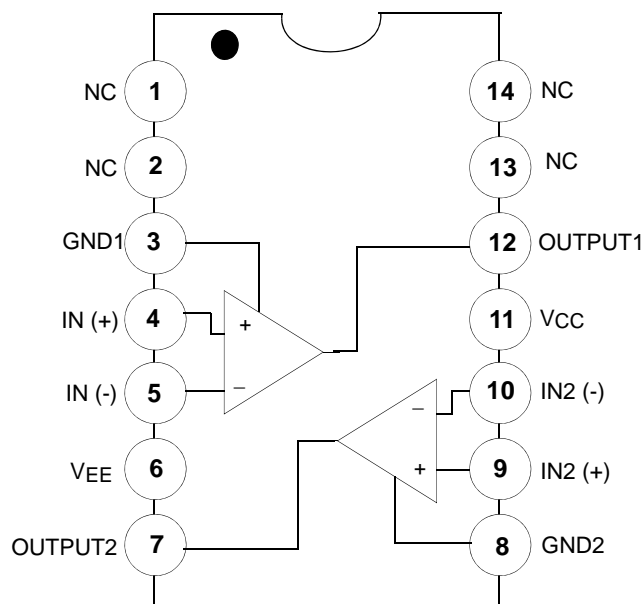
- Operates From a Single 5V Supply
- Typically 80ns Response Time at  $\pm 15V$
- Open Collector Outputs : up to +35V
- High Output Drive Current : 25mA
- Inputs and Outputs can be Isolated From System Ground
- Minimum Fan-out of 2 (Each Side)
- Two Independent Comparators

### Description

The KA319 is a dual high speed voltage comparator designed to operate from a single +5V supply up to  $\pm 15V$  dual supplies. Open collector of the output stage makes the KA319 compatible with RTL, DTL and TTL as well as capable of driving lamps and relays at currents up to 25mA. Typical response time of 80ns with  $\pm 15V$  power supplies makes the KA319 ideal for application in fast A/D converts, level shifters, oscillators, and multivibrators.



### Internal Block Diagram





## Electrical Characteristics

( $V_{CC} = +15V$ ,  $V_{EE} = -15V$ ,  $T_A = 25^{\circ}C$ , unless otherwise specified)

Parameter	Symbol	Conditions	KA319			Unit	
			Min.	Typ.	Max.		
Input Offset Voltage (Note1)	$V_{IO}$	$R_S \leq 5k\Omega$	-	2.0	8.0	mV	
			Note3	-	-		10
Input Offset Current (Note1)	$I_{IO}$		-	10	200	nA	
			Note3	-	-		300
Input Bias Current	$I_{BIAS}$		-	150	1000	nA	
			Note3	-	-		1200
Voltage Gain	$G_V$	-	8	40	-	V/mV	
Response Time (Note2)	$T_{RES}$	$V_{CC} = \pm 15V$	-	80	-	ns	
Saturation Voltage	$V_{SAT}$	$V_{CC} = 15V, V_{EE} = -15V, V_I \leq -5mV, I_O = 25mA$	-	0.6	1.5	V	
		$V_{CC} = 4.5V, V_{EE} = 0V$ $V_I \leq -10mV, I_O \leq 3.2mA$	Note3	-	0.3		0.4
Output Leakage Current	$I_{O(LKG)}$	$V_I \geq 5mV, V_{O(P)} = 35V$	-	-	-	$\mu A$	
		Note3	-	-	-		
Input Voltage Range	$V_{I(R)}$	Note3	$V_{CC} = \pm 15V$	-	$\pm 13$	-	V
			$V_{CC} = 5V, V_{EE} = 0V$	1	-	3	
Differential Input Voltage	$V_{I(DIFF)}$	-	Note3	-	-	$\pm 5$	V
Positive Supply Current	$I_{CC1}$	$V_{CC} = 5V, V_{EE} = 0V$	-	3.6	-	mA	
Positive Supply Current	$I_{CC2}$	$V_{CC} = \pm 15V$	-	7.5	12.5	mA	
Negative Supply Current	$I_{EE}$	$V_{CC} = \pm 15V$	-	3	5	mA	

### Notes :

- The offset voltage and offset currents given are the maximum values required to drive the output within a volt of either supply with a 1mA load. Thus, these parameters define an error band and take into account the worst case effects of voltage gain and input impedance.
- The response time specified is for a 100mV input step with 5mV overdrive.
- KA319 :  $0 \leq T_A \leq +70^{\circ}C$

# Typical Performance Characteristics

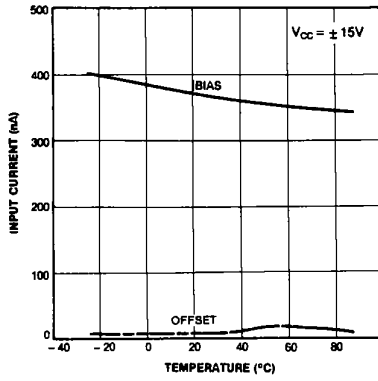


Figure 1. Input Current

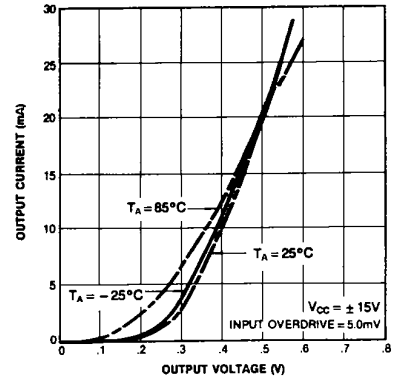


Figure 2. Output Saturation Voltage

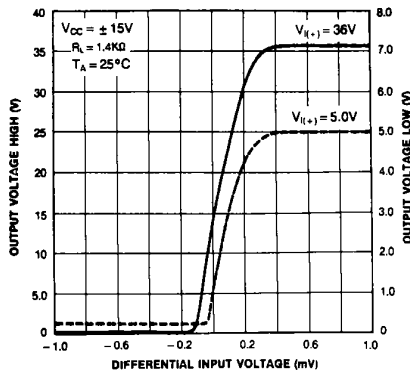


Figure 3. Transfer Function

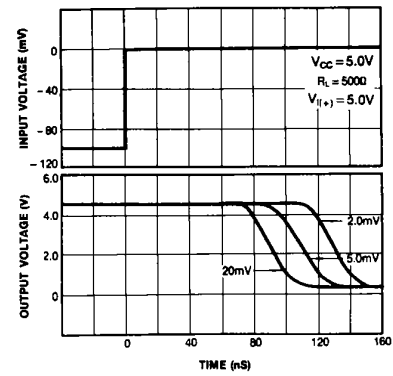


Figure 4. Response Time for Various Input Overdriver

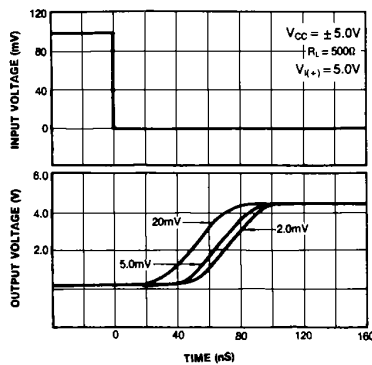


Figure 5. Response Time Various Input Overdriver

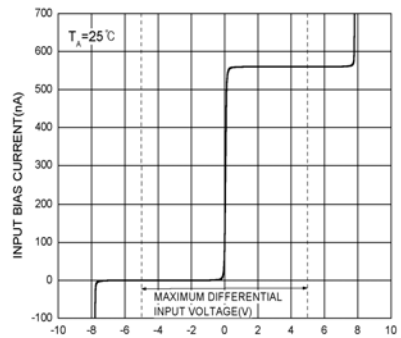


Figure 6. Input Characteristics

Typical Performance Characteristics (Continued)

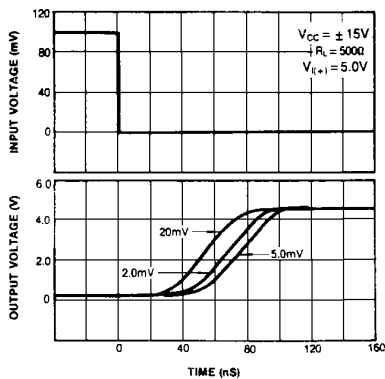


Figure 7. Response Time for Various Input Over driver

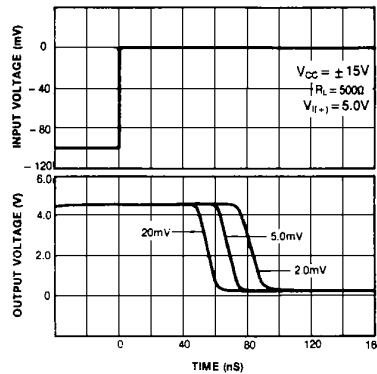


Figure 8. Response Time for Various Input Over driver

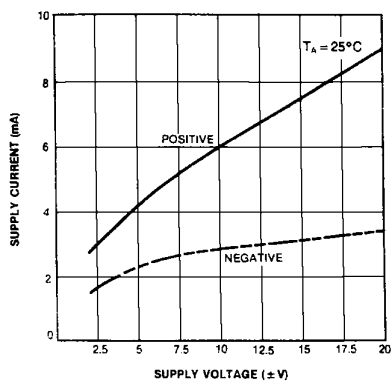


Figure 9. Supply Current

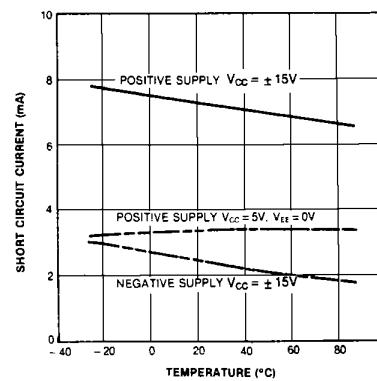


Figure 10. Supply Current

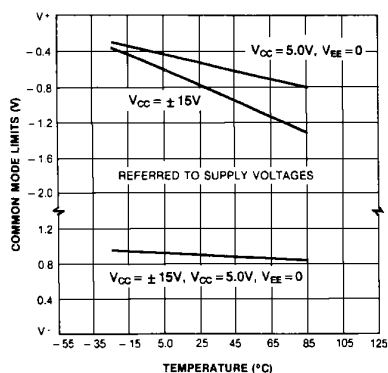


Figure 11. Common Mode Limits

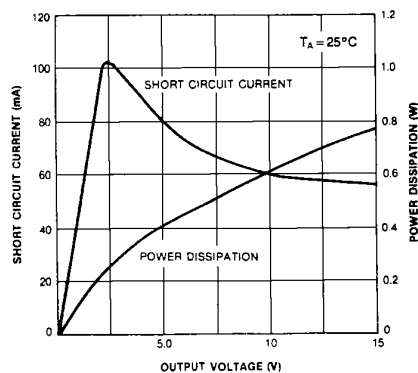


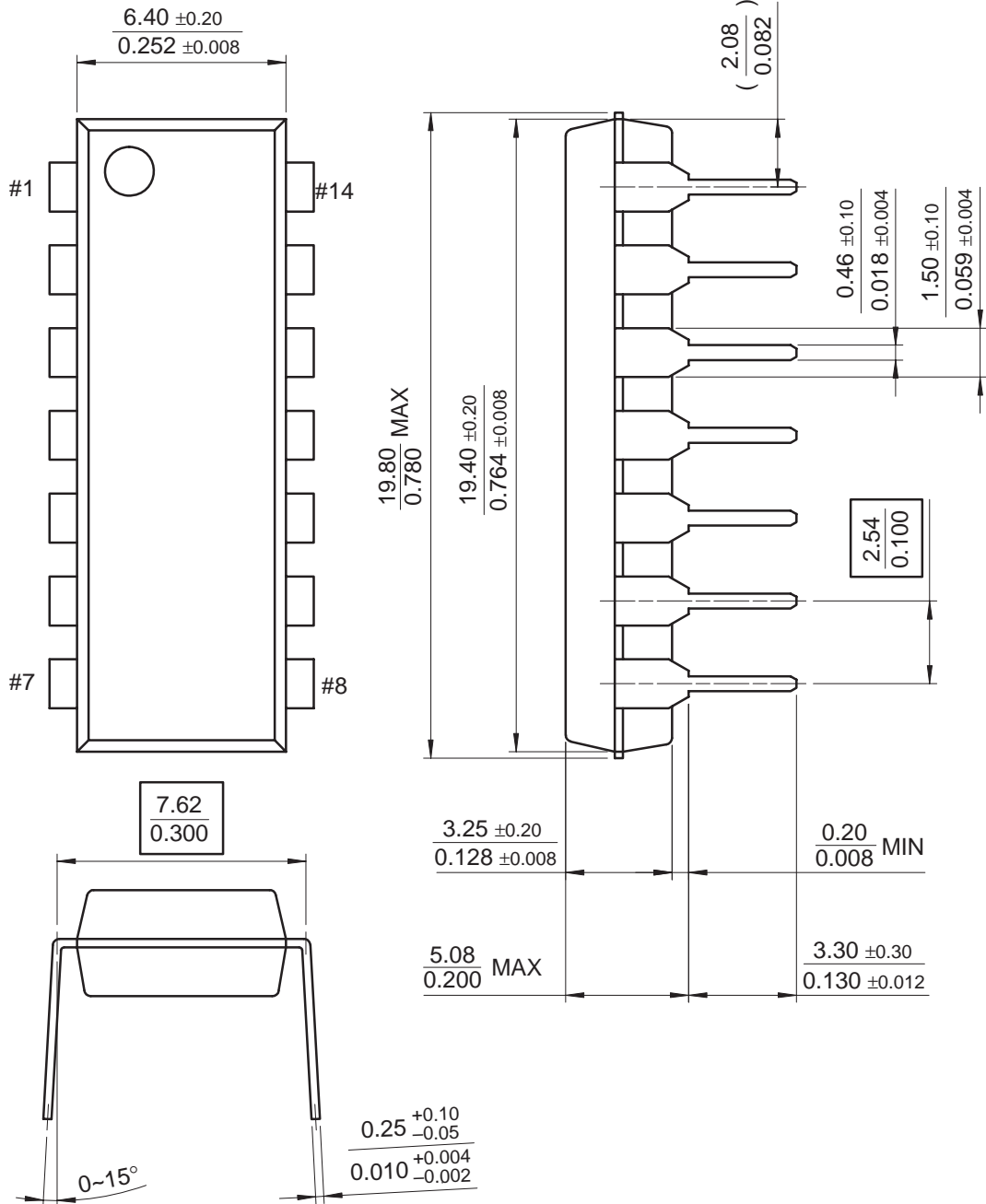
Figure 12. Output Limiting Characteristics

# Mechanical Dimensions

## Package

Dimensions in millimeters

### 14-DIP

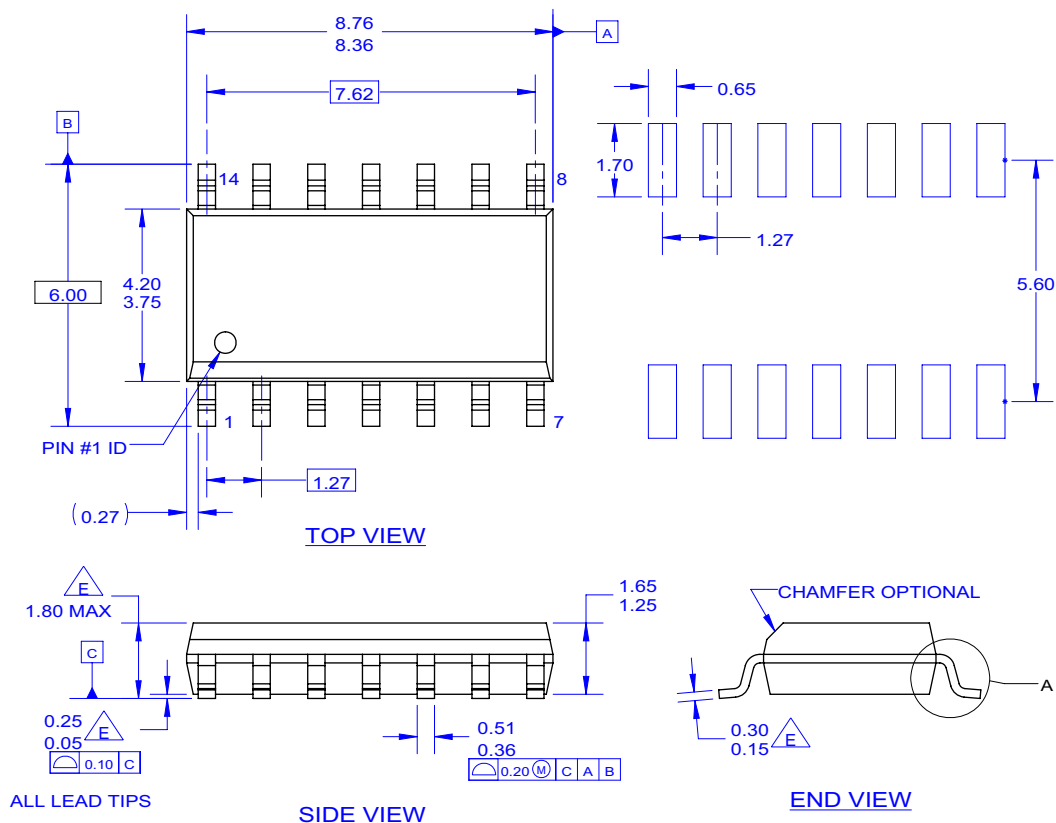


**Mechanical Dimensions** (Continued)

**Package**

Dimensions in millimeters

**14-SOP**



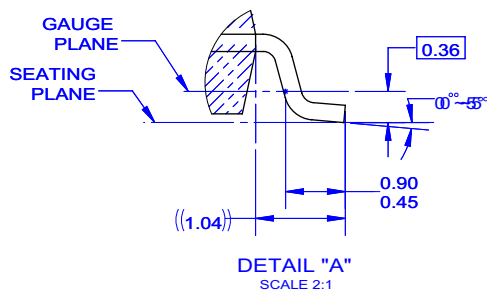
ALL LEAD TIPS

**SIDE VIEW**

**END VIEW**

NOTES: UNLESS OTHERWISE SPECIFIED

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- B. ALL DIMENSIONS ARE IN MILLIMETERS.
- C. DIMENSIONS ARE EXCLUSIVE OF BURRS, MOLD FLASH AND TIE BAR EXTRUSIONS.
- D. DIMENSIONS AND TOLERANCES AS PER ASME Y14.5-1994.
- E. OUT OF JEDEC STANDARD VALUE.
- F. LAND PATTERN STANDARD: SOIC127P600X145-14M.
- G. FILE NAME: MKT-M14C REV2





## Ordering Information

Product Number	Package	Operating Temperature
KA319	14-DIP	0 ~ +70°C
KA319D	14-SOP	

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