

BAS69 Series

Low capacitance small signal Schottky diodes

Main product characteristics

I _F	10 mA
V _{RRM}	15 V
C (typ)	<1 pF
T _j (max)	150° C

Features and benefits

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

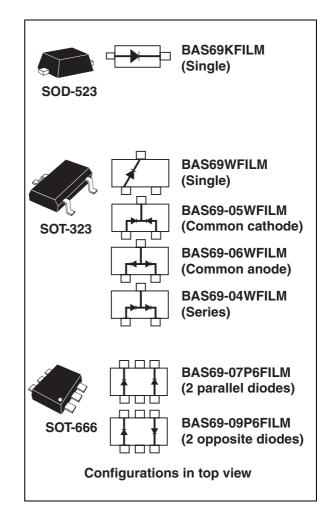
Description

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.

Order codes

Part Number	Marking
BAS69WFILM	23
BAS69-04WFILM	24
BAS69-05WFILM	25
BAS69-06WFILM	26
BAS69KFILM	65
BAS69-09P6FILM	69
BAS69-07P6FILM	67



Characteristics BAS69 Series

1 Characteristics

Table 1. Absolute ratings (limiting values at $T_i = 25^{\circ}$ C, unless otherwise specified)

	<u> </u>	,		
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	Α
T _{stg}	Storage temperature range		-65 to +150	
Tj	Maximum operating junction temperature (1)	150	° C	
TL	Maximum soldering temperature ⁽¹⁾		260	

^{1.} Pulse test: t_p = 380 μ s, δ < 2 %

Table 2. Thermal parameters

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

^{1.} Epoxy printed circuit board with recommended pad layout

Table 3. Static electrical characteristics

Symbol	Parameter	Test conditions		Min.	Тур	Max.	Unit
		T _j = 25° C	V _R = 1 V			0.035	
I _R ⁽¹⁾	Reverse leakage current	T _j = 125° C	7 V _R = 1 V		6	30	
'R` ′		T _j = 25° C	V _R = 15 V			0.23	μA
		T _j = 125° C	v _R = 15 v		10	100	
		T _j = 25° C	1 4 4		350	380	
V _F ⁽¹⁾	Forward voltage drop	T _j = 125° C	- I _F = 1 mA		230	260	mV
v F` ′		T _j = 25° C	L = 10 mA		500	570	1117
		T _j = 125° C	I _F = 10 mA		460	510	

^{1.} Pulse test: $t_p \le 250$ ms, $\delta \le 2$ %

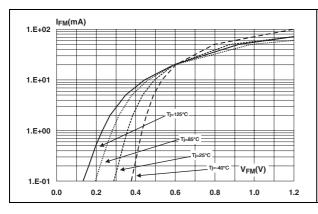
Table 4. Dynamic characteristics

Symbol	Parameter	Test conditions	Min.	Тур	Max.	Unit
С	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		nΗ

BAS69 Series Characteristics

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

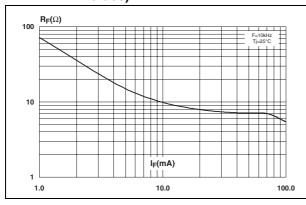
Figure 2. Reverse leakage current versus reverse voltage applied (typical values)



1.E+01
1.E+01
1.E+00
1.E-01
1.E-02
1.E-03
0.0 2.5 5.0 7.5 10.0 12.5 15.0

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

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



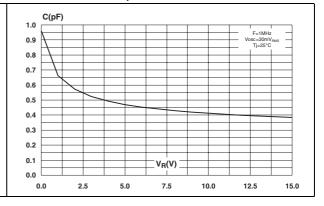
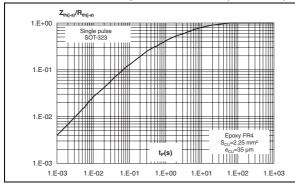


Figure 5. Relative variation of thermal impedance junction to ambient versus pulse duration (SOT-323)

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



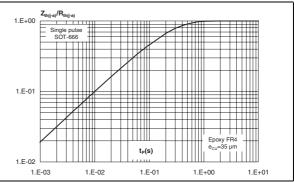
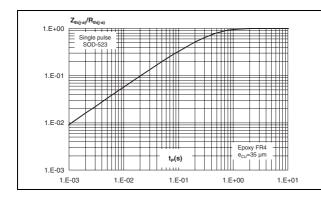
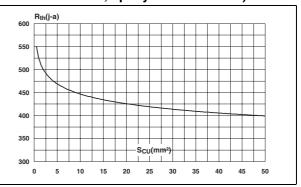


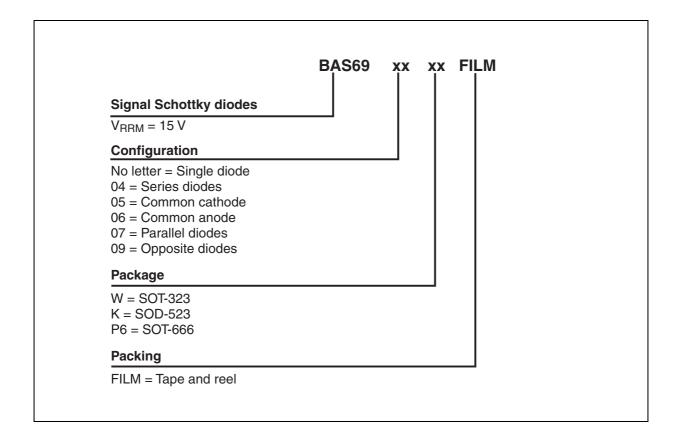
Figure 7. Relative variation of thermal impedance junction to ambient versus pulse duration (SOD-523)

Figure 8. Thermal resistance junction to ambient versus copper surface under each lead (printed circuit board, epoxy FR4 - SOT-323)





2 Ordering information scheme

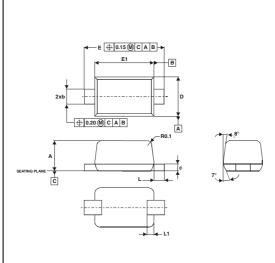


BAS69 Series Package information

3 Package information

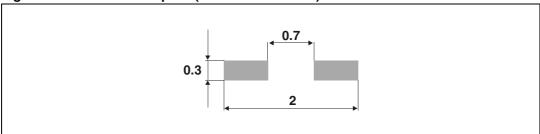
Epoxy meets UL94, V0

Table 5. SOD-523 dimensions



		Dimensions				
Ref.	Mi	illimete	ers		Inches	
	Min.	Тур.	Max.	Min.	Тур.	Max.
Α	0.50	0.60	0.70	0.020	0.024	0.028
Е	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
С	0.07		0.20	0.003		0.008
L	0.15	0.20	0.25	0.006	0.008	0.010
L1	0.10	_	0.20	0.004	_	0.008

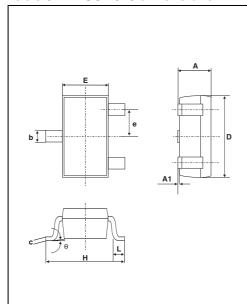
Figure 9. SOD-523 footprint (dimensions in mm)



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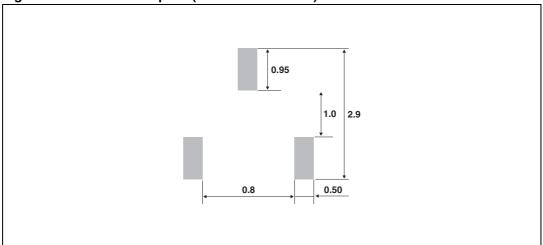
Package information BAS69 Series

Table 6. SOT-323 dimensions



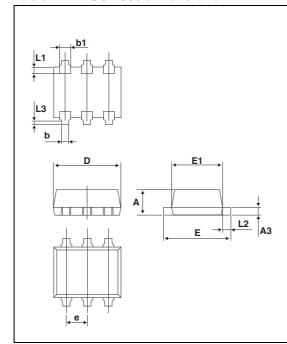
	Dimensions					
Ref.	М	illimete	rs		Inches	
	Min.	Тур.	Max.	Min.	Тур.	Max.
Α	0.8		1.1	0.031		0.043
A1	0.0		0.1	0.0		0.004
b	0.25		0.4	0.010		0.016
С	0.1		0.26	0.004		0.010
D	1.8	2.0	2.2	0.071	0.079	0.086
Е	1.15	1.25	1.35	0.045	0.049	0.053
е		0.65			0.026	
Н	1.8	2.1	2.4	0.071	0.083	0.094
L	0.1	0.2	0.3	0.004	0.008	0.012
q	0		30°	0		30°

Figure 10. SOT-323 footprint (dimensions in mm)



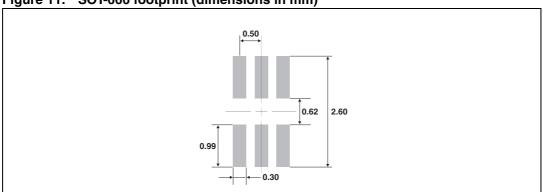
BAS69 Series Package information

Table 7. SOT-666 dimensions



	Dimensions					
Ref.	Mi	illimete	rs		Inches	
	Min.	Тур.	Max.	Min.	Тур.	Max.
Α	0.45		0.60	0.018		0.024
А3	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
Е	1.50		1.70	0.059		0.067
E1	1.10		1.30	0.043		0.051
е		0.50			0.020	
L1		0.19			0.007	
L2	0.10		0.30	0.004		0.012
L3		0.10			0.004	

Figure 11. SOT-666 footprint (dimensions in mm)



In order to meet environmental requirements, ST offers these devices in ECOPACK® packages. These packages have a lead-free second level interconnect. The category of second level interconnect is marked on the package and on the inner box label, in compliance with JEDEC Standard JESD97. The maximum ratings related to soldering conditions are also marked on the inner box label. ECOPACK is an ST trademark. ECOPACK specifications are available at: www.st.com.

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Ordering information BAS69 Series

4 Ordering information

Part Number	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

Date	Revision	Description of Changes
24-Jul-2006	1	First issue

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