

Small Signal Schottky (double) diodes

BAS70S3/BAS70AS3 BAS70CS3/BAS70SS3

Description

Planar silicon Schottky barrier diodes encapsulated in a SOT-323 very small plastic SMD package. Single diodes and double diodes with different pinning are available.

Features

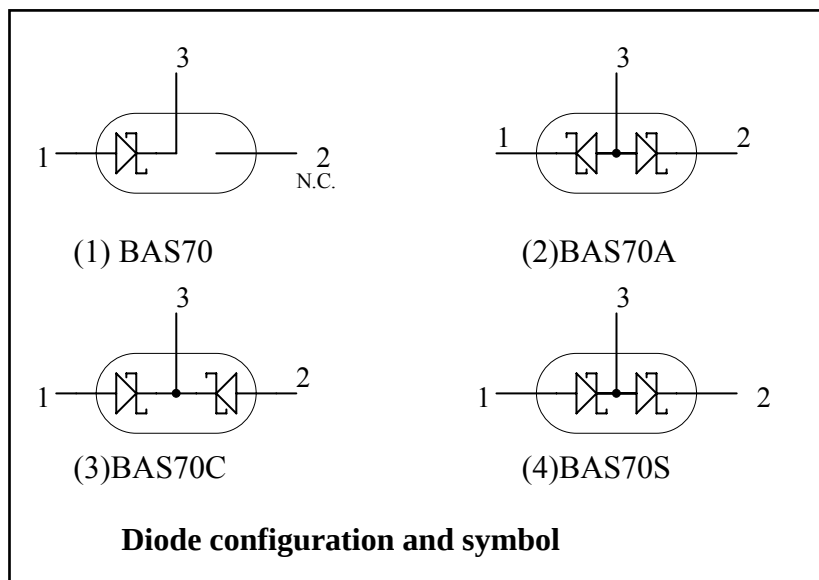
- Guard ring protected
- Low forward voltage drop
- Very small plastic SMD package
- Pb-free package

Applications

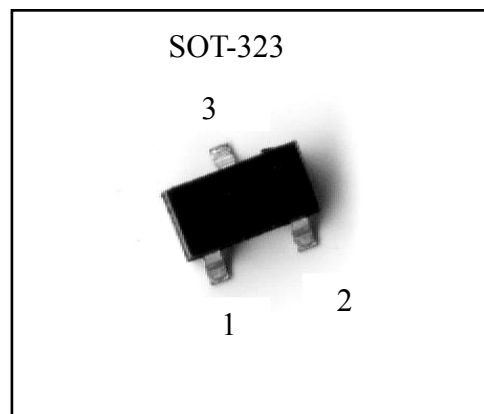
- Ultra high-speed switching
- Voltage clamping
- Protection circuits
- Blocking diodes

Pinning

Pin	Description			
	BAS70	BAS70A	BAS70C	BAS70S
1	A	K1	A1	A1
2	NC	K2	A2	K2
3	K	A1,A2	K1,K2	K1,A1



Outline



Marking:

Type	Marking Code
BAS70 S3	K73
BAS70AS3	K76
BAS70CS3	K75
BAS70SS3	K74

**Absolute Maximum Ratings**

Symbol	Parameter	Conditions	Min	Max	Unit
Per diode					
V_R	continuous reverse voltage		-	70	V
I_F	continuous forward current		-	70	mA
I_{FRM}	repetitive peak forward current	$t_p \leq 1s, \delta \leq 0.5$	-	100	mA
P_{tot}	total power dissipation (per package)	$T_{amb} \leq 25^\circ C$	-	200	mW
T_{stg}	storage temperature		-65	+150	$^\circ C$
T_{amb}	operating ambient temperature		-55	+125	$^\circ C$

Characteristics ($T_a = 25^\circ C$, unless otherwise specified)

Parameter	Symbol	Condition	Min.	Max.	Unit
Reverse Breakdown Voltage	V_{BR}	$I_R = 10\mu A$	70	-	V
Forward Voltage (Note 1)	$V_F(1)$	$I_F = 1mA$	-	410	mV
	$V_F(2)$	$I_F = 15mA$	-	1000	mV
Reverse Leakage Current (Note 1)	I_R	$V_R = 50V$	-	100	nA
Diode Capacitance	C_D	$V_R = 0V, f = 1MHz$	-	2	pF
Reverse Recovery Time	t_{rr}	when switched from $I_F = 10mA$ to $I_R = 10mA$; $R_L = 100\Omega$; measured at $I_R = 1mA$	-	5	ns

Notes: 1.pulse test, $t_p = 300\mu s$, duty cycle $< 2\%$.**Thermal Characteristics**

Symbol	Parameter	Conditions	Value	Unit
$R_{th\ j-a}$	thermal resistance from junction to ambient	note 1	625	K/W

Note 1 : Refer to SOT-323 standard mounting conditions.

Characteristic Curves

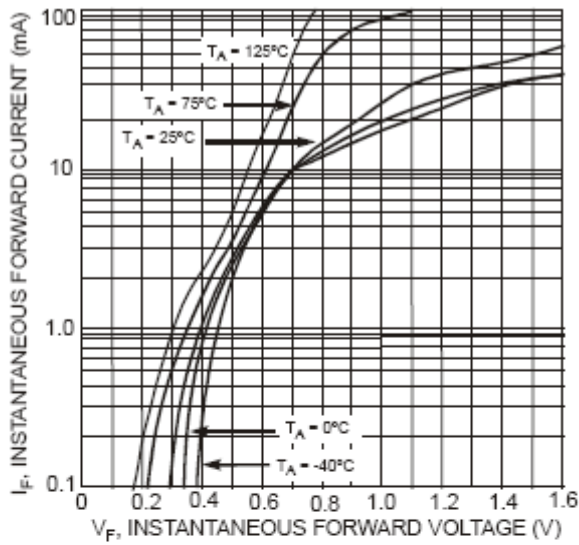


Fig. 1 Typical Forward Characteristics

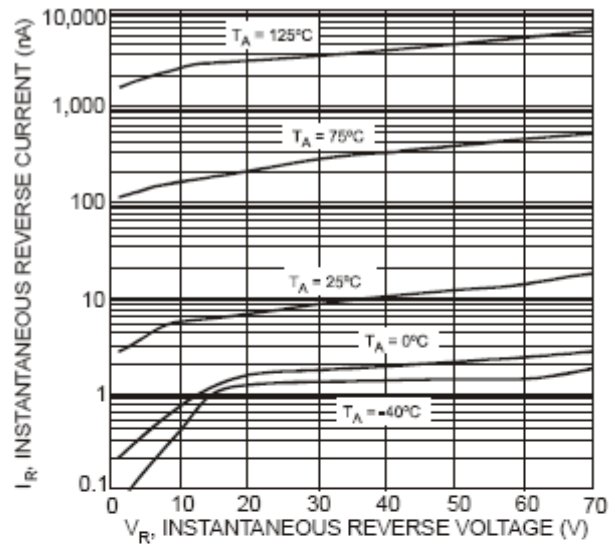


Fig. 2 Typical Reverse Characteristics

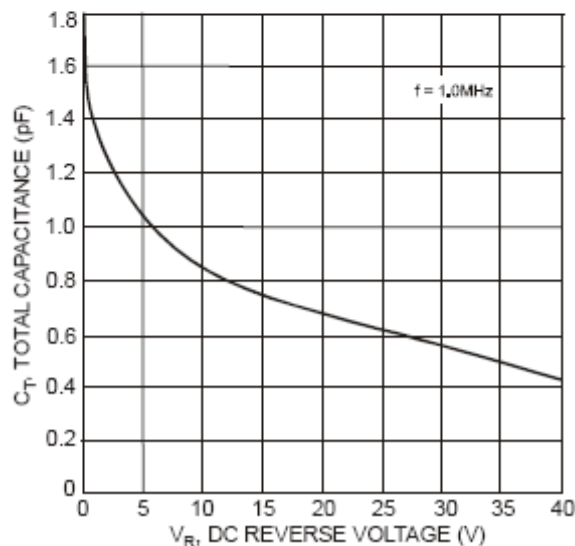


Fig. 3 Total Capacitance vs. Reverse Voltage

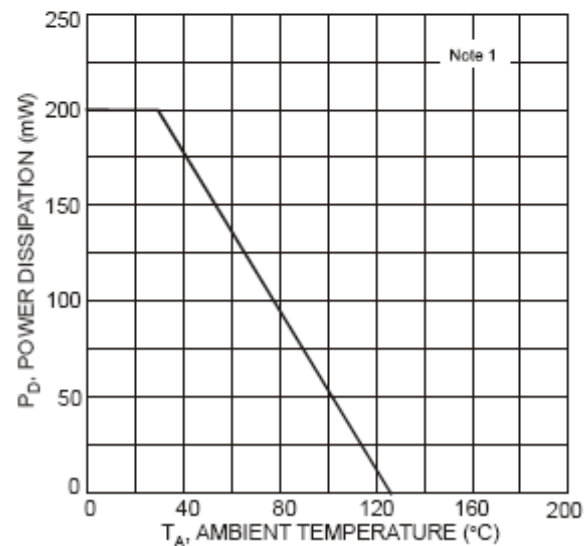


Fig. 4 Power Derating Curve, Total Package

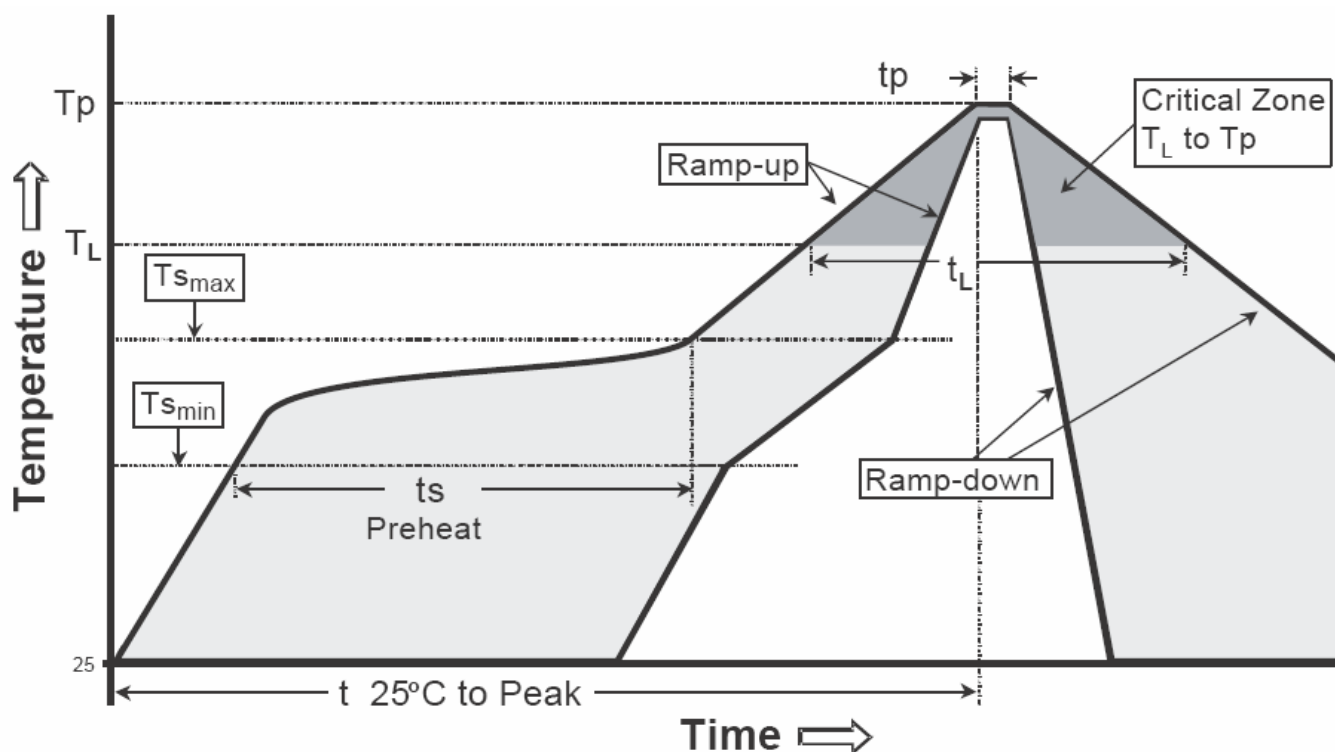
Ordering Information

Device	Package	Shipping	Marking
BAS70S3	SOT-323 (Pb-free)	3000 pcs / Tape & Reel	K73
BAS70AS3	SOT-323 (Pb-free)	3000 pcs / Tape & Reel	K76
BAS70CS3	SOT-323 (Pb-free)	3000 pcs / Tape & Reel	K75
BAS70SS3	SOT-323 (Pb-free)	3000 pcs / Tape & Reel	K74

Recommended wave soldering condition

Product	Peak Temperature	Soldering Time
Pb-free devices	260 +0/-5 °C	5 +1/-1 seconds

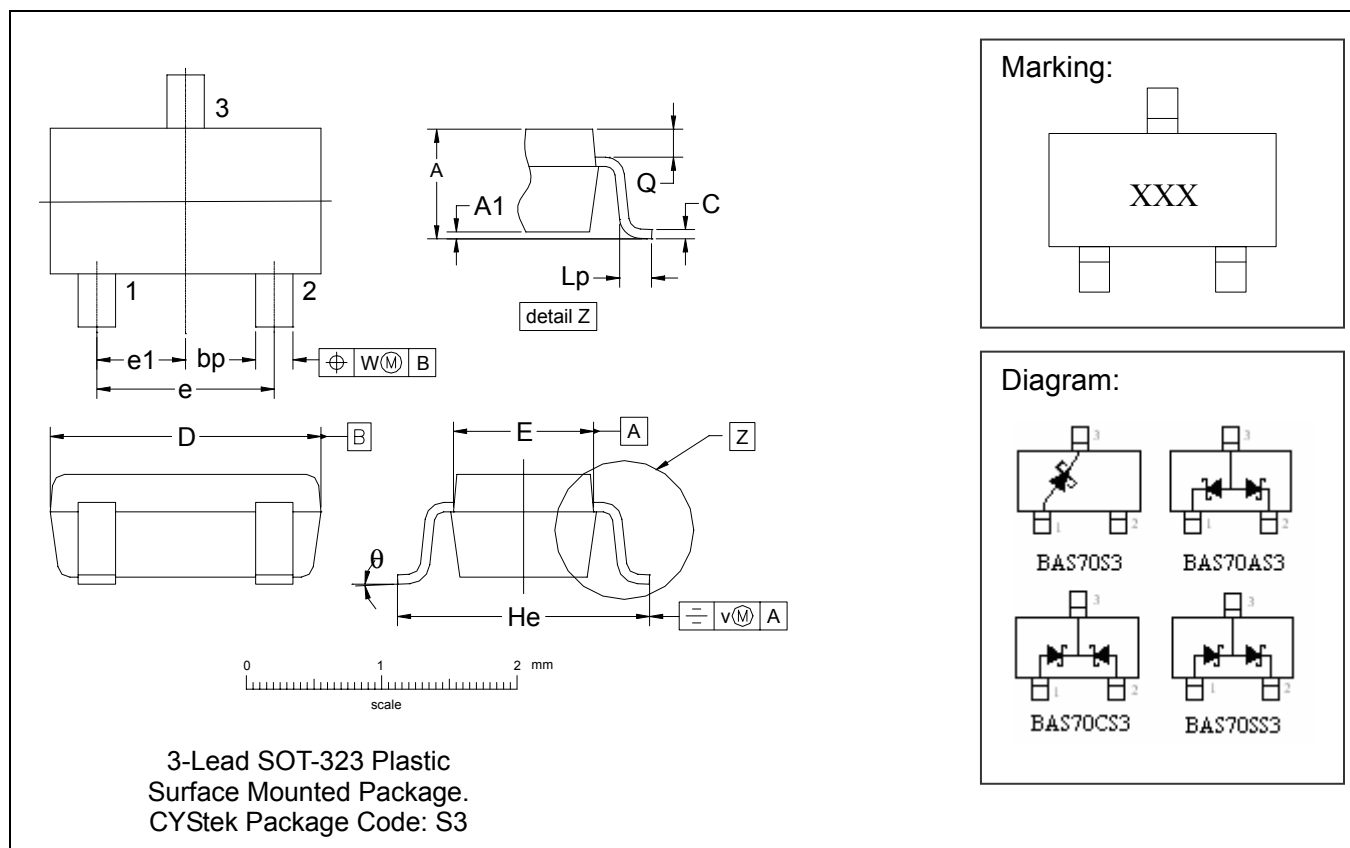
Recommended temperature profile for IR reflow



Profile feature	Sn-Pb eutectic Assembly	Pb-free Assembly
Average ramp-up rate (Tsmax to Tp)	3°C/second max.	3°C/second max.
Preheat		
-Temperature Min(Ts min)	100°C	150°C
-Temperature Max(Ts max)	150°C	200°C
-Time(ts min to ts max)	60-120 seconds	60-180 seconds
Time maintained above:		
-Temperature (Tl)	183°C	217°C
- Time (tL)	60-150 seconds	60-150 seconds
Peak Temperature(Tp)	240 +0/-5 °C	260 +0/-5 °C
Time within 5°C of actual peak temperature(tp)	10-30 seconds	20-40 seconds
Ramp down rate	6°C/second max.	6°C/second max.
Time 25 °C to peak temperature	6 minutes max.	8 minutes max.

Note : All temperatures refer to topside of the package, measured on the package body surface.

SOT-323 Dimension



- BAS70 S3 : Single Diode (Marking Code K73)
- BAS70AS3 : Common Anode. (Marking Code K76)
- BAS70CS3 : Common Cathode. (Marking Code K75)
- BAS70SS3 : Series Connected. (Marking Code K74)

*: Typical

DIM	Inches		Millimeters		DIM	Inches		Millimeters	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.0315	0.0433	0.80	1.10	e1	0.0256	-	0.65	-
A1	0.0000	0.0039	0.00	0.10	He	0.0787	0.0886	2.00	2.25
bp	0.0118	0.0157	0.30	0.40	Lp	0.0059	0.0177	0.15	0.45
C	0.0039	0.0098	0.10	0.25	Q	0.0051	0.0091	0.13	0.23
D	0.0709	0.0866	1.80	2.20	v	0.0079	-	0.2	-
E	0.0453	0.0531	1.15	1.35	w	0.0079	-	0.2	-
e	0.0512	-	1.3	-	θ	-	-	10°	0°

Notes: 1.Controlling dimension: millimeters.

2.Maximum lead thickness includes lead finish thickness, and minimum lead thickness is the minimum thickness of base material.

3.If there is any question with packing specification or packing method, please contact your local CYStek sales office.

Material:

- Lead: Pure tin plated.
- Mold Compound: Epoxy resin family, flammability solid burning class: UL94V-0.

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