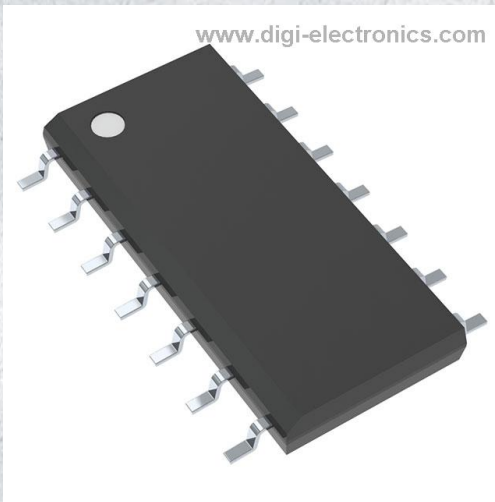


# KA339ADTF Datasheet



<https://www.DiGi-Electronics.com>

DiGi Electronics Part Number	KA339ADTF-DG
Manufacturer	<a href="#">onsemi</a>
Manufacturer Product Number	KA339ADTF
Description	IC COMPARATOR 4 GEN PUR 14SOP
Detailed Description	Comparator General Purpose DTL, MOS, Open-Coll ector, TTL 14-SOP



Tel: +00 852-30501935

RFQ Email: [Info@DiGi-Electronics.com](mailto:Info@DiGi-Electronics.com)

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## Purchase and inquiry

Manufacturer Product Number:

KA339ADTF

Series:

-

Type:

General Purpose

Output Type:

DTL, MOS, Open-Collector, TTL

Voltage - Input Offset (Max):

2mV @ 5V

Current - Output (Typ):

18mA @ 5V

CMRR, PSRR (Typ):

-

Hysteresis:

-

Package / Case:

14-SOIC (0.154", 3.90mm Width)

Supplier Device Package:

14-SOP

Manufacturer:

onsemi

Product Status:

Obsolete

Number of Elements:

4

Voltage - Supply, Single/Dual ( $\pm$ ):

2V ~ 36V,  $\pm$ 1V ~ 18V

Current - Input Bias (Max):

0.25 $\mu$ A @ 5V

Current - Quiescent (Max):

2.5mA

Propagation Delay (Max):

-

Operating Temperature:

0°C ~ 70°C

Mounting Type:

Surface Mount

Base Product Number:

KA339

## Environmental & Export classification

RoHS Status:

ROHS3 Compliant

REACH Status:

REACH Unaffected

HTSUS:

8542.39.0001

Moisture Sensitivity Level (MSL):

1 (Unlimited)

ECCN:

EAR99





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# KA339/KA339A, KA2901

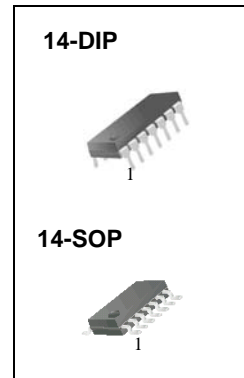
## Quad Comparator

### Features

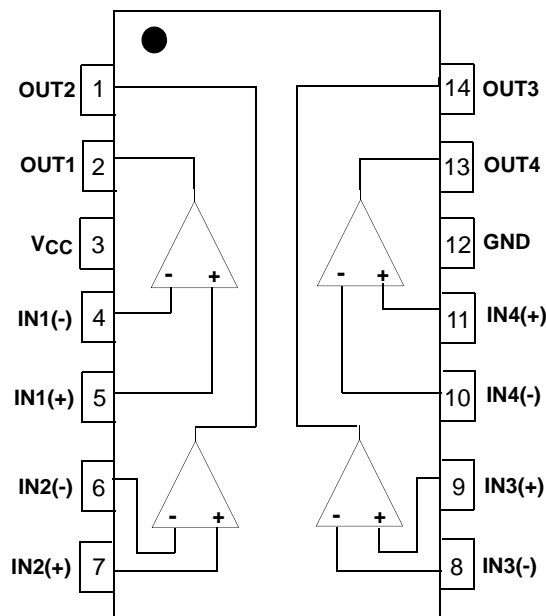
- Single or Dual Supply Operation
- Wide Range of Supply Voltage  
KA339/KA339A, KA2901 : 2 ~ 36V (or  $\pm 1 \sim \pm 18V$ )
- Low Supply Current Drain 800 $\mu A$  Typ.
- Open Collector Outputs for Wired and Connectors
- Low Input Bias Current 25nA Typ.
- Low Input Offset Current  $\pm 2.3nA$  Typ.
- 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 KA339/KA339A, KA2901 consist of four independent voltage comparators designed to operate from single power supply over a wide voltage range.

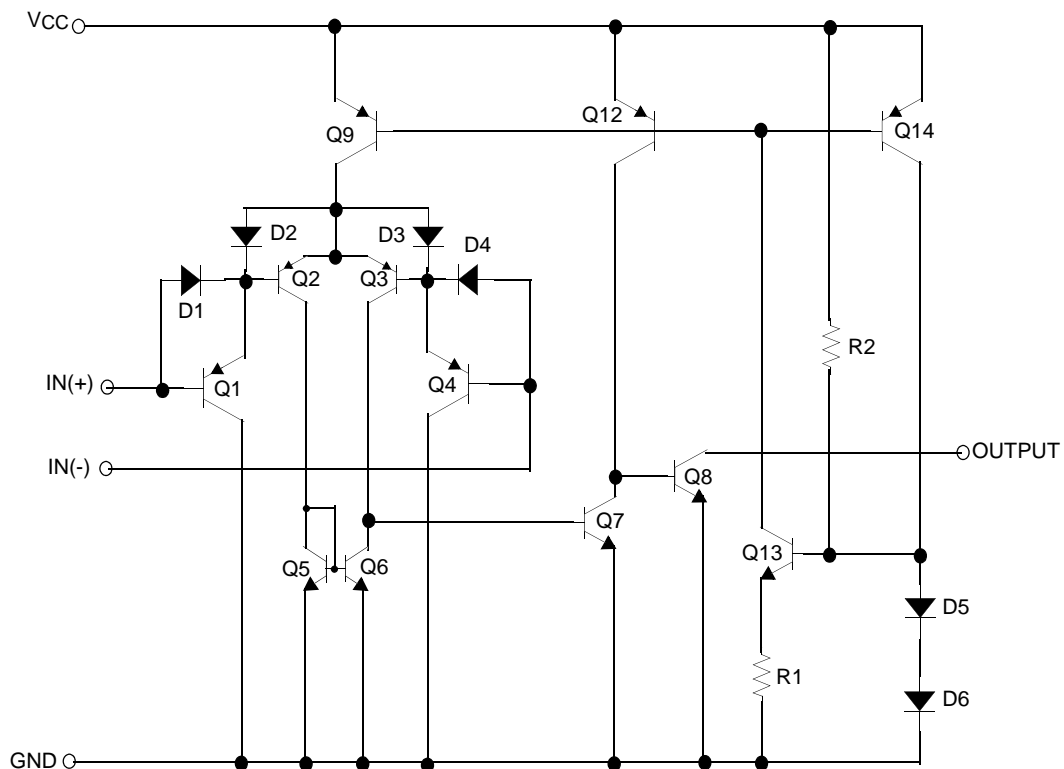


### Internal Block Diagram



KA339/KA339A, KA2901

## Schematic Diagram



## Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Supply Voltage	$V_{CC}$	$\pm 18$ or 36	V
Differential Input Voltage	$V_I(DIFF)$	36	V
Input Voltage	$V_I$	-0.3 to +36	V
Output Short Circuit to GND	-	Continuous	-
Power Dissipation	$P_D$	570	mW
Operating Temperature KA339/KA339A KA2901	$T_{OPR}$	0 ~ +70 -40 ~ +85	$^{\circ}C$
Storage Temperature	$T_{STG}$	-65 ~ +150	$^{\circ}C$

## Electrical Characteristics

( $V_{CC} = 5V$ ,  $T_A = 25^\circ C$ , unless otherwise specified)

Parameter	Symbol	Conditions	KA339A			KA339			Unit
			Min.	Typ.	Max.	Min.	Typ.	Max.	
Input Offset Voltage	$V_{IO}$	$V_{O(P)} = 1.4V$ , $R_S = 0\Omega$	-	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	$I_{CC}$	$V_{CC} = 5V$ , $R_L = \infty$	-	1.1	2.0	-	1.1	2.0	mA
Voltage Gain	$G_V$	$V_{CC} = 15V$ , $R_L \geq 15k\Omega$ (for large swing)	50	200	-	50	200	-	V/mV
Large Signal Response Time	$T_{LRES}$	$V_I = \text{TTL Logic Swing}$ $V_{REF} = 1.4V$ , $V_{RL} = 5V$ , $R_L = 5.1k\Omega$ (Note2)	-	300	-	-	300	-	ns
Response Time	$T_{RES}$	$V_{RL} = 5V$ , $R_L = 5.1k\Omega$ (Note2)	-	1.3	-	-	1.3	-	$\mu s$
Output Sink Current	$I_{SINK}$	$V_{I(-)} \geq 1V$ , $V_{I(+)} = 0V$ , $V_{O(P)} \leq 1.5V$	6	18	-	6	18	-	mA
Output Saturation Voltage	$V_{SAT}$	$V_{I(-)} \geq 1V$ , $V_{I(+)} = 0V$	-	140	400	-	140	400	mV
		$I_{SINK} = 4mA$	Note1	-	-	700	-	-	
Output Leakage Current	$I_{o(LKG)}$	$V_{I(-)} = 0V$	$V_{O(P)} = 5V$	-	0.1	-	-	0.1	nA
		$V_{I(+)} = 1V$	$V_{O(P)} = 30V$	-	-	1.0	-	-	1.0
Differential Voltage	$V_{I(DIFF)}$	Note1	-	-	36	-	-	36	V

### Note:

- KA339 / KA339A:  $0 \leq T_A \leq +70^\circ C$   
KA2901:  $-40 \leq T_A \leq +85^\circ C$
- These parameters, although guaranteed, are not 100% tested in production.

**Electrical Characteristics** (Continued)(V<sub>CC</sub> = 5V, T<sub>A</sub> = 25°C, unless otherwise specified)

Parameter	Symbol	Conditions	KA2901			Unit
			Min.	Typ.	Max.	
Input Offset Voltage	V <sub>IO</sub>	VO(P) = 1.4V, R <sub>S</sub> = 0Ω	-	2	7	mV
		Note1	-	9	15	
Input Offset Current	I <sub>IO</sub>		-	2.3	50	nA
		Note1	-	50	200	
Input Bias Current	I <sub>BIAS</sub>		-	57	250	nA
		Note1	-	200	500	
Input Common Mode Voltage Range	V <sub>I(R)</sub>	KA2901, V <sub>CC</sub> = 30V	0	-	V <sub>CC</sub> -1.5	V
		Note1	0	-	V <sub>CC</sub> -2	
Supply Current	I <sub>CC</sub>	R <sub>L</sub> = ∞, V <sub>CC</sub> = 5V	-	1.1	2.0	mA
		R <sub>L</sub> = ∞, V <sub>CC</sub> = 30V	-	1.6	2.5	
Voltage Gain	G <sub>V</sub>	V <sub>CC</sub> = 15V, R <sub>L</sub> ≥ 15kΩ (for large swing)	25	100	-	V/mV
Large Signal Response Time	T <sub>LR</sub>	V <sub>I</sub> = TTL Logic Swing V <sub>REF</sub> = 1.4V, V <sub>RL</sub> = 5V, R <sub>L</sub> = 5.1kΩ (Note2)	-	300	-	ns
Response Time	T <sub>RES</sub>	V <sub>RL</sub> = 5V, R <sub>L</sub> = 5.1kΩ (Note2)	-	1.3	-	μs
Output Sink Current	I <sub>SINK</sub>	V <sub>I(-)</sub> ≥ 1V, V <sub>I(+)</sub> = 0V, V <sub>O(P)</sub> ≤ 1.5V	6	18	-	mA
Output Saturation Voltage	V <sub>SAT</sub>	V <sub>I(-)</sub> ≥ 1V, V <sub>I(+)</sub> = 0V	-	140	400	mV
		I <sub>SINK</sub> = 4mA	Note1	-	700	
Output Leakage Current	I <sub>O(LKG)</sub>	V <sub>I(-)</sub> = 0V V <sub>I(+)</sub> = 1V	V <sub>O(P)</sub> = 5V	-	0.1	nA
			V <sub>O(P)</sub> = 30V	-	-	1.0
Differential Voltage	V <sub>I(DIFF)</sub>	-	Note1	-	36	V

**Note:**

- KA339 / KA339A: 0 ≤ T<sub>A</sub> ≤ +70°C  
KA2901: -40 ≤ T<sub>A</sub> ≤ +85°C
- These parameters, although guaranteed, are not 100% tested in production.

# Typical Performance Characteristics

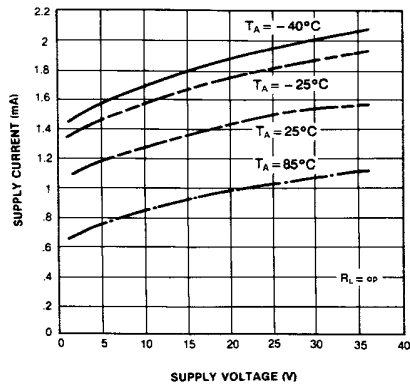


Figure 1. Supply Current vs Supply Voltage

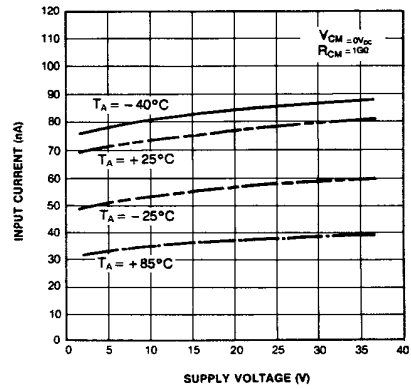


Figure 2. Input Current vs Supply Voltage

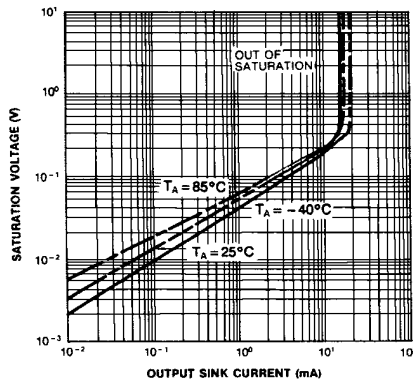


Figure 3. Output Saturation Voltage vs Sink Current

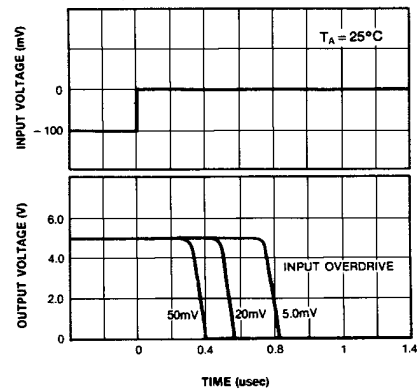


Figure 4. Response Time for Various Input Overdrive-Negative Transition

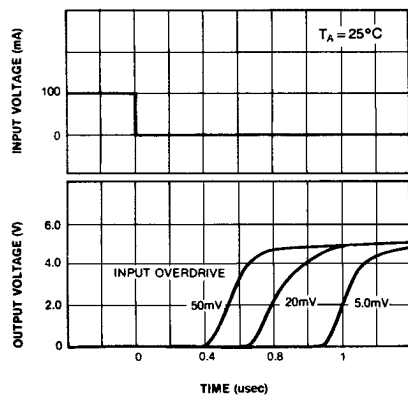


Figure 5. Response Time for Various Input Overdrive-Positive Transition

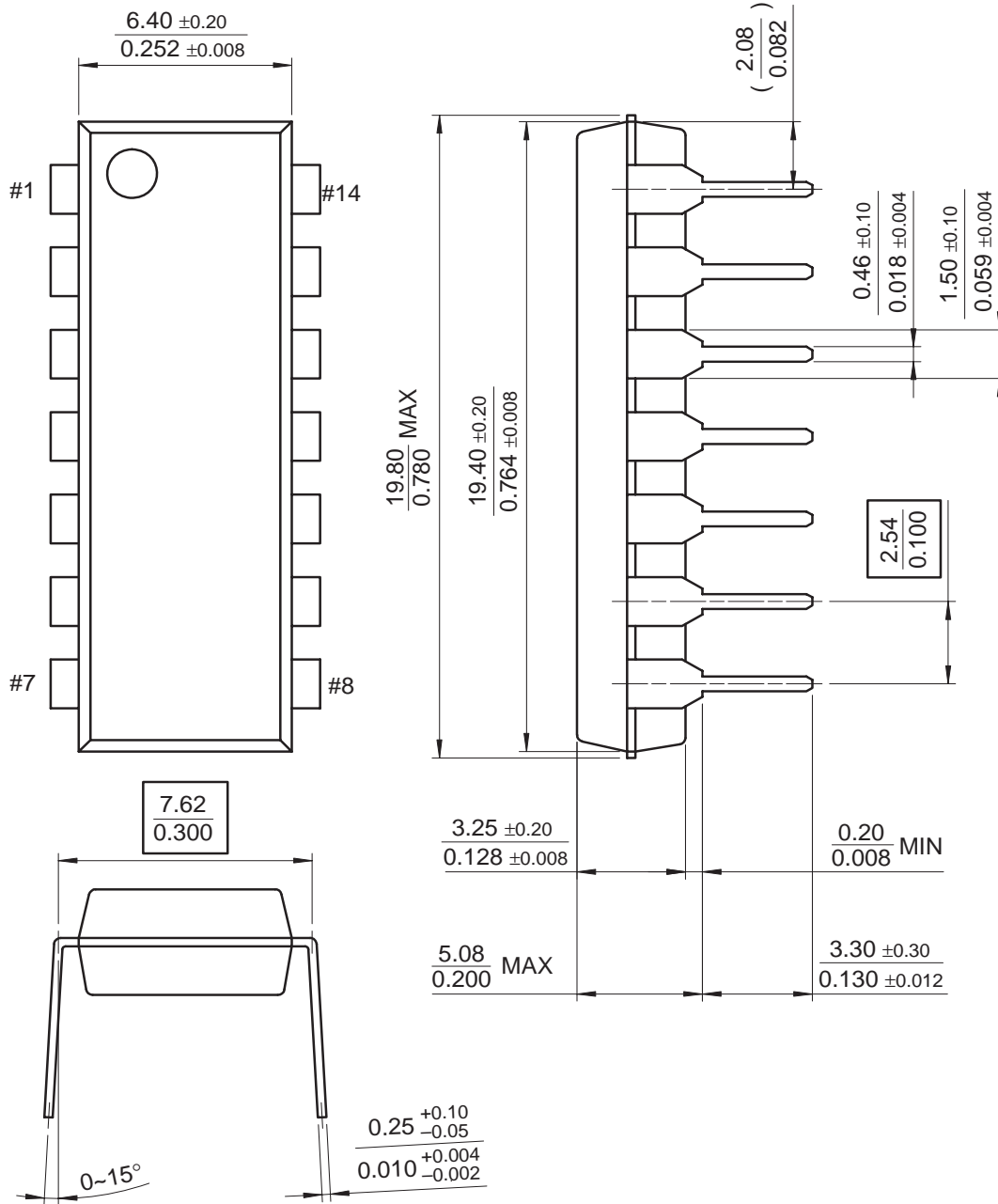


# Mechanical Dimensions

## Package

Dimensions in millimeters

### 14-DIP

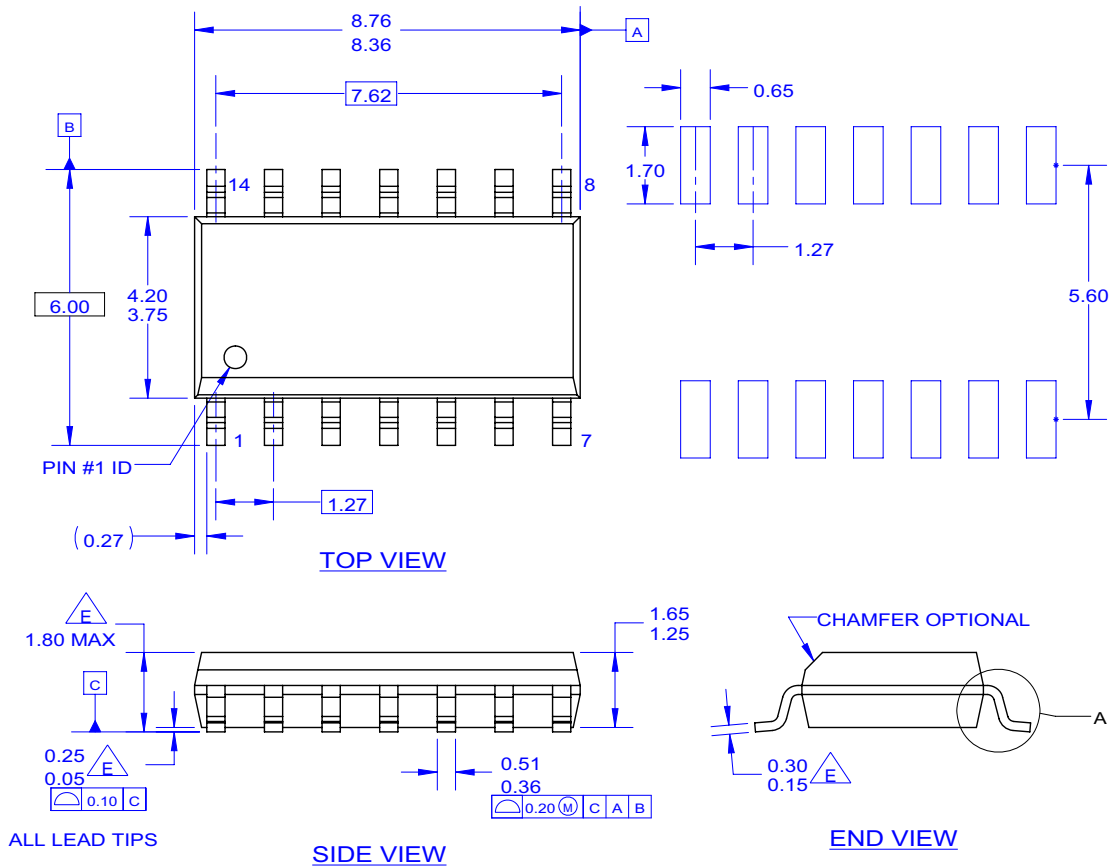


# Mechanical Dimensions (Continued)

## Package

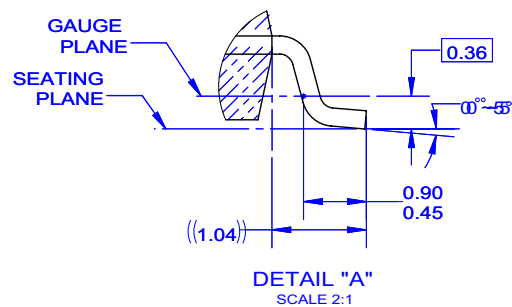
Dimensions in millimeters

### 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



KA339/KA339A, KA2901

## Ordering Information

Product Number	Package	Operating Temperature
KA339	14-DIP	0 ~ +70°C
KA339A		
KA339D	14-SOP	
KA339AD		
KA2901D	14-SOP	-40 ~ +85°C


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