

50V HiRel Silicon PIN Diode

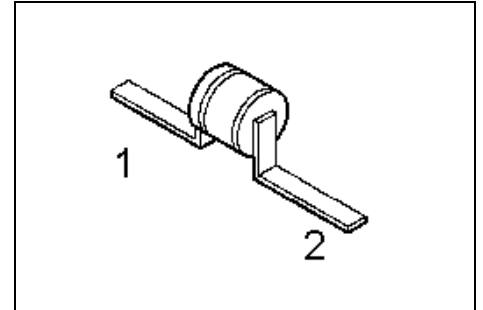
BXY42-T1(ES)

Features

- PIN Diode for high speed switching of RF signals
- Very low capacitance
- Hermetically sealed microwave package

Product validation

-  **ESA Space Qualified**
 ESCC Detail Spec. No.: 5513/017
 Type Variant No. 01



Description

ESD: Electrostatic discharge sensitive device, observe handling precautions!

Table 1 Product information

| Type | Comment | Pin Configuration |
|--------------------------|---------------------------------|--|
| BXY42-T1(ES) | For flight use |  |
| BXY42-T1(P) ¹ | Not for flight use ¹ | |

¹ (P) parts have the same fit, form and function as (ES) parts, no screening acc. to Chart F3 in ESCC Generic Specification No. 5010

Table of contents

Features 1

Product validation 1

Description 1

Table of contents 2

1 Maximum ratings 3

2 Thermal characteristics 4

3 Electrical characteristics 5

4 Electrical performance in test fixture 6

5 Package outlines 7

Maximum ratings

1 Maximum ratings

Table 2 Maximum ratings

| Parameter | Symbol | Values | | | Unit | Note / Test Condition |
|--------------------------------|-----------|--------|------|------|------------------|--------------------------------------|
| | | Min. | Typ. | Max. | | |
| Reverse Voltage | V_R | - | - | 50 | V | |
| Peak Forward Current | I_{FM} | - | - | 5 | A | $t_p = 1.0\mu s$, Duty Cycle=0.001% |
| Power Dissipation ¹ | P_{tot} | - | - | 350 | mW | $T_c = 52.5\text{ }^\circ\text{C}$ |
| Operating temperature | T_{op} | -55 | - | 175 | $^\circ\text{C}$ | |
| Storage temperature | T_{stg} | -65 | - | 175 | $^\circ\text{C}$ | |
| Junction temperature | T_j | - | - | 175 | $^\circ\text{C}$ | |

¹ For $T_c > 52.5^\circ\text{C}$ derating is required.

Thermal characteristics

2 Thermal characteristics

Table 3 Thermal characteristics

| Parameter | Symbol | Values | | | Unit | Note / Test Condition |
|------------------------------------|-------------|--------|------|------|------|--|
| | | Min. | Typ. | Max. | | |
| Thermal resistance, junction -case | $R_{th,Jc}$ | - | - | 350 | K/W | |
| Soldering temperature | T_{sol} | - | - | 250 | °C | Duration 5 seconds maximum and the same terminal shall not be resoldered until 5 minutes have elapsed. |

Electrical characteristics

3 Electrical characteristics

at $T_A=25^\circ\text{C}$, unless otherwise specified

Table 4 Static characteristics

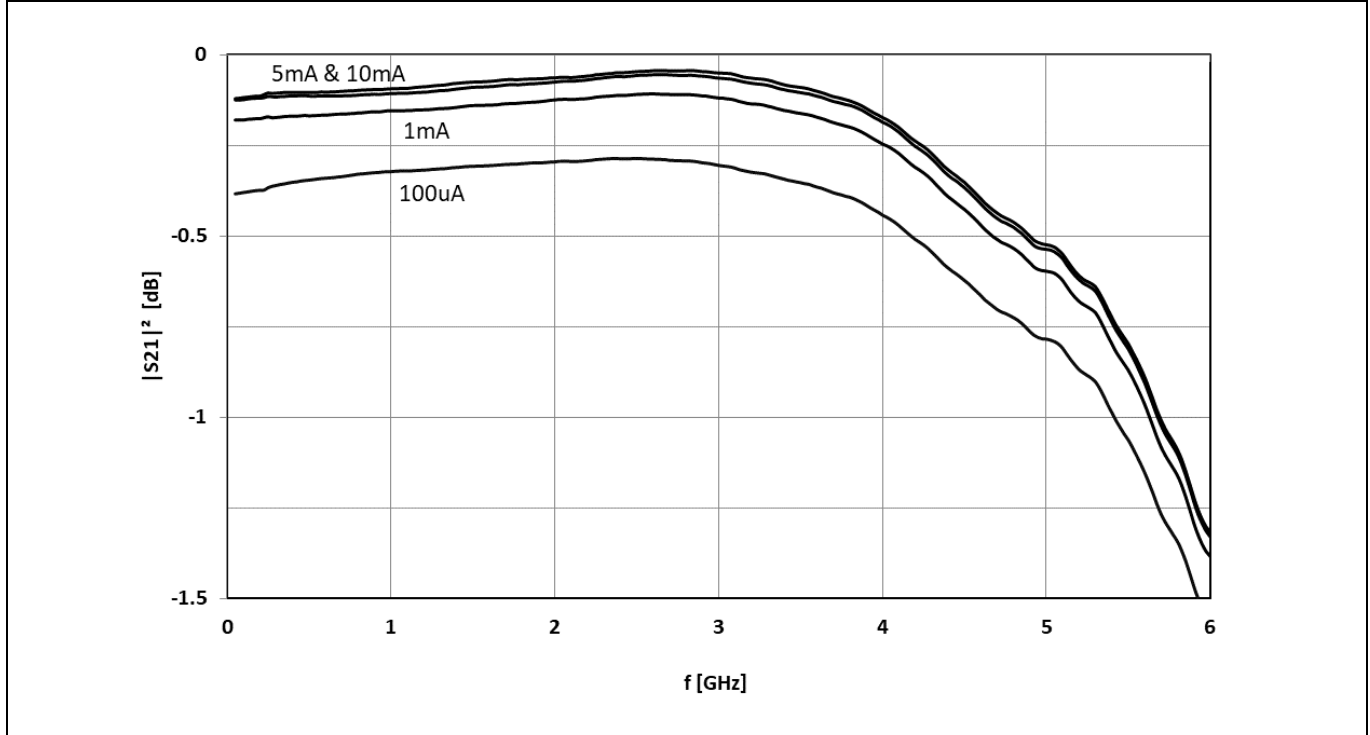
| Parameter | Symbol | Values | | | Unit | Note / Test Condition |
|-------------------|----------|--------|------|------|---------------|-----------------------|
| | | Min. | Typ. | Max. | | |
| Reverse Current 1 | I_{R1} | - | - | 10 | μA | $V_{R1}= 50\text{V}$ |
| Reverse Current 2 | I_{R2} | - | - | 5 | nA | $V_{R2}= 40\text{V}$ |
| Forward Voltage | V_F | - | 0.97 | 1.1 | V | $I_F= 100\text{mA}$ |

Table 5 Dynamic characteristics

| Parameter | Symbol | Values | | | Unit | Note / Test Condition |
|----------------------|----------|--------|------|------|----------|---|
| | | Min. | Typ. | Max. | | |
| Total Capacitance | C_T | - | 0.22 | 0.24 | pF | $V_R= 20\text{V}, f= 1.0\text{MHz}$ |
| Forward Resistance 1 | R_{F1} | - | 2 | 3.5 | Ω | $f= 100\text{MHz}, I_{F1}= 1\text{mA}$ |
| Forward Resistance 2 | R_{F2} | - | 1 | 2.5 | Ω | $f= 100\text{MHz}, I_{F2}= 10\text{mA}$ |

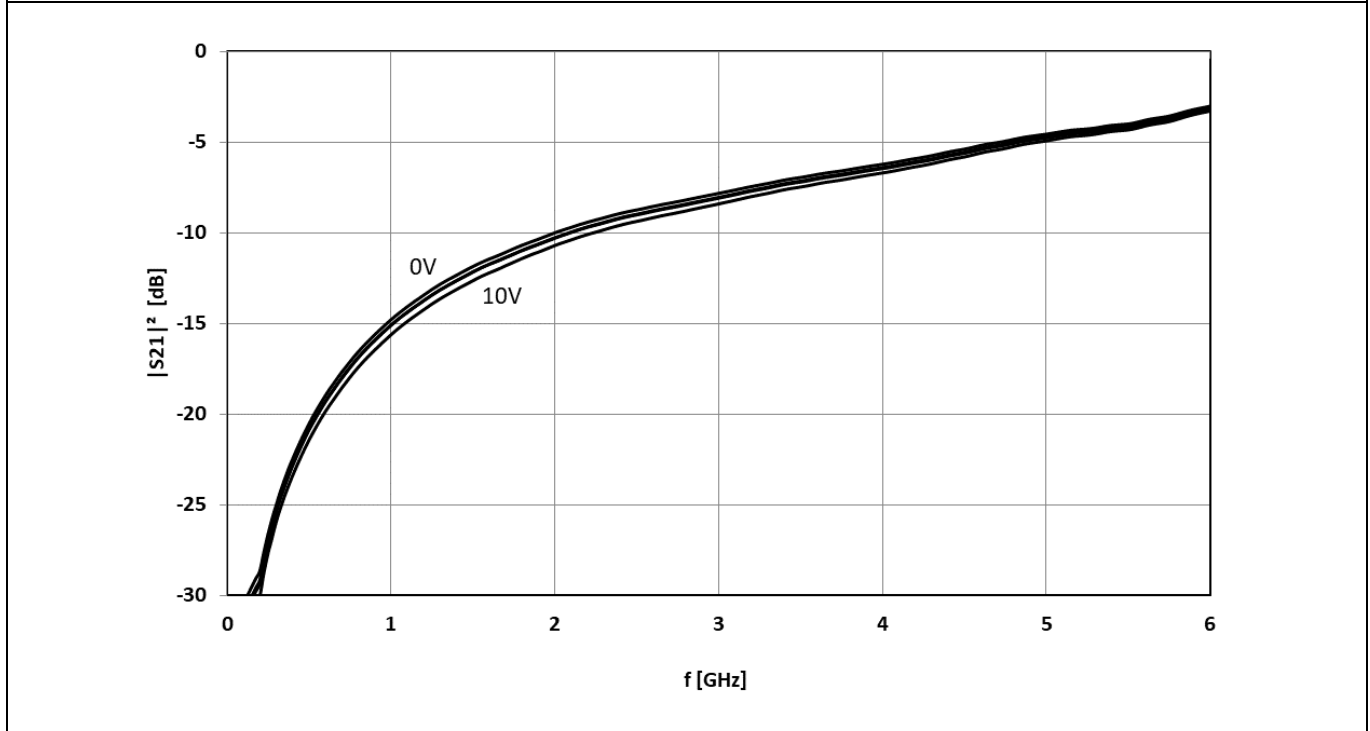
4 Electrical performance in test fixture

Diagram 1: Typical insertion loss vs. frequency



$T_c = 25^\circ\text{C}$; parameter: I_F

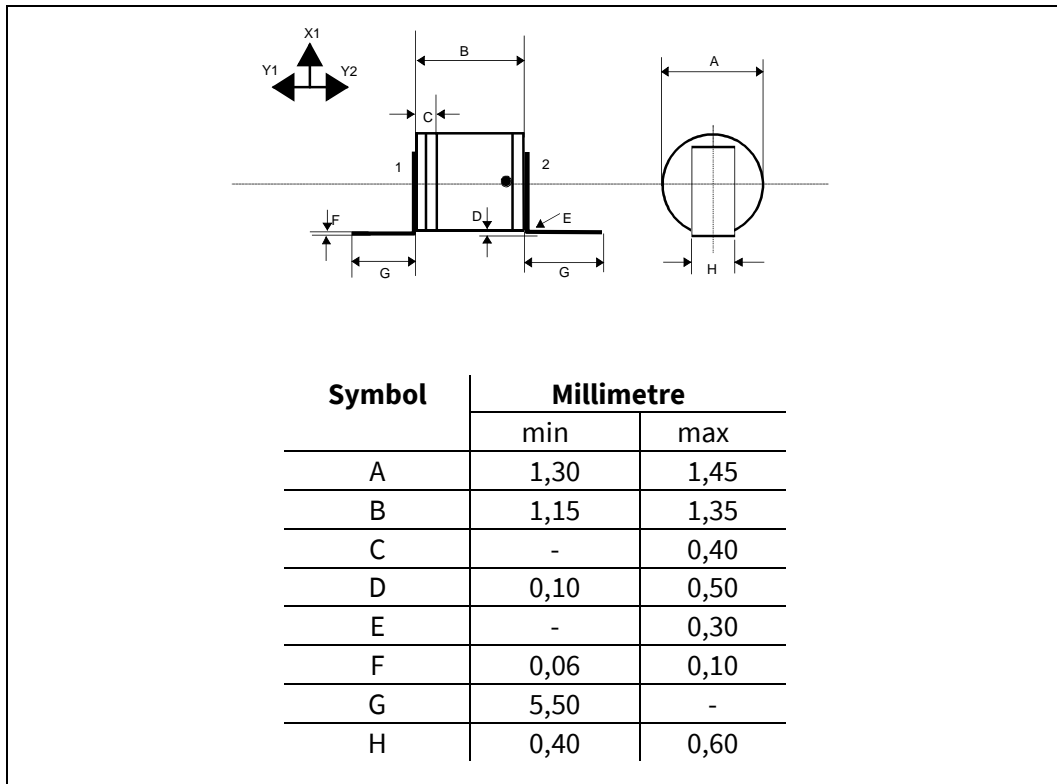
Diagram 2: Typical isolation vs. frequency



$T_c = 25^\circ\text{C}$; parameter: V_R

Note: The curves shown in this chapter have been generated using typical devices but shall not be understood as a guarantee that all devices have identical characteristic curves

5 Package outlines



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