Sony

1T32/1T32A

Silicon Variable Capacitance Diode

Description
The 1T32/1T32A is a variable capacitance diode designed for use in electric tuning for UHF, VHF and TV tuner, and AFT which make their packages more compact so as to match tuner miniaturization easily, keeping excellent characteristics of former 1T25 type.

Features
- Compact package
- Low serial resistance 0.52 Ω Typ. (f = 470 MHz)
- Large capacitance ratio 6.5 Typ. (C2/C1)
- Small leakage current 10 nA Max. (VR = 28V)
- 1T32(A)-T7, 1T32(A)-T8 is for taping.

Structure
Silicon epitaxial planar type diode

Applications
Electric tuning for UHF, VHF or TV tuner, or AFT

Absolute Maximum Ratings (Ta = 25°C)
- Reverse voltage VR 30 V
- Peak reverse voltage VRM 35 V (RL ≥ 10 kΩ)
- Operating temperature Topr 85 °C
- Storage temperature Ts 30 to +120 °C
### Electrical Characteristics

<table>
<thead>
<tr>
<th>Item</th>
<th>Symbol</th>
<th>Condition</th>
<th>Min.</th>
<th>Typ.</th>
<th>Max.</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reverse current</td>
<td>In</td>
<td>( V_R = 28V )</td>
<td></td>
<td></td>
<td>10</td>
<td>nA</td>
</tr>
<tr>
<td>Diode capacitance</td>
<td>( C_2 )</td>
<td>( V_R = 2V, f = 1 \text{ MHz} )</td>
<td>14.01</td>
<td>15.00</td>
<td>16.33</td>
<td>pF</td>
</tr>
<tr>
<td></td>
<td>( C_{26} )</td>
<td>( V_R = 25V, f = 1 \text{ MHz} )</td>
<td>2.10</td>
<td>2.27</td>
<td>2.39</td>
<td>pF</td>
</tr>
<tr>
<td>Serial resistance</td>
<td>( r_s )</td>
<td>( C_D = 14 \text{ pF, } f = 470 \text{ MHz} )</td>
<td>0.52</td>
<td>0.6</td>
<td></td>
<td>( \Omega )</td>
</tr>
<tr>
<td>Maximum-capacitance deviation in the Same ranking*</td>
<td>( \delta C )</td>
<td>( V_R = 2 \text{ to } 25V )</td>
<td>3 (1T32)</td>
<td></td>
<td></td>
<td>%</td>
</tr>
</tbody>
</table>

*Note* Applied only to tuning.

#### Diode capacitance vs. Reverse voltage

![Diode capacitance vs. Reverse voltage](image1)

#### Q-factor vs. Reverse voltage

![Q-factor vs. Reverse voltage](image2)

#### Diode capacitance vs. Ambient temperature

![Diode capacitance vs. Ambient temperature](image3)

#### Temperature coefficient of the diode capacitance

![Temperature coefficient of the diode capacitance](image4)
Reverse current vs. Reverse voltage

Reverse current vs. Ambient temperature

Reverse breakdown voltage vs. Ambient temperature

$V_r$ - Reverse voltage (V)
$T_a$ - Ambient temperature (°C)
$I_r$ - Reverse current (μA)

$V_r = 28$V
$T_a = 60$°C
$T_a = 25$°C
$I_r = 10$μA