

BAV23A-Q1/BAV23C-Q1/BAV23S-Q1**List**

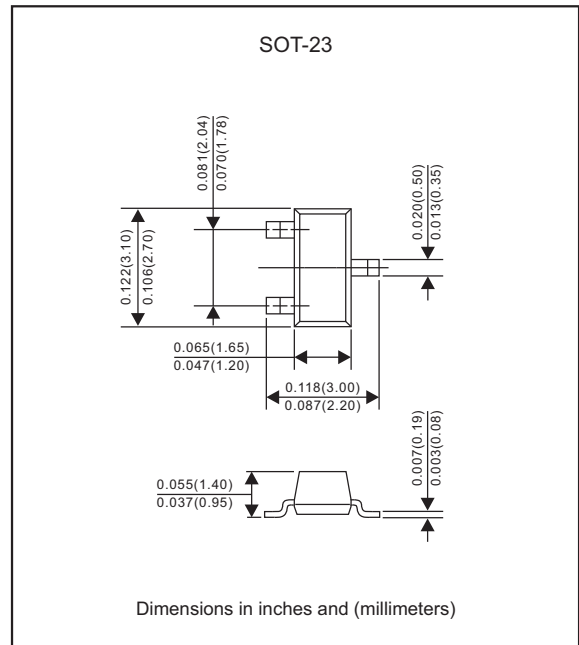
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BAV23A-Q1/BAV23C-Q1/BAV23S-Q1**350mW Surface Mount
Switching Diode-250V****Features**

- Fast speed switching.
- For general purpose switching application.
- High conductance.
- Lead-free parts meet RoHS requirements.
- Qualified to AEC-Q101 standards for high reliability.
- Suffix "-H" indicates Halogen-free part, ex.BAV23A-Q1-H

Mechanical data

- Epoxy:UL94-V0 rated flame retardant
- Case : Molded plastic, SOT-23
- Terminals : Solder plated, solderable per MIL-STD-750, Method 2026
- Mounting Position : Any
- Weight : Approximated 0.008 gram

Package outline**Maximum ratings** (AT $T_A=25^\circ\text{C}$ unless otherwise noted)

PARAMETER	Symbol	Value	UNIT
Non-repetitive peak reverse voltage	V_{RRM}	250	V
Working peak reverse voltage	V_{RWM}	175	V
RMS reverse voltage	V_{RMS}	225	V
Average rectified output current (note 1)	I_O	1.7	mA
Non-repetitive peak forward surge current 8.3ms	I_{FSM}	350	A
Power dissipation (note 1)	P_D	357	mW
Typical thermal resistance junction to ambient (note 1)	$R_{\theta JA}$	-55 to +150	$^\circ\text{C/W}$
Operating junction temperature range	T_J	-55 to +150	$^\circ\text{C}$
Storage temperature range	T_{STG}	-55 to +150	$^\circ\text{C}$

Electrical characteristics (AT $T_A=25^\circ\text{C}$ unless otherwise noted)

PARAMETER	CONDITION	Symbol	MIN.	MAX.	UNIT
Reverse breakdown voltage	$I_R = 100\mu\text{A}$	$V_{(BR)R}$	250		V
Forward voltage	$I_F = 100\text{ mA}$ $I_F = 200\text{ mA}$	V_F		1.00 1.25	V
Reverse leakage current	$V_R = 250\text{V}$, $T_J=25^\circ\text{C}$	I_R		0.1	μA
Total capacitance	$V_R=0\text{V}$, $f=1\text{MHz}$	C_T		5	pF
Reverse recovery time	$I_F=I_R=30\text{mA}$, $I_{rr}=0.1 \times I_R$, $R_L=100\Omega$	t_{rr}		50	ns

Note 1: Valid provided that electrodes are kept at ambient temperature.

Rating and characteristic curves for each diode (BAV23A-Q1/BAV23C-Q1/BAV23S-Q1)

FIG.1 Forward Characteristics

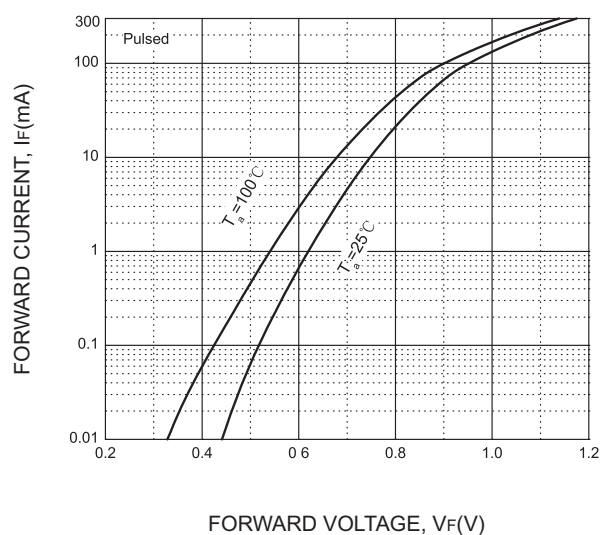


FIG.2 Reverse Characteristics

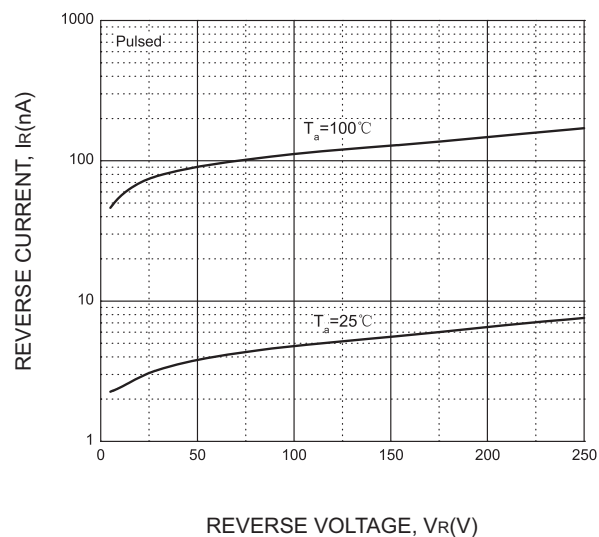


FIG.3 Capacitance Characteristics

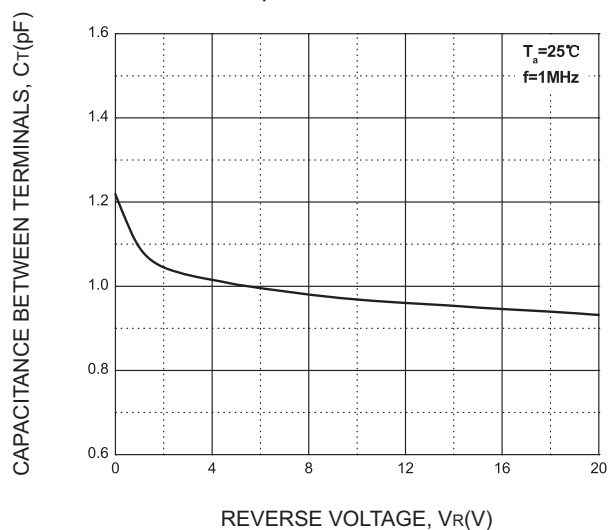
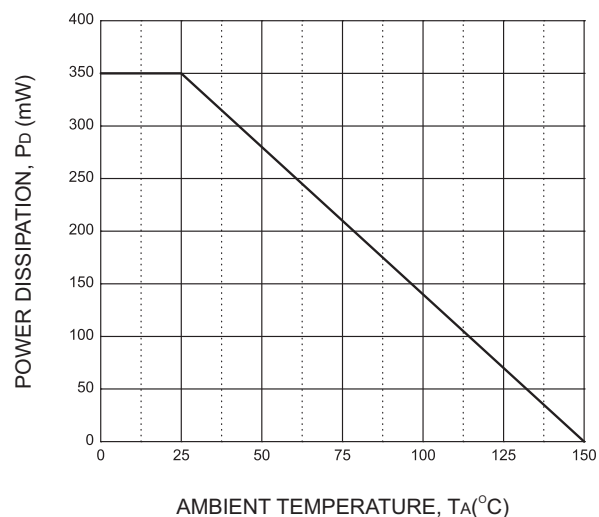
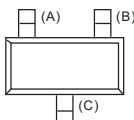
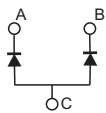
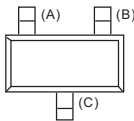
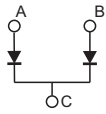
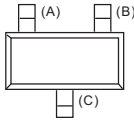
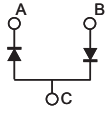
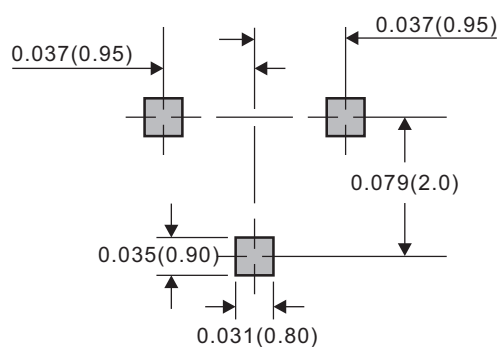


FIG.4 Power Derating Curve

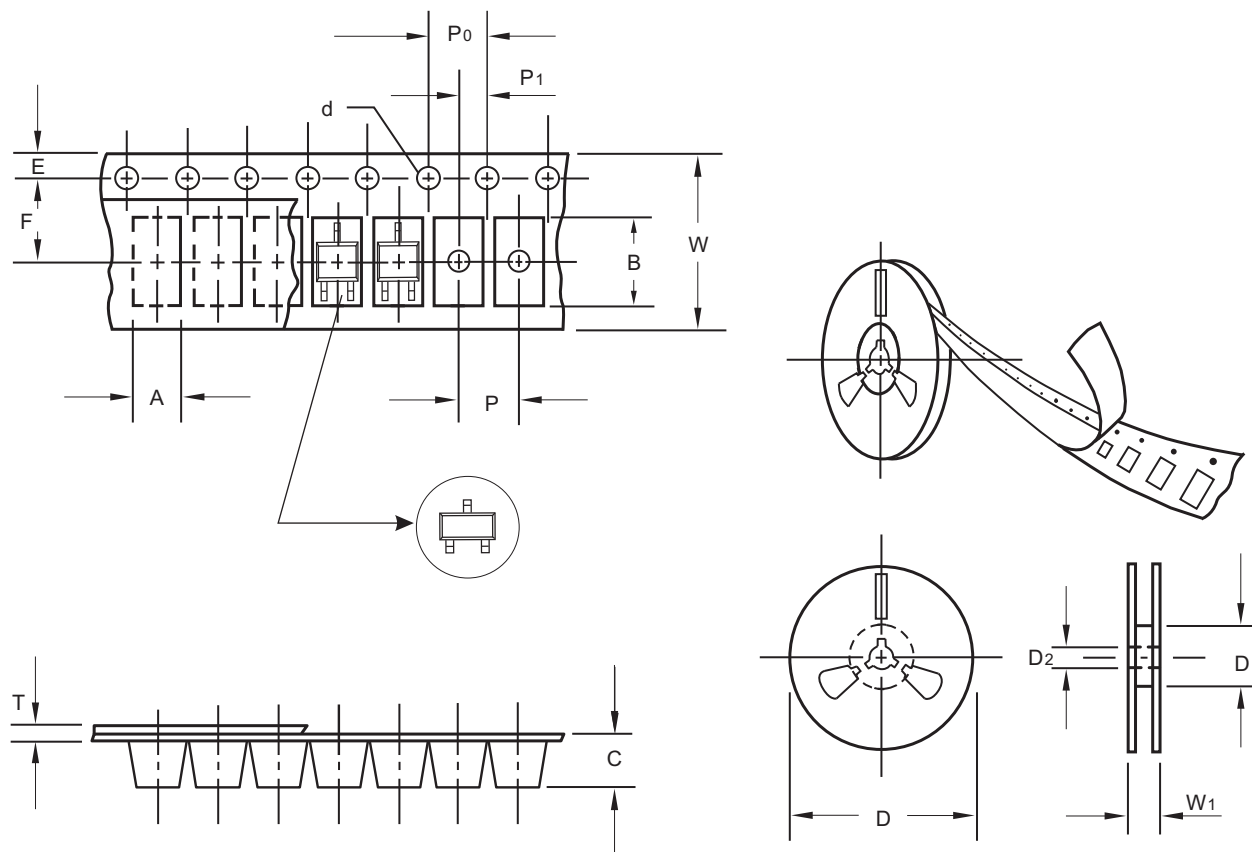


BAV23A-Q1/BAV23C-Q1/BAV23S-Q1**Pinning information**

Type number	Marking code	Simplified outline	Symbol
BAV23A-Q1	RA		
BAV23C-Q1	PZ		
BAV23S-Q1	PY		

Suggested solder pad layout**SOT-23**

Dimensions in inches and (millimeters)

BAV23A-Q1/BAV23C-Q1/BAV23S-Q1**Packing information**

unit:mm

Item	Symbol	Tolerance	SOT-23
Carrier width	A	0.1	3.15
Carrier length	B	0.1	2.77
Carrier depth	C	0.1	1.22
Sprocket hole	d	0.1	1.50
13" Reel outside diameter	D	2.0	-
13" Reel inner diameter	D1	min	-
7" Reel outside diameter	D	2.0	178.00
7" Reel inner diameter	D1	min	54.40
Feed hole diameter	D2	0.5	13.00
Sprocket hole position	E	0.1	1.75
Punch hole position	F	0.1	3.50
Punch hole pitch	P	0.1	4.00
Sprocket hole pitch	P0	0.1	4.00
Embossment center	P1	0.1	2.00
Overall tape thickness	T	0.1	0.23
Tape width	W	0.3	8.00
Reel width	W1	1.0	9.50

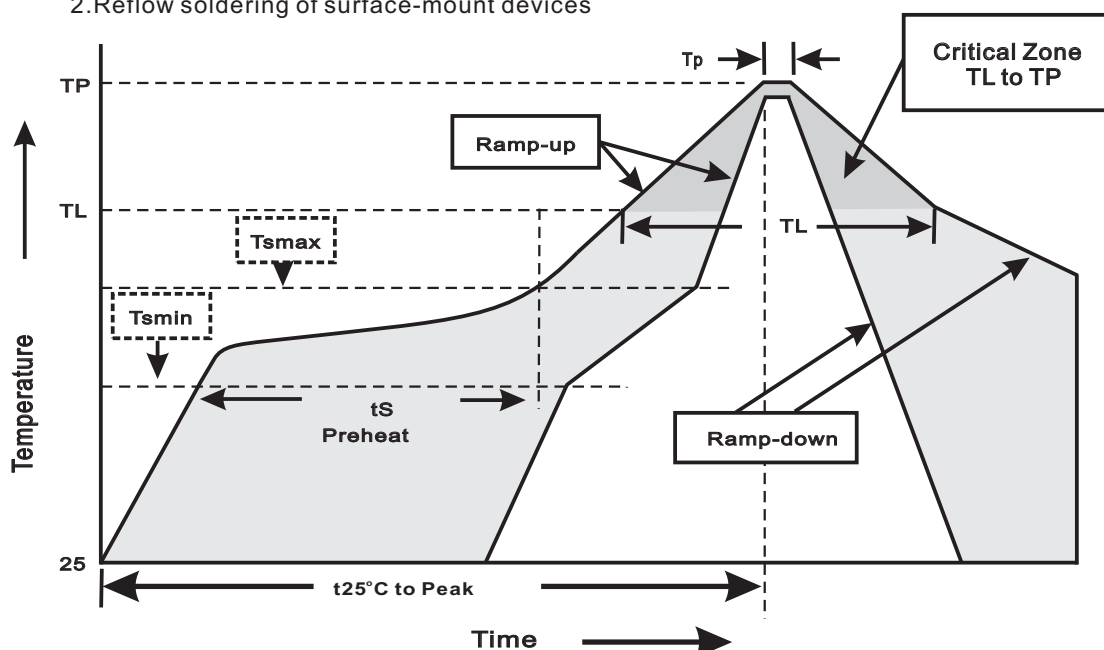
Note: Devices are packed in accordance with EIA standard RS-481-A and specifications listed above.

BAV23A-Q1/BAV23C-Q1/BAV23S-Q1**Reel packing**

PACKAGE	REEL SIZE	REEL (pcs)	COMPONENT SPACING (m/m)	BOX (pcs)	INNER BOX (m/m)	REEL DIA, (m/m)	CARTON SIZE (m/m)	CARTON (pcs)	APPROX. GROSS WEIGHT (kg)
SOT-23	7"	3,000	4.0	30,000	183*123*183	178	382*257*387	240,000	11.6

Suggested thermal profiles for soldering processes

- 1.Storage environment: Temperature=5°C~40°C Humidity=55%±25%
- 2.Reflow soldering of surface-mount devices

**3.Reflow soldering**

Profile Feature	Soldering Condition
Average ramp-up rate(T _L to T _P)	<3°C/sec
Preheat -Temperature Min(T _{smmin}) -Temperature Max(T _{smmax}) -Time(min to max)(t _s)	150°C 200°C 60~120sec
T _{smmax} to T _L -Ramp-upRate	<3°C/sec
Time maintained above: -Temperature(T _L) -Time(t _L)	217°C 60~260sec
Peak Temperature(T _P)	255°C-0/+5°C
Time within 5°C of actual Peak Temperature(t _P)	10~30sec
Ramp-down Rate	<6°C/sec
Time 25°C to Peak Temperature	<6minutes

BAV23A-Q1/BAV23C-Q1/BAV23S-Q1**High reliability test capabilities**

Item Test	Conditions	Reference
1. MSL Preconditioning	24hr bake@125°C+168hrs@85°C /85%RH+3xIR@260°C+1flux immersion+alcohol+DI H2O rinse	JESD22-A113
2. Operation Life	Ta=25°C, Rated Current (Io=Io max.)Test Duration:1000hrs	MIL-STD-750E METHOD 1027.3
3. High Temperature Reverse Bias	80% Rated VR (Tj=Tj max.)Test Duration:1000hrs	JESD22-A108
4. High Temperature Storage Life	Ta= 125°C Test Duration: 1000hrs	JESD22 A-103
5. Temperature Cycle	-55°C (15min) to 150°C (15min)Test Cycles: 1000cycles	JESD22 A-104
6. Autoclave	P=2atm Ta=121°C RH=100% Test Duration:96hrs	JESD22 A-102
7. Intermittent Operational Life	Ta=25°C, On/Io Max. 2min, Off/2min, Test Cycles:15000cycles	MIL-STD-750E METHOD 1037
8. Solderability	245±5°C for 5sec	J-STD-002
9. Moisture Resistance	Ta=85°C/85% Relative humidity Test Duration:1000hrs	MIL-STD-750E METHOD 1021.2
10. Resistance To Solder Heat	260±5°C for 10sec	JESD22 B-106
11. High Temperature High Humidity Reverse Bias	Ta=85°C, 85%RH, with device reverse biased at 80% of rated breakdown voltage up to a maximum of 100V or limit of chamber Test Duration:1000hrs	JESD22-A101