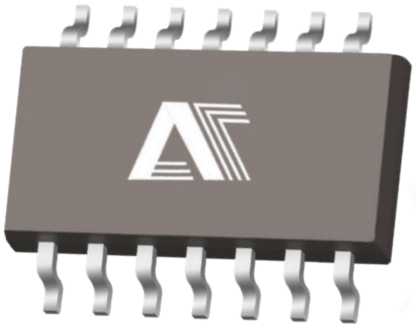
AOTE SEMICONDUCTOR



Comparator

LM339DR

Product Data Sheet

AOTE DCC
RELEASE

◆ Summary ：

The LM339 consists of four independent comparators internally. The circuit can operate under a single power supply with a wide voltage range and also supports dual power supply operation. When using dual power supplies, the voltage difference between the two power supplies must be between 2V and 18V, with VCC being at least 1.5V higher than the input common-mode voltage. The static current consumption is independent of the power supply voltage. The output can be connected to the open-drain output of other devices to achieve a wired-AND configuration.

The LM339 operates on a single power supply voltage range of 2V to 36V. It is primarily used in systems such as industrial, automotive, power regulation, oscillators, peak detectors, and logic voltage conversion.

◆ Product features

- Package type: SOP14
- Wide operating voltage range
- Single supply 2V~36V
- Dual power supply ±1V to ±18V
- Low power supply current independent of supply voltage: 0.8mA (typical value)
- Low input bias current: 25nA (typical)
- Low input offset voltage: 2mV (typical value)
- The common-mode input voltage range includes ground
- The differential input voltage range equals the maximum rated power supply voltage: ±36V
- Low output saturation voltage
- Output compatible with TTL, MOS, and CMOS

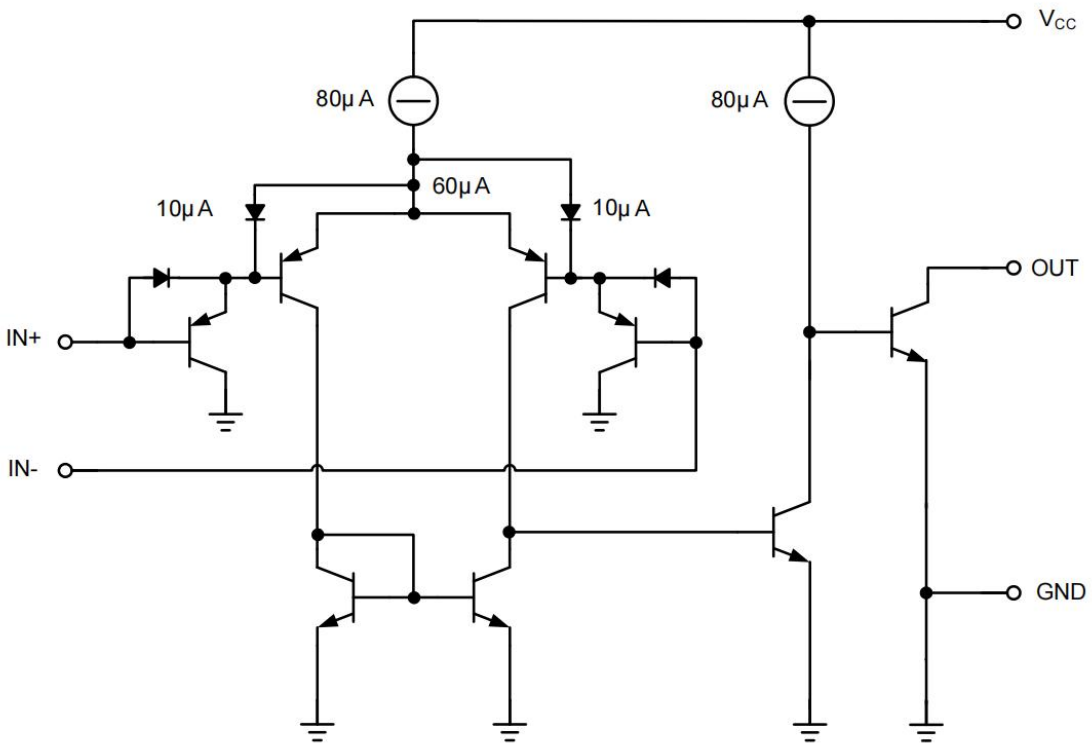
◆ Order Information

Product Part Number	Package form	Print identification	Number of tape reel installations	Number of boxed packaging	Remarks
LM339DR	SOP14	LM339	2500PCS/disk	5000PCS/box	Plastic enclosure size: 8.7mm×3.9mm pin pitch：1.27mm

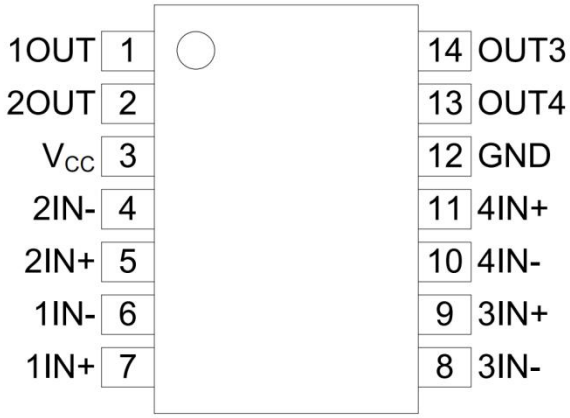
Note: If there is a discrepancy between the actual product and the ordering information, please refer to the actual product.

◆ Functional Block Diagram and Pin Description

Functional Block Diagram



Pin arrangement diagram



Pin Description

Pin	Symbol	Function	Pin	Symbol	Function
1	1OUT	Output of comparator 1	8	3IN-	Negative input of comparator 3
2	2OUT	Output of comparator 2	9	3IN+	Positive input of comparator 3
3	VCC	Positive power supply	10	4IN-	Comparator 4 negative input
4	2IN-	Negative input of comparator 2	11	4IN+	Positive input of comparator 4
5	2IN+	Positive input of comparator 2	12	GND	land
6	1IN-	Negative input of comparator 1	13	OUT4	Output of comparator 4
7	1IN+	Positive input of comparator 1	14	OUT3	Output of comparator 3

◆ Electrical characteristics

Limit parameter (Unless otherwise specified, Tamb=25 ℃)

Parameter name		Symbol	Condition		Rated value	Unit
power supply voltage		V_{CC}	—		40	V
Differential input voltage		V_{ID}			±40	V
Input voltage range		V_I			-0.3～40	V
input current		I_{IK}			-50	mA
output voltage		V_O	—		40	V
thermal resistance	SOP14	θ_{JA}	—		131	℃/W
Output current		I_O			20	mA
Work completion temperature		T_J			150	℃
Storage temperature		T_{stg}	—		-65～150	℃
welding temperature		T_L	10 seconds	SOP	260	℃

Recommended usage conditions

Parameter name	Symbol	Condition	Min	Typ	Max	Unit
Power supply voltage	V_{CC}		2		36	V
Ambient temperature	T_{amb}	LM339	-40		85	℃

◆ Electrical Characteristics

DC Parameters (unless otherwise specified, VCC=5V))

Parameter name	Symbol	Test conditions		Tamb	Min	Typ	Max	Unit
Input offset voltage	V_{IO}	V_{CC}=5V～36V，V_{IC}=V_{ICR}min，V_O=1.4V		25℃		2	5	mV
				full temperature			9	
Input offset current	I_{IO}	V_O=1.4V		25℃	—	5	50	nA
				full temperature	—	—	150	
Input bias current	I_{IB}	V_O=1.4V		25℃	—	-25	-250	nA
				full temperature	—	—	-400	
Common mode input voltage	V_{ICR}			25℃	0～V_{CC}-1.5	—	—	V
				full temperature	0～V_{CC}-2			
Large signal differential amplification	A_{VD}	V_{CC}=18V，V_O=1.4～11.4V，R_L ≥15KΩ~V_{CC}		25℃	50	200		V/mV
High level output current	I_{OH}	V_{ID}=1V	V_{OH}=5V LM339	25℃	—	0.1	20	nA
			V_{OH}=36V	full temperature	—	—	1	uA
Low level output voltage	V_{OL}	V_{ID}=-1V，I_{OL}=4mA		25℃	—	150	400	mV
				full temperature	—	—	700	
Low level output current	I_{OL}	V_{ID}=-1V，V_{OL}=1.5V		25℃	6	16	—	mA
operating current (Four comparators)	I_{CC}	V_O=2.5V，No-load		25℃	—	0.8	2	mA

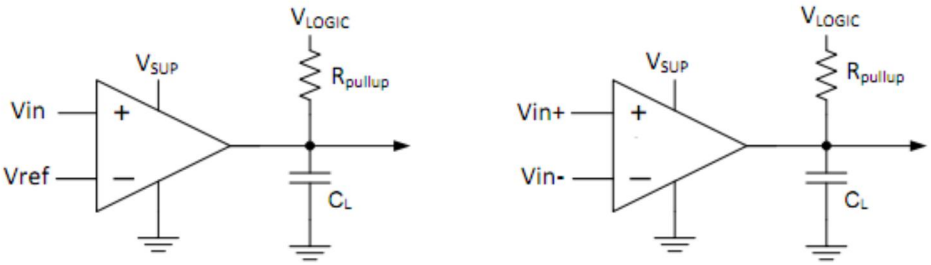
AC parameter (Unless otherwise specified, Tamb=25 ℃, VCC=5V)

Parameter name	Test conditions		Typ	Unit
Response time	R_L Pull up 5.1K Ω to 5V, C_L=15pF	100mV bias，5mV amplitude signal	1.3	us
		TTL signal	0.3	

Note:
1: CL includes probe and fixture capacitors.
2: The response time is the interval between the input stepping function and the output reaching 1.4V.

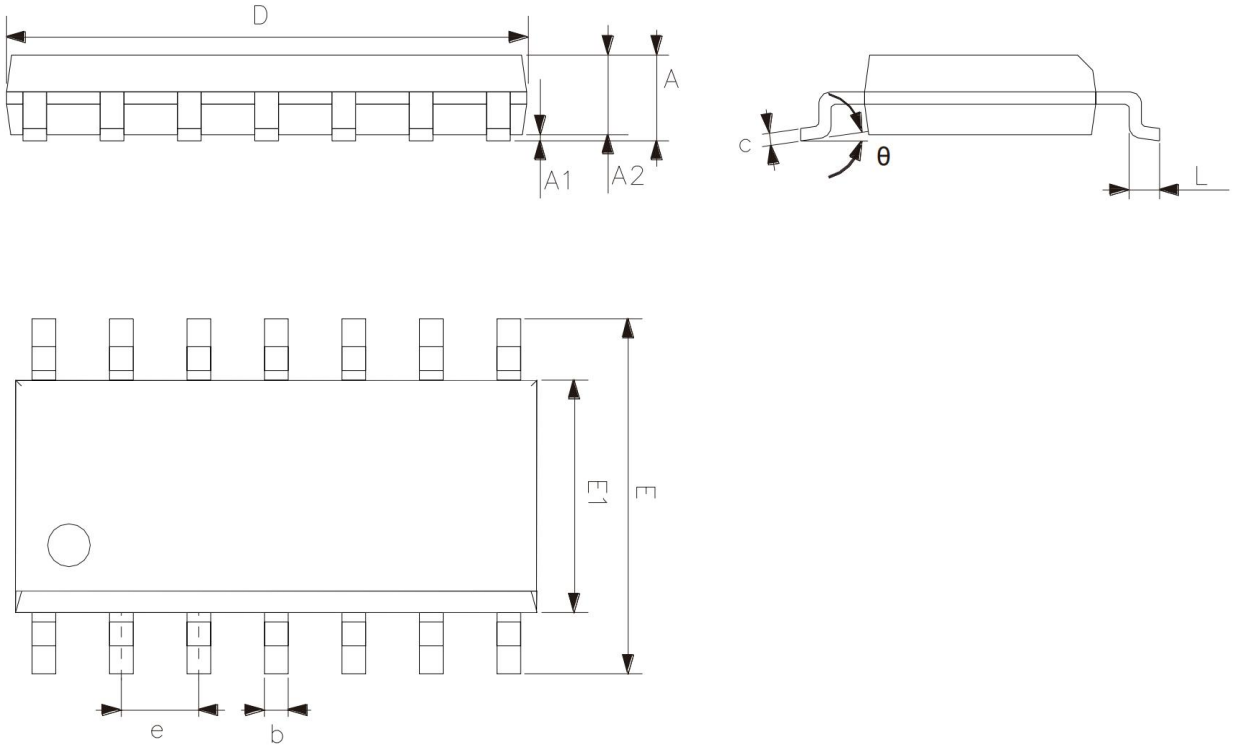
◆ Typical application routes

Single ended and differential comparator configuration



◆ Package outline dimensions

SOP14



Symbol	Size (mm)	
	Min	Max
A	1.50	1.75
A1	0.05	0.25
A2	1.30	—
b	0.33	0.50
c	0.19	0.25
D	8.43	8.76
E	5.80	6.25
E1	3.75	4.00
e	1.27	
L	0.40	0.89
θ	0°	8°

◆ Attention

- AOTE implements dynamic technical updates. Specifications are subject to change. Refer to the official website for the latest version.
- Users must strictly adhere to specified conditions. Failures caused by misuse (overload, high temperature, incompatible circuits) are excluded from warranty.
- Contact technical support for customized validation in critical applications (medical devices, industrial control).
- This document is valid until December 31, 2026. Updates will be notified on the official website.
- For further clarification on technical specifications or application solutions, please contact us through official channels: