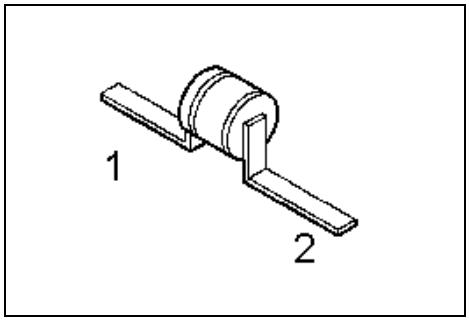
# 50V HiRel Silicon PIN Diode

## BXY42-03(ES)




## Features

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

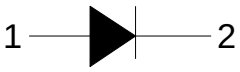
## Product validation

- esa **Space Qualified**
  ESCC Detail Spec. No.: 5513/017
  Type Variant No. 03

## Description

**ESD**: **E**lectro**s**tatic **d**ischarge sensitive device,
observe handling precautions!

**Table 1 Product information**

| Type | Comment | Pin Configuration |
|---|---|---|
| BXY42-03(ES) | For flight use |  |
| BXY42-03(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

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# 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 | $t_p$ = 1.0µs, Duty Cycle=0.001% |
| Power Dissipation [1] | $P_{tot}$ | - | - | 350 | mW | $T_C$ = 52.5 °C |
| Operating temperature | $T_{op}$ | -55 | - | 175 | °C | |
| Storage temperature | $T_{stg}$ | -65 | - | 175 | °C | |
| Junction temperature | $T_j$ | - | - | 175 | °C | |

[1] For $T_C$ > 52.5°C derating is required.

# 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. |

# 3 Electrical characteristics

at $T_A$=25°C, unless otherwise specified

**Table 4 Static characteristics**

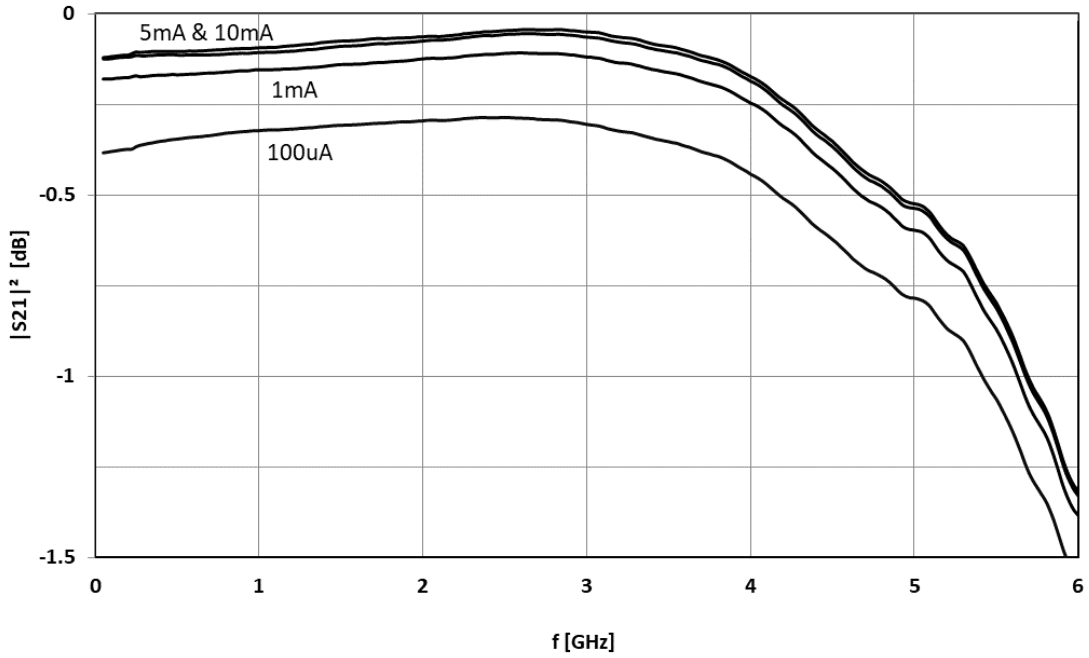
| Parameter | Symbol | Values | | | Unit | Note / Test Condition |
|---|---|---|---|---|---|---|
| | | Min. | Typ. | Max. | | |
| Reverse Current 1 | $I_{R1}$ | - | - | 10 | µA | $V_{R1}$= 50V |
| Reverse Current 2 | $I_{R2}$ | - | - | 5 | nA | $V_{R2}$= 40V |
| Forward Voltage | $V_F$ | - | 1.0 | 1.1 | V | $I_F$= 100mA |

**Table 5 Dynamic characteristics**

| Parameter | Symbol | Values | | | Unit | Note / Test Condition |
|---|---|---|---|---|---|---|
| | | Min. | Typ. | Max. | | |
| Total Capacitance | $C_T$ | - | 0.26 | 0.29 | pF | $V_R$= 20V, $f$= 1.0MHz |
| Forward Resistance 1 | $R_{F1}$ | - | 2.15 | 3.5 | Ω | $f$= 100MHz, $I_{F1}$= 1mA |
| Forward Resistance 2 | $R_{F2}$ | - | 1.2 | 2.5 | Ω | $f$= 100MHz, $I_{F2}$= 10mA |

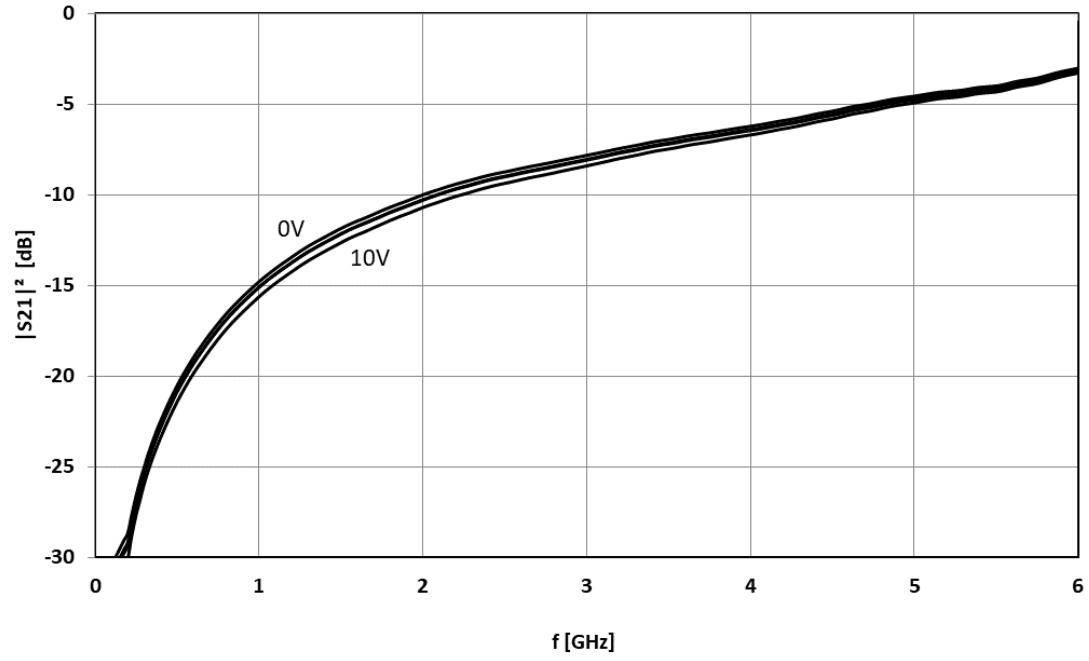
# 4 Electrical performance in test fixture

**Diagram 1: Typical insertion loss vs. frequency**




$T_C$ = 25°C; parameter: $I_F$

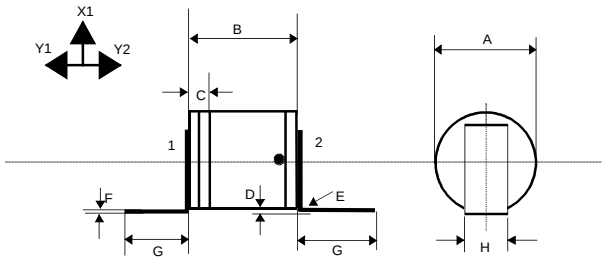
**Diagram 2: Typical isolation vs. frequency**




$T_C$ = 25°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




| Symbol | Millimetre | |
|---|---|---|
| | min | max |
| A | 1,30 | 1,45 |
| B | 1,15 | 1,35 |
| C | - | 0,40 |
| D | 0,10 | 0,50 |
| E | - | 0,30 |
| F | 0,06 | 0,10 |
| G | 5,50 | - |
| H | 0,40 | 0,60 |

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