

SD103AW / BW / CW**List**

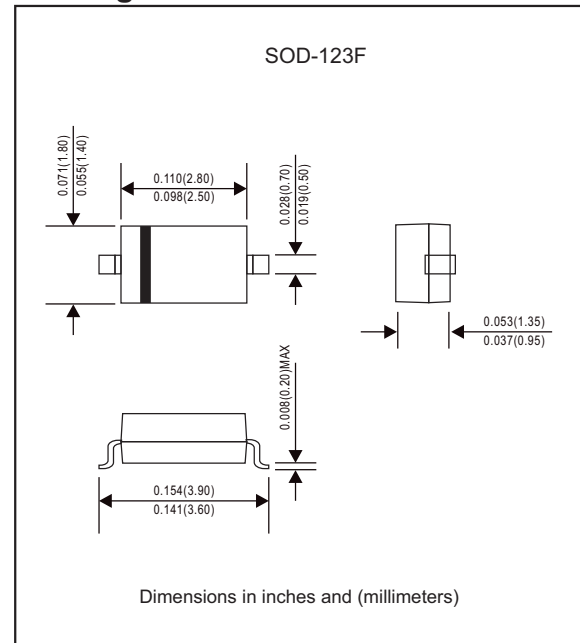
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SD103AW / BW / CW**350mA Surface Mount Small Signal Schottky Diode 20V-40V****Features**

- Low current rectification and high speed switching
- Extremely small surface mount type
- Low forward voltage drop
- Silicon epitaxial planar chip, metal silicon junction
- Lead-free parts meet RoHS requirements
- Suffix "-H" indicates Halogen-free part, ex. SD103AW-H

Mechanical data

- Epoxy : UL94-V0 rated flame retardant
- Case : Molded plastic, SOD-123F
- Terminals : Plated terminals, solderable per MIL-STD-750, Method 2026
- Polarity : Indicated by cathode band
- Mounting Position : Any
- Weight : Approximated 0.010 gram

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

Parameter	Conditions	Symbol	SD103AW	SD103BW	SD103CW	Unit
Peak repetitive reverse voltage		V_{RRM}	40	30	20	V
Working peak reverse voltage		V_{RWM}				
DC blocking voltage		V_R				
RMS reverse voltage		$V_{R(RMS)}$	28	21	14	V
Average rectified output current		$I_F(AV)$	350			mA
Non-repetitive peak forward surge current	@ $t < 1.0s$	I_{FSM}	1.5			A
Total device dissipation		P_D	400			mW
Thermal resistance junction to ambient	junction to ambient	$R_{\theta JA}$	300			$^{\circ}\text{C/W}$
Operating temperature		T_J	-55 to +125			$^{\circ}\text{C}$
Storage temperature		T_{STG}	-55 to +125			$^{\circ}\text{C}$

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

Parameter	Conditions	Symbol	MIN.	TYP.	MAX.	Unit
Reverse breakdown voltage	$I_R=100\mu\text{A}$, SD103AW $I_R=100\mu\text{A}$, SD103BW $I_R=100\mu\text{A}$, SD103CW	$V_{(BR)R}$	40 30 20			V
Forward voltage	$I_F=20\text{mA}$ $I_F=200\text{mA}$	V_F			0.37 0.60	V
Reverse current	$V_R=30\text{V}$, SD103AW $V_R=20\text{V}$, SD103BW $V_R=10\text{V}$, SD103CW	I_R			5.0	μA
Typical junction capacitance	$V_R=0\text{V}$, $f=1.0\text{MHz}$	C_J		50		pF
Reverse recover time	$I_F=I_R=200\text{mA}$, $I_{rr}=0.1 \times I_R$, $R_L=100\Omega$	t_{rr}		10		ns

Rating and characteristic curves (SD103AW / BW / CW)

Fig. 1 POWER DERATING CURVE

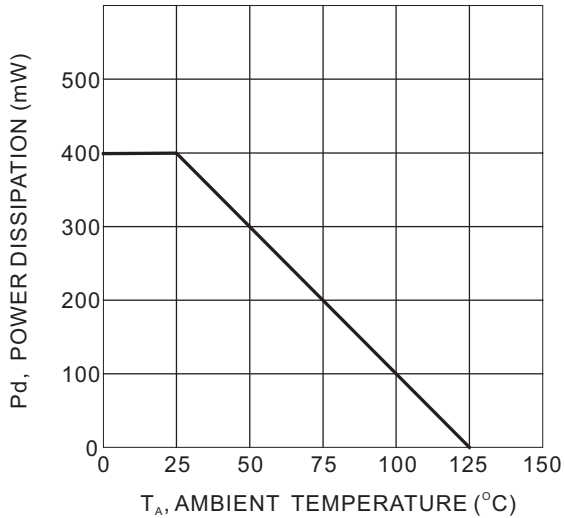


Fig. 2 TYPICAL FORWARD CHARACTERISTIC

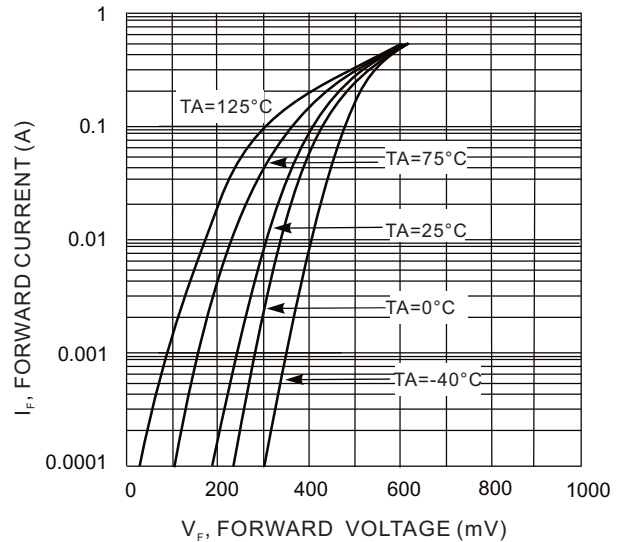


Fig. 3 TYPICAL JUNCTION CAPACITANCE VS REVERSE VOLTAGE

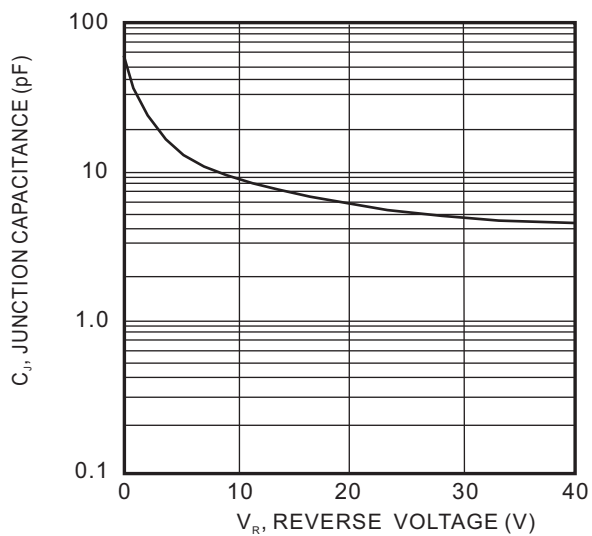
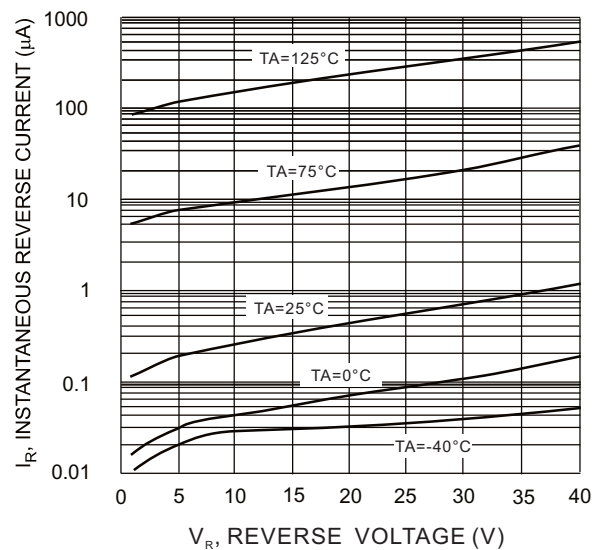


Fig. 4 TYPICAL REVERSE CHARACTERISTICS



SD103AW / BW / CW**Pinning information**

Pin	Simplified outline	Symbol
Pin1 cathode Pin2 anode		

Marking

Type number	Marking code
SD103AW	S4
SD103BW	S5
SD103CW	S6

Suggested solder pad layout

Dimensions in inches and (millimeters)

PACKAGE	A	B	C
SOD-123F	0.048 (1.22)	0.036 (0.91)	0.093 (2.36)

SD103AW / BW / CW**Packing information**

unit:mm

Item	Symbol	Tolerance	SOD-123F
Carrier width	A	0.1	2.00
Carrier length	B	0.1	3.85
Carrier depth	C	0.1	1.10
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	62.00
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	11.40

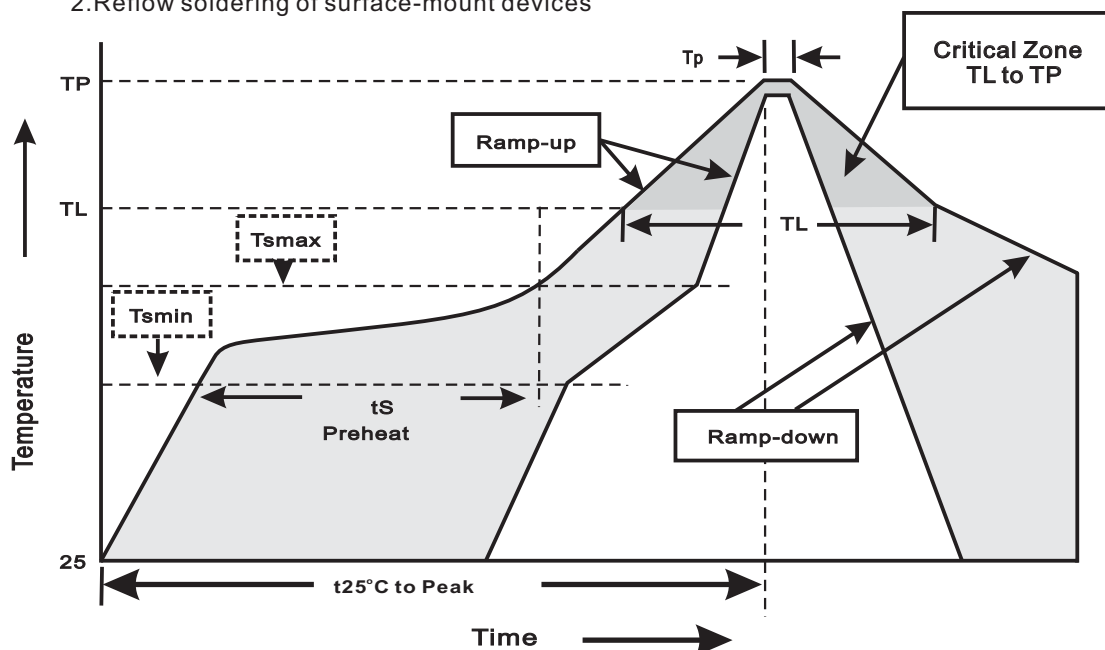
Note: Devices are packed in accordance with EIA standard RS-481-A and specifications listed above.

SD103AW / BW / CW**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-123F	7"	3,000	4.0	30,000	183*123*183	178	382*257*387	240,000	9.5

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

SD103AW / BW / CW**High reliability test capabilities**

Item Test	Conditions	Reference
1. Solder Resistance	at $260 \pm 5^{\circ}\text{C}$ for $10 \pm 2\text{sec.}$	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 $T_J = 125^{\circ}\text{C}$ 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 Forward Surge	Non-repetitive peak forward surge current @ $t < 1.0\text{s}$	MIL-STD-750D METHOD-4066-2
9. Humidity	at $T_A = 85^{\circ}\text{C}$, RH=85% for 1000hrs.	MIL-STD-750D METHOD-1021
10. High Temperature Storage Life	at 175°C for 1000 hrs.	MIL-STD-750D METHOD-1031