Surface Mount Plastic PIN Diodes

MADP-010630-13920T
MADP-010631-13920T
MADP-010633-13920T

Features

- Surface Mount Packages
- Low Loss, High Isolation Switching Diodes
- Tape and Reel Packaging
- RoHS* Compliant and 260°C Reflow Compatible

Description

The MADP-010630, MADP-010631 and the MADP-010633 are silicon PIN diodes in a low cost, surface mount plastic package for use as a switch or attenuator. These diodes are offered with 100% matte Sn plating and are RoHS compliant devices.

These PIN diodes feature optimized I-region lengths which results in a low resistance, low capacitance device for various microwave control circuit applications.

Ordering Information

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Package</th>
</tr>
</thead>
<tbody>
<tr>
<td>MADP-010630-13920T</td>
<td>tape and reel</td>
</tr>
<tr>
<td>MADP-010631-13920T</td>
<td>tape and reel</td>
</tr>
<tr>
<td>MADP-010633-13920T</td>
<td>tape and reel</td>
</tr>
</tbody>
</table>

Electrical Specifications @ $T_{\text{Ambient}} = 25^\circ\text{C}$

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Maximum 5 Incident Power (W)</th>
<th>Reverse Voltage 1 (V)</th>
<th>Maximum Total Capacitance 2 (pF)</th>
<th>Maximum $R_s^3$ (Ohms)</th>
<th>Carrier Lifetime 4 (µs)</th>
<th>I-Region Thickness 5 (µm)</th>
<th>Thermal 6 Resistance $\theta$</th>
</tr>
</thead>
<tbody>
<tr>
<td>MADP-010630</td>
<td>25</td>
<td>100</td>
<td>0.35 @ 20 V</td>
<td>1.5 @ 10 mA</td>
<td>0.2</td>
<td>10</td>
<td>82°C/W</td>
</tr>
<tr>
<td>MADP-010631</td>
<td>40</td>
<td>100</td>
<td>1.00 @ 20 V</td>
<td>0.5 @ 10 mA</td>
<td>0.2</td>
<td>10</td>
<td>32°C/W</td>
</tr>
<tr>
<td>MADP-010633</td>
<td>100</td>
<td>500</td>
<td>0.4 @ 50 V</td>
<td>0.6 @ 100 mA</td>
<td>1.0</td>
<td>50</td>
<td>25°C/W</td>
</tr>
</tbody>
</table>

1. The reverse current will not exceed 10 µA at the reverse voltage rating.
2. Total capacitance is measured at 1 MHz at the indicated voltage.
3. Series resistance is measured at 100 MHz.
4. Nominal minority carrier lifetime is measured at $I_r = 10$ mA, $I_c = 6$ mA, 90% recovery.
5. Incident power measured at $I_r = 50$ mA, $F = 1$GHz
6. Device located on an infinite heatsink

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Absolute Maximum Ratings: \( T_{\text{AMB}} = 25^\circ \text{C} \) (unless otherwise specified)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Absolute Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Temperature</td>
<td>-65°C to +125°C</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>-65°C to +150°C</td>
</tr>
<tr>
<td>Junction Temperature</td>
<td>+175°C</td>
</tr>
<tr>
<td>Mounting Temperature</td>
<td>+260°C for 30 secs.</td>
</tr>
</tbody>
</table>

Handling Procedures
Please observe the following precautions to avoid damage:

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

Package Style 1392

Mounting Pad Configuration

All dimensions are in mils / millimeters
Surface Mount Plastic PIN Diodes

Rs vs. I MADP-010630-13920T

Insertion Loss MADP-010630-13920T

Isolation MADP-010630-13920T

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MADP-010630-13920T  
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Surface Mount Plastic PIN Diodes

Rs vs. I
MADP-010631-13920T

Insertion Loss
MADP-010631-13920T

Isolation
MADP-010631-13920T
Typical Performance Curves MADP-010633

Series Resistance vs. Frequency

Insertion Loss vs. Frequency

Isolation vs. Frequency
Surface Mount Plastic PIN Diodes

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