

## Dual Anti-Parallel Non-Magnetic PIN Diode RoHS Compliant

V1

### Features

- Designed for MRI applications
- Anti-Parallel Self Bias Arrangement
- Non-Magnetic Surface Mount Package
- SPC Process for Superior Parametric Repeatability
- RoHS Compliant with 260°C reflow compatibility

### Description

The MA45471 device acts as a passive switch using silicon PIN diodes in a surface mount non-magnetic package. The PIN diode pair are arranged in an anti-parallel configuration and encapsulated with a non-conductive epoxy resin.

### Applications

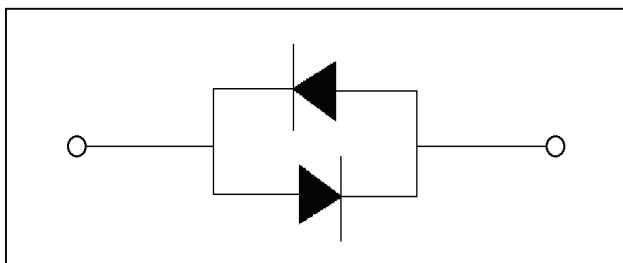
The MA45471 is well suited for MRI Passive switching applications. The PIN diodes become a high Q, R-C network under small signal and behave as an effective passive rectifier or short circuit under high RF Signal to tune and de-tune the resonant MRI tank circuit. The anti-parallel arrangement provides for more efficient RF power handling.

### Absolute Maximum Ratings @ $T_A=+25\text{ }^\circ\text{C}$ (Unless Otherwise Noted)<sup>1</sup>

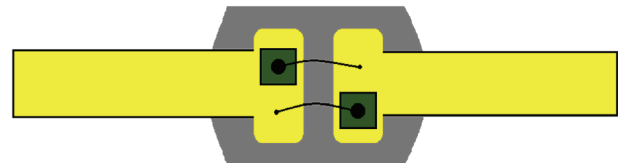
| Parameter                     | Absolute Maximum  |
|-------------------------------|-------------------|
| Reverse Voltage               | 75V               |
| Forward Current               | 2A                |
| Power Dissipation (per diode) | 1.7 W             |
| Operating Temperature         | -55 °C to +125 °C |
| Storage Temperature           | -55 °C to +125 °C |
| Junction Temperature          | +175 °C           |

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
3. Total current per diode= I (rms) + I (dc) @ +25C

### Schematic



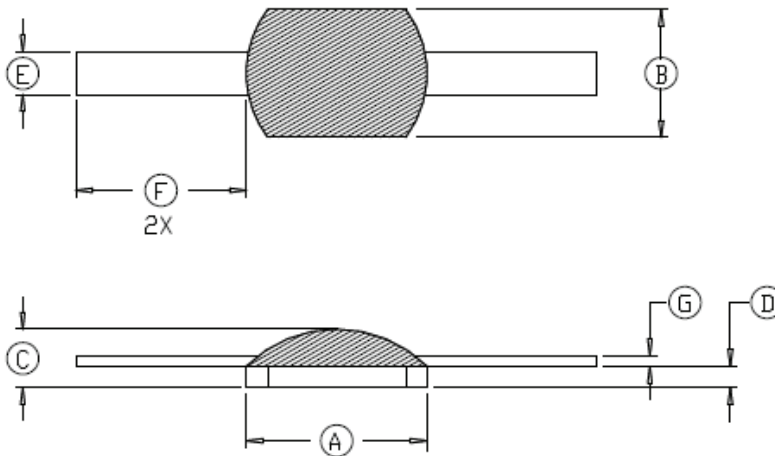
### Internal Construction



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

| Part Number    | Junction Capacitance            | Total Capacitance               | Breakdown Voltage     | Forward Voltage       | Δ Forward Voltage                             | Carrier Lifetime                              |
|----------------|---------------------------------|---------------------------------|-----------------------|-----------------------|---|---|
|                | f = 1MHz<br>V <sub>r</sub> = 0V | f = 1MHz<br>V <sub>r</sub> = 0V | I <sub>r</sub> = 10μA | I <sub>f</sub> = 20uA | I <sub>f</sub> = 20uA<br>(between each diode) | I <sub>f</sub> = 10mA / I <sub>r</sub> = 6 mA |
|                | (pF)                            | (pF)                            | (V)                   | (V)                   | (mV)  | (nS)  |
| <b>MA45471</b> | 1.25 - 1.50                     | 3.0 - 3.5                       | 75                    | 0.5 - 0.8             | +/-20   | 200   |

### Case Style 1134



| DIM. | INCHES |      | MILLIMETERS |      |
|------|--------|------|-------------|------|
|      | MIN.   | MAX. | MIN.        | MAX. |
| A    | .162   | .178 | 4.11        | 4.52 |
| B    | .112   | .128 | 2.84        | 3.25 |
| C    | -      | .055 | -           | 1.40 |
| D    | .017   | .023 | 0.43        | 0.58 |
| E    | .036   | .044 | 0.91        | 1.12 |
| F    | .150   | -    | 3.81        | -    |
| G    | .008   | .012 | 0.20        | 0.30 |