# MA44700 Series

## Surface Mount Low Power Step Recovery Diodes

Rev. V5

### 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
- Also Offering RoHS Compliant Equivalent Parts

### Description

The MA44700 series of Step Recovery diodes is 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. The Step Recovery diode will appear as a low impedance currentsource 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.

### Applications

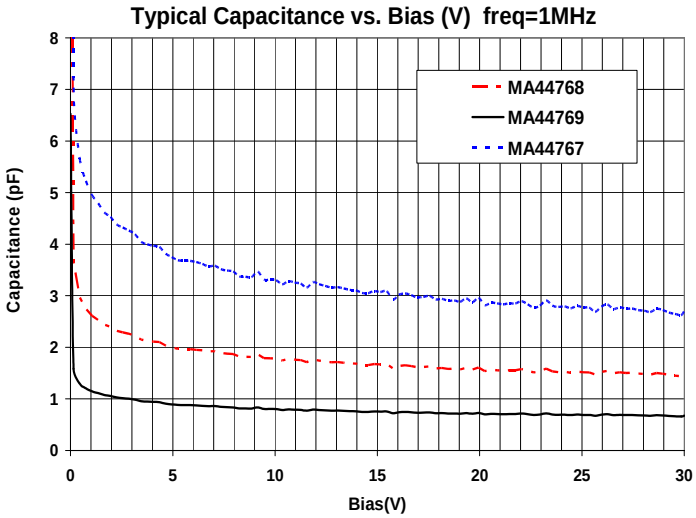
The MA44700 series step recovery are useful for surface mount low power applications.

### Absolute Maximum Ratings [1,2]

### @ $T_A$=+25 °C (Unless Otherwise Noted)

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

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




| Part Number (non-RoHS)[1] | RoHS Compliant Part Numbers[1] | $C_T$[2] (pF) f=1 MHz, $V_R$=6.0 V | | Reverse Voltage (V) Ir =10 uA | Nominal Carrier (nS) | Transition Time (pS) | Nominal Input (GHz) | Nominal Output (GHz) |
|---|---|---|---|---|---|---|---|---|
| | | Min. | Max. | Min. | Typical | Max | | |
| MA44767-287T | MAVR-044767-0287AT<br>MAVR-044767-12790T | 3.0 | 4.5 | 30 | 250-500 | 600 | 0.05-5 | 0.5-1.5 |
| MA44768-287T | MAVR-044768-0287AT<br>MAVR-044768-12790T | 1.6 | 2.4 | 30 | 75-225 | 250 | 0.1-1 | 0.5-2.5 |
| MA44769-287T | MA144769-287T<br>MAVR-044769-12790T | 0.8 | 1.2 | 30 | 20-50 | 150 | 0.1-1 | 1-5 |

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



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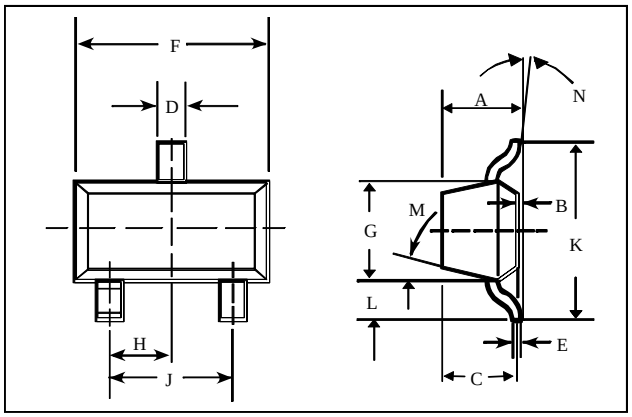
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## Case Styles

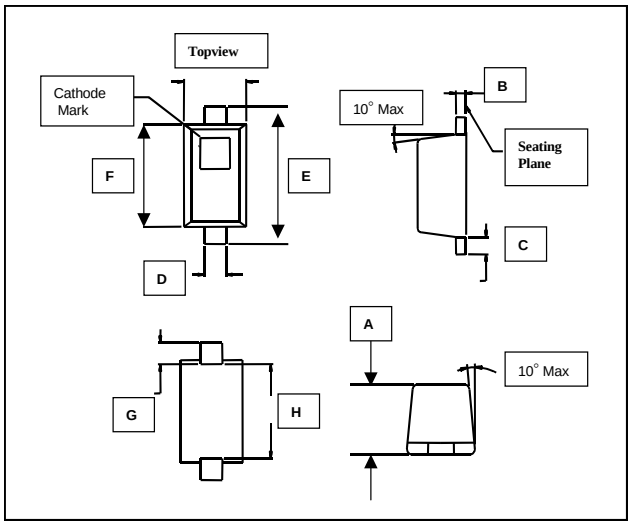
### SOT-23 (Case Style 287)




### SOT-23 (Case Style 287)

| | INCHES | | MILLIMETERS | |
|---|---|---|---|---|
| **DIM.** | **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)

| | INCHES | | MILLIMETERS | |
|---|---|---|---|---|
| **DIM.** | **MIN.** | **MAX.** | **MIN.** | **MAX.** |
| A | 0.020 | 0.028 | 0.50 | 0.71 |
| B | 0.003 | 0.008 | 0.08 | 0.20 |
| C | 0.006 | 0.010 | 0.15 | 0.25 |
| D | 0.010 | 0.014 | 0.25 | 0.36 |
| E | 0.059 | 0.067 | 0.08 | 0.15 |
| F | 0.043 | 0.051 | 1.50 | 1.30 |
| G | 0.011 | 0.012 | 0.28 | 0.30 |
| H | 0.037 typical | 0.043 | 0.94 | 1.09 |



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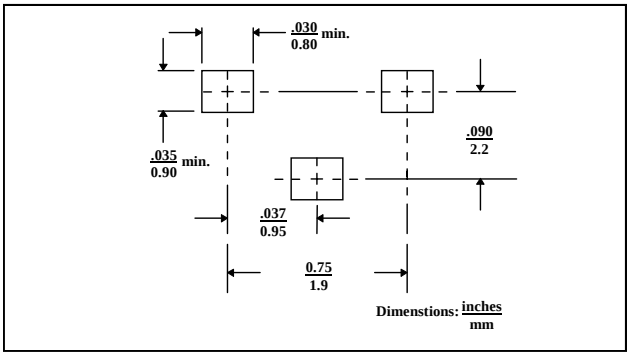
### Mounting Information

The illustration indicates the recommended mounting pad configuration for the SOT-23 and SC-79 packages. Solder paste containing flux should be screened onto the pads to a thickness of 0.005-0.007 inches. The plastic package is placed in position, firmly adhering to the solder paste.

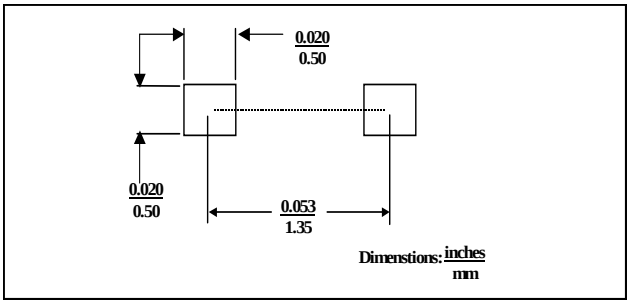
Permanent attachment is performed by a reflow soldering procedure during which the tab temperature does not exceed +275 °C and the body temperature does not exceed +250 °C, for standard models and +260 °C for the RoHS compliant devices.

**Please refer to Application Note M538 for surface mounting instructions.**

### SOT-23

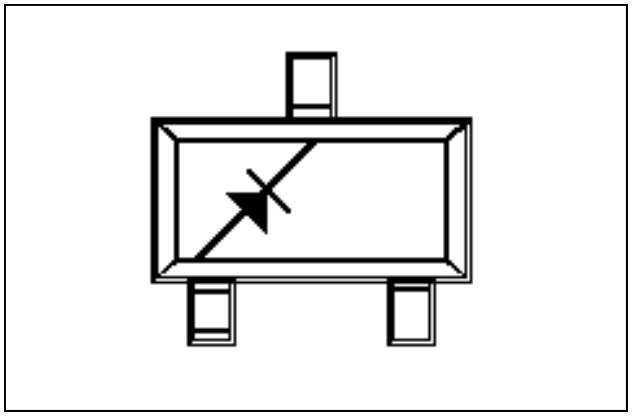



### SC-79

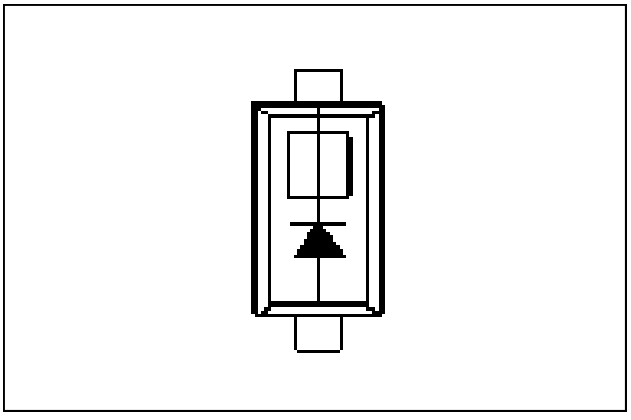



### Package Configuration

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



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





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