

## General purpose PIN diode

### FEATURES

- ◆ Two elements in series configuration in a small SMD plastic package
- ◆ Low diode capacitance
- ◆ Low diode forward resistance.

### APPLICATIONS

- ◆ General RF applications.

### DESCRIPTION

- ◆ Two planar PIN diodes in series configuration in an SOT-323 small SMD plastic package.

**Marking Code:6w**

### LIMITING VALUES

In accordance with the Absolute Maximum Rating System (IEC 60134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
<b>Per diode</b>					
$V_R$	continuous reverse voltage		–	50	V
$I_F$	continuous forward current		–	50	mA
$P_{tot}$	total power dissipation	$T_s = 90\text{ }^\circ\text{C}$	–	240	mW
$T_{stg}$	storage temperature		–65	+150	$^\circ\text{C}$
$T_j$	junction temperature		–65	+150	$^\circ\text{C}$

### ELECTRICAL CHARACTERISTICS

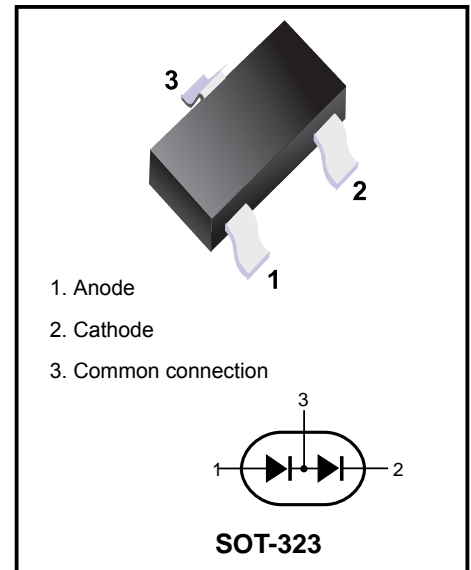
$T_j = 25\text{ }^\circ\text{C}$  unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
<b>Per diode</b>						
$V_F$	forward voltage	$I_F = 50\text{ mA}$	–	0.95	1.1	V
$V_R$	reverse voltage	$I_R = 10\text{ }\mu\text{A}$	50	–	–	V
$I_R$	reverse current	$V_R = 50\text{ V}$	–	–	100	nA
$C_d$	diode capacitance	$V_R = 0$ ; $f = 1\text{ MHz}$	–	0.45	–	pF
		$V_R = 1\text{ V}$ ; $f = 1\text{ MHz}$	–	0.35	0.6	pF
		$V_R = 5\text{ V}$ ; $f = 1\text{ MHz}$	–	0.30	0.5	pF
$r_D$	diode forward resistance	$I_F = 0.5\text{ mA}$ ; $f = 100\text{ MHz}$ ; note 1	–	25	40	$\Omega$
		$I_F = 1\text{ mA}$ ; $f = 100\text{ MHz}$ ; note 1	–	14	25	$\Omega$
		$I_F = 10\text{ mA}$ ; $f = 100\text{ MHz}$ ; note 1	–	3	5	$\Omega$
$\tau_L$	charge carrier life time	when switched from $I_F = 10\text{ mA}$ to $I_R = 6\text{ mA}$ ; $R_L = 100\text{ }\Omega$ ; measured at $I_R = 3\text{ mA}$	–	1.05	–	$\mu\text{s}$
$L_S$	series inductance	$I_F = 10\text{ mA}$ ; $f = 100\text{ MHz}$	–	1.60	–	nH

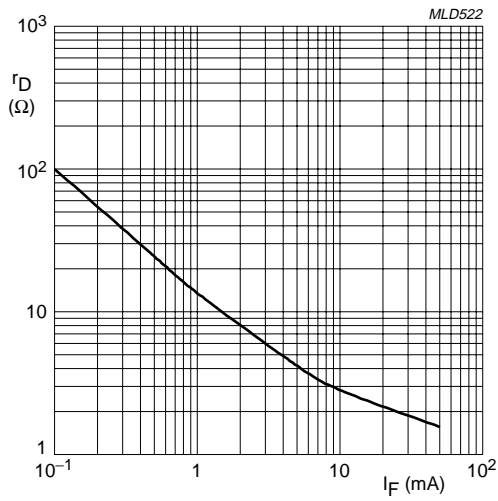
**Note 1.** Guaranteed on AQL basis: inspection level S4, AQL1.0.

### THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	VALUE	UNIT
$R_{th-j-s}$	thermal resistance from junction to soldering point	250	K/W

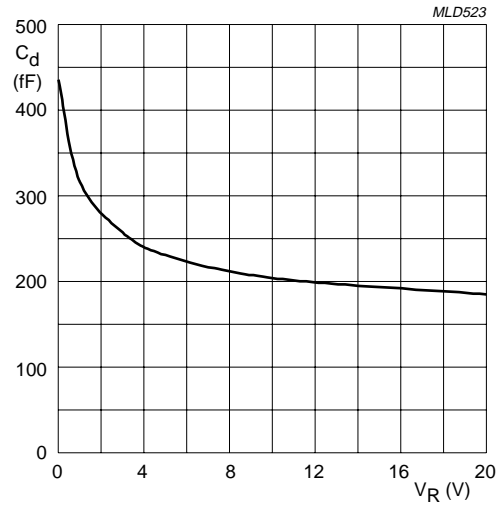


**Typical Characteristics**



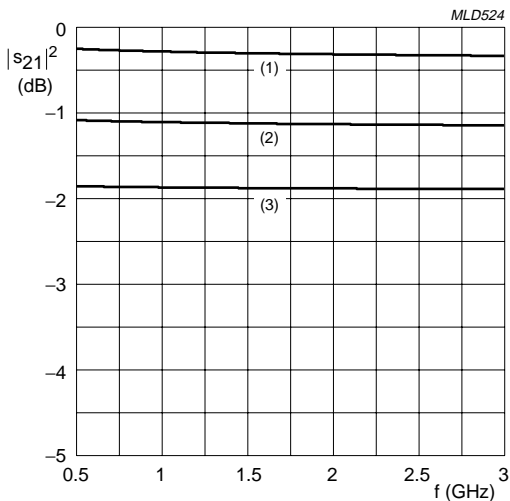
$f = 100 \text{ MHz}; T_j = 25 \text{ }^\circ\text{C}.$

Fig.2 Forward resistance as a function of forward current; typical values.



$f = 1 \text{ MHz}; T_j = 25 \text{ }^\circ\text{C}.$

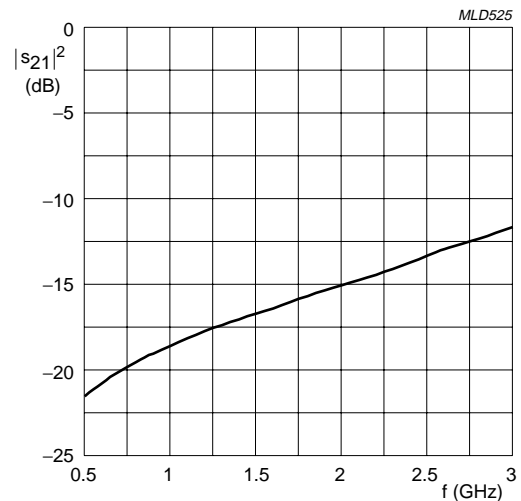
Fig.3 Diode capacitance as a function of reverse voltage; typical values.



(1)  $I_F = 10 \text{ mA}.$  (2)  $I_F = 1 \text{ mA}.$  (3)  $I_F = 0.5 \text{ mA}.$

Diode inserted in series with a  $50 \text{ } \Omega$  stripline circuit and biased via the analyzer Tee network.  
 $T_{\text{amb}} = 25 \text{ }^\circ\text{C}.$

Fig.4 Insertion loss ( $|s_{21}|^2$ ) of the diode in on-state as a function of frequency; typical values.

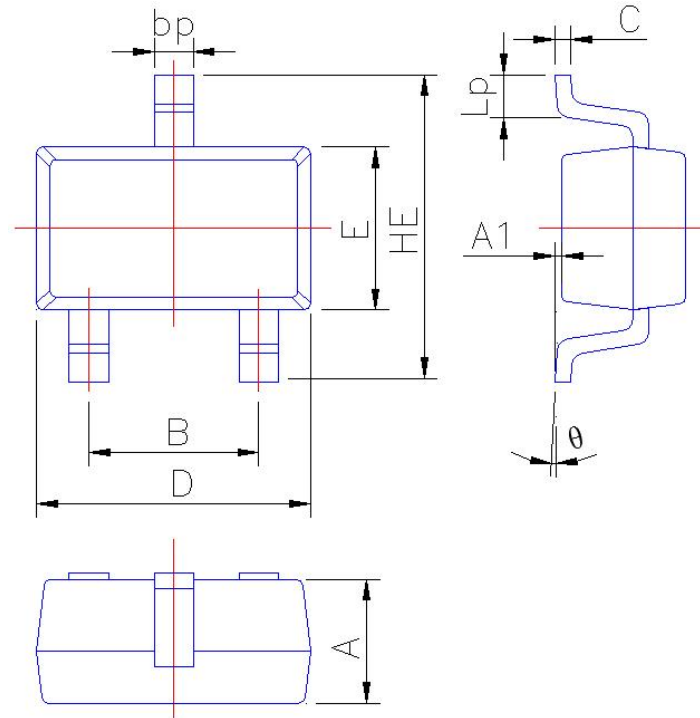


Diode zero biased and inserted in series with a  $50 \text{ } \Omega$  stripline circuit.  
 $T_{\text{amb}} = 25 \text{ }^\circ\text{C}.$

Fig.5 Isolation ( $|s_{21}|^2$ ) of the diode in off-state as a function of frequency; typical values.

Package Outline

SOT-323



Symbol	Dimension in Millimeters	
	Min	Max
A	0.90	1.00
A1	0.010	0.100
B	1.20	1.40
bp	0.25	0.45
C	0.09	0.15
D	2.00	2.20
E	1.15	1.35
HE	2.15	2.55
Lp	0.25	0.46
θ	0°	6°

Summary of Packing Options

Package	Package Description	Packing Quantity	Industry Standard
SOT-323	Tape/Reel, 7" reel	3000	EIA-481-1