Schottky Detector Diodes

Features
- Wide Selection of Packages for Stripline, Coaxial, and Waveguide Detectors
- Chip Diodes Available
- N Type Diodes
- Low 1/F Noise

Description
This family of low capacitance Schottky diodes is designed to give superior performance in video detectors and power monitors from 100 MHz through 16 GHz. They have low junction capacitance and repeatable video impedance. These diodes are available in a wide range of ceramic, stripline and axial lead packages and as bondable chips.

Applications
Detectors and power monitors in stripline, coaxial and waveguide circuits through 16GHz.

Case Styles
119
120
137
166
213
276
Schottky Detector Diodes

Maximum Ratings

| Temperature Ratings | Storage Operating Temperature | -65°C to +150°C  
|                     |                               | (Case Styles 54, 119, 120, 135, 135A, 186, 276)  
|                     |                               | -65°C to +125°C (Case Styles 137, 213)  

Power Ratings @ 25°C

| Maximum Peak Incident RF Power | S-X Band 1 Watt - 1 microsecond maximum pulse length  
|                               | Ku-K Band 0.5 W - 1 microsecond maximum pulse length  
| Maximum CW RF Power | S-X Band 150 mW (maximum)  
| Derate Linearity to Zero at 150°C | Ku-K Band 100 mW (maximum)  

Solder Temperature

| For case styles 54, 119, 186, 276 | 230°C for 5 seconds, 1 mm from package  
| For case style 120 | 200°C for 5 seconds  
| For case styles 137 and 213 | 150°C for 5 seconds, 1 mm from package  

Packaged N Type Silicon Schottky Detector Diodes

These low barrier packaged detector diodes are suitable for use in waveguide and coaxial detectors. They feature high sensitivity and low l/f noise. These diodes are listed by increasing test frequency, grouped by packages style and decreasing Tss. Other case styles than those specified may be available.

Specifications @ $T_A = +25°C$

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Case Style</th>
<th>Test Frequency (GHz)</th>
<th>$T_{SS}$ (dBm)</th>
<th>Video Impedance Range Min./Max. (k Ohms)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MA40201</td>
<td>119</td>
<td>10</td>
<td>-55</td>
<td>1/2</td>
</tr>
<tr>
<td>MA40205</td>
<td>119</td>
<td>16</td>
<td>-52</td>
<td>1/2</td>
</tr>
<tr>
<td>MA40215</td>
<td>120</td>
<td>16</td>
<td>-52</td>
<td>1/2</td>
</tr>
</tbody>
</table>

Notes:
1. Schottky barrier junction diodes are thermocompression bonded in case style 119 and 120. The standard case style is given for each model number. Other case styles may be available.
2. The video amplifier bandwidth is 1 MHz and the nominal amplifier noise figure is 3 dB. DC Impedance is 10 k Ohms.
3. The DC bias is 20 µA.
4. RF Power = 30 dBm. The DC forward bias is +20 µA.
5. Measured at the indicated test frequency and at -30 dBm RF power.
N Type Silicon Schottky Detector Diodes

These low barrier packaged detector diodes are suitable for use in stripline applications. They feature high sensitivity, and low l/f noise. These diodes are listed by increasing frequency, and grouped by package style and $T_{SS}$. Case styles other than those specified may be available. For additional information, contact the factory.

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Case Style</th>
<th>Test Frequency (GHz)</th>
<th>Minimum$^1$ Tang. Signal Sensitivity $T_{SS}$ (dBm)</th>
<th>Video Impedance $^2$ Range Min./Max. (K Ohms)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MA40261</td>
<td>186</td>
<td>3</td>
<td>-55</td>
<td>1/2</td>
</tr>
<tr>
<td>MA40143</td>
<td>213</td>
<td>3</td>
<td>-50</td>
<td>1/2</td>
</tr>
<tr>
<td>MA40264</td>
<td>186</td>
<td>10</td>
<td>-55</td>
<td>1/2</td>
</tr>
<tr>
<td>MA40147</td>
<td>213</td>
<td>10</td>
<td>-55</td>
<td>1/2</td>
</tr>
<tr>
<td>MA40208-276</td>
<td>276</td>
<td>10</td>
<td>-52</td>
<td>1/2</td>
</tr>
<tr>
<td>MA40215-276</td>
<td>276</td>
<td>16</td>
<td>-52</td>
<td>1/2</td>
</tr>
</tbody>
</table>

Notes:
1. The video amplifier bandwidth is 1 MHz and the noise figure is 3 dB. The Input Impedance is 10 k Ohms and DC Bias is 20 µA.
2. $P_{inc} = -30$ dBm. The DC forward bias is +20 µA.
Typical Performance Curves

Nominal Output Voltage at X-Band (With Forward Bias)

Nominal Output Voltage at X-Band (With Zero Bias)

Nominal Tangential Signal Sensitivity vs. Frequency

Nominal Tangential Signal Sensitivity vs. Bias Current at X-Band

Nominal Video Impedance vs. Bias Current