

Excellent Integrated System Limited

Stocking Distributor

Click to view price, real time Inventory, Delivery & Lifecycle Information:

For any questions, you can email us directly:

sales@integrated-circuit.com

LM339/LM339A, LM239A, LM2901

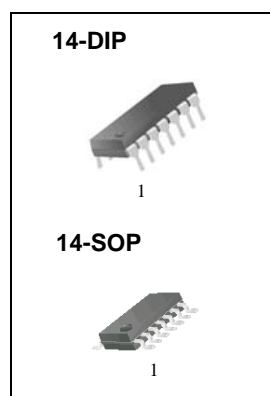
Quad Comparator

Features

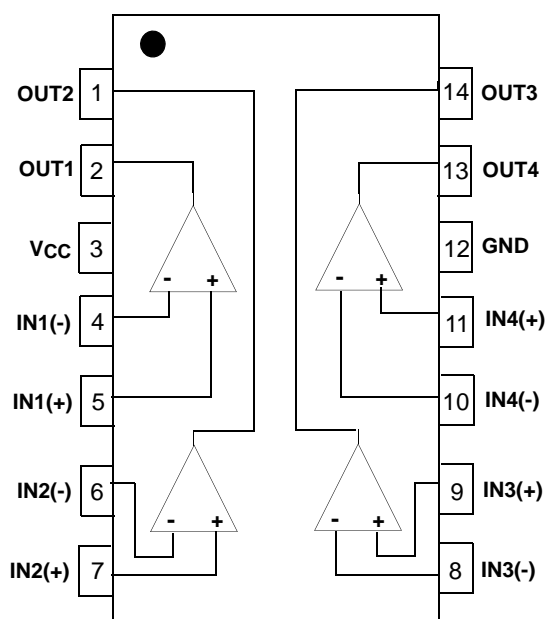
- Single or Dual Supply Operation
- Wide Range of Supply Voltage
LM2901, LM339/LM339A, LM239A: 2 ~ 36V (or $\pm 1 \sim \pm 18V$)
- Low Supply Current Drain 800 μA Typ.
- Open Collector Outputs for Wired and Connectors
- Low Input Bias Current 25nA Typ.
- Low Input Offset Current $\pm 2.3nA$ Typ.
- Low Input Offset Voltage $\pm 1.4mV$ Typ.
- Input Common Mode Voltage Range Includes Ground.
- Low Output Saturation Voltage
- Output Compatible With TTL, DTL and MOS Logic System

Description

The LM339/LM339A, LM239A, LM2901 consist of four independent voltage comparators designed to operate from single power supply over a wide voltage range.

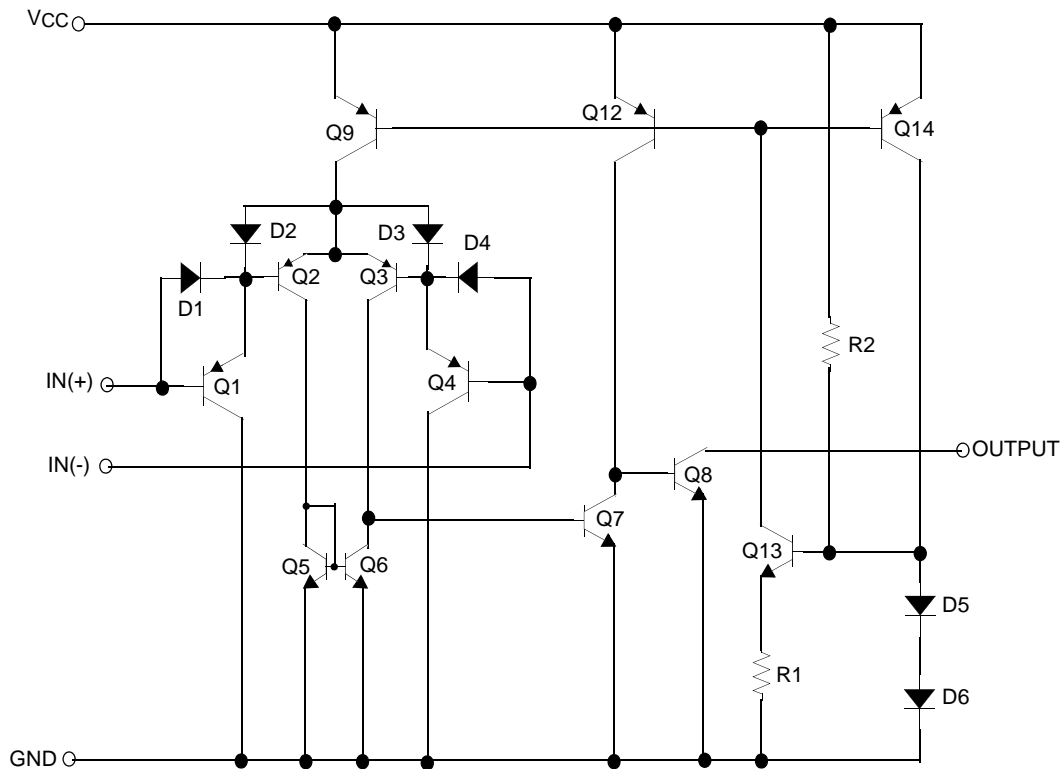


Internal Block Diagram



LM339/LM339A, LM239A, LM2901

Schematic Diagram



Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Supply Voltage	VCC	±18 or 36	V
Differential Input Voltage	VI(DIFF)	36	V
Input Voltage	VI	-0.3 to +36	V
Output Short Circuit to GND	-	Continuous	-
Power Dissipation	PD	570	mW
Operating Temperature LM339/LM339A LM2901 LM239A	TOPR	0 ~ +70 -40 ~ +85 -25 ~ +85	°C
Storage Temperature	TSTG	-65 ~ +150	°C

Electrical Characteristics

(VCC = 5V, TA = 25°C, unless otherwise specified)

Parameter	Symbol	Conditions	LM239A/LM339A			LM339			Unit
			Min.	Typ.	Max.	Min.	Typ.	Max.	
Input Offset Voltage	V _{IO}	V _{O(P)} = 1.4V, R _S = 0Ω	-	1	2	-	1.4	5	mV
		Note1	-	-	4.0	-	-	9.0	
Input Offset Current	I _{IO}	I _{IN(+)} - I _{IN(-)} , V _{CM} = 0V	-	2.3	50	-	2.3	50	nA
		Note1	-	-	150	-	-	150	
Input Bias Current	I _{BIAS}	V _{CM} = 0V	-	57	250	-	57	250	nA
		Note1	-	-	400	-	-	400	
Input Common Mode Voltage Range	V _{I(R)}	V _{CC} = 30V	0	-	V _{CC} -1.5	0	-	V _{CC} -1.5	V
		Note1	0	-	V _{CC} -2	0	-	V _{CC} -2	
Supply Current	I _{CC}	V _{CC} = 5V, R _L = ∞	-	1.1	2.0	-	1.1	2.0	mA
Voltage Gain	G _V	V _{CC} = 15V, R _L ≥ 15kΩ (for large swing)	50	200	-	50	200	-	V/mV
Large Signal Response Time	T _{LRES}	V _I = TTL Logic Swing V _{REF} = 1.4V, V _{RL} = 5V, R _L = 5.1kΩ (Note2)	-	300	-	-	300	-	ns
Response Time	T _{RES}	V _{RL} = 5V, R _L = 5.1kΩ (Note2)	-	1.3	-	-	1.3	-	μs
Output Sink Current	I _{SINK}	V _{I(-)} ≥ 1V, V _{I(+)} = 0V, V _{O(P)} ≤ 1.5V	6	18	-	6	18	-	mA
Output Saturation Voltage	V _{SAT}	V _{I(-)} ≥ 1V, V _{I(+)} = 0V	-	140	400	-	140	400	mV
		I _{SINK} = 4mA	-	-	700	-	-	700	
Output Leakage Current	I _{O(LKG)}	V _{I(-)} = 0V	-	0.1	-	-	0.1	-	nA
		V _{I(+)} = 1V	-	-	1.0	-	-	1.0	μA
Differential Voltage	V _{I(DIFF)}	Note1	-	-	36	-	-	36	V

Note:

- LM339/LM339A : 0 ≤ T_A ≤ +70°C
 LM2901 : -40 ≤ T_A ≤ +85°C
 LM239A : -25 ≤ T_A ≤ +85°C
- These parameters, although guaranteed, are not 100% tested in production.

LM339/LM339A, LM239A, LM2901

Electrical Characteristics (Continued)

(VCC = 5V, TA = 25°C, unless otherwise specified)

Parameter	Symbol	Conditions	LM2901			Unit
			Min.	Typ.	Max.	
Input Offset Voltage	V _{IO}	VO(P) = 1.4V, RS = 0Ω	-	2	7	mV
		Note1	-	9	15	
Input Offset Current	I _{IO}		-	2.3	50	nA
		Note1	-	50	200	
Input Bias Current	I _{BIAS}		-	57	250	nA
		Note1	-	200	500	
Input Common Mode Voltage Range	V _{I(R)}	LM2901, VCC = 30V	0	-	VCC-1.5	V
		Note1	0	-	VCC-2	
Supply Current	I _{CC}	RL = ∞, VCC = 5V	-	1.1	2.0	mA
		RL = ∞, VCC = 30V	-	1.6	2.5	
Voltage Gain	GV	VCC = 15V, RL ≥ 15kΩ (for large swing)	25	100	-	V/mV
Large Signal Response Time	TLRES	V _I = TTL Logic Swing VREF = 1.4V, VRL = 5V, RL = 5.1kΩ (Note2)	-	300	-	ns
Response Time	TRES	VRL = 5V, RL = 5.1kΩ (Note2)	-	1.3	-	μs
Output Sink Current	I _{SINK}	V _{I(-)} ≥ 1V, V _{I(+)} = 0V, VO(P) ≤ 1.5V	6	18	-	mA
Output Saturation Voltage	V _{SAT}	V _{I(-)} ≥ 1V, V _{I(+)} = 0V	-	140	400	mV
		I _{SINK} = 4mA	Note1	-	700	
Output Leakage Current	I _{O(LKG)}	V _{I(-)} = 0V	-	0.1	-	nA
		V _{I(+)} = 1V	-	-	1.0	μA
Differential Voltage	V _{I(DIFF)}	Note1	-	-	36	V

Note:

- LM339/LM339A : 0 ≤ TA ≤ +70°C
 LM2901 : -40 ≤ TA ≤ +85°C
 LM239A : -25 ≤ TA ≤ +85°C
- These parameters, although guaranteed, are not 100% tested in production.

Typical Performance Characteristics

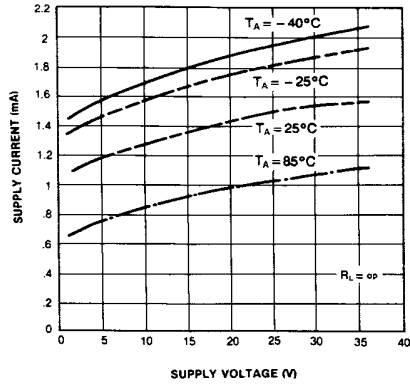


Figure 1. Supply Current vs Supply Voltage

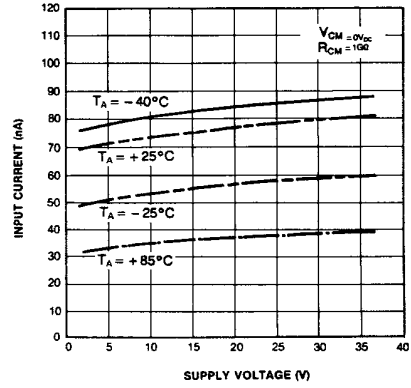


Figure 2. Input Current vs Supply Voltage

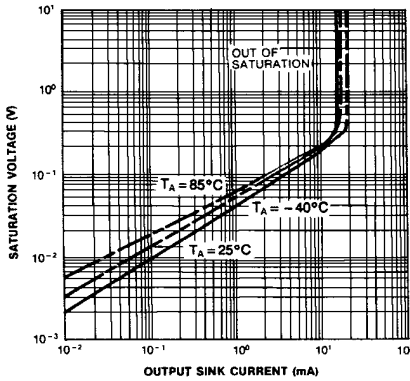


Figure 3. Output Saturation Voltage vs Sink Current

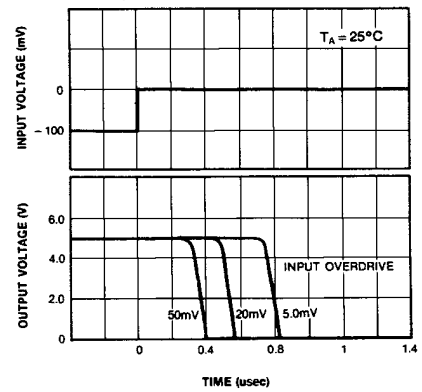


Figure 4. Response Time for Various Input Overdrive-Negative Transition

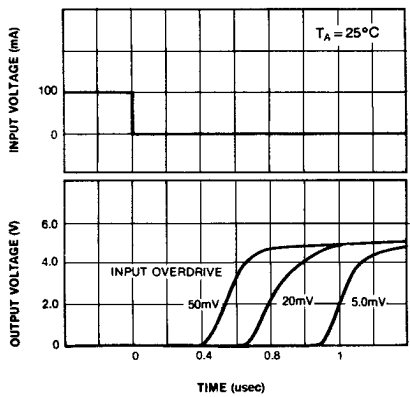


Figure 5. Response Time for Various Input Overdrive-Positive Transition

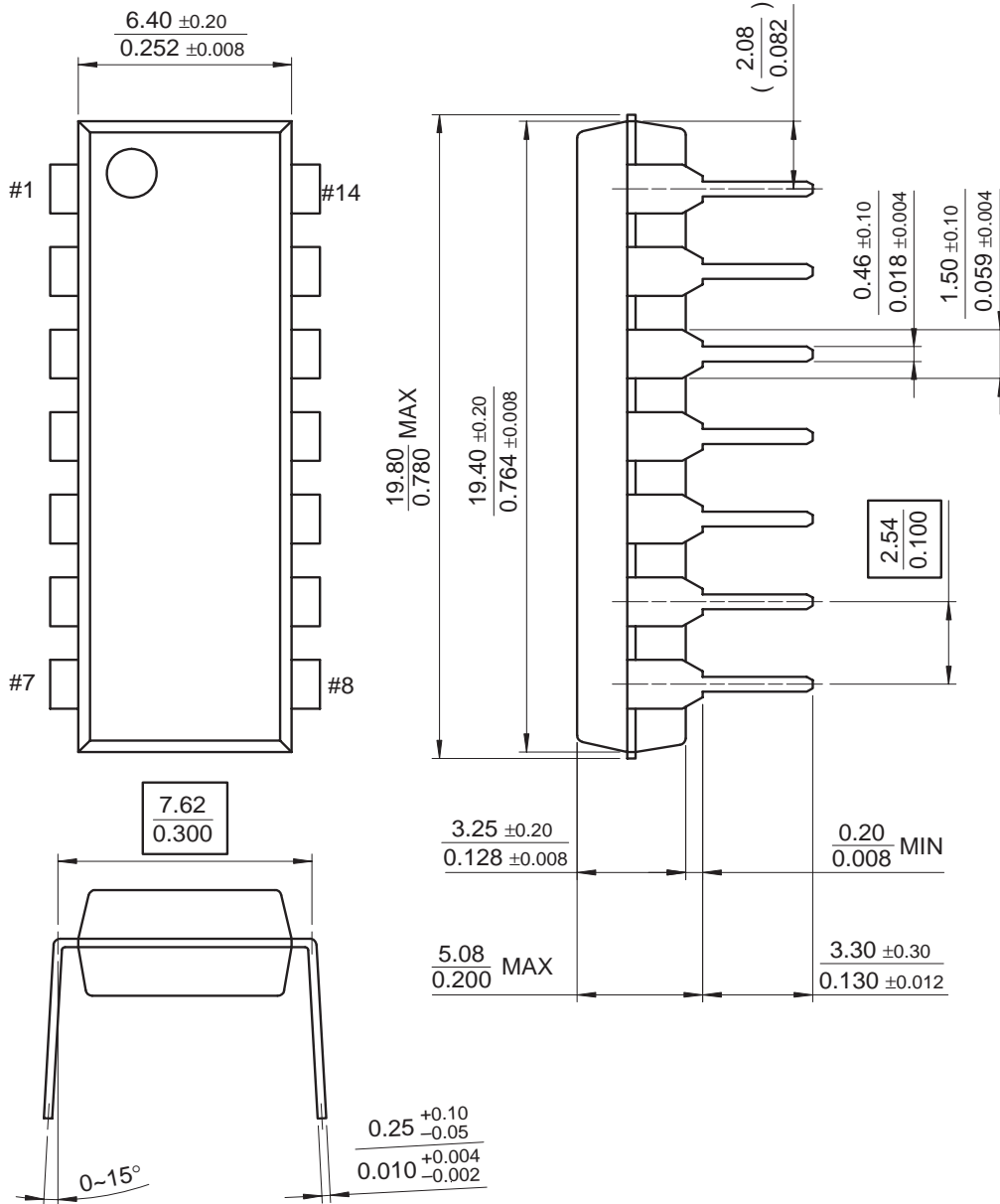
LM339/LM339A, LM239A, LM2901

Mechanical Dimensions

Package

Dimensions in millimeters

14-DIP

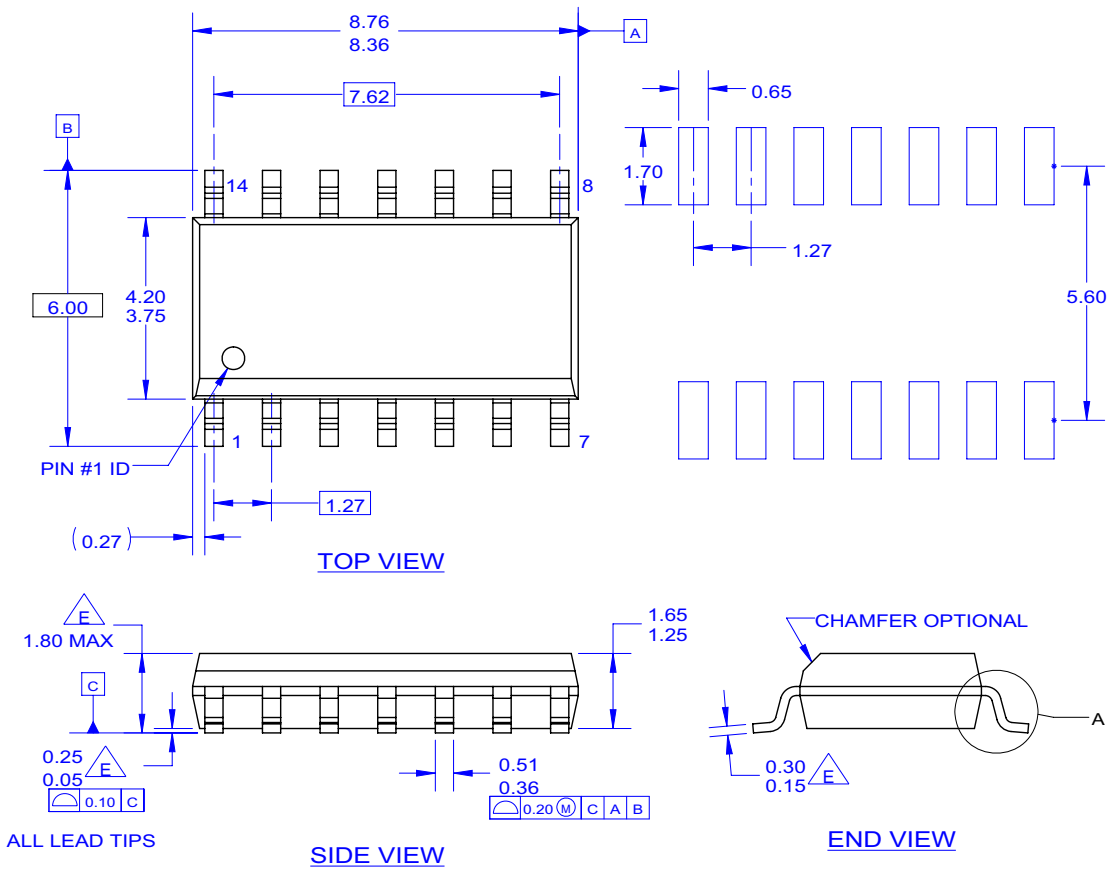


Mechanical Dimensions (Continued)

Package

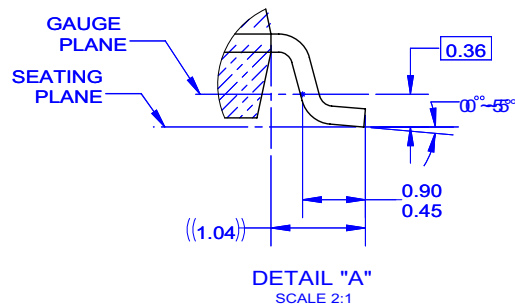
Dimensions in millimeters

14-SOP



NOTES: UNLESS OTHERWISE SPECIFIED

- A. THIS PACKAGE REFERENCE TO JEDEC MS-012 VARIATION AB.
- 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



LM339/LM339A, LM239A, LM2901

Ordering Information

Product Number	Package	Operating Temperature
LM339N	14-DIP	0 ~ +70°C
LM339AN		
LM339M	14-SOP	
LM339AM		
LM2901N	14-DIP	-40 ~ +85°C
LM2901M	14-SOP	
LM239AN	14-DIP	-25 ~ +85°C
LM239AM	14-SOP	

DISCLAIMER

FAIRCHILD SEMICONDUCTOR RESERVES THE RIGHT TO MAKE CHANGES WITHOUT FURTHER NOTICE TO ANY PRODUCTS HEREIN TO IMPROVE RELIABILITY, FUNCTION OR DESIGN. FAIRCHILD DOES NOT ASSUME ANY LIABILITY ARISING OUT OF THE APPLICATION OR USE OF ANY PRODUCT OR CIRCUIT DESCRIBED HEREIN; NEITHER DOES IT CONVEY ANY LICENSE UNDER ITS PATENT RIGHTS, NOR THE RIGHTS OF OTHERS.

LIFE SUPPORT POLICY

FAIRCHILD'S PRODUCTS ARE NOT AUTHORIZED FOR USE AS CRITICAL COMPONENTS IN LIFE SUPPORT DEVICES OR SYSTEMS WITHOUT THE EXPRESS WRITTEN APPROVAL OF THE PRESIDENT OF FAIRCHILD SEMICONDUCTOR CORPORATION. As used herein:

1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body, or (b) support or sustain life, and (c) whose failure to perform when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in a significant injury of the user.
2. A critical component in any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.