

SD103AWS-Q1 / SD103BWS-Q1 / SD103CWS-Q1

List

List.....	1
Package outline.....	2
Features.....	2
Mechanical data.....	2
Maximum ratings and Electrical characteristics	2
Rating and characteristic curves.....	3
Pinning information.....	4
Marking.....	4
Suggested solder pad layout.....	4
Packing information.....	5
Reel packing.....	6
Suggested thermal profiles for soldering processes.....	6
High reliability test capabilities.....	7

SD103AWS-Q1 / SD103BWS-Q1 / SD103CWS-Q1

350mA Surface Mount Small Signal
Schottky Diode-20V-40V

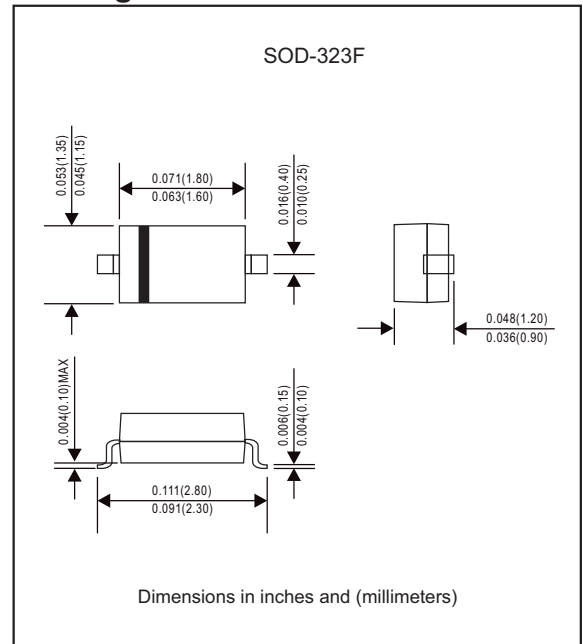
Features

- Extremely small surface mount type
- Low forward voltage drop
- Lead-free parts meet RoHS requirements
- Qualified to AEC-Q101 standards for high reliability
- Suffix "-H" indicates Halogen-free part, ex. SD103AWS-Q1-H

Mechanical data

- Epoxy: UL94-V0 rated flame retardant
- Case : Molded plastic, SOD-323F
- Terminals : Solder plated, solderable per
MIL-STD-750, Method 2026
- Polarity : Indicated by cathode band
- Mounting Position : Any
- Weight : Approximated 0.005 gram

Package Outline

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

PARAMETER	Symbol	Value	UNIT
Non-repetitive peak reverse voltage	SD103AWS-Q1 SD103BWS-Q1 SD103CWS-Q1	40 30 20	V
Reverse voltage	SD103AWS-Q1 SD103BWS-Q1 SD103CWS-Q1	40 30 20	V
Average rectified forward current	$I_F(AV)$	350	mA
Non-repetitive peak forward surge current at $t=1s$	I_{FSM}	2.0	A
Power dissipation (note 1)	P_D	200	mW
Thermal resistance junction to ambient (note 1)	$R_{\theta JA}$	625	$^{\circ}\text{C/W}$
Operating junction temperature range	T_J	-65 to +125	$^{\circ}\text{C}$
Storage temperature range	T_{STG}	-65 to +125	$^{\circ}\text{C}$

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

PARAMETER	CONDITION	Symbol	Min.	Typ.	MAX.	UNIT
Reverse breakdown voltage	$I_R=10\mu\text{A}$ SD103AWS-Q1 SD103BWS-Q1 SD103CWS-Q1	$V_{(BR)R}$	40 30 20			V
Forward voltage	$I_F=20\text{ mA}$ $I_F=200\text{ mA}$	V_F			0.37 0.60	V
Reverse leakage current	$V_R=30\text{V}$ $V_R=20\text{V}$ $V_R=10\text{V}$ SD103AWS-Q1 SD103BWS-Q1 SD103CWS-Q1	I_R			5 5 5	μA
Total capacitance	$V_R=0, f=1\text{MHz}$	C_T		50		pF
Reverse recovery time	$I_F=I_R=200\text{mA}$ $I_{RR}=0.1 \times I_R, R_L=100\Omega$	t_{rr}		10		ns

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

Rating and characteristic curves (SD103AWS-Q1 / SD103BWS-Q1 / SD103CWS-Q1)

Fig. 1 POWER DERATING CURVE

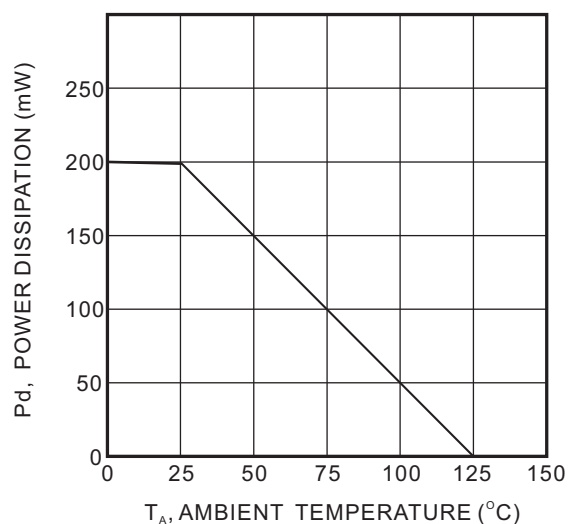


Fig. 2 TYPICAL FORWARD CHARACTERISTIC

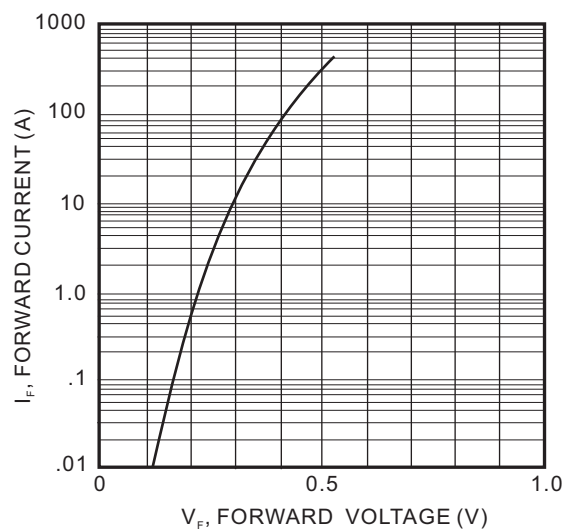
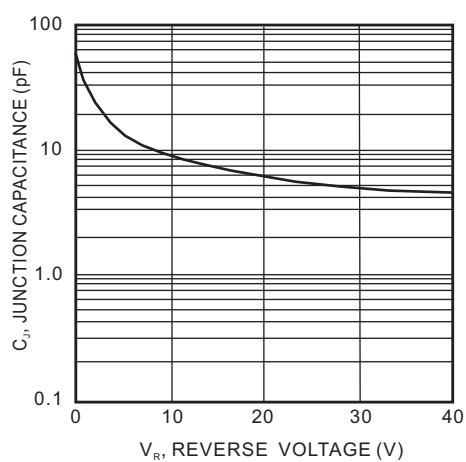


Fig. 3 TYPICAL JUNCTION CAPACITANCE VS REVERSE VOLTAGE

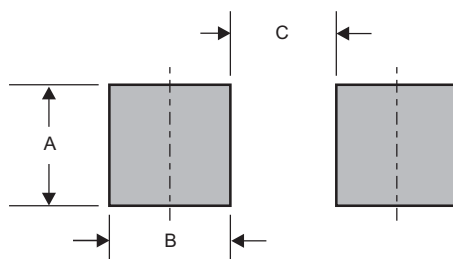


SD103AWS-Q1 / SD103BWS-Q1 / SD103CWS-Q1**Pinning information**

Pin	Simplified outline	Symbol
Pin1 cathode Pin2 anode		

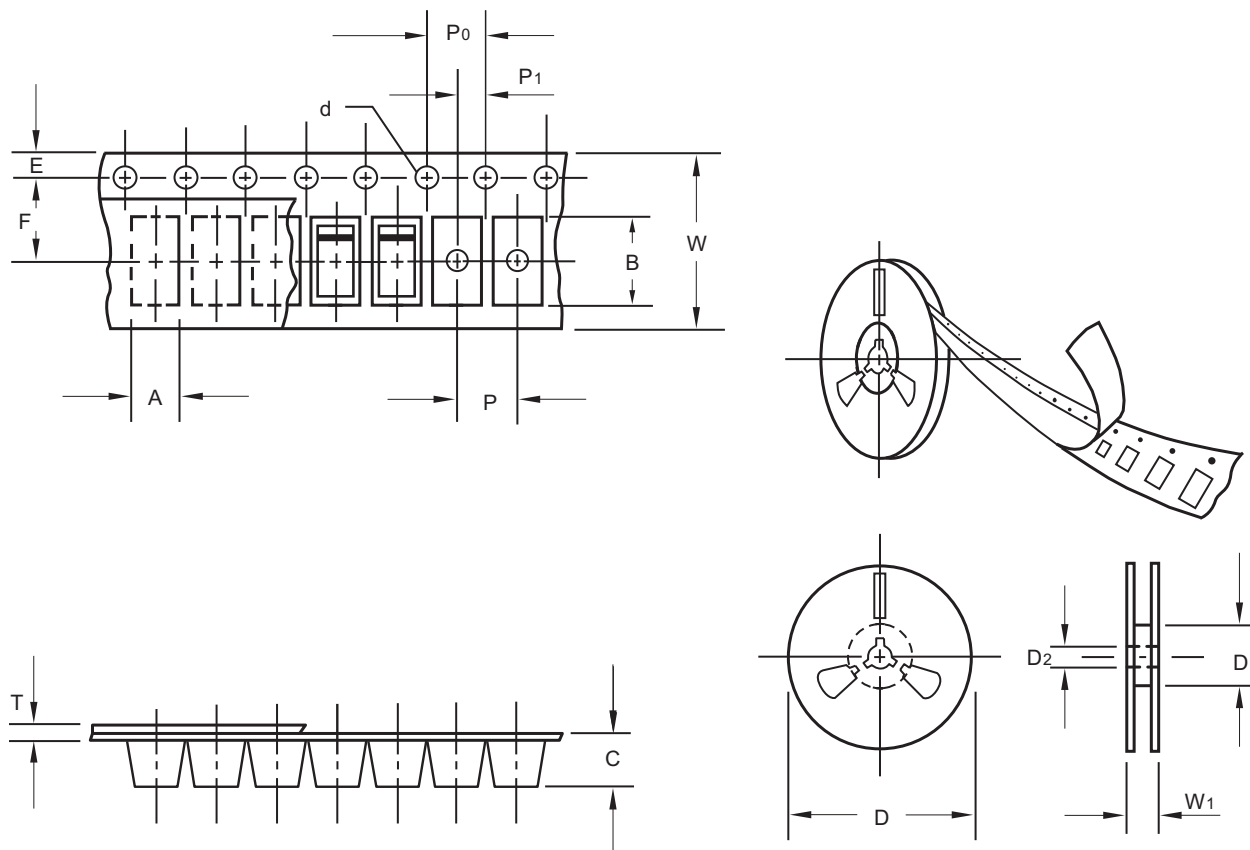
Marking

Type number	Marking code
SD103AWS-Q1	S4
SD103BWS-Q1	S4
SD103CWS-Q1	S4

Suggested solder pad layout

Dimensions in inches and (millimeters)

PACKAGE	A	B	C
SOD-323F	0.033 (0.83)	0.028 (0.70)	0.057 (1.45)

SD103AWS-Q1 / SD103BWS-Q1 / SD103CWS-Q1**Packing information**

unit:mm

Item	Symbol	Tolerance	SOD-323F
Carrier width	A	0.05	1.40
Carrier length	B	0.05	2.90
Carrier depth	C	0.05	1.25
Sprocket hole	d	0.05	1.55
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	0.02	0.20
Tape width	W	0.1	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.

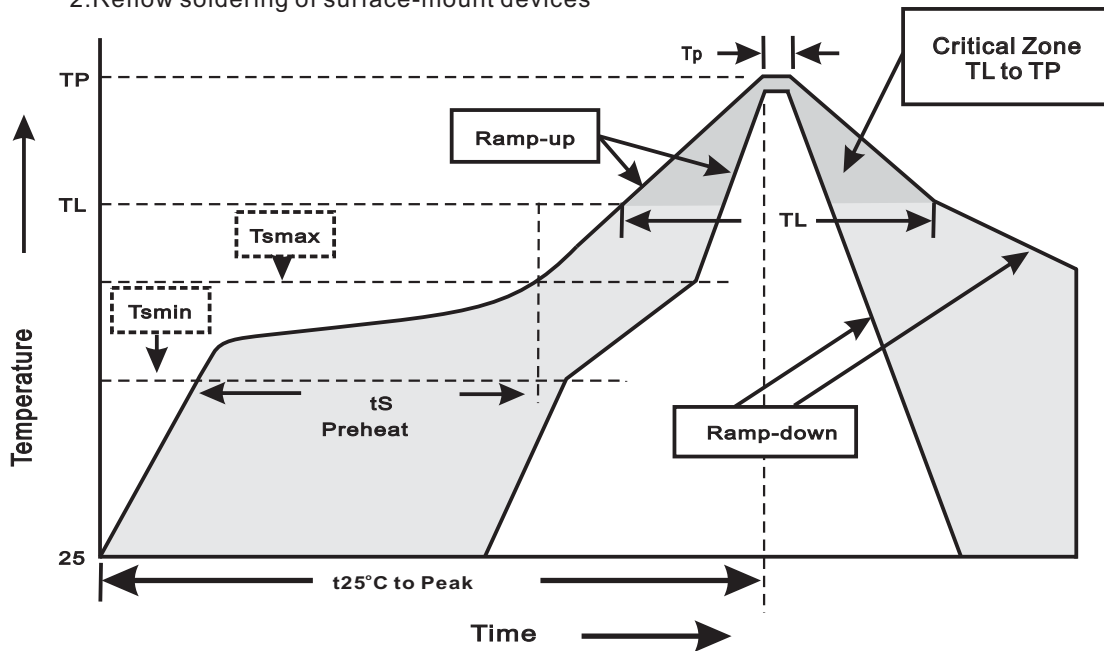
SD103AWS-Q1 / SD103BWS-Q1 / SD103CWS-Q1

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)
SOD-323F	7"	3,000	4.0	30,000	183*123*183	178	382*257*387	240,000	8.0

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_{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°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

SD103AWS-Q1 / SD103BWS-Q1 / SD103CWS-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=125°C)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