

BAV100 THRU BAV103

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BAV100 THRU BAV103

500mW Surface Mount Switching Diode-60-250V

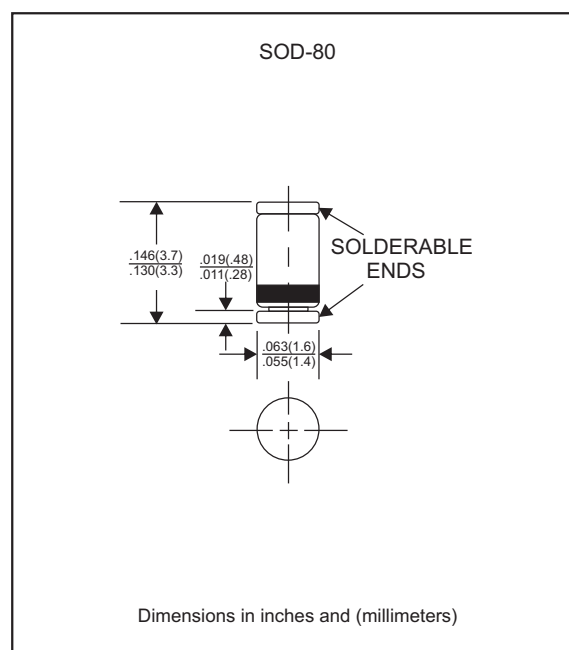
Features

- Fast speed switching.
- Silicon epitaxial planar chip structruction.
- Hermetically sealed glass.
- Small surface mounting type.
- Lead-free parts meet RoHS requirments.

Mechanical data

- Case : GLASS MINI-MELF / SOD-80
- Terminals : Solder plated, solderable per MIL-STD-750, Method 2026
- Polarity : Indicated by cathode band
- Mounting Position : Any
- Weight : Approximated 0.03 gram

Package outline



Maximum ratings and Electrical Characteristics (AT $T_A=25^{\circ}\text{C}$ unless otherwise noted)

PARAMETER	CONDITIONS	TYPE	Symbol	Min.	Typ.	Max.	UNIT
Repetitive peak reverse voltage		BAV100 BAV101 BAV102 BAV103	V_{RRM}			60 120 200 250	V
Reverse voltage		BAV100 BAV101 BAV102 BAV103	V_R			50 100 150 200	V
Peak forward surge current	$t_p = 1 \text{ s}$		I_{FSM}			1000	mA
Forward DC current			I_F			250	mA
Average forward current			I_{FAV}			200	mA
Power dissipation			P_V			500	mW
Junction temperature			T_J	-55		+150	$^{\circ}\text{C}$
Storage temperature			T_{STG}	-65		+150	$^{\circ}\text{C}$
Repetitive peak forward current			I_{FRM}			625	mA
Forward voltage	$I_F = 100 \text{ mA}$		V_F			1.00	V
Reverse current	$V_R = 50 \text{ V}$ $V_R = 50 \text{ V}, T_J = 100^{\circ}\text{C}$ $V_R = 100 \text{ V}$ $V_R = 100 \text{ V}, T_J = 100^{\circ}\text{C}$ $V_R = 150 \text{ V}$ $V_R = 150 \text{ V}, T_J = 100^{\circ}\text{C}$ $V_R = 200 \text{ V}$ $V_R = 200 \text{ V}, T_J = 100^{\circ}\text{C}$	BAV100 BAV100 BAV101 BAV101 BAV102 BAV102 BAV103 BAV103	I_R			100 15 100 15 100 15 100 15	nA μA nA μA nA μA nA μA
Diode capacitance	$V_R = 0 \text{ V}, f = 1 \text{ MHz}$		C_D		1.5		pF
Reverse recovery time	$I_F = 30 \text{ mA}, I_{RR} = 3 \text{ mA}, R_L = 100 \Omega$		t_{rr}			50	ns
Dynamic forward resistance	$I_F = 10 \text{ mA}$		r_f		5		Ω
Junction ambient	on PC board 50mm*50mm*1.6mm		R_{thJA}			500	K/W

Rating and characteristic curves (BAV100 THRU BAV103)

FIG.1-MAXIMUM PERMISSIBLE CONTINUOUS
FORWARD CURRENT VS. AMBIENT TEMPERATURE

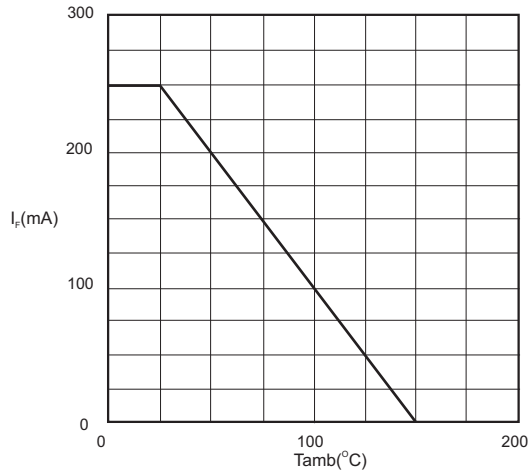


FIG.2 - FORWARD CURRENT VS. FORWARD VOLTAGE

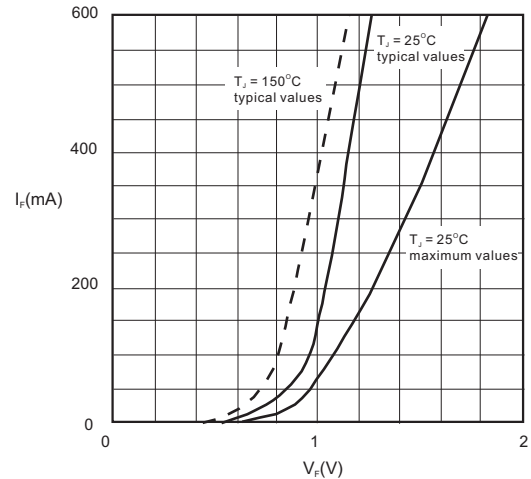


FIG.3 - REVERSE CURRENT VS.
JUNCTION TEMPERATURE

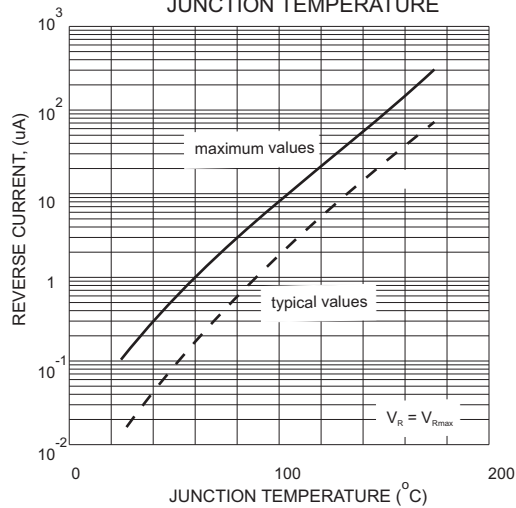


FIG.4 - DIODE CAPACITANCE VS. REVERSE VOLTAGE
(TYPICAL VALUES)

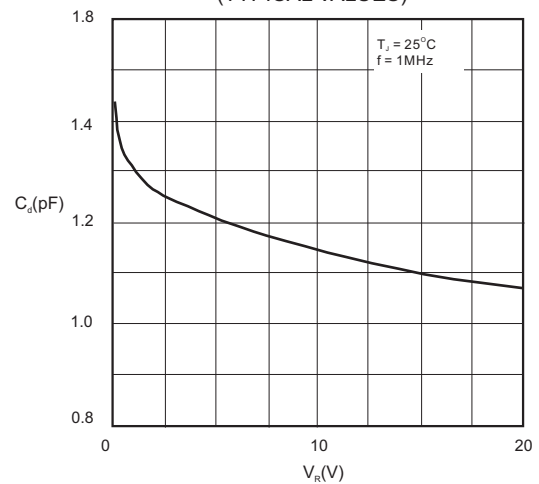
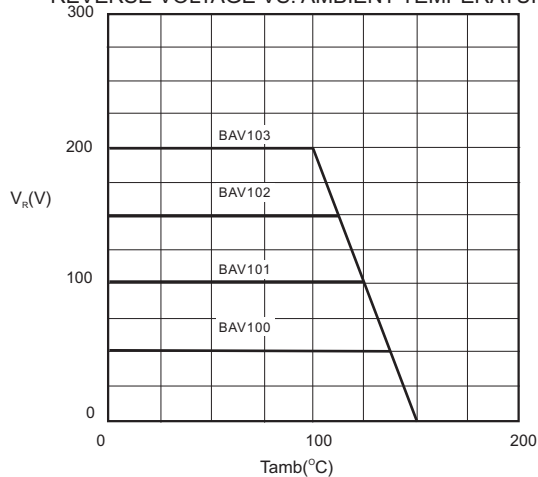
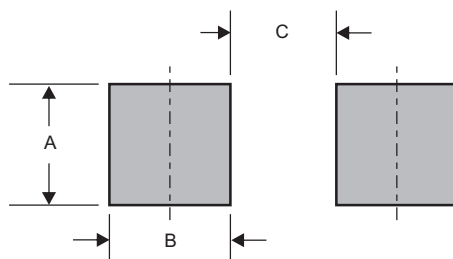


FIG.5 - MAXIMUM PERMISSIBLE CONTINUOUS
REVERSE VOLTAGE VS. AMBIENT TEMPERATURE



BAV100 THRU BAV103**Pinning information**

Pin	Simplified outline	Symbol
Pin1 cathode Pin2 anode		

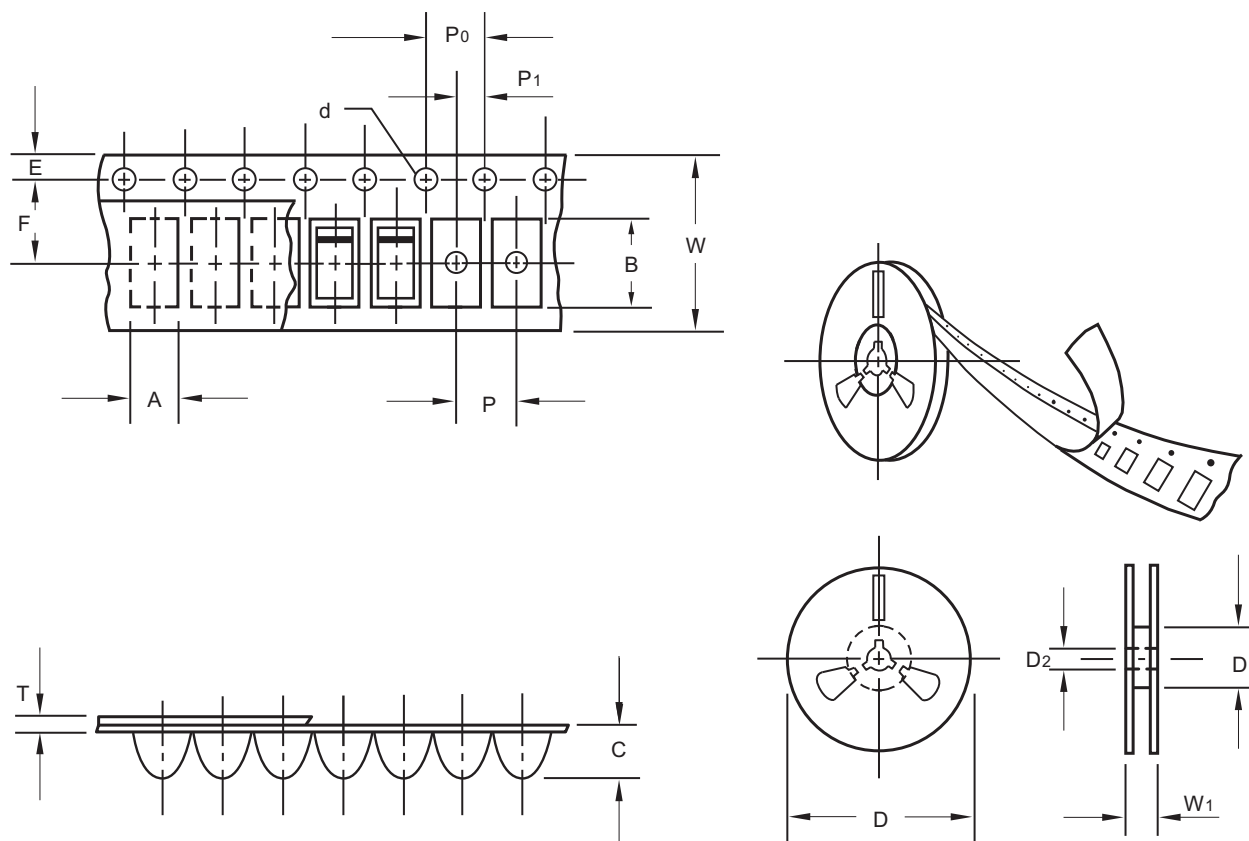
Suggested solder pad layout

Dimensions in inches and (millimeters)

PACKAGE	A	B	C
SOD-80	0.071(1.80)	0.035(0.90)	0.102(2.60)

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Packing information



unit:mm

Item	Symbol	Tolerance	SOD-80
Carrier width	A	0.1	2.00
Carrier length	B	0.1	3.70
Carrier depth	C	0.1	1.80
Sprocket hole	d	0.1	1.50
7" Reel outside diameter	D	2.0	178.00
7" Reel inner diameter	D ₁	min	50.00
Feed hole diameter	D ₂	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	P ₀	0.1	4.00
Embossment center	P ₁	0.1	2.00
Overall tape thickness	T	0.1	0.23
Tape width	W	0.3	8.00
Reel width	W ₁	1.0	11.40

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

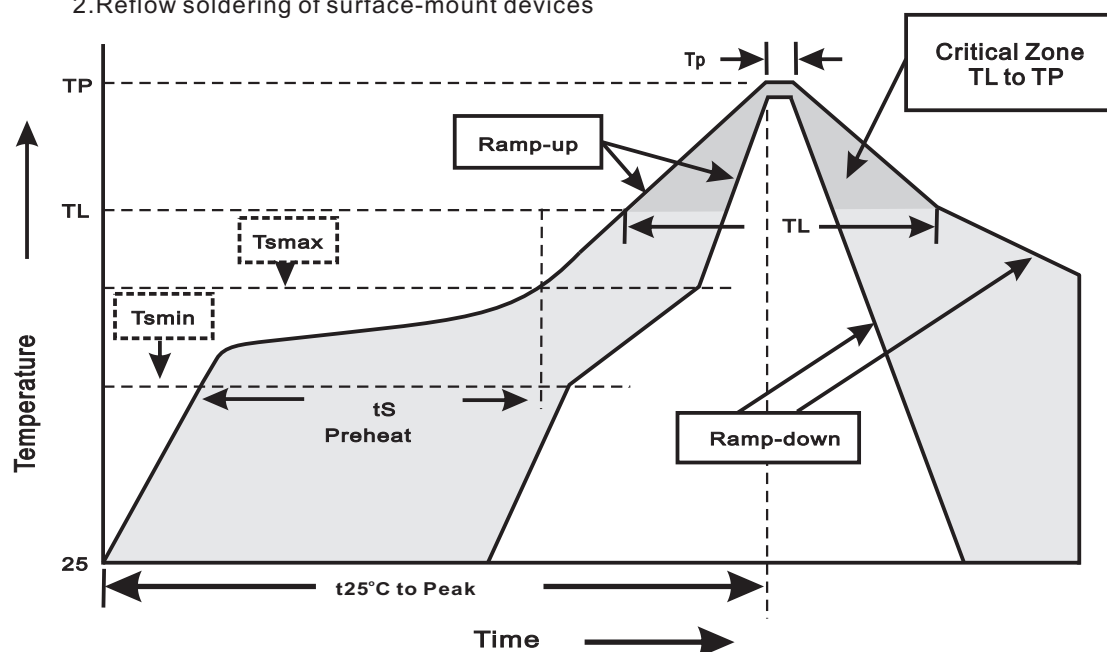
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Reel packing

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)
SOD-80	7"	2500	4.0	25,000	183*183*123	178	382*262*387	200,000	9.6

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)	$< 3^\circ\text{C/sec}$
Preheat -Temperature Min(T_{smin}) -Temperature Max(T_{smax}) -Time(min to max)(t_s)	150°C 200°C 60~120sec
T_{smax} to T_L -Ramp-upRate	$< 3^\circ\text{C/sec}$
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	$< 6^\circ\text{C/sec}$
Time 25°C to Peak Temperature	< 6 minutes

BAV100 THRU BAV103**High reliability test capabilities**

Item Test	Conditions	Reference
1. Solder Resistance	at $260 \pm 5^\circ\text{C}$ for $10 \pm 2\text{sec.}$ immerse body into solder $1/16" \pm 1/32"$	MIL-STD-750D METHOD-2031
2. Solderability	at $245 \pm 5^\circ\text{C}$ for 5 sec.	MIL-STD-202F METHOD-208
3. High Temperature Reverse Bias	$V_R = 80\%$ rate at $T_J = 150^\circ\text{C}$ for 168 hrs.	MIL-STD-750D METHOD-1038
4. Forward Operation Life	Rated average rectifier current at $T_A = 25^\circ\text{C}$ for 500hrs.	MIL-STD-750D METHOD-1027
5. Intermittent Operation Life	$T_A = 25^\circ\text{C}$, $I_F = I_O$ On state: power on for 5 min. off state: power off for 5 min. on and off for 500 cycles.	MIL-STD-750D METHOD-1036
6. Pressure Cooker	$15P_{SIG}$ at $T_A = 121^\circ\text{C}$ for 4 hrs.	JESD22-A102
7. Temperature Cycling	-55°C to $+125^\circ\text{C}$ dwelled for 30 min. and transferred for 5min. total 10 cycles.	MIL-STD-750D METHOD-1051
8. Thermal Shock	0°C for 5 min. rise to 100°C for 5 min. total 10 cycles.	MIL-STD-750D METHOD-1056
9. Forward Surge	Peak forward surge current $t_p = 1\text{ s}$	MIL-STD-750D METHOD-4066-2
10. Humidity	at $T_A = 85^\circ\text{C}$, RH=85% for 1000hrs.	MIL-STD-750D METHOD-1021
11. High Temperature Storage Life	at 175°C for 1000 hrs.	MIL-STD-750D METHOD-1031