

# High voltage switching (double) diodes

## BAV23/A/C/SN3

### Description

High voltage switching diodes encapsulated in a SOT-23 small plastic SMD package. Single diodes and double diodes with different pinning are available.

### Features

- Fast switching speed
- Low forward voltage drop
- Pb-free lead plating and halogen-free package

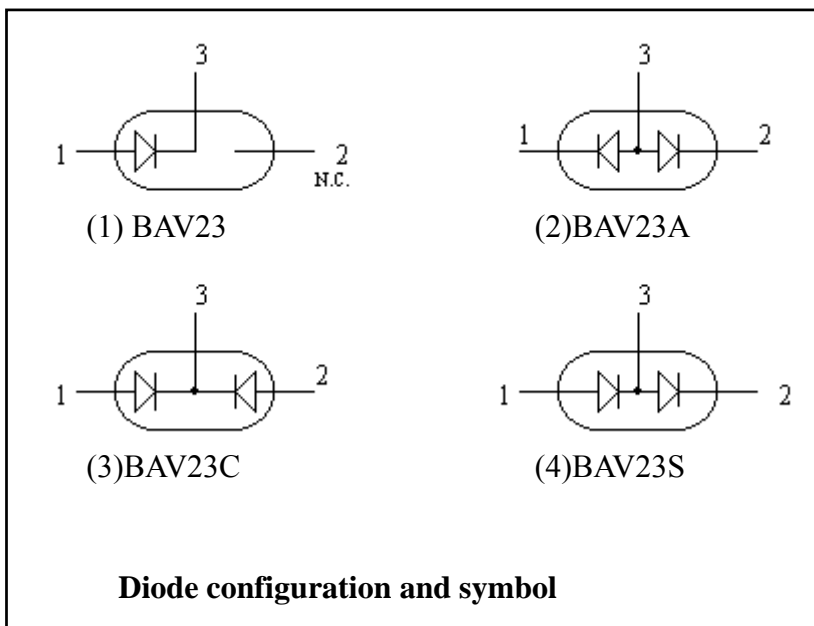
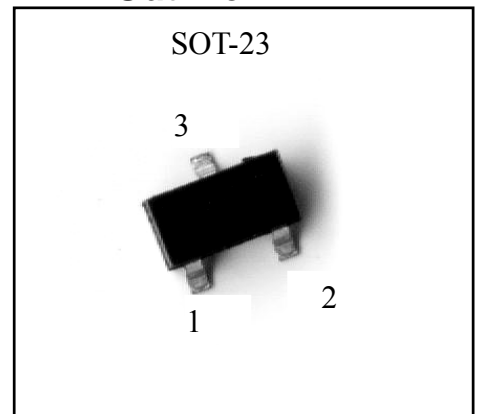
### Mechanical Data

- Case : SOT-23, molded plastic
- Terminals : Solderable per MIL-STD-202 Method 208
- Weight : 0.008 grams(approx.)

### Pinning

Pin	Description			
	BAV23	BAV23A	BAV23C	BAV23S
1	A	K1	A1	A1
2	NC	K2	A2	K2
3	K	A1,A2	K1,K2	K1,A1

### Outline



### Marking:

Type	Marking Code
BAV23N3	JS
BAV23AN3	JS2
BAV23CN3	JS3
BAV23SN3	JS4



**Absolute Maximum Ratings**( $T_a=25^{\circ}\text{C}$ , unless otherwise specified)

Parameter	Symbol	Limits	unit
Repetitive Peak Reverse Voltage	$V_{RRM}$	250	V
Working Peak Reverse Voltage	$V_{RWM}$		
DC Blocking Voltage	$V_R$		
Forward Continuous Current	$I_{FM}$	400	mA
Average Rectified Output Current	$I_O$	200	mA
Non-repetitive Peak Forward Surge Current @ $t_p=1\mu\text{s}$ @ $t_p=100\mu\text{s}$ @ $t_p=1\text{s}$	$I_{FSM}$	9 3 1.7	A
Repetitive Peak Forward Surge Current	$I_{FRM}$	625	mA
Power Dissipation	$P_D$	250	mW
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	500	$^{\circ}\text{C}/\text{W}$
Operating Junction Temperature Range	$T_J$	-65~+150	$^{\circ}\text{C}$
Storage Temperature Range	$T_{STG}$	-65~+150	$^{\circ}\text{C}$

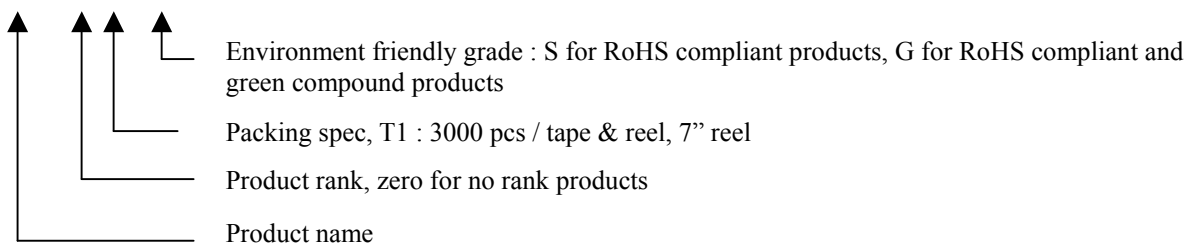
**Characteristics** ( $T_a=25^{\circ}\text{C}$ )

Characteristic	Symbol	Condition	Min.	Max.	Unit
Reverse Breakdown Voltage	$V_{BR}$	$I_R=100\mu\text{A}$	250	-	V
Forward Voltage (Note)	$V_F$	$I_F=100\text{mA}$	-	1	V
		$I_F=200\text{mA}$	-	1.25	V
Reverse Leakage Current	$I_R$	$V_R=250\text{V}$	-	100	nA
		$V_R=250\text{V}, T_j=150^{\circ}\text{C}$	-	100	$\mu\text{A}$
Diode Capacitance	$C_D$	$V_R=0\text{V}, f=1\text{MHz}$	-	5	pF
Reverse Recovery Time	$t_{rr}$	$I_F=I_R=30\text{mA}, R_L=100\Omega$ measured at $I_R=3\text{mA}$	-	50	ns

Note: Pulse test,  $t_p=300\mu\text{s}$ , duty cycle<2%.

**Ordering Information**

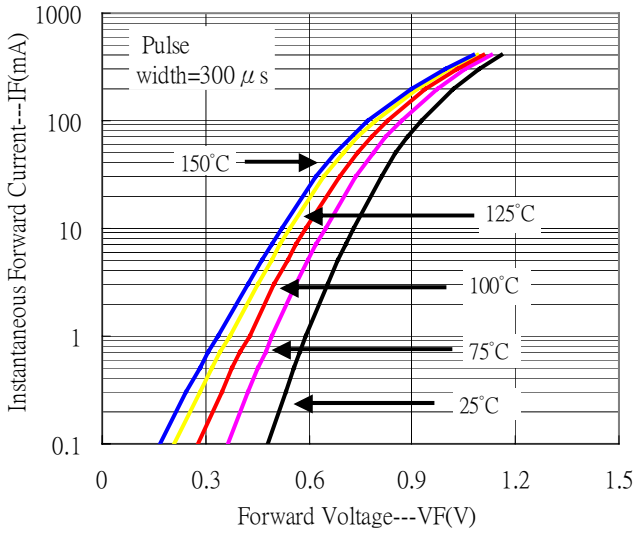
Device	Package	Shipping	Marking
BAV23N3-0-T1-G	SOT-23 (Pb-free lead plating and halogen-free package)	3000 pcs / Tape & Reel	JS
BAV23AN3-0-T1-G			JS2
BAV23CN3-0-T1-G			JS3
BAV23SN3-0-T1-G			JS4



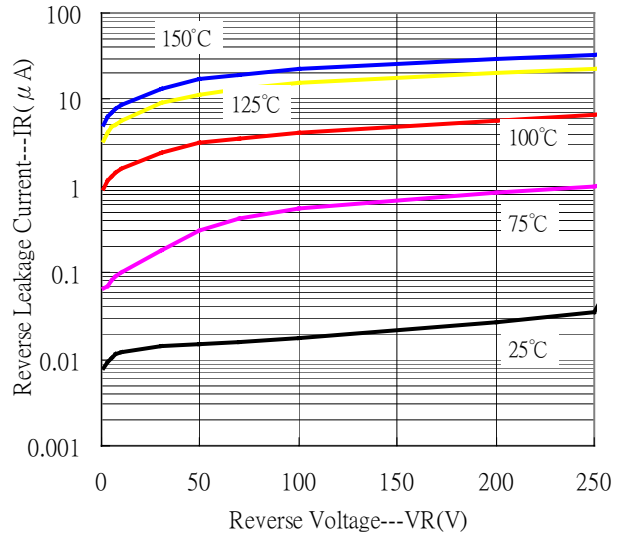


### Typical Characteristics

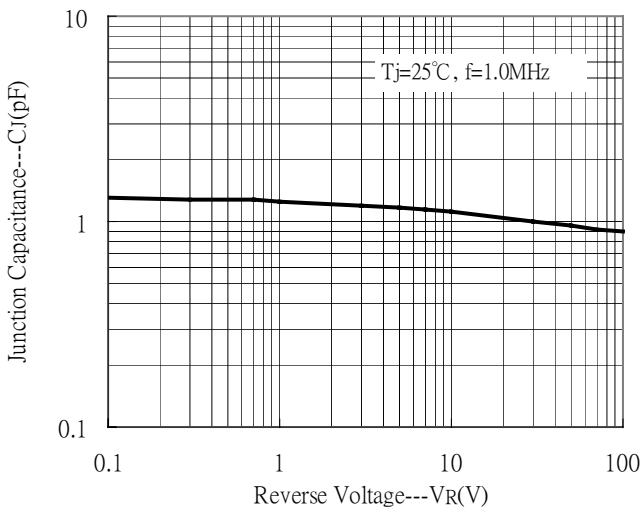
Forward Current vs Forward Voltage



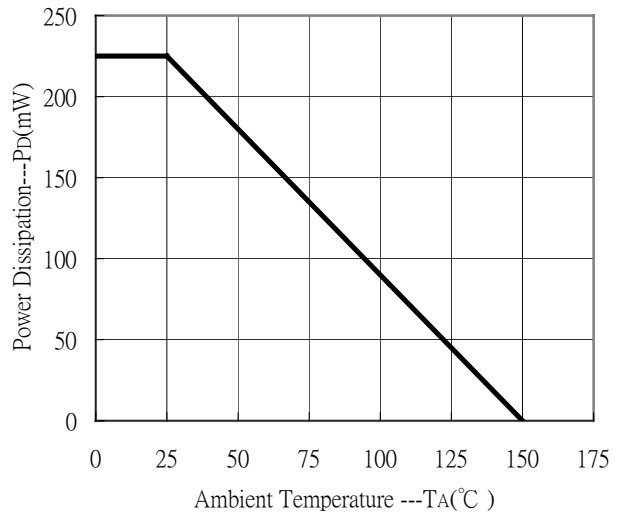
Reverse Leakage Current vs Reverse Voltage



Junction Capacitance vs Reverse Voltage

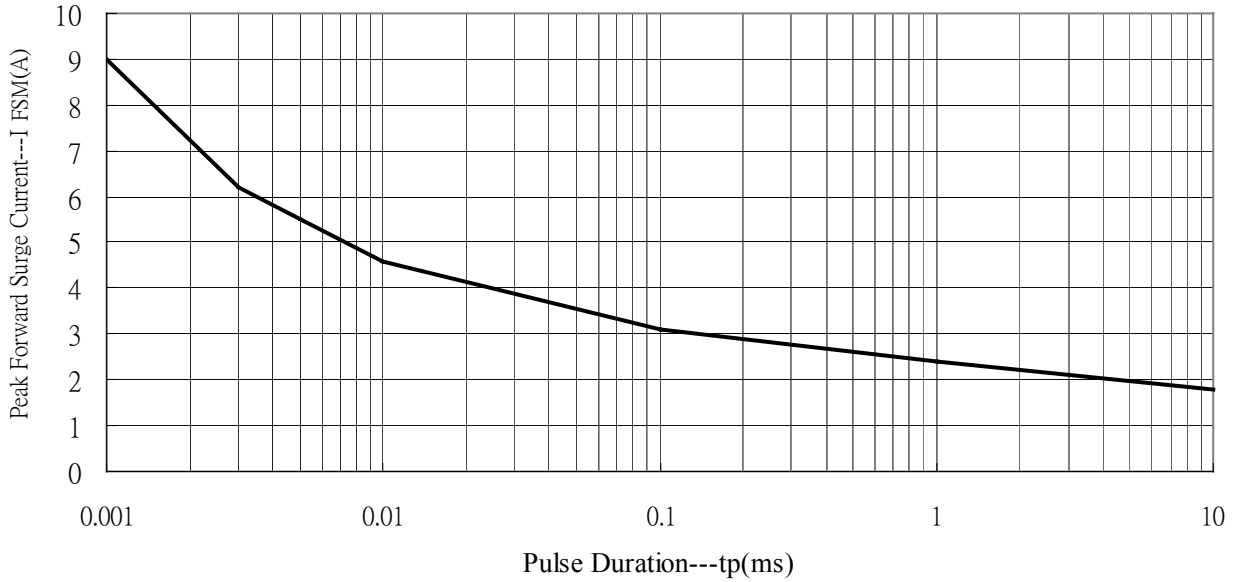


Power Derating Curve

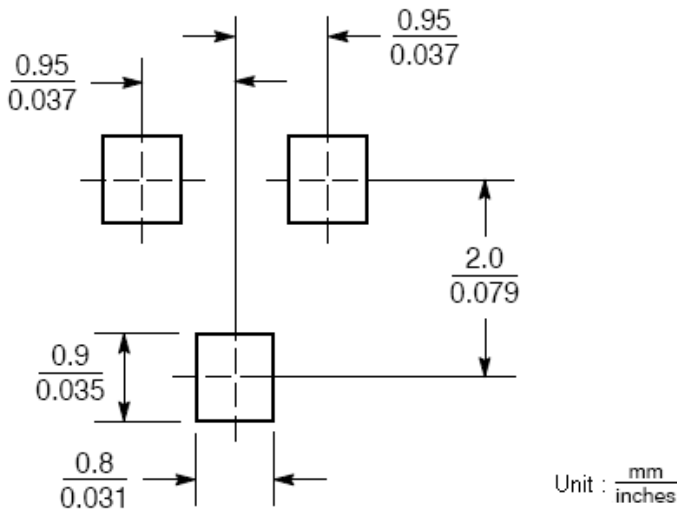


**Typical Characteristics(Cont.)**

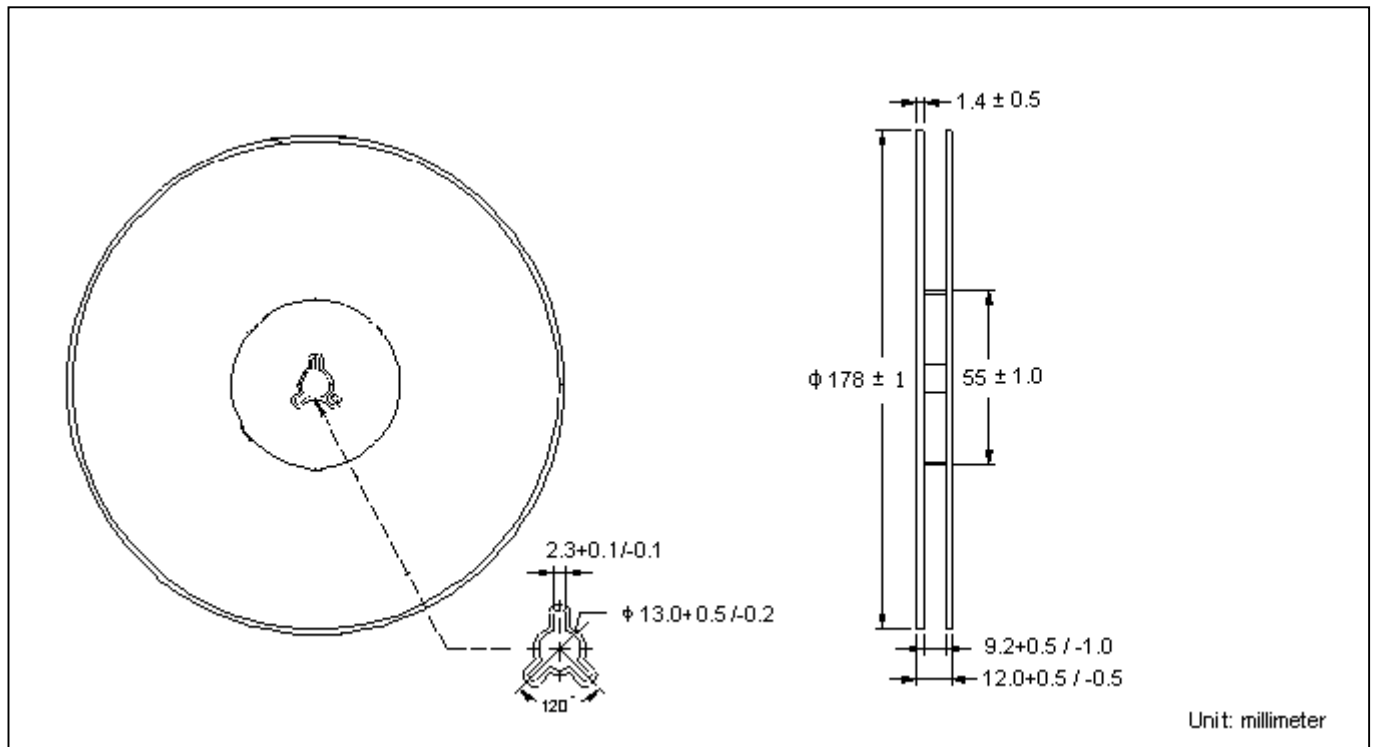
**Maximum Permissible Non-repetitive Peak Forward Surge Current**



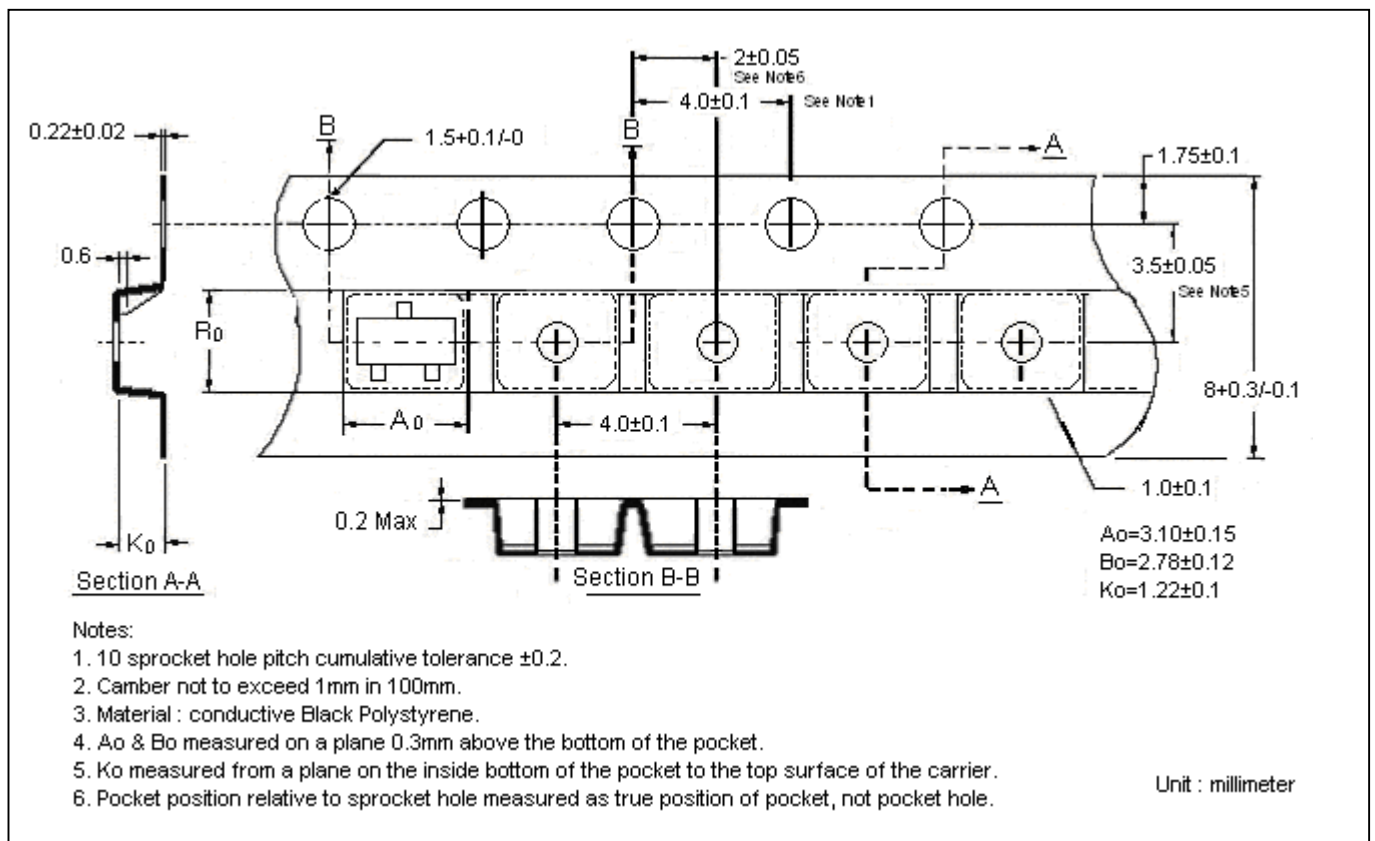
**Recommended Soldering Footprint**



**Reel Dimension**



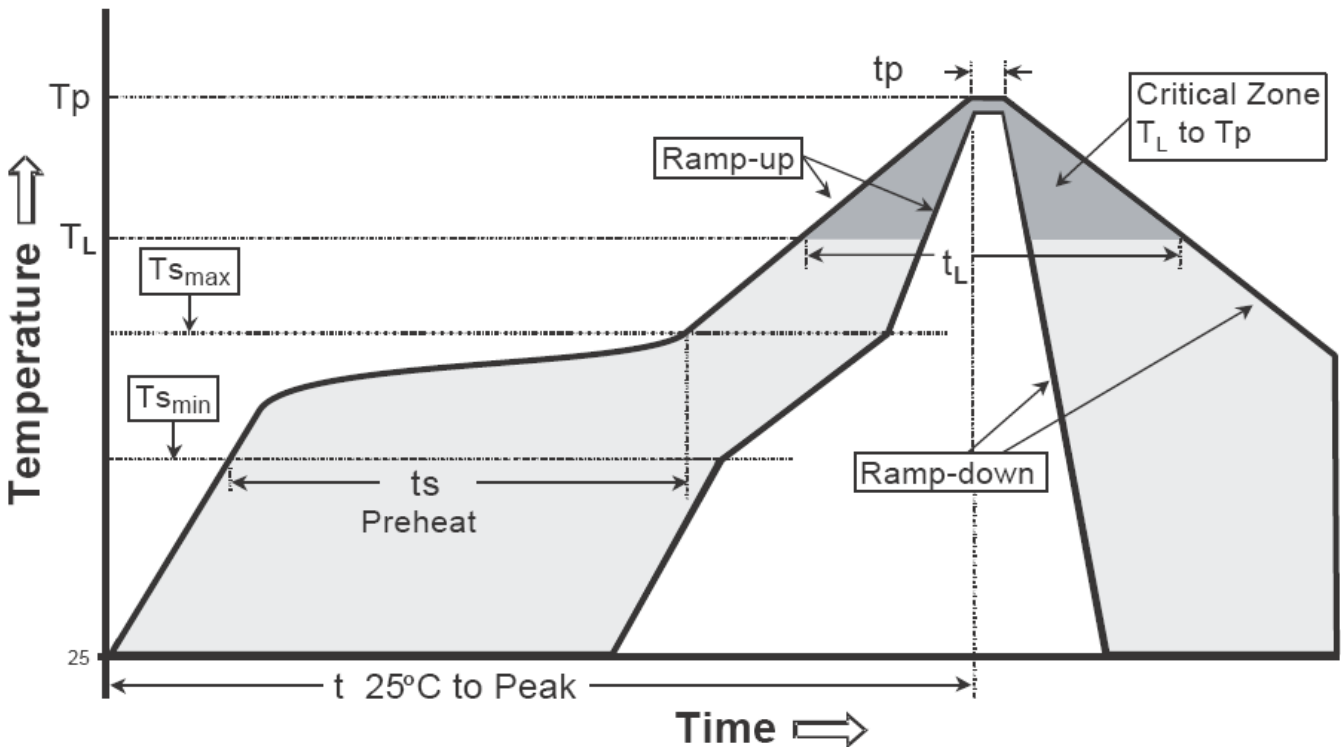
**Carrier Tape Dimension**



**Recommended wave soldering condition**

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

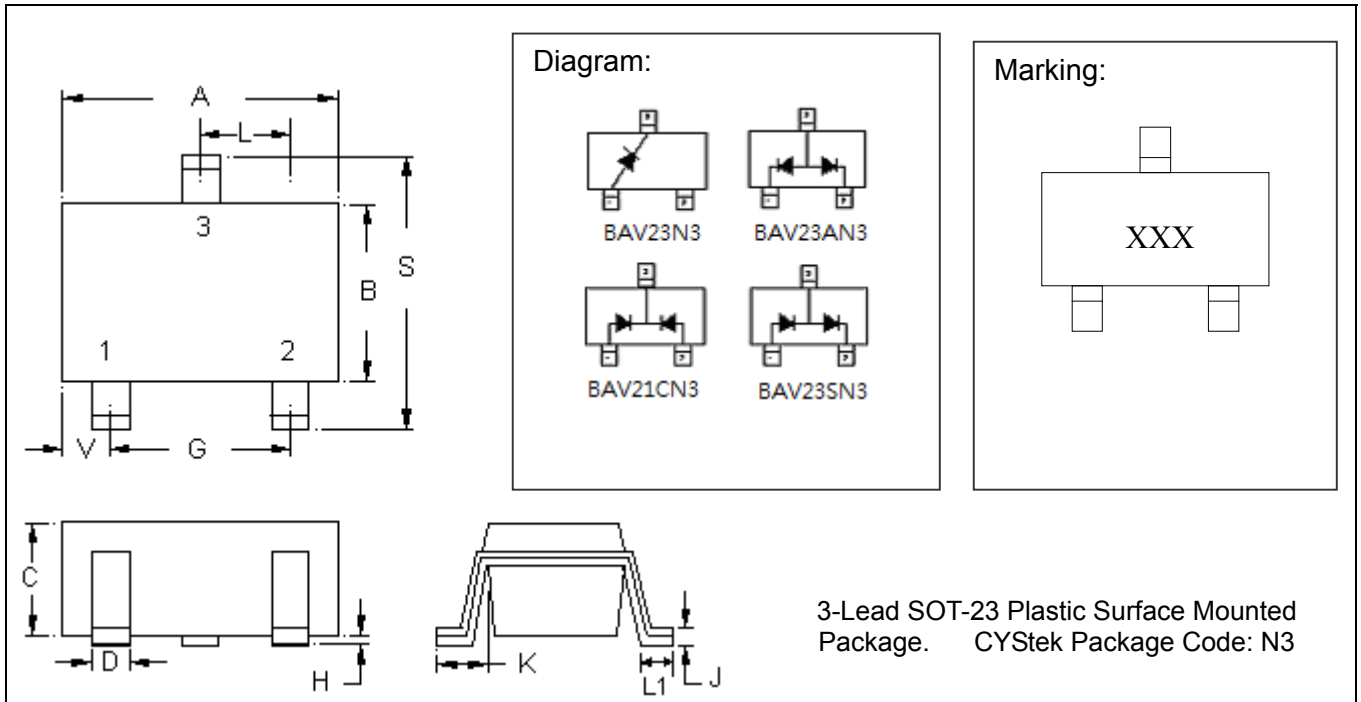
**Recommended temperature profile for IR reflow**



Profile feature	Sn-Pb eutectic Assembly	Pb-free Assembly
Average ramp-up rate (T <sub>smax</sub> to T <sub>p</sub> )	3°C/second max.	3°C/second max.
Preheat		
-Temperature Min(T <sub>s min</sub> )	100°C	150°C
-Temperature Max(T <sub>s max</sub> )	150°C	200°C
-Time(t <sub>s min</sub> to t <sub>s max</sub> )	60-120 seconds	60-180 seconds
Time maintained above:		
-Temperature (T <sub>L</sub> )	183°C	217°C
- Time (t <sub>L</sub> )	60-150 seconds	60-150 seconds
Peak Temperature(T <sub>p</sub> )	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-23 Dimension**



- BAV23 N3 : Single Diode      (Marking Code JS)
- BAV23AN3 : Common Anode.    (Marking Code JS2)
- BAV23CN3 : Common Cathode. (Marking Code JS3)
- BAV23SN3 : Series Connected. (Marking Code JS4)

DIM	Inches		Millimeters		DIM	Inches		Millimeters	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.1102	0.1204	2.80	3.04	J	0.0032	0.0079	0.08	0.20
B	0.0472	0.0669	1.20	1.70	K	0.0118	0.0266	0.30	0.67
C	0.0335	0.0512	0.89	1.30	L	0.0335	0.0453	0.85	1.15
D	0.0118	0.0197	0.30	0.50	S	0.0830	0.1161	2.10	2.95
G	0.0669	0.0910	1.70	2.30	V	0.0098	0.0256	0.25	0.65
H	0.0000	0.0040	0.00	0.10	L1	0.0118	0.0197	0.30	0.50

**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.

**Important Notice:**

- All rights are reserved. Reproduction in whole or in part is prohibited without the prior written approval of CYStek.
- CYStek reserves the right to make changes to its products without notice.
- CYStek **semiconductor products are not warranted to be suitable for use in Life-Support Applications, or systems.**
- CYStek assumes no liability for any consequence of customer product design, infringement of patents, or application assistance.