THE DATASHEET OF

BAS70-06-E3-18

BAS70

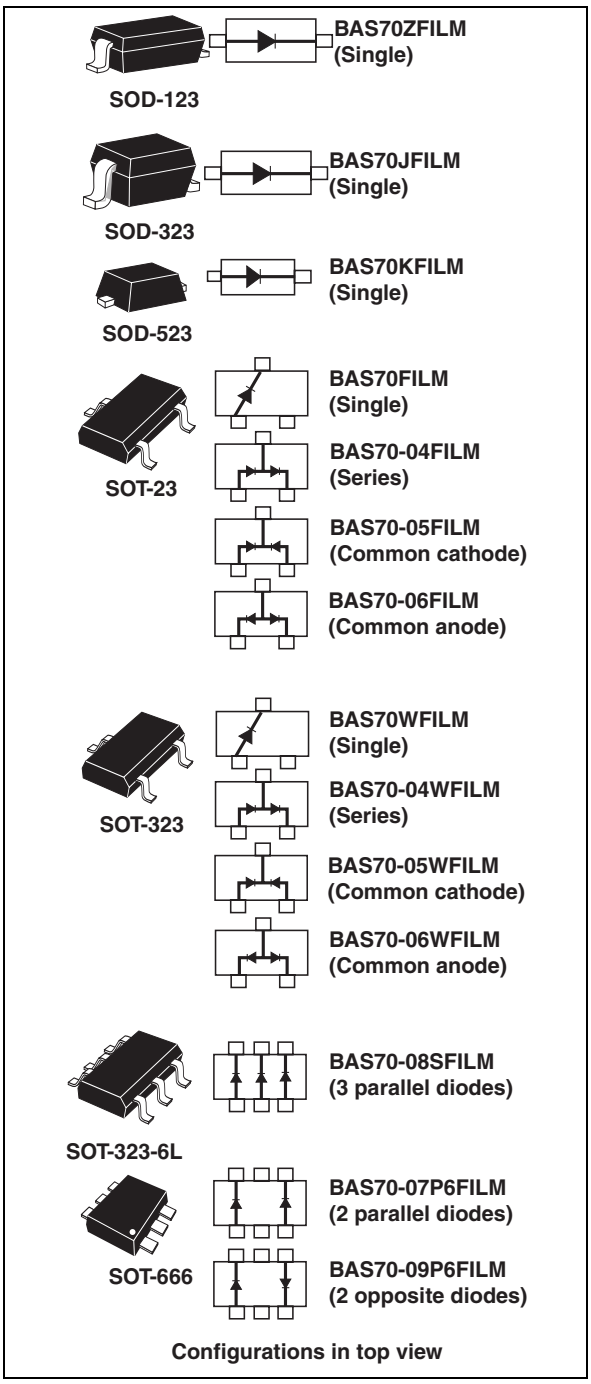
Low capacitance, low series inductance and resistance Schottky diodes

Features

- Very low conduction losses
- Negligible switching losses
- Low forward and reverse recovery times
- Surface mount device
- Low capacitance diode
- Low resistance and inductance

Description

The BAS70 series uses 70 V Schottky barrier diodes packaged in SOD-123, SOD-323, SOD-523, SOT-23, SOT-323, SOT-323-6L or SOT-666. These diodes are specially suited for signal detection and temperature compensation in RF applications.



Configurations in top view

Table 1. Device summary

Symbol	Value
I_F	70 mA
V_{RRM}	70 V
C (max)	2 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		70	V
I_F	Continuous forward current		70	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
T_L	Maximum soldering temperature		260	°C

Table 3. Thermal parameters

Symbol	Parameter		Value	Unit
$R_{th(j-a)}$	Junction to ambient(1)	SOD-123, SOT-23	500	°C/W
		SOT-323, SOD-323	550	
		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 = 50 V			100	nA
			V_R = 70 V			10	µA
V_F(2)	Forward voltage drop	T_j = 25 °C	I_F = 1 mA			410	mV
			I_F = 10 mA			750	
			I_F = 15 mA			1000	

1. Pulse test: t_p = 5 ms, δ < 2 %
2. Pulse test: t_p = 380 µs, δ < 2 %

Table 5. Dynamic characteristics

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
C	Diode capacitance	V_R = 0 V, F = 1 MHz			2	pF
R_F	Differential forward resistance	I_F = 10 mA, F = 100 MHz		30		Ω
L_S	Series inductance			1.5		nH

Figure 1. Average forward power dissipation versus average forward current

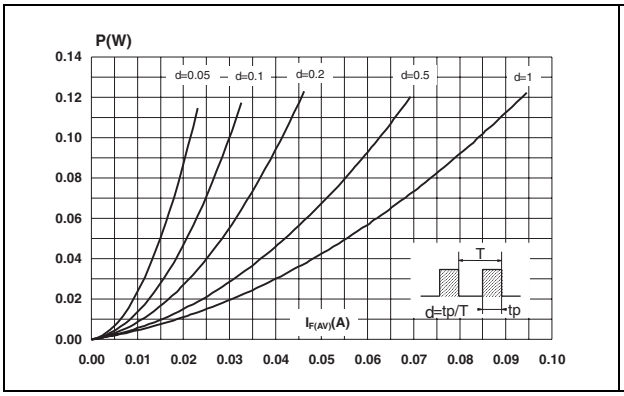


Figure 2. Average forward current versus ambient temperature (δ = 1)

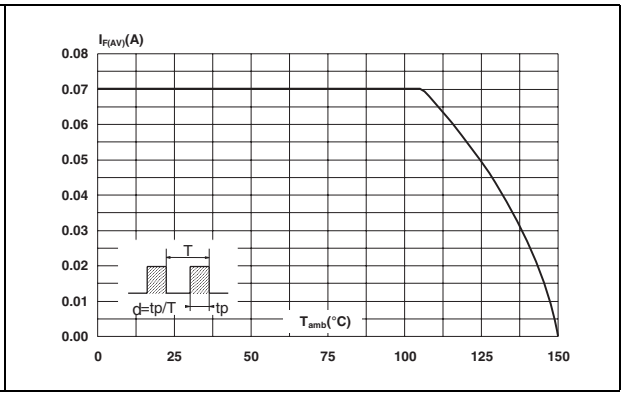


Figure 3. Reverse leakage current versus reverse applied voltage (typical values)

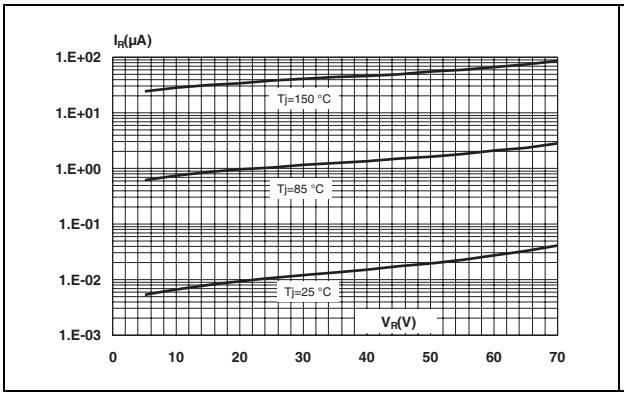


Figure 4. Reverse leakage current versus junction temperature (typical values)

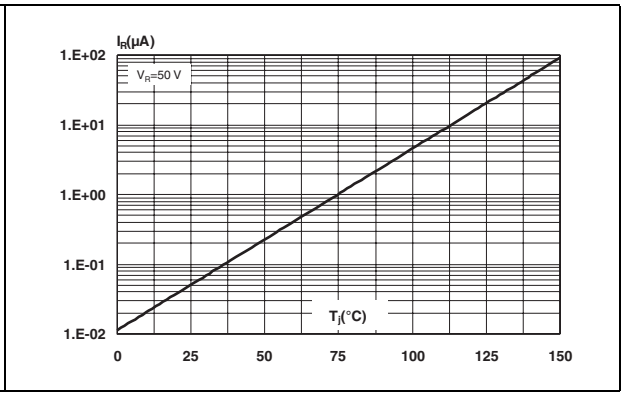


Figure 5. Junction capacitance versus reverse applied voltage (typical values)

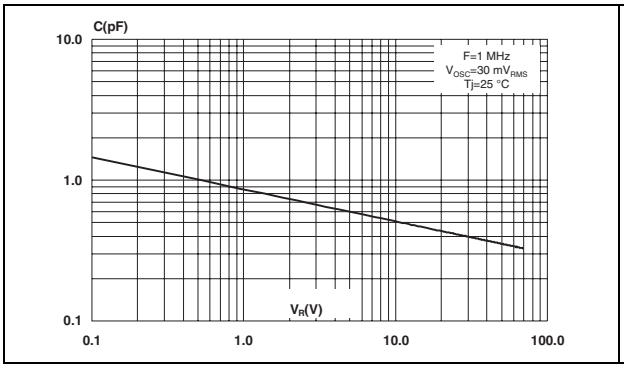


Figure 6. Forward voltage drop versus forward current (typical values)

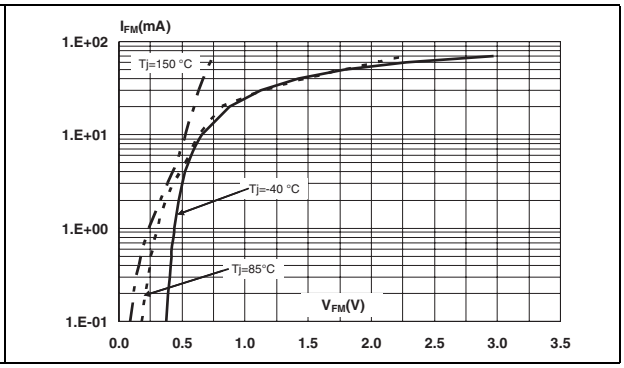


Figure 7. Forward voltage drop versus forward current (typical values)

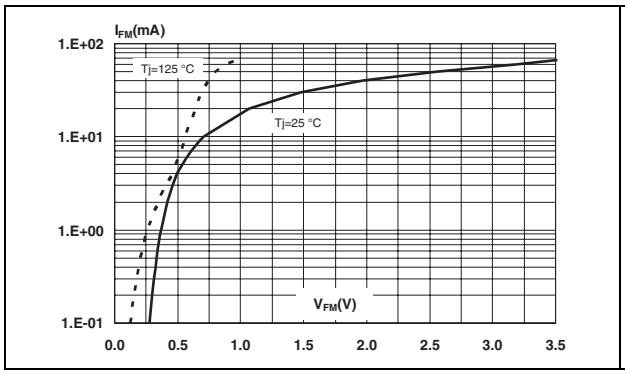


Figure 8. Differential forward resistance versus forward current (typical values)

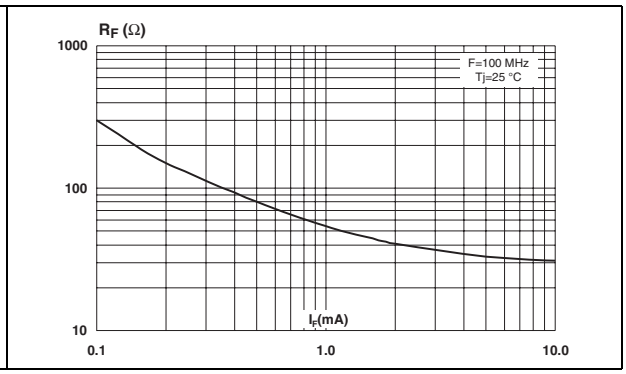


Figure 9. Relative variation of thermal impedance junction to ambient versus pulse duration

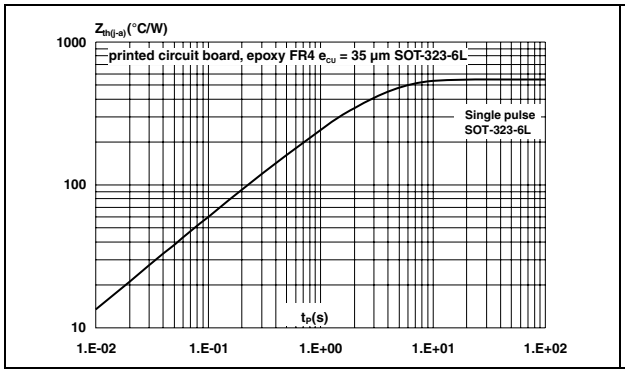


Figure 10. Relative variation of thermal impedance junction to ambient versus pulse duration

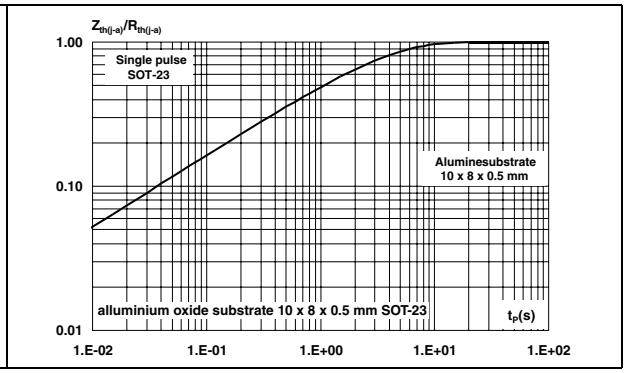


Figure 11. Relative variation of thermal impedance junction to ambient versus pulse duration

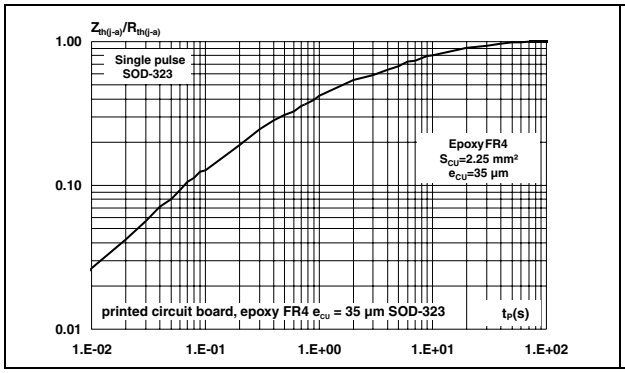


Figure 12. Relative variation of thermal impedance junction to ambient versus pulse duration

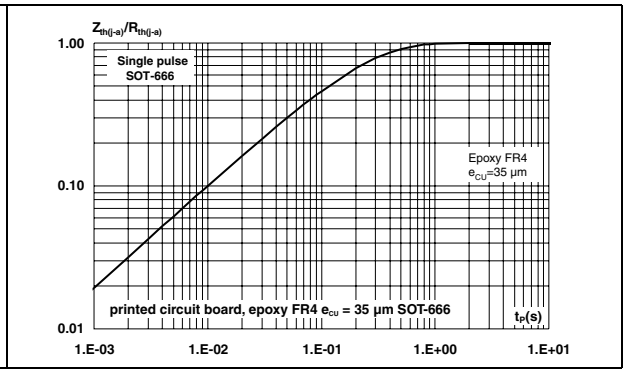


Figure 13. Relative variation of thermal impedance junction to ambient versus pulse duration

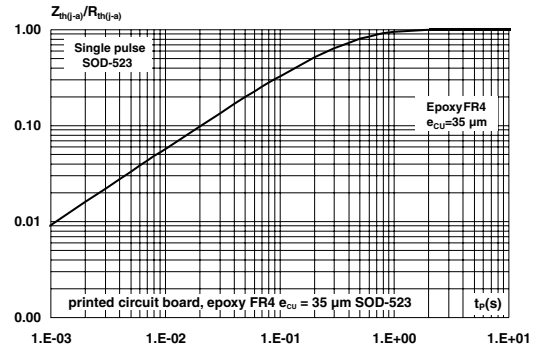
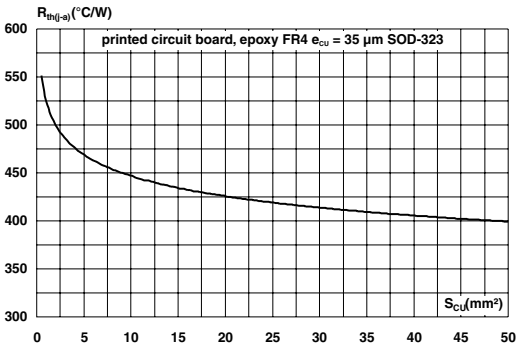


Figure 14. Thermal impedance junction to ambient versus copper surface under each lead



2 Ordering information scheme

Figure 15. Ordering information scheme

BAS70 xx xx FILM

Signal Schottky diodes

V_{RRM} = 70 V

Configuration

No letter = Single diode
04 = Series diodes
05 = Common cathode
06 = Common anode
07 = 2 Parallel diodes
08 = 3 Parallel diodes
09 = 2 Opposite diodes

Package

Blank = SOT-23
J = SOD-323
W = SOT-323
K = SOD-523
P6 = SOT-666
S = SOT323-6L
Z = SOD-123

Packing

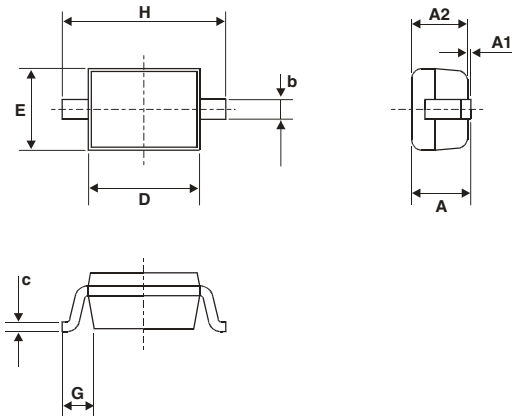
FILM = Tape and reel

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-123 dimensions



Ref.	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A		1.45		0.057
A1	0	0.1	0	0.004
A2	0.85	1.35	0.033	0.053
b	0.55 Typ.		0.022 Typ.	
c	0.15 Typ.		0.039 Typ.	
D	2.55	2.85	0.1	0.112
E	1.4	1.7	0.055	0.067
G	0.25		0.01	
H	3.55	3.95	0.14	0.156

Figure 16. SOD-123 footprint (dimensions in mm)

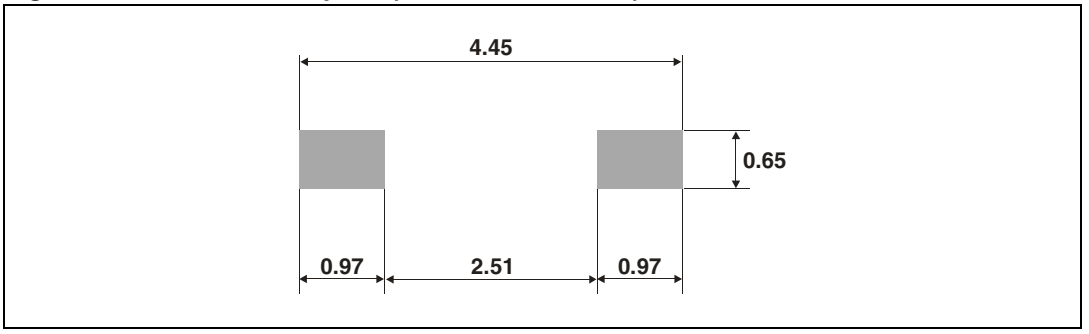
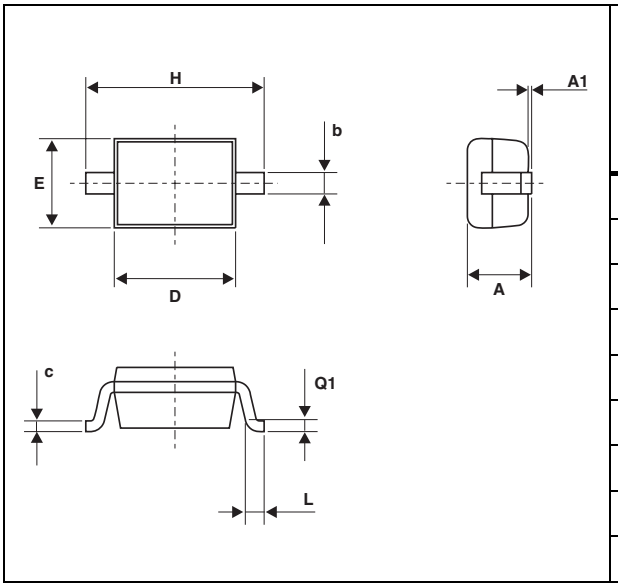


Table 7. SOD-323 dimensions



Ref.	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A		1.17		0.046
A1	0	0.1	0	0.004
b	0.25	0.44	0.01	0.017
c	0.1	0.25	0.004	0.01
D	1.52	1.8	0.06	0.071
E	1.11	1.45	0.044	0.057
H	2.3	2.7	0.09	0.106
L	0.1	0.46	0.004	0.02
Q1	0.1	0.41	0.004	0.016

Figure 17. SOD-323 footprint (dimensions in mm)

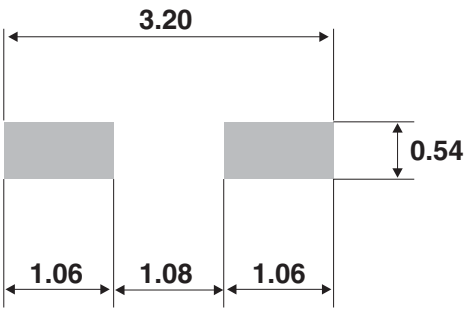
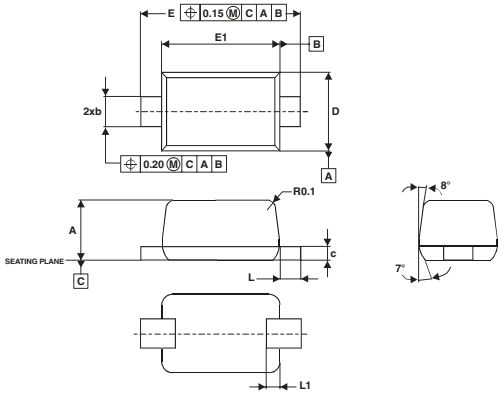


Table 8. SOD-523 dimensions



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 18. SOD-523 footprint (dimensions in mm)

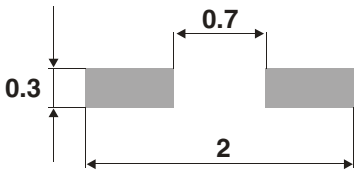
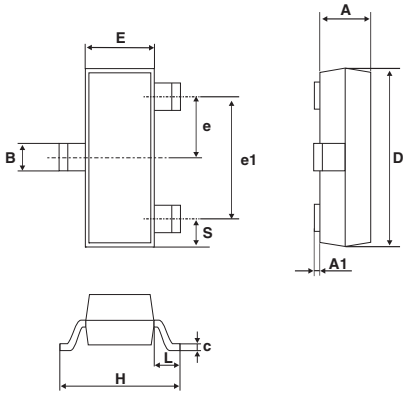


Table 9. SOT-23 dimensions



Ref.	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	0.89	1.4	0.035	0.055
A1	0	0.1	0	0.004
B	0.3	0.51	0.012	0.02
c	0.085	0.18	0.003	0.007
D	2.75	3.04	0.108	0.12
e	0.85	1.05	0.033	0.041
e1	1.7	2.1	0.067	0.083
E	1.2	1.6	0.047	0.063
H	2.1	2.75	0.083	0.108
L	0.6 typ.		0.024 typ.	
S	0.35	0.65	0.014	0.026

Figure 19. SOT-23 footprint (dimensions in mm)

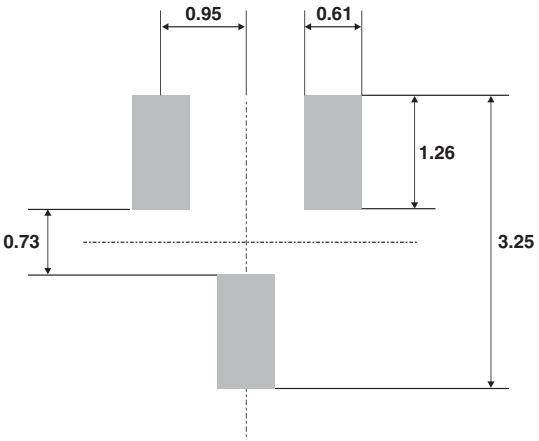
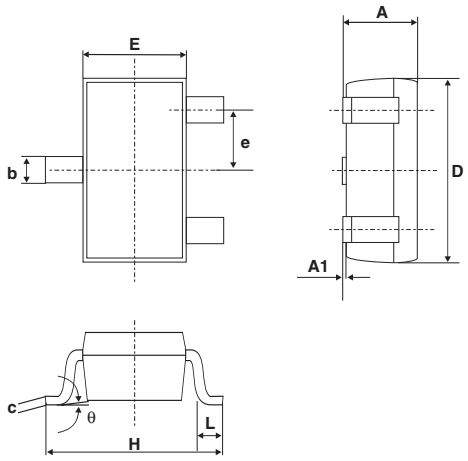


Table 10. SOT-323 dimensions



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 20. SOT-323 footprint (dimensions in mm)

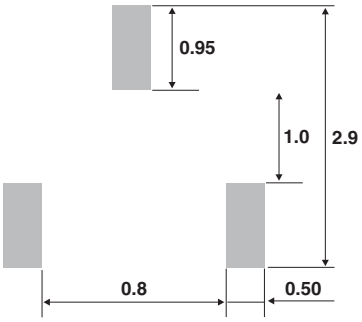
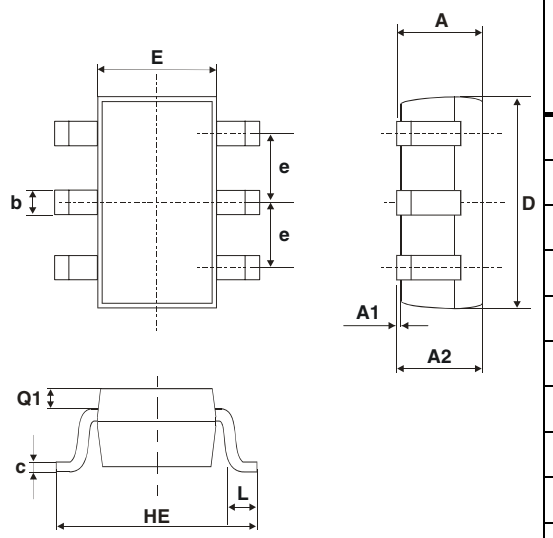


Table 11. SOT323-6L dimensions



Ref.	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	0.8	1.1	0.031	0.043
A1	0	0.1	0	0.004
A2	0.8	1	0.031	0.039
b	0.15	0.3	0.006	0.012
c	0.1	0.18	0.004	0.007
D	1.8	2.2	0.071	0.086
E	1.15	1.35	0.045	0.053
e	0.65 Typ.		0.025 Typ.	
H	1.8	2.4	0.071	0.094
Q	0.1	0.4	0.004	0.016

Figure 21. SOT323-6L footprint (dimensions in mm)

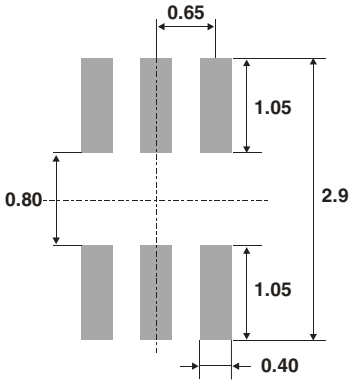
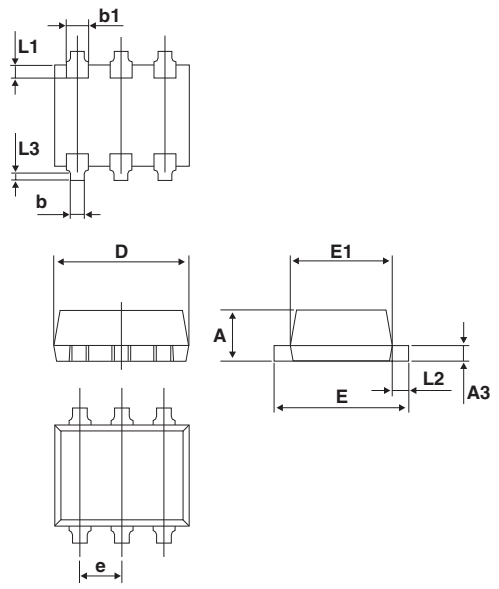
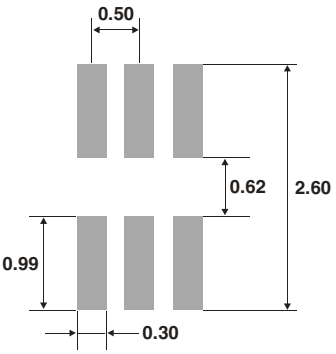


Table 12. SOT-666 dimensions



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 22. SOT-666 footprint (dimensions in mm)



4 Ordering information

Table 13. Ordering information

Order code	Marking	Package	Weight	Base qty	Delivery mode
BAS70ZFILM	Z70	SOD-123	10 mg	3000	Tape and reel
BAS70FILM	D76	SOT-23 Single	10 mg	3000	Tape and reel
BAS70-04FILM	D96	SOT-23 Series	10 mg	3000	Tape and reel
BAS70-05FILM	D97	SOT-23 Common cathode	10 mg	3000	Tape and reel
BAS70-06FILM	D98	SOT-23 Common anode	10 mg	3000	Tape and reel
BAS70WFILM	D28	SOT-323 Single	6 mg	3000	Tape and reel
BAS70-04WFILM	D31	SOT-323 Series	6 mg	3000	Tape and reel
BAS70-05WFILM	D30	SOT-323 Common cathode	6 mg	3000	Tape and reel
BAS70-06WFILM	D29	SOT-323 Common anode	6 mg	3000	Tape and reel
BAS70-08SFILM	D33	SOT323-6L 3 Parallel	6 mg	3000	Tape and reel
BAS70JFILM	76	SOD-323	5 mg	3000	Tape and reel
BAS70KFILM	76	SOD-523	1.4 mg	3000	Tape and reel
BAS70-07P6FILM	P7	SOT-666 2 Parallel	2.9 mg	3000	Tape and reel
BAS70-09P6FILM	Q7	SOT-666 2 Opposite	2.9 mg	3000	Tape and reel

5 Revision history

Table 14. Document revision history

Date	Revision	Changes
24-Jul-2006	1	BAS70J / W datasheets merged. ECOPACK statement added. SOD-523 and SOT-666 packages added.
12-Oct-2009	2	Updated Table 8 quote “L1” from 0.10 to 0.05.

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