BAS69

Low capacitance small signal Schottky diodes

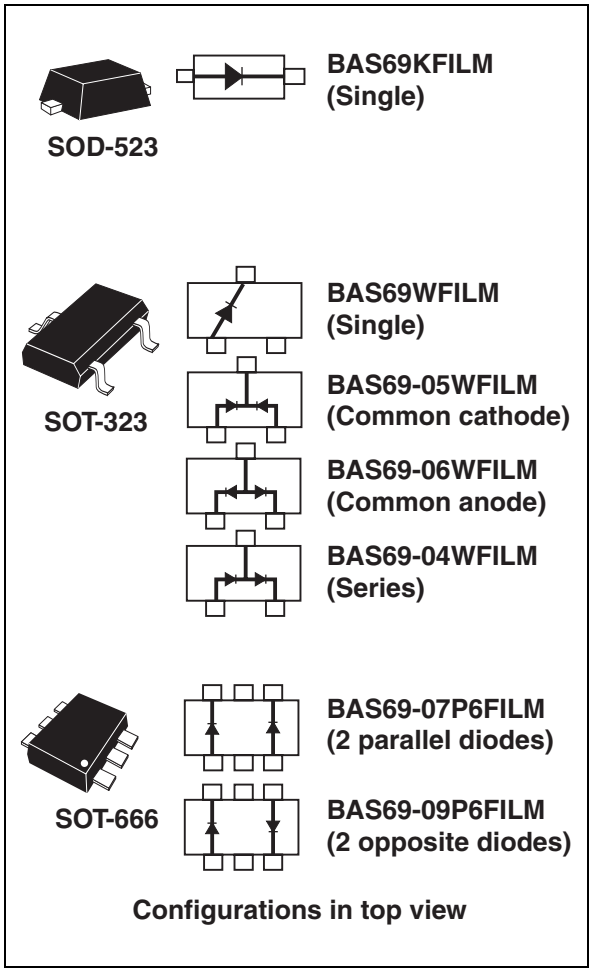
Features

- Low diode capacitance
- Designed for RF applications
- Low profile packages
- Very low parasitic inductor and resistor

Description

The BAS69 series use 15V barrier, with extremely low junction capacitance, suitable for the detection of an RF signal and the compensation of the voltage drift with the temperature. The presented packages make the device ideal in applications where space saving is critical.

The low junction capacitance will reduce the disturbance on the RF signal.



Configurations in top view

Table 1. Device summary

Symbol	Value
I_F	10 mA
V_{RRM}	15 V
C (typ)	< 1 pF
T_j (max)	150 °C

1 Characteristics

Table 2. Absolute ratings (limiting values at T_j = 25 °C, unless otherwise specified)

Symbol	Parameter		Value	Unit
V_{RRM}	Repetitive peak reverse voltage		15	V
I_F	Continuous forward current		10	mA
I_{FSM}	Surge non repetitive forward current	Half wave, single phase 60 Hz	2	A
T_{stg}	Storage temperature range		-65 to +150	°C
T_j	Maximum operating junction temperature (1)		150	
T_L	Maximum soldering temperature(1)		260	

1. Pulse test: t_p = 380 µs, δ < 2 %

Table 3. Thermal parameters

Symbol	Parameter		Value	Unit
$R_{th(j-a)}$	Junction to ambient(1)	SOT-323	550	°C/W
		SOD-523, SOT-666	600	

1. Epoxy printed circuit board with recommended pad layout

Table 4. Static electrical characteristics

Symbol	Parameter	Test conditions		Min.	Typ	Max.	Unit
I_R(1)	Reverse leakage current	T_j = 25 °C	V_R = 1 V			0.035	µA
		T_j = 125 °C			6	30	
		T_j = 25 °C	V_R = 15 V			0.23	
		T_j = 125 °C			10	100	
V_F(1)	Forward voltage drop	T_j = 25 °C	I_F = 1 mA		350	380	mV
		T_j = 125 °C			230	260	
		T_j = 25 °C	I_F = 10 mA		500	570	
		T_j = 125 °C			460	510	

1. Pulse test: $t_p \leq$ 250 ms, $\delta \leq$ 2 %

Table 5. Dynamic characteristics

Symbol	Parameter	Test conditions	Min.	Typ	Max.	Unit
C	Diode capacitance	V_R = 0 V, F = 1 MHz			1.0	pF
R_F	Forward resistance	I_F = 5 mA, F = 100 MHz		15		Ω
L_S	Series inductance			1.5		nH

Figure 1. Forward voltage drop versus forward current (typical values)

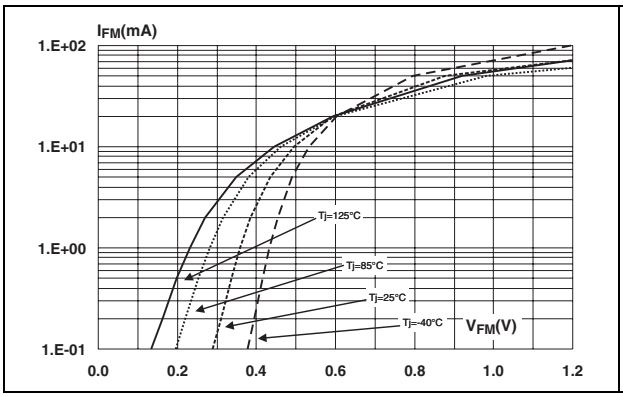


Figure 2. Reverse leakage current versus reverse voltage applied (typical values)

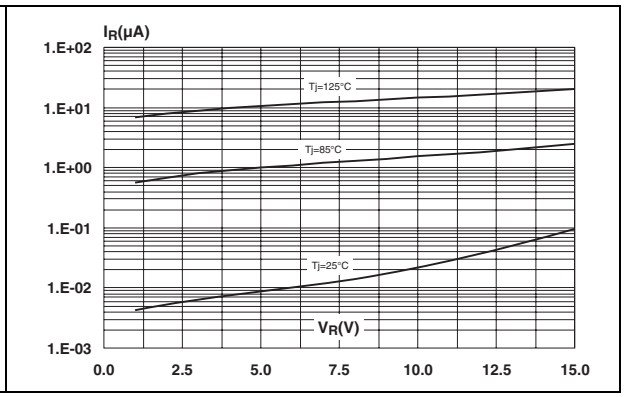


Figure 3. Differential forward resistance versus forward current (typical values)

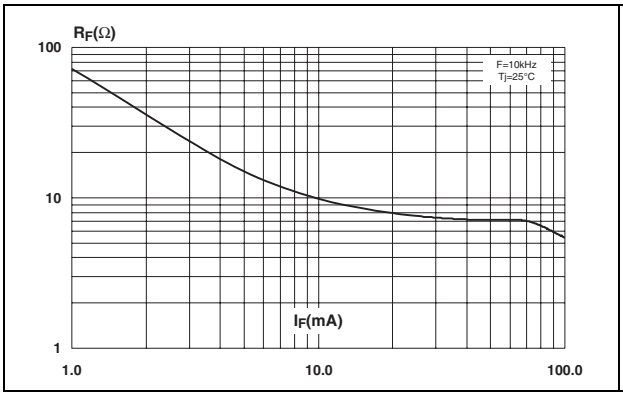


Figure 4. Junction capacitance versus reverse voltage applied (typical values)

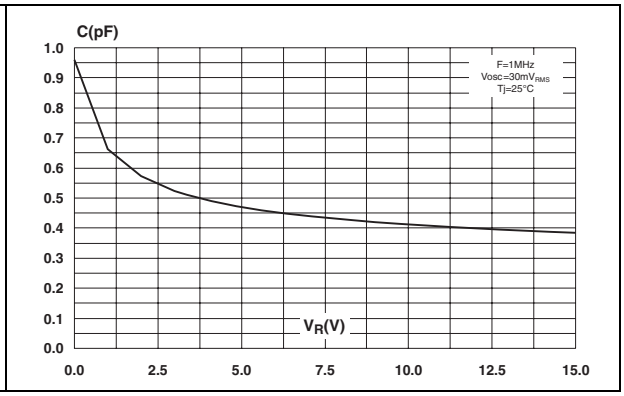


Figure 5. Relative variation of thermal impedance junction to ambient versus pulse duration (SOT-323)

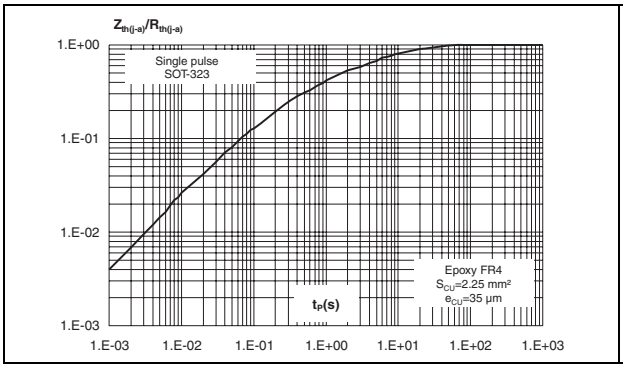


Figure 6. Relative variation of thermal impedance junction to ambient versus pulse duration (SOT-666)

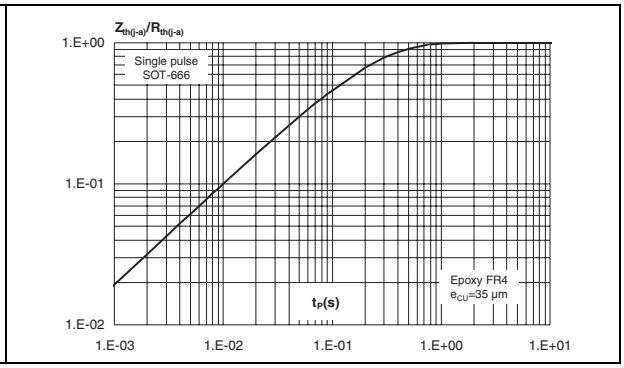


Figure 7. Relative variation of thermal impedance junction to ambient versus pulse duration (SOD-523)

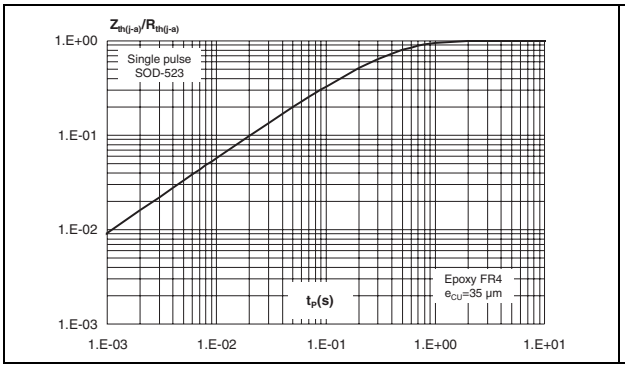
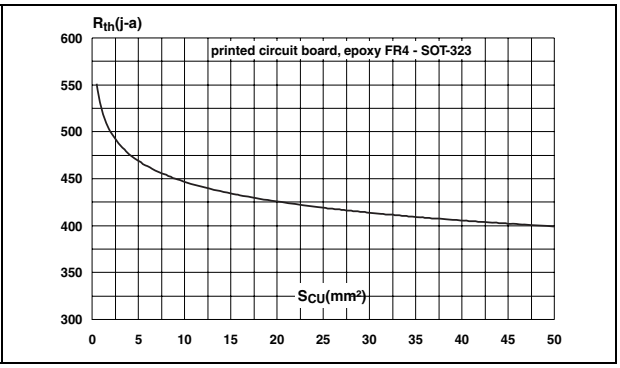


Figure 8. Thermal resistance junction to ambient versus copper surface under each lead



2 Ordering information scheme

Figure 9. Ordering information scheme

BAS69 xx xx FILM

Signal Schottky diodes

V_{RRM} = 15 V

Configuration

No letter = Single diode
04 = Series diodes
05 = Common cathode
06 = Common anode
07 = Parallel diodes
09 = Opposite diodes

Package

W = SOT-323
K = SOD-523
P6 = SOT-666

Packing

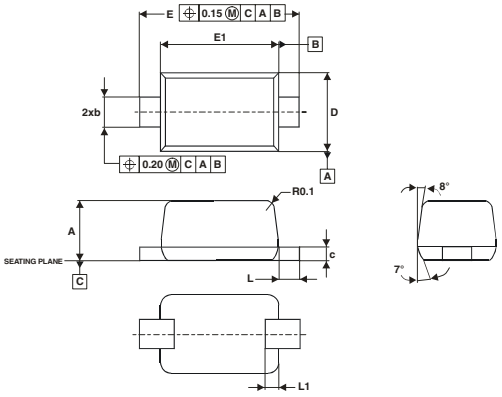
FILM = Tape and reel

3 Package information

- Epoxy meets UL94, V0
- Lead-free packages

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. ECOPACK® is an ST trademark.

Table 6. SOD-523 dimensions



Ref.	Dimensions					
	Millimeters			Inches		
	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	0.05		0.20	0.002		0.008

Figure 10. SOD-523 footprint (dimensions in mm)

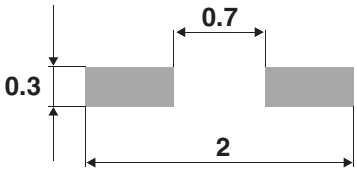
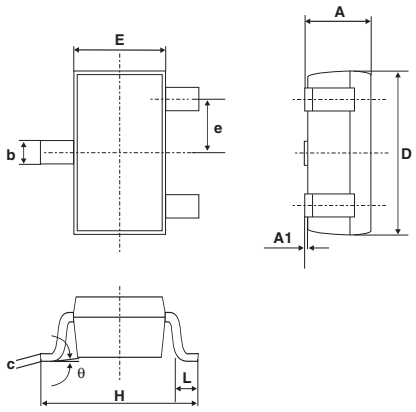


Table 7. SOT-323 dimensions



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	0.8		1.1	0.031		0.043
A1	0.0		0.1	0.0		0.004
b	0.25		0.4	0.010		0.016
c	0.1		0.26	0.004		0.010
D	1.8	2.0	2.2	0.071	0.079	0.086
E	1.15	1.25	1.35	0.045	0.049	0.053
e		0.65			0.026	
H	1.8	2.1	2.4	0.071	0.083	0.094
L	0.1	0.2	0.3	0.004	0.008	0.012
q	0		30°	0		30°

Figure 11. SOT-323 footprint (dimensions in mm)

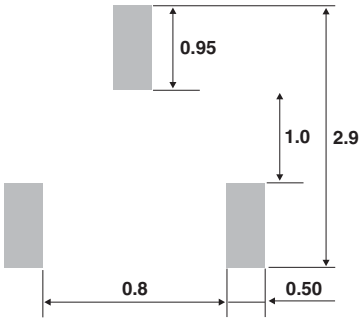
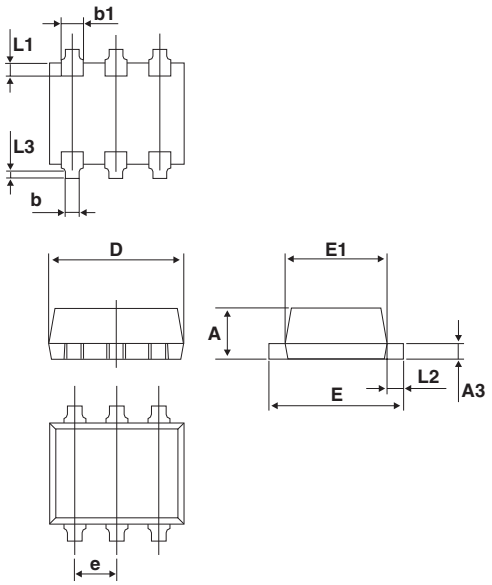
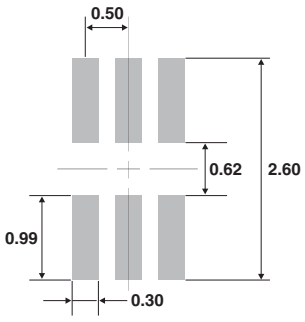


Table 8. SOT-666 dimensions



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	0.45		0.60	0.018		0.024
A3	0.08		0.18	0.003		0.007
b	0.17		0.34	0.007		0.013
b1	0.19	0.27	0.34	0.007	0.011	0.013
D	1.50		1.70	0.059		0.067
E	1.50		1.70	0.059		0.067
E1	1.10		1.30	0.043		0.051
e		0.50			0.020	
L1		0.19			0.007	
L2	0.10		0.30	0.004		0.012
L3		0.10			0.004	

Figure 12. SOT-666 footprint (dimensions in mm)



4 Ordering information

Table 9. Ordering information

Order code	Marking	Package	Weight	Base qty	Delivery mode
BAS69WFILM	23	SOT-323 Single	6 mg	3000	Tape and reel
BAS69-04WFILM	24	SOT-323 Series	6 mg	3000	Tape and reel
BAS69-05WFILM	25	SOT-323 Common cathode	6 mg	3000	Tape and reel
BAS69-06WFILM	26	SOT-323 Common anode	6 mg	3000	Tape and reel
BAS69KFILM	65	SOD-523 Single	1.4 mg	3000	Tape and reel
BAS69-09P6FILM	69	SOT-666 Opposite	2.9 mg	3000	Tape and reel
BAS69-07P6FILM	67	SOT-666 Parallel	2.9 mg	3000	Tape and reel

5 Revision history

Table 10. Document revision history

Date	Revision	Changes
24-Jul-2006	1	First issue
12-Oct-2009	2	Updated Table 6 quote “L1” from 0.10 to 0.05.

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