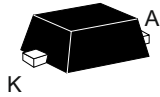
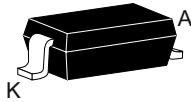


## Low capacitance small signal Schottky diodes



SOD-523



SOD123

### Features

- Low leakage current losses
- Negligible switching losses
- Low forward and reverse recovery times
- Extremely fast switching
- Surface mount device
- Low capacitance diode
- ECOPACK2 compliant

### Applications

- General Rectification
- Reverse polarity protection
- Voltage clamping
- High-speed switching

### Description

The BAT41 series uses 100 V Schottky barrier diodes packaged in SOD-123 or SOD-523. This series is specially suited for switching mode with low  $I_R$  losses.



#### Product status link

[BAT41](#)

#### Product summary

$I_F$	200 mA
$V_{RRM}$	100 V
$T_j$ (max.)	150 °C
$C$ (typ.)	3 pF

# 1 Characteristics

**Table 1. Absolute ratings (limiting values at 25 °C, unless otherwise specified)**

Symbol	Parameter	Value	Unit
$V_{RRM}$	Repetitive peak reverse voltage	100	V
$I_F$	Continuous forward current	200	mA
$I_{FSM}$	Surge non repetitive forward current $t_p = 10$ ms sinusoidal	1	A
$T_{stg}$	Storage temperature range	-65 to +150	°C
$T_j$	Maximum operating junction temperature	+150	°C

**Table 2. Thermal resistance parameter**

Symbol	Parameter	Typ. value	Unit
$R_{th(j-a)}$	Junction to ambient <sup>(1)</sup>	SOD-123	500
		SOD-523	600

1. Epoxy printed circuit board with recommended pad layout

For more information, please refer to the following application note:

- AN5088: Rectifiers thermal management, handling and mounting recommendations

**Table 3. Static electrical characteristics**

Symbol	Parameter	Test conditions		Min.	Typ.	Max.	Unit
$I_R^{(1)}$	Reverse leakage current	$T_j = 25$ °C	$V_R = 50$ V	-		0.1	$\mu$ A
		$T_j = 100$ °C		-		20	
$V_F^{(2)}$	Forward voltage drop	$T_j = 25$ °C	$I_F = 1$ mA	-	400	450	mV
			$I_F = 200$ mA	-		1000	

1. Pulse test:  $t_p = 5$  ms,  $\delta < 2\%$

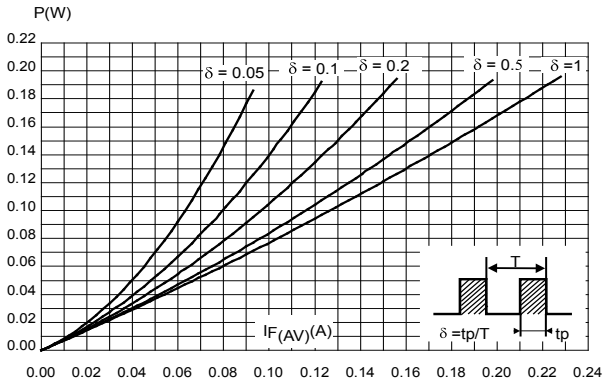
2. Pulse test:  $t_p = 380$   $\mu$ s,  $\delta < 2\%$

**Table 4. Dynamic characteristics**

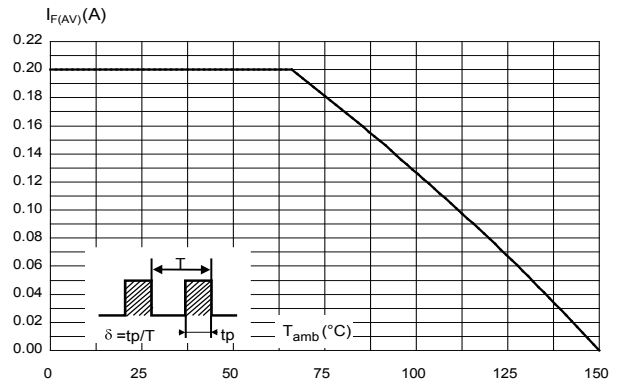
Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
C	Diode capacitance	$V_R = 1$ V, $f = 1$ MHz	-	3	10	pF

## 1.1 Characteristics (curves)

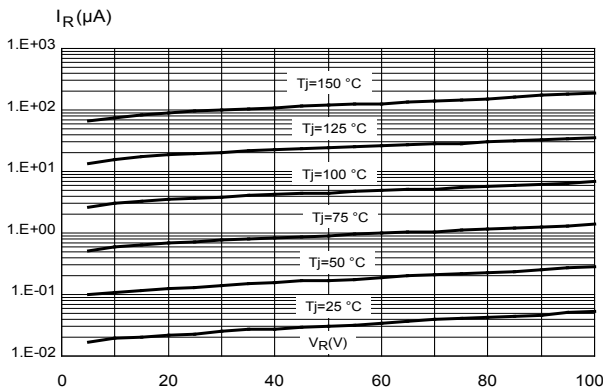
**Figure 1. Average forward power dissipation versus average forward current**



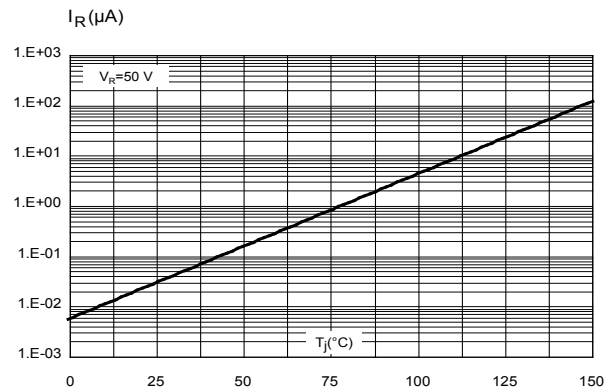
**Figure 2. Average forward current versus ambient temperature ( $\delta = 1$ )**



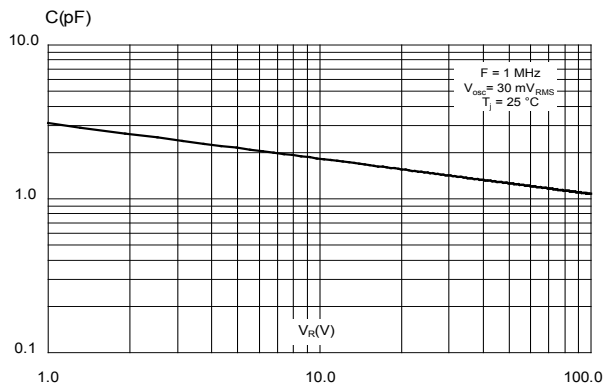
**Figure 3. Reverse leakage current versus reverse voltage applied (typical values)**



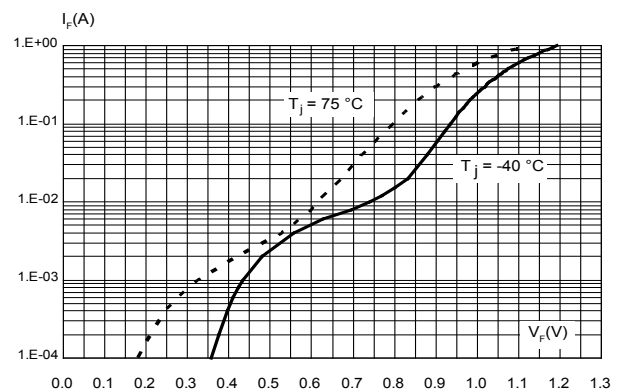
**Figure 4. Reverse leakage current versus junction temperature (typical values)**



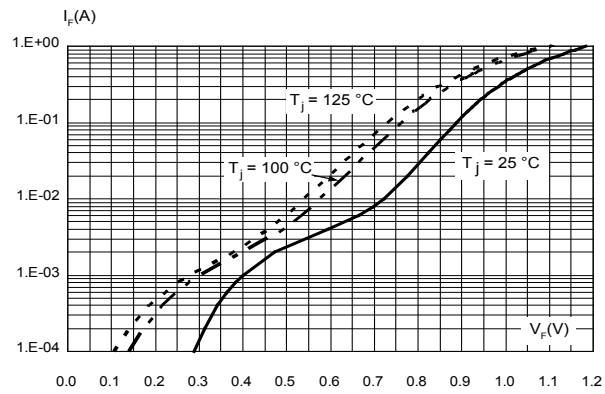
**Figure 5. Junction capacitance versus reverse voltage applied (typical values)**



**Figure 6. Forward voltage drop versus forward current (typical values)**



**Figure 7. Forward voltage drop versus forward current (typical values)**

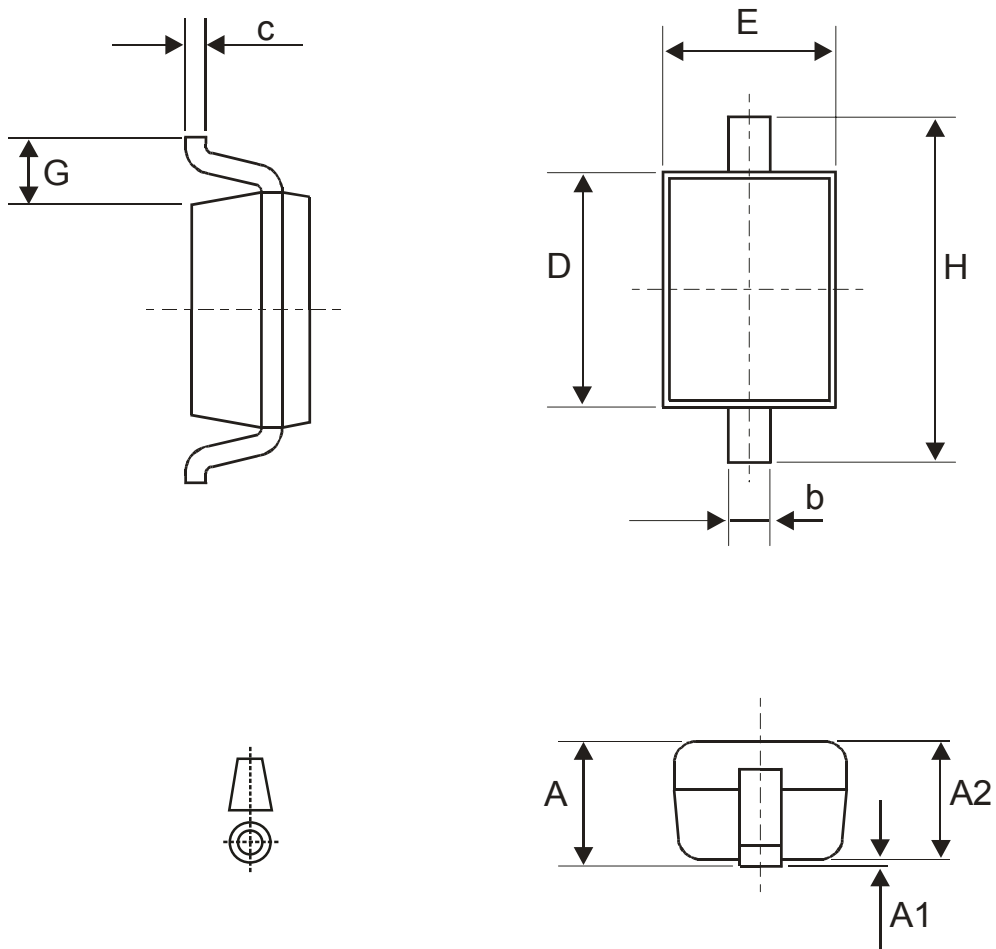


## 2 Package information

In order to meet environmental requirements, ST offers these devices in different grades of **ECOPACK** packages, depending on their level of environmental compliance. ECOPACK specifications, grade definitions and product status are available at: [www.st.com](http://www.st.com). ECOPACK is an ST trademark.

### 2.1 SOD123 package information

Figure 8. SOD123 package outline

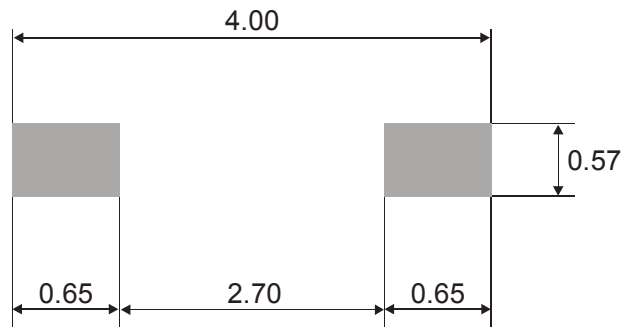


**Table 5. SOD123 package mechanical data**

Ref.	Dimensions					
	Millimeters			Inches <sup>(1)</sup>		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A			1.45			0.057
A1	0.00		0.10	0.000		0.004
A2	0.85		1.35	0.033		0.053
b		0.55			0.022	
c		0.15			0.039	
D	2.55		2.85	0.100		0.112
E	1.40		1.70	0.055		0.067
G	0.25			0.010		
H	3.55		3.75	0.140		0.148

1. Values in inches are converted from mm and rounded to 3 decimal digits

**Figure 9. SOD123 footprint in mm**



## 2.2 SOD523 package information

Figure 10. SOD523 package outline

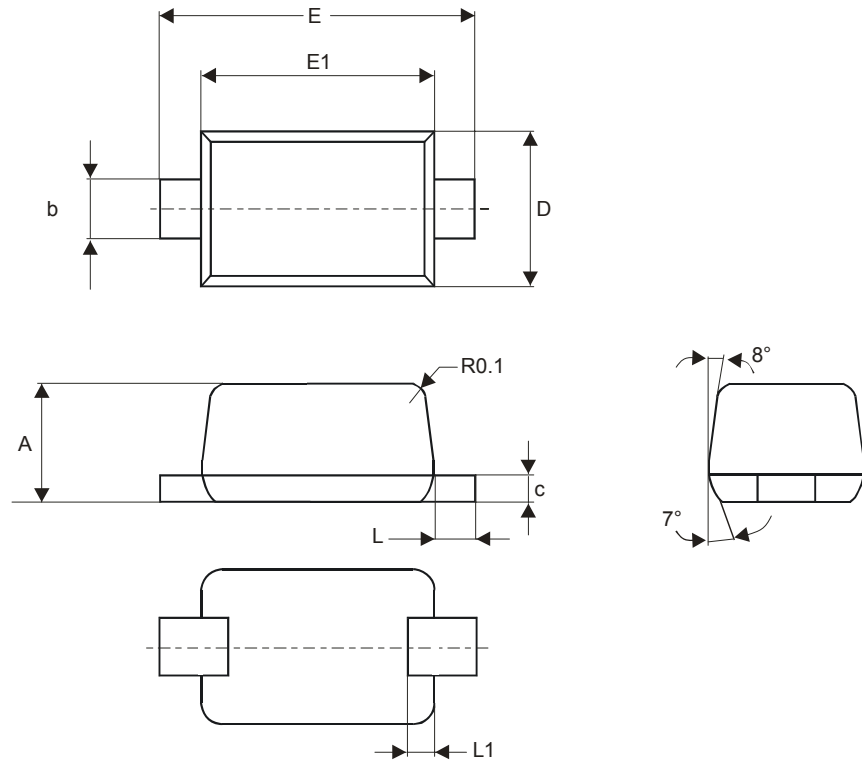
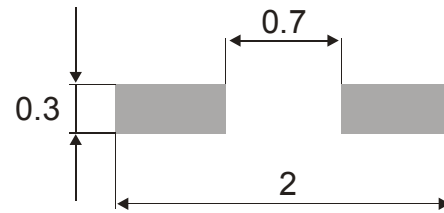


Table 6. SOD523 package mechanical data

Ref.	Dimensions					
	Millimeters			Inches <sup>(1)</sup>		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	0.50	0.60	0.70	0.020	0.024	0.028
E	1.50	1.60	1.70	0.059	0.063	0.067
E1	1.10	1.20	1.30	0.043	0.047	0.051
D	0.70	0.80	0.90	0.028	0.031	0.035
b	0.25		0.35	0.010		0.014
c	0.07		0.20	0.003		0.008
L	0.15	0.20	0.25	0.006	0.008	0.010
L1	0.00		0.20	0.000		0.008

1. Values in inches are converted from mm and rounded to 3 decimal digits

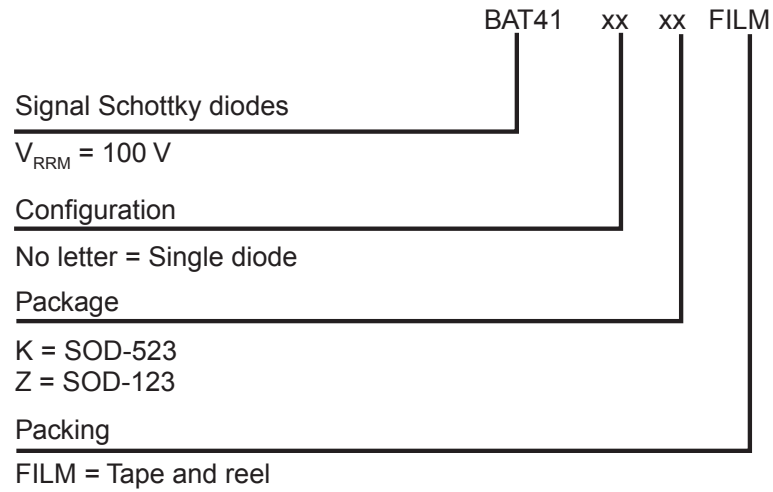
Figure 11. SOD523 footprint in mm





### 3 Ordering information

**Figure 12. Ordering information scheme**



**Table 7. Ordering information**

Order code	Marking	Package	Weight	Base qty.	Delivery mode
BAT41ZFILM	Z41	SOD-123 Single	10 mg	3000	Tape and reel
BAT41KFILM	41	SOD-523 Single	1.4 mg	3000	Tape and reel

## Revision history

**Table 8. Document revision history**

Date	Revision	Changes
08-Aug-2006	1	Initial release.
12-Oct-2009	2	Updated Table 8 quote "L1" from 0.10 to 0.05.
03-Sep-2021	3	Updated all figures. Removal of Obsolete P/N. Minor text changes to improve readability.

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