

# Silicon Medium Barrier Schottky Diode

## MA4E1340 Series

### Features

- RF & Microwave Medium Barrier Silicon 70 V Schottky Diode
- Available as Single Diode, Series Pair or Unconnected Pair Configurations.
- Low Profile Surface Mount Plastic Packages

### Description

The MA4E1340 series is a silicon medium barrier Schottky diode suitable for use in mixer, detector and limiter circuits. These diodes are also suitable for usage in anti-parallel, shunt power surge protection circuits for 50  $\Omega$  and 75  $\Omega$  systems.

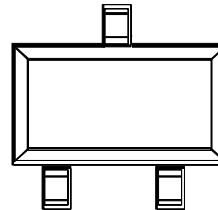
The MA4E1340 Series of Schottky diodes is available in the SOT-23 ( case style 287 ), SOT-143 ( case style 1068 ), SOT-323 ( case style 1146 ) and the SOD 323, ( case style 1141 ) plastic package. These packages are supplied on tape and reel for automatic pick and place assembly and for surface mount placement to circuit boards, as indicated by a "T" to the P/N suffix.

### Applications

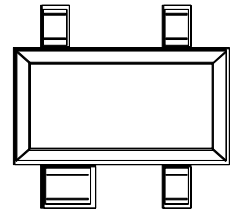
These Silicon Medium Barrier, 70 V Schottky Diodes are Useful in Detector, Limiter, Mixer, and Surge Protection Applications for Operating Frequency Bands from DC through 6 GHz.

### Package Outlines

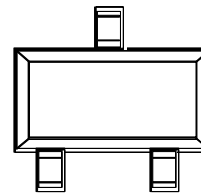
SOT-23 (287)



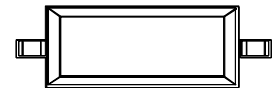
SOT-143 (1068)



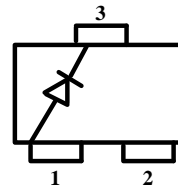
SOT-323 (1146)



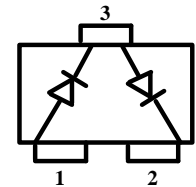
SOD-323 (1141)



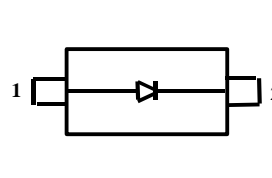
### Configurations — Top View



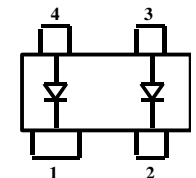
Single  
MA4E1340A-287T  
MA4E1340A-1146T



Series Pair  
MA4E1340B-287T  
MA4E1340B-1146T



Single  
MA4E1340A-1141T



Unconnected Pair  
MA4E1340E-1068T

## Absolute Maximum Ratings

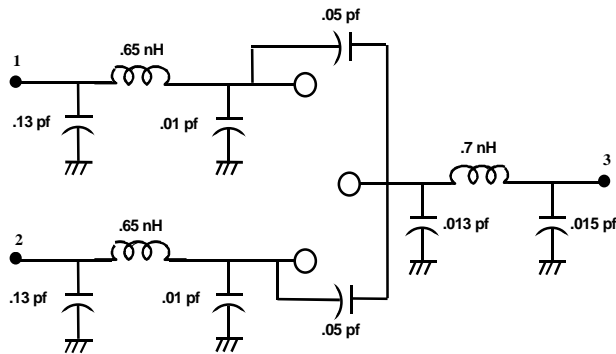
| Parameter                            | Unit | Values      |
|--------------------------------------|------|-------------|
| Operating Temperature                | °C   | -55 to +125 |
| Storage Temperature                  | °C   | -55 to +125 |
| Total Power Dissipation (Tc = 25 °C) | mW   | 250         |
| Continuous Forward Current           | mA   | 15          |
| Surge Forward Current, @ t < 10 ms   | mA   | 100         |
| Reverse Voltage                      | V    | 70          |

## Electrical Specifications @ T<sub>A</sub> = +25 °C

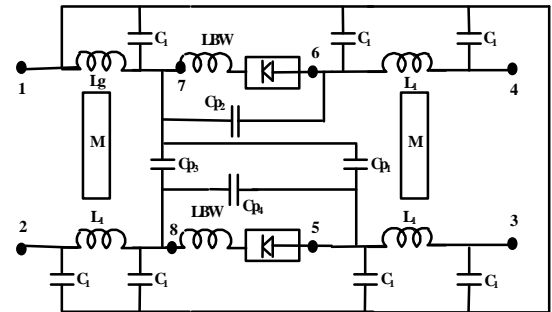
| Parameter                 | Condition                             | Symbol           | Specification   |
|---------------------------|---------------------------------------|------------------|---|
| Forward Voltage           | I <sub>F</sub> = 1 mA                 | V <sub>F</sub>   | 410 mV max.   |
| Delta Forward Voltage     | I <sub>F</sub> = 1 mA                 | Δ V <sub>F</sub> | 20 mV max.<br>(for series pair and unconnected pair configurations) |
| Forward Voltage           | I <sub>F</sub> = 15 mA                | V <sub>F</sub>   | 1.0 V max.  |
| Total Capacitance         | V <sub>R</sub> = 0 V and<br>f = 1 MHz | C <sub>T</sub>   | 2.0 pF max.   |
| Reverse Leakage Current   | V <sub>R</sub> = 50 V                 | I <sub>R</sub>   | 200 nA max.   |
| Reverse Voltage Breakdown | I <sub>R</sub> = 10 μA                | V <sub>b</sub>   | 70 V min.   |

Circuit Models

SOT-23

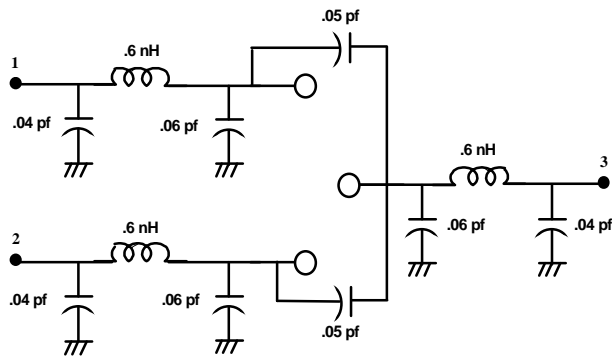


SOT-143

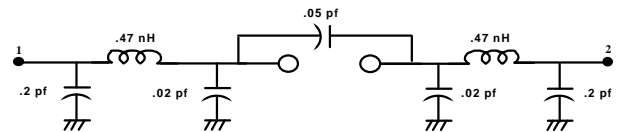


LBW = 0.08nH, Lg = 0.36nH, L1 = 0.31nH, M = 0.12nH, C1 = 0.01pF, Cp1 = 0.05pF, Cp2 = 0.10pF, Cp3 = 0.05pF, Cp4 = 0.03pF

SOT-323

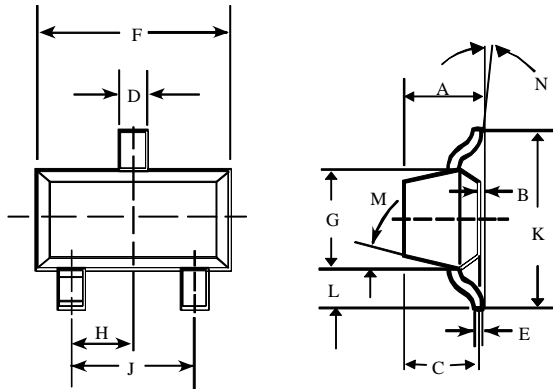


SOD-323



Case Styles

SOT-23

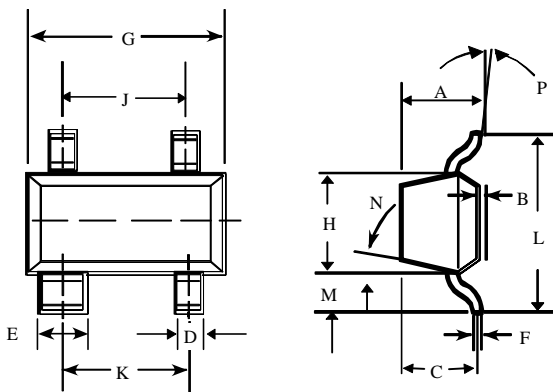


SOT-23 (Case Style 287)

| DIM. | INCHES                |       | MILLIMETERS  |      |
|------|-----------------------|-------|--------------|------|
|      | MIN.                  | MAX.  | MIN.         | MAX. |
| A    | -                     | 0.048 | -            | 1.22 |
| B    | -                     | 0.008 | -            | 0.20 |
| C    | -                     | 0.040 | -            | 1.00 |
| D    | 0.013                 | 0.020 | 0.35         | 0.50 |
| E    | 0.003                 | 0.006 | 0.08         | 0.15 |
| F    | 0.110                 | 0.119 | 2.80         | 3.00 |
| G    | 0.047                 | 0.056 | 1.20         | 1.40 |
| H    | 0.037 typical         |       | 0.95 typical |      |
| J    | 0.075 typical         |       | 1.90 typical |      |
| K    | -                     | 0.103 | -            | 2.60 |
| L    | -                     | 0.024 | -            | 0.60 |
| DIM. | GRADIENT              |       |              |      |
| M    | 10° max. <sup>1</sup> |       |              |      |
| N    | 2° . . . 30°          |       |              |      |

Note: 1. Applicable on all sides

SOT-143



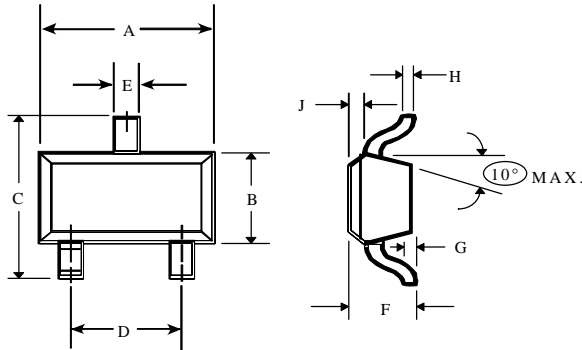
SOT-143 (Case Style 1068)

| DIM. | INCHES                |       | MILLIMETERS  |      |
|------|-----------------------|-------|--------------|------|
|      | MIN.                  | MAX.  | MIN.         | MAX. |
| A    | -                     | 0.044 | -            | 1.10 |
| B    | -                     | 0.044 | -            | 1.10 |
| C    | -                     | 0.040 | -            | 1.00 |
| D    | 0.030                 | 0.035 | 0.75         | 0.90 |
| E    | 0.013                 | 0.020 | 0.35         | 0.50 |
| F    | 0.003                 | 0.006 | 0.08         | 0.15 |
| G    | 0.110                 | 0.119 | 2.80         | 3.00 |
| H    | 0.047                 | 0.056 | 1.20         | 1.40 |
| J    | 0.075 typical         |       | 1.90 typical |      |
| K    | 0.075 typical         |       | 1.90 typical |      |
| L    | -                     | 0.103 | -            | 2.6  |
| M    | -                     | 0.024 | -            | 0.6  |
| DIM. | GRADIENT              |       |              |      |
| N    | 10° max. <sup>1</sup> |       |              |      |
| P    | 2° . . . 30°          |       |              |      |

Note: 1. Applicable on all sides

Case Styles (Cont'd)

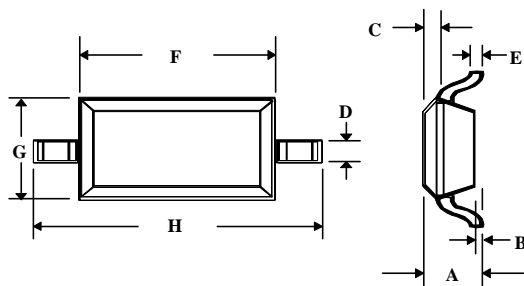
SOT-323



SOT-323 (Case Style 1146)

| DIM. | INCHES |       | MILLIMETERS |      |
|------|--------|-------|-------------|------|
|      | MIN.   | MAX.  | MIN.        | MAX. |
| A    | 0.063  | 0.087 | 1.6         | 2.2  |
| B    | 0.045  | 0.053 | 1.15        | 1.35 |
| C    | 0.079  | 0.087 | 2.0         | 2.2  |
| D    | 0.047  | 0.055 | 1.2         | 1.4  |
| E    | 0.008  | 0.016 | 0.2         | 0.4  |
| F    | 0.031  | 0.039 | 0.8         | 1.0  |
| G    | -      | 0.004 | -           | 0.1  |
| H    | 0.003  | 0.006 | 0.08        | 0.15 |
| J    | 0.004  | 0.010 | 0.1         | 0.25 |

SOD-323



SOD-323 (Case Style 1141)

| DIM. | INCHES |       | MILLIMETERS |      |
|------|--------|-------|-------------|------|
|      | MIN.   | MAX.  | MIN.        | MAX. |
| A    | -      | 0.043 | -           | 1.1  |
| B    | -      | 0.004 | -           | 0.1  |
| C    | -      | 0.008 | -           | 0.2  |
| D    | 0.010  | 0.016 | 0.25        | 0.4  |
| E    | 0.003  | 0.006 | 0.08        | 0.15 |
| F    | 0.063  | 0.075 | 1.6         | 1.9  |
| G    | 0.045  | 0.057 | 1.15        | 1.45 |
| H    | 0.091  | 0.106 | 2.3         | 2.7  |