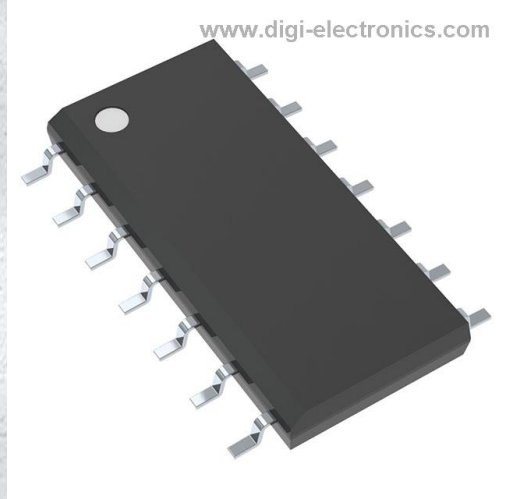
# KA339ADTF Datasheet




https://www.DiGi-Electronics.com

| | |
|---|---|
| DiGi Electronics Part Number | KA339ADTF-DG |
| Manufacturer | onsemi |
| Manufacturer Product Number | KA339ADTF |
| Description | IC COMPARATOR 4 GEN PUR 14SOP |
| Detailed Description | Comparator General Purpose DTL, MOS, Open-Collector, TTL 14-SOP |

Tel: +00 852-30501935

RFQ Email: Info@DiGi-Electronics.com

## Purchase and inquiry

| Manufacturer Product Number: | Manufacturer: |
| --- | --- |
| KA339ADTF | onsemi |
| Series: | Product Status: |
| - | Obsolete |
| Type: | Number of Elements: |
| General Purpose | 4 |
| Output Type: | Voltage - Supply, Single/Dual (±): |
| DTL, MOS, Open-Collector, TTL | 2V ~ 36V, ±1V ~ 18V |
| Voltage - Input Offset (Max): | Current - Input Bias (Max): |
| 2mV @ 5V | 0.25µA @ 5V |
| Current - Output (Typ): | Current - Quiescent (Max): |
| 18mA @ 5V | 2.5mA |
| CMRR, PSRR (Typ): | Propagation Delay (Max): |
| - | - |
| Hysteresis: | Operating Temperature: |
| - | 0°C ~ 70°C |
| Package / Case: | Mounting Type: |
| 14-SOIC (0.154", 3.90mm Width) | Surface Mount |
| Supplier Device Package: | Base Product Number: |
| 14-SOP | KA339 |

## Environmental & Export classification

| RoHS Status: | Moisture Sensitivity Level (MSL): |
| --- | --- |
| ROHS3 Compliant | 1 (Unlimited) |
| REACH Status: | ECCN: |
| REACH Unaffected | EAR99 |
| HTSUS: | |
| 8542.39.0001 | |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Please note: As part of the Fairchild Semiconductor integration, some of the Fairchild orderable part numbers will need to change in order to meet ON Semiconductor's system requirements. Since the ON Semiconductor product management systems do not have the ability to manage part nomenclature that utilizes an underscore (_), the underscore (_) in the Fairchild part numbers will be changed to a dash (-). This document may contain device numbers with an underscore (_). Please check the ON Semiconductor website to verify the updated device numbers. The most current and up-to-date ordering information can be found at www.onsemi.com. Please email any questions regarding the system integration to Fairchild_questions@onsemi.com.

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# KA339/KA339A, KA2901

## Quad Comparator

## Features

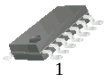
- Single or Dual Supply Operation
- Wide Range of Supply Voltage
  KA339/KA339A, KA2901 : 2 ~ 36V (or ±1 ~ ±18V)
- Low Supply Current Drain 800μA Typ.
- Open Collector Outputs for Wired and Connectors
- Low Input Bias Current 25nA Typ.
- Low Input Offset Current ±2.3nA Typ.
- Low Input Offset Voltage ±1.4mV Typ.
- Input Common Mode Voltage Range Includes Ground.
- Low Output Saturation Voltage
- Output Compatible With TTL, DTL and MOS Logic System

## Description

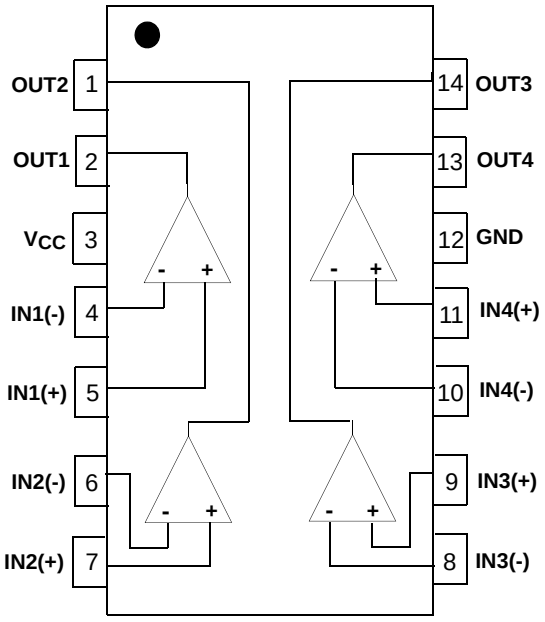
The KA339/KA339A, KA2901 consist of four independent voltage comparators designed to operate from single power supply over a wide voltage range.

**14-DIP**


**14-SOP**

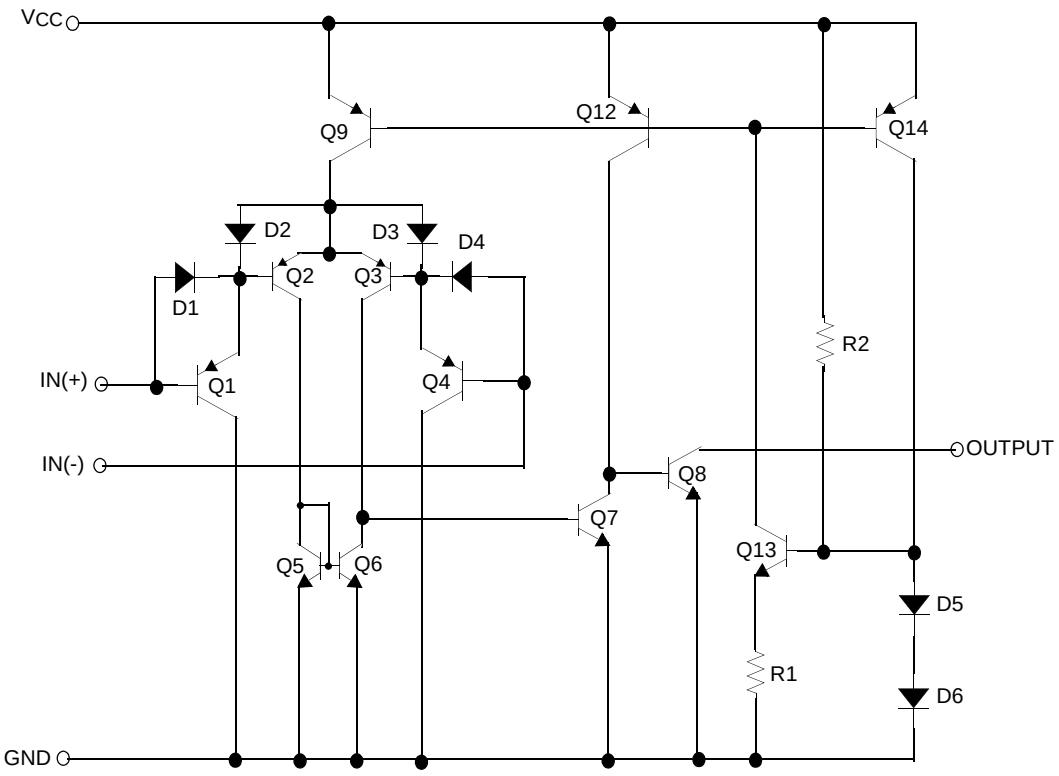



## Internal Block Diagram




Rev. 1.0.5

## Schematic Diagram




## Absolute Maximum Ratings

| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| Supply Voltage | $V_{CC}$ | ±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<br>KA339/KA339A<br>KA2901 | $T_{OPR}$ | <br>0 ~ +70<br>-40 ~ +85 | °C |
| Storage Temperature | $T_{STG}$ | -65 ~ +150 | °C |

## Electrical Characteristics

($V_{CC}$ = 5V, $T_A$ = 25°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, $R_S$ = 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 | Note1 | - | - | 700 | - | - | 700 | |
| Output Leakage Current | $I_{O(LKG)}$ | $V_{I(-)}$ = 0V $V_{I(+)}$ = 1V | $V_{O(P)}$ = 5V | - | 0.1 | - | - | 0.1 | - | nA |
| | | | $V_{O(P)}$ =30V | - | - | 1.0 | - | - | 1.0 | μA |
| Differential Voltage | $V_{I(DIFF)}$ | | Note1 | - | - | 36 | - | - | 36 | V |

**Note:**

1. KA339 / KA339A: 0 ≤ $T_A$ ≤ +70°C
   KA2901: -40 ≤ $T_A$ ≤ +85°C
2. These parameters, although guaranteed, are not 100% tested in production.

## Electrical Characteristics (Continued)

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

| Parameter | Symbol | Conditions | | KA2901 | | | Unit |
|---|---|---|---|---|---|---|---|
| | | | | Min. | Typ. | Max. | |
| Input Offset Voltage | $V_{IO}$ | $V_{O(P)}$ = 1.4V, $R_S$ = 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 | $V_{I(R)}$ | KA2901, $V_{CC}$ =30V | | 0 | - | $V_{CC}$-1.5 | V |
| | | | Note1 | 0 | - | $V_{CC}$-2 | |
| Supply Current | $I_{CC}$ | $R_L$ =∞, $V_{CC}$=5V | | - | 1.1 | 2.0 | mA |
| | | $R_L$ =∞, $V_{CC}$ =30V | | - | 1.6 | 2.5 | |
| Voltage Gain | $G_V$ | $V_{CC}$ =15V, $R_L$≥15kΩ (for large swing) | | 25 | 100 | - | 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 | - | ns |
| Response Time | $T_{RES}$ | $V_{RL}$ = 5V, $R_L$ =5.1kΩ (Note2) | | - | 1.3 | - | μs |
| Output Sink Current | $I_{SINK}$ | $V_{I(-)}$ ≥ 1V, $V_{I(+)}$ = 0V, $V_{O(P)}$ ≤ 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 $V_{I(+)}$ = 1V | $V_{O(P)}$ = 5V | - | 0.1 | - | nA |
| | | | $V_{O(P)}$ = 30V | - | - | 1.0 | μA |
| Differential Voltage | $V_{I(DIFF)}$ | - | Note1 | - | - | 36 | V |

**Note:**

1. KA339 / KA339A: 0 ≤ $T_A$ ≤ +70°C
   KA2901: -40 ≤ $T_A$ ≤ +85°C
2. These parameters, although guaranteed, are not 100% tested in production.

# Typical Performance Characteristics

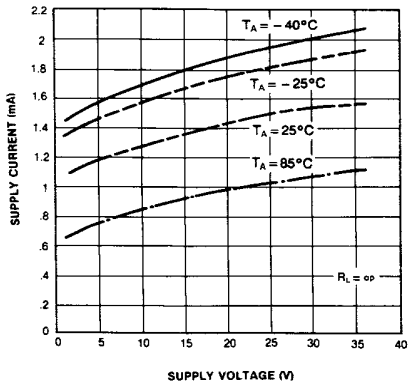



**Figure 1. Supply Current vs Supply Voltage**

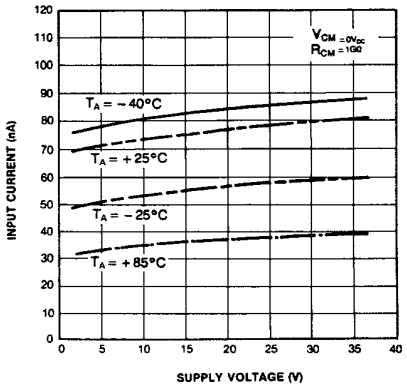



**Figure 2. Input Current vs Supply Voltage**

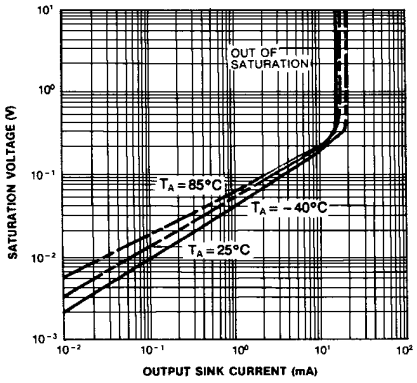



**Figure 3. Output Saturation Voltage vs Sink Current**

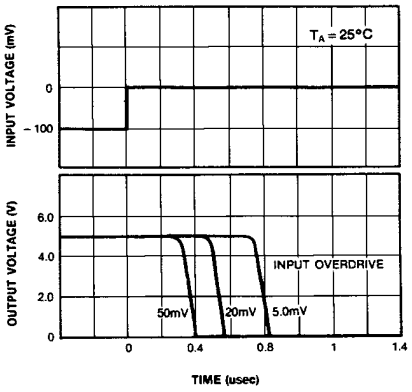



**Figure 4. Response Time for Various Input Overdrive-Negative Transition**

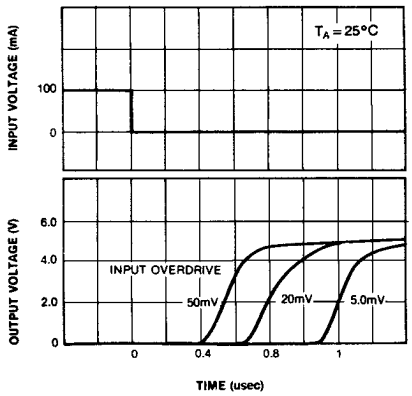


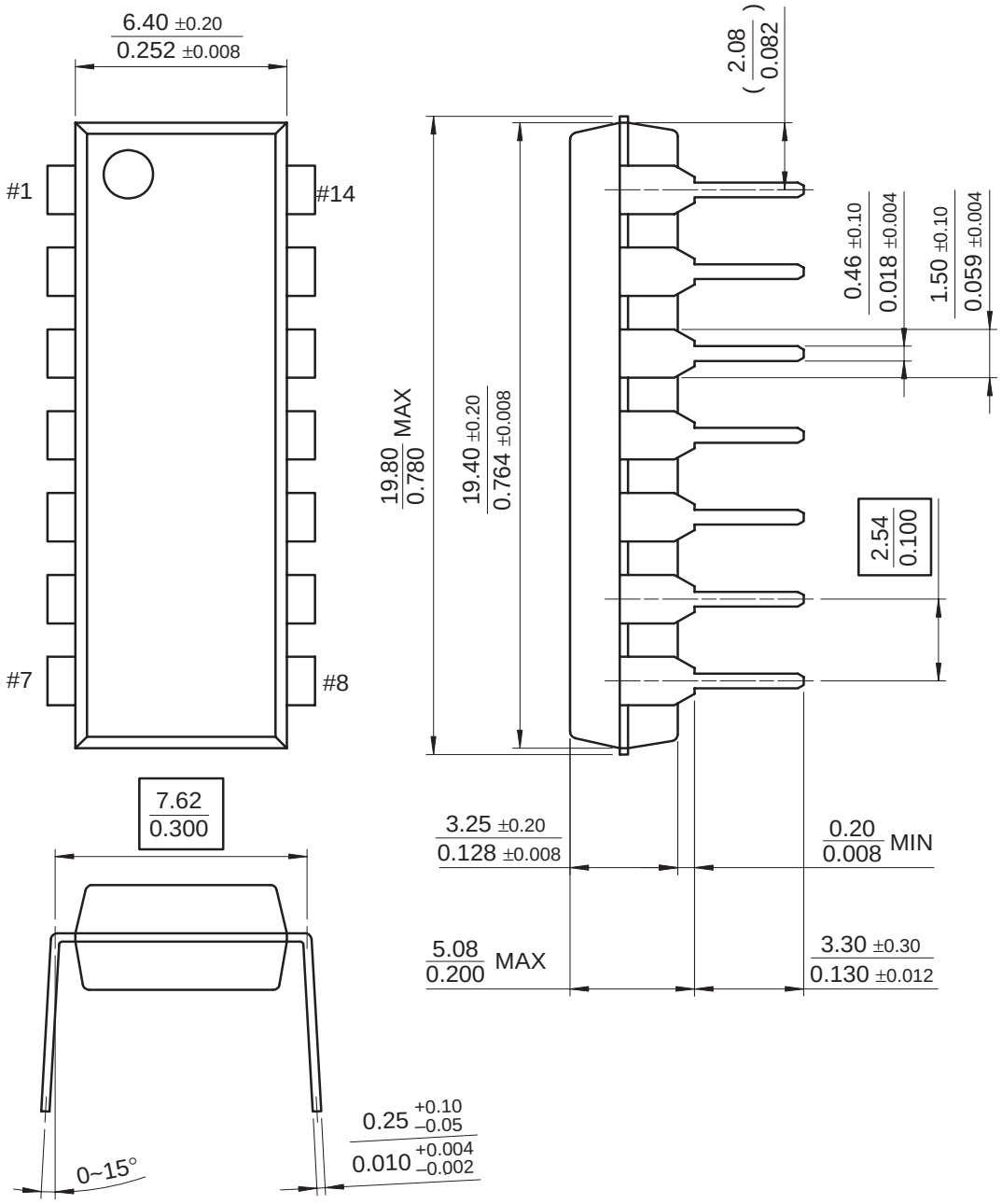

**Figure 5. Response Time for Various Input Overdrive-Positive Transition**

# Mechanical Dimensions

## Package

**Dimensions in millimeters**

## 14-DIP

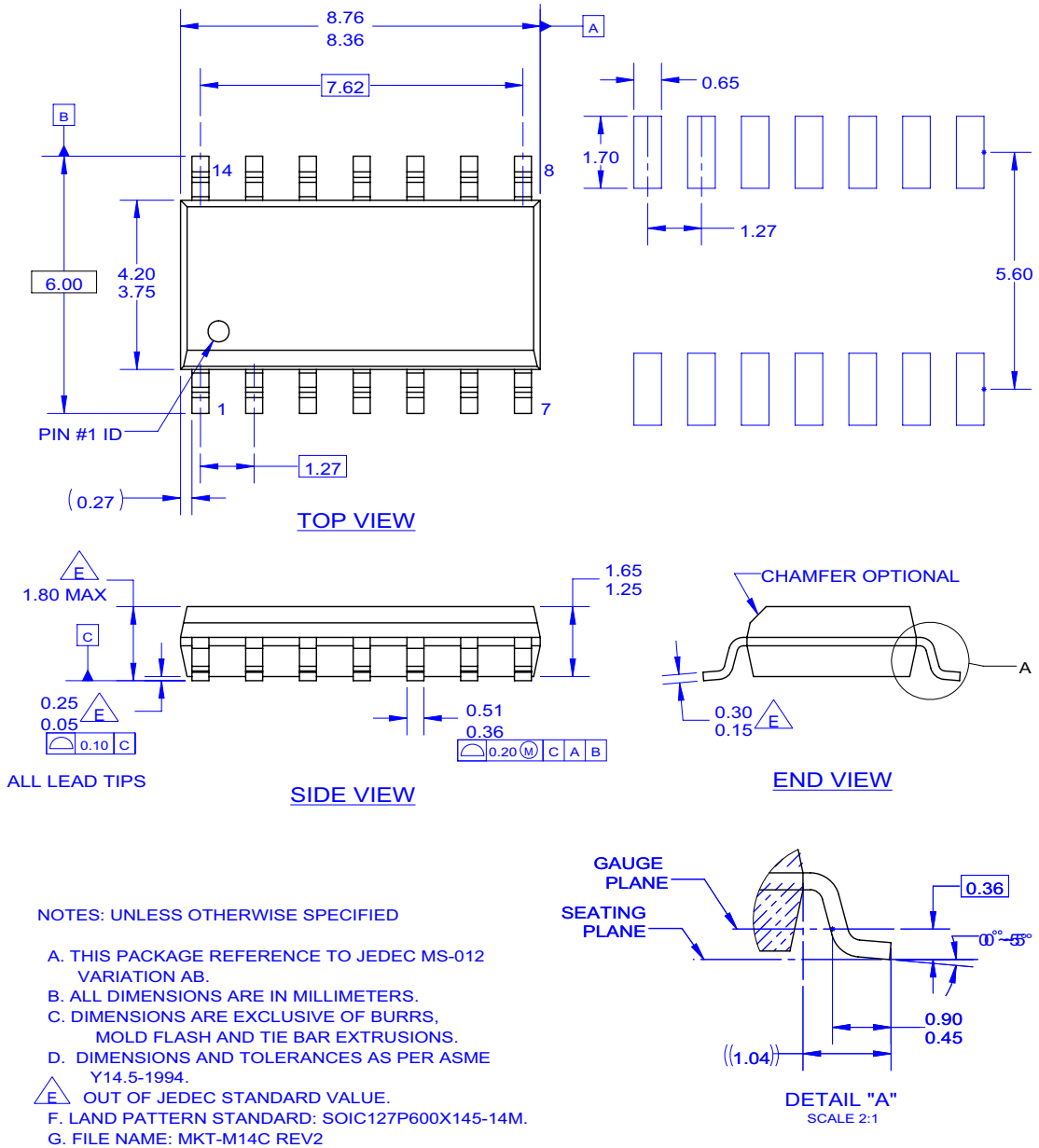


# Mechanical Dimensions (Continued)

## 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

# Ordering Information

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





1/17/12 0.0m 001
Stock#DS400068

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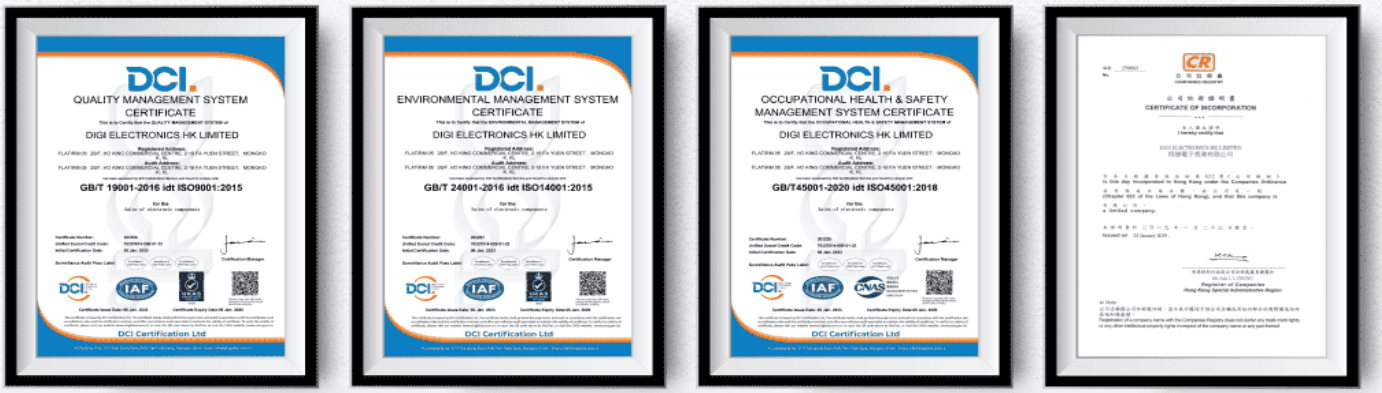



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