

## Surface Mount Low Power Step Recovery Diodes

Rev. V3

### Features

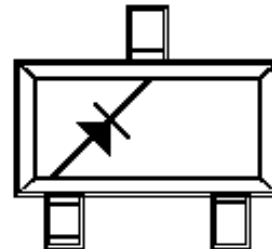
- Surface Mount Packages (SOT-23,SC-79)
- Low Transition Times
- SPC Process for Superior C-V Repeatability
- Tape and Reel Packaging
- Designed for Commercial Wireless Applications
- RoHS Compliant

### Description

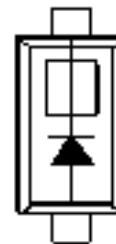
The MA144769-287 and the MAVR-044769-1279 step recovery diodes are designed for use in low power multipliers with output frequencies of up to 5 GHz. These step recovery diodes generate harmonics by storing a charge as the diode is driven to forward conductance by the positive voltage of the input signal. When the signal reverses polarity, this charge is extracted. These diodes will appear as a low impedance current source until all the charge is extracted, then it will “snap” to a higher impedance. This causes a voltage pulse to form in the impulse circuit of the multiplier. Step recovery diodes make excellent high order multipliers such as comb generators. They are also useful as efficient moderate power x2 - x4 multipliers.

These step recovery diodes are useful for surface mount low power applications.

### SOT-23 (Case Style 287)



### SC-79 (Case Style 1279)



### Electrical Specifications

| RoHS Compliant Part Numbers <sup>1</sup> | Total Capacitance @ 1 MHz, 6 V |      | Reverse Voltage @ 10 $\mu$ A | Nominal Carrier Lifetime | Transition Time | Nominal Input Frequency | Nominal Output Frequency |
|--|--------------------------------|------|------------------------------|--------------------------|-----------------|-------------------------|--------------------------|
|  | (pF)                           |      | (V)                          | (ns)                     | (ps)            | (GHz)                   |                          |
|  | Min.                           | Max. | Min.                         | Typical                  | Max.            |                         |                          |
| MA144769-287T<br>MAVR-044769-12790T      | 0.8                            | 1.2  | 30                           | 20 - 50                  | 150             | 0.1 - 1.0               | 1 - 5                    |

1. The prefix defines package style, configuration and packaging information. Contact representative for complete part identification.

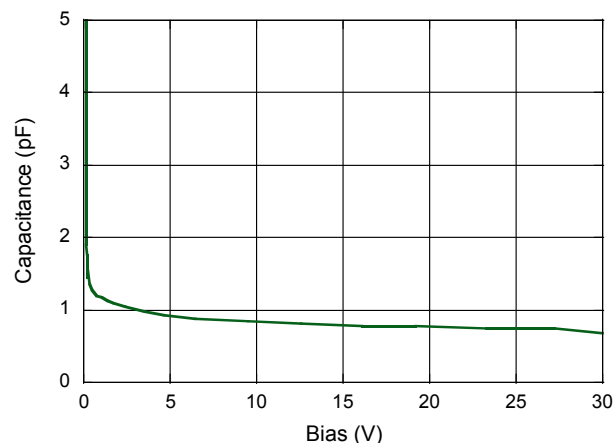
### Absolute Maximum Ratings<sup>2,3</sup>

@ T<sub>A</sub> = +25°C (Unless Otherwise Noted)

| Parameter             | Absolute Maximum |
|-----------------------|------------------|
| Operating Temperature | -65°C to +125°C  |
| Storage Temperature   | -65°C to +125°C  |
| Reverse Voltage       | 30 V             |
| Forward Bias Current  | 50 mA            |
| Power Dissipation     | 250 mW           |

2. Operation of this device above any one of these parameters may cause permanent damage.
3. Please refer to application note M538 for surface mounting instructions.

Capacitance vs. Bias, @ 1 MHz



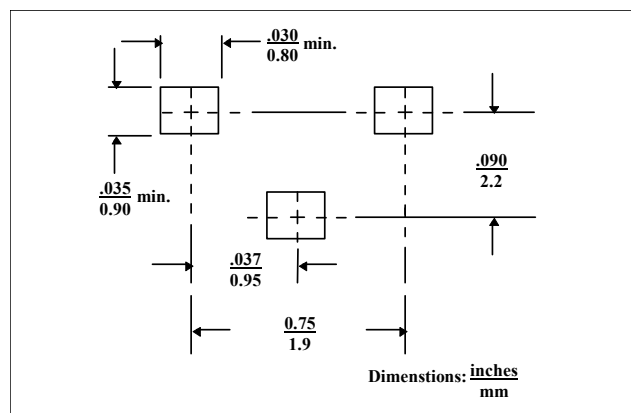
### Mounting Information

The illustration indicates the recommended mounting pad configuration for the SOT-23 and SC-79 packages.

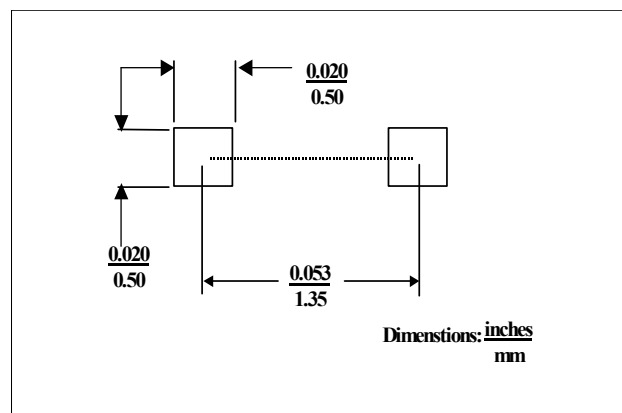
Permanent attachment is performed by a reflow soldering procedure during which the tab temperature does not exceed +275°C and the body temperature does not exceed +260°C.

Please refer to Application Note M538 for surface mounting instructions.

#### SOT-23

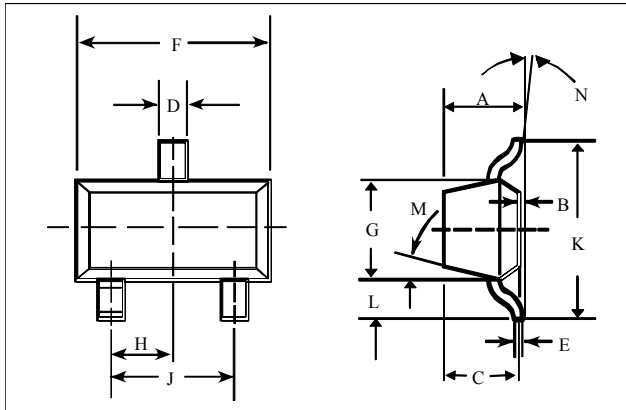


#### SC-79



### Case Styles

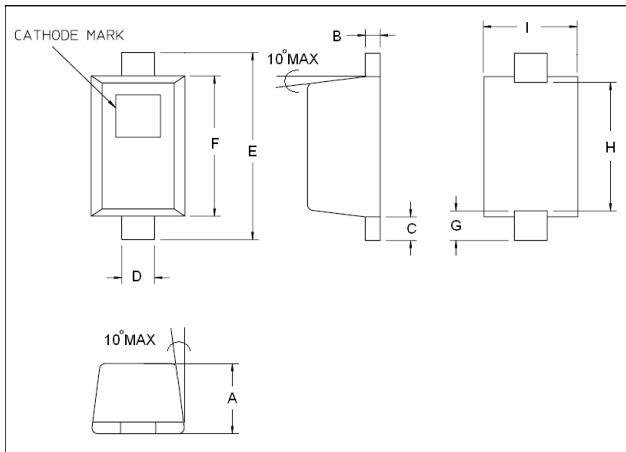
#### SOT-23 (Case Style 287)



#### 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.      |       |              |      |
| N    | 2° . . .30°   |       |              |      |

#### SC-79 (Case Style 1279)



#### SC-79 (Case Style 1279)

| Dim. | Inches         |        | Millimeters   |      |
|------|----------------|--------|---------------|------|
|      | Min.           | Max.   | Min.          | Max. |
| A    | 0.0197         | 0.0276 | 0.50          | 0.70 |
| B    | 0.003          | 0.008  | 0.07          | 0.20 |
| C    | 0.006          | 0.010  | 0.15          | 0.25 |
| D    | 0.010          | 0.014  | 0.25          | 0.35 |
| E    | 0.059          | 0.067  | 1.50          | 1.70 |
| F    | 0.043          | 0.051  | 1.09          | 1.30 |
| G    | 0.0098 nominal |        | 0.250 nominal |      |
| H    | 0.0433 nominal |        | 1.10 nominal  |      |
| I    | 0.027          | 0.035  | 0.68          | 0.89 |

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