Dual Pair Anti-Parallel Non-Magnetic PIN Diode

Features
- Designed for MRI Applications
- Anti-Parallel Self Bias Arrangement
- Non-Magnetic Surface Mount Package
- SPC Process for Superior Parametric Repeatability
- RoHS* Compliant and 260°C Reflow Compatible

Description
The MA44781 device acts as a passive switch using silicon PIN diodes in a surface mount package. There are two sets of two PIN diode pairs constructed in opposing configurations. The package is sealed with a non-conductive epoxy resin and is suitable for surface mount applications.

The MA44781 device 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 doublet arrangement provides for more efficient RF power handling.

Ordering Information

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Package</th>
</tr>
</thead>
<tbody>
<tr>
<td>MA44781</td>
<td>ODS-1134</td>
</tr>
</tbody>
</table>

*S Restrictions on Hazardous Substances, European Union Directive 2011/65/EU.*
Electrical Specifications:
\( T_A = +25°C, \) Breakdown Voltage @ \( I_R = 10 \, \mu A, \) \( V_b = 60 \, V \) Minimum

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Test Conditions</th>
<th>Units</th>
<th>Min.</th>
<th>Typ.</th>
<th>Max.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forward Voltage</td>
<td>( I_F = 20 , \mu A )</td>
<td>V</td>
<td>0.500</td>
<td>—</td>
<td>0.780</td>
</tr>
<tr>
<td>Delta Forward Voltage</td>
<td>( I_F = 20 , \mu A ) (between each diodes)</td>
<td>mV</td>
<td>—</td>
<td>+/- 30</td>
<td>—</td>
</tr>
<tr>
<td>Junction Capacitance (per diode)</td>
<td>( f = 1 , MHz, ) ( V_R = -6.0 , V )</td>
<td>pF</td>
<td>0.15</td>
<td>—</td>
<td>0.50</td>
</tr>
<tr>
<td>Total Capacitance</td>
<td>( V_R = 0 , V )</td>
<td>pF</td>
<td>1.5</td>
<td>—</td>
<td>3.5</td>
</tr>
</tbody>
</table>

Absolute Maximum Ratings\(^1\)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Absolute Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reverse Voltage</td>
<td>60 , V</td>
</tr>
<tr>
<td>Forward Current (Per Diode Pair)(^2)</td>
<td>2 , A</td>
</tr>
<tr>
<td>Total Power Dissipation(^3)</td>
<td>2 , W</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>-55°C to +125°C</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>-55°C to +125°C</td>
</tr>
<tr>
<td>Junction Temperature</td>
<td>+175°C</td>
</tr>
</tbody>
</table>

Handling Procedures
Please observe the following precautions to avoid damage:

Static Sensitivity
These electronic devices are sensitive to electrostatic discharge (ESD) and can be damaged by static electricity. Proper ESD control techniques should be used when handling these devices.

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1. Operation of this device above any one of these parameters may cause permanent damage.
2. Total current per diode= \( I_{(rms)} + I_{(dc)} \) @ +25°C
3. Please refer to application note M538 for surface mounting instructions.
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