

B0520WS-Q1/B0530WS-Q1/B0540WS-Q1**List**

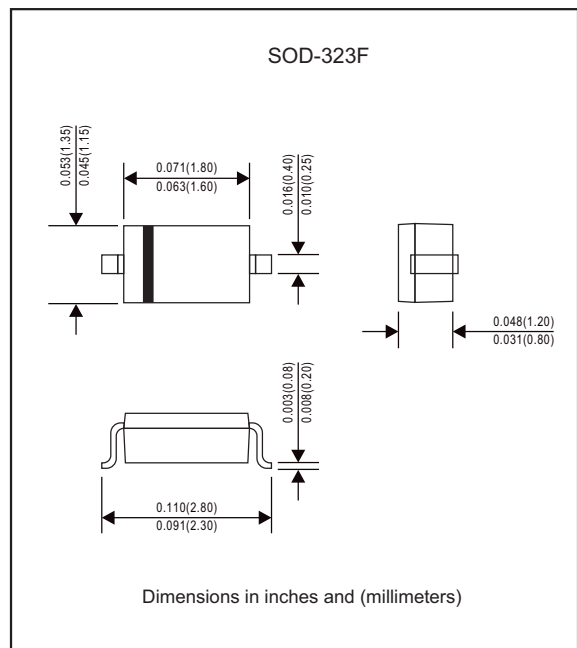
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B0520WS-Q1/B0530WS-Q1/B0540WS-Q1**0.5A Surface Mount Schottky
Barrier Rectifiers 20-40V****Features**

- Surface mounting type
- Low forward voltage
- Guard ring construction for transient protection
- High conductance
- Lead-free parts meet RoHS requirements.
- Qualified to AEC-Q101 standards for high reliability
- Suffix "-H" indicates Halogen-free parts, ex. B0520WS-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)

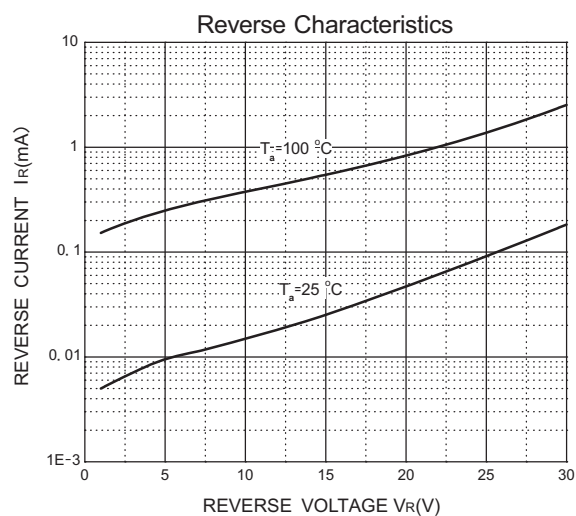
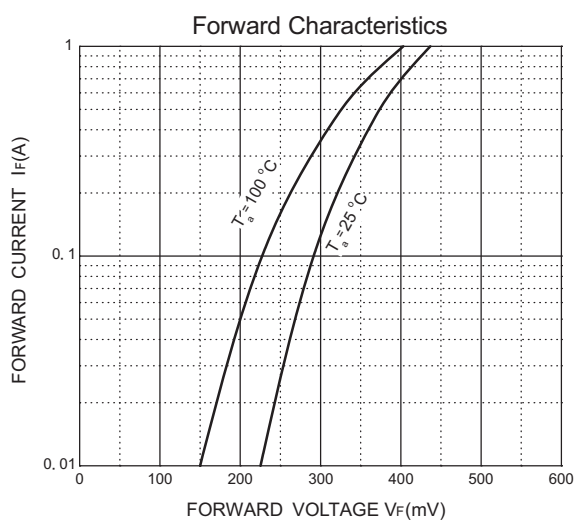
PARAMETER	SYMBOLS	B0520WS-Q1	B0530WS-Q1	B0540WS-Q1	UNIT
Maximum peak repetitive peak reverse voltage	V_{RRM}				
Maximum working peak reverse voltage	V_{RWM}	20	30	40	Volts
Maximum DC blocking voltage	V_R				
Maximum RMS voltage	V_{RMS}	14	21	28	Volts
Maximum average rectified output current	I_O	0.5			Amps
Non-repetitive peak forward surge current @ $t=8.3\text{ms}$	I_{FSM}	5.5			Amps
Power dissipation	P_D	200			mW
Typical thermal resistance junction to ambient	$R_{\theta JA}$	500			$^{\circ}\text{C/W}$
Operating junction temperature range	T_J	-55 to $+125$			$^{\circ}\text{C}$
Storage temperature range	T_{STG}	-55 to $+150$			$^{\circ}\text{C}$

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

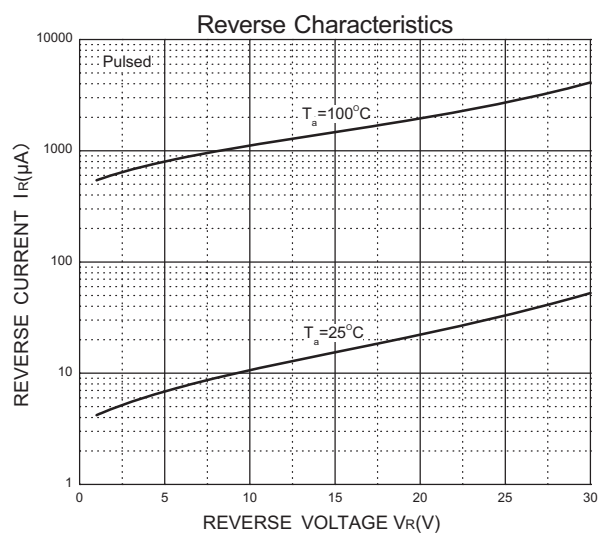
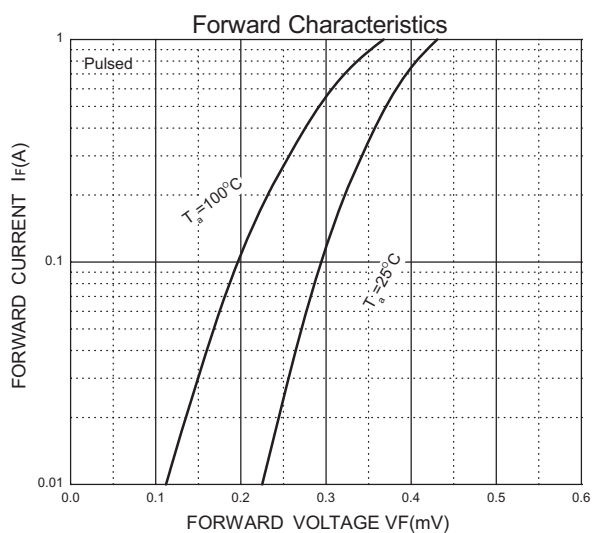
PARAMETER	SYMBOLS	MIN.	TYP.	MAX.	UNIT
Reverse breakdown voltage	$V_{(BR)R}$	20 30 40			V
Forward voltage	V_F			0.330 0.360 0.390 0.450 0.510 0.620	V
Reverse leakage current	I_R			75 80 250 100 10 500 20	μA
Capacitance between terminals $V_R=0, f=1\text{MHz}$	C_T		170 170 -	- - 170	pF

Rating and characteristic curves

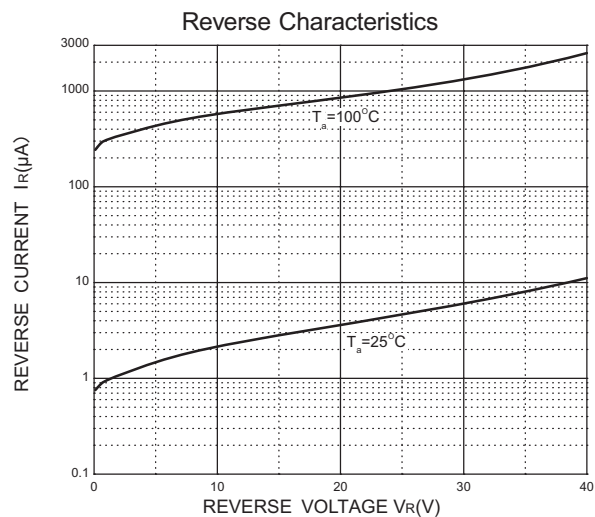
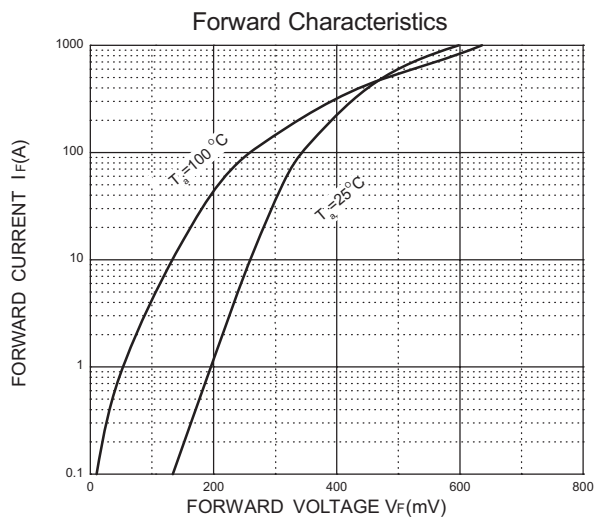
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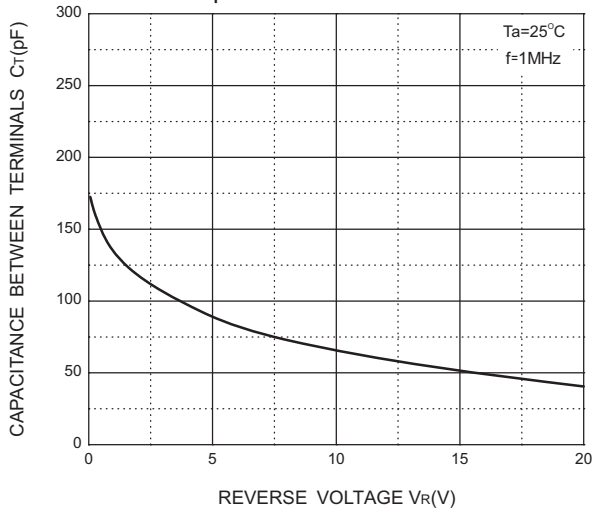
B0540WS-Q1



Rating and characteristic curves

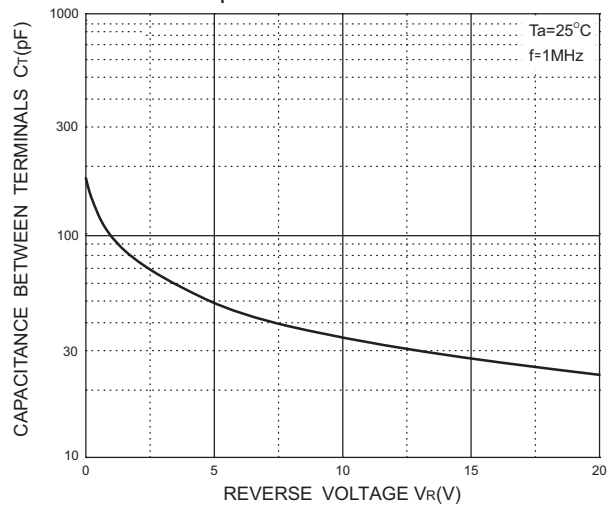
B0520WS-Q1

Capacitance Characteristics



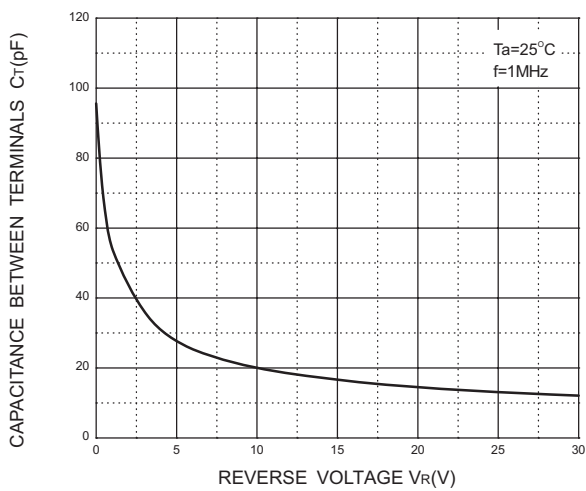
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Capacitance Characteristics

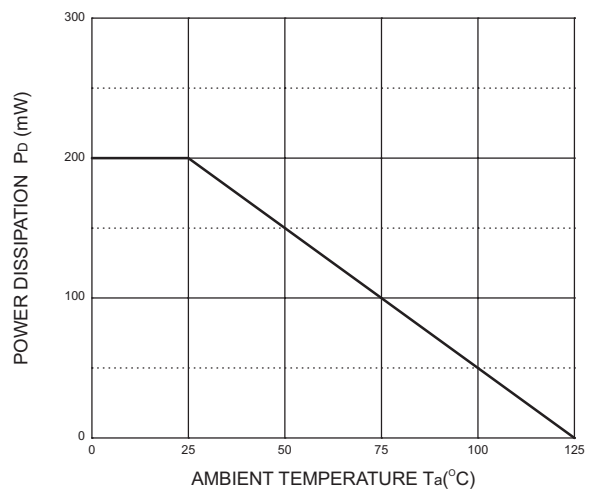


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Capacitance Characteristics



Power Derating Curve

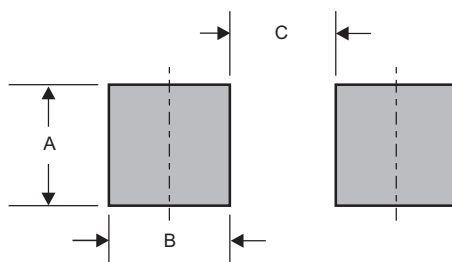


B0520WS-Q1/B0530WS-Q1/B0540WS-Q1**Pinning information**

Pin	Simplified outline	Symbol
Pin1 cathode Pin2 anode		

Marking

Type number	Marking code
B0520WS-Q1	SD
B0530WS-Q1	SE
B0540WS-Q1	SF

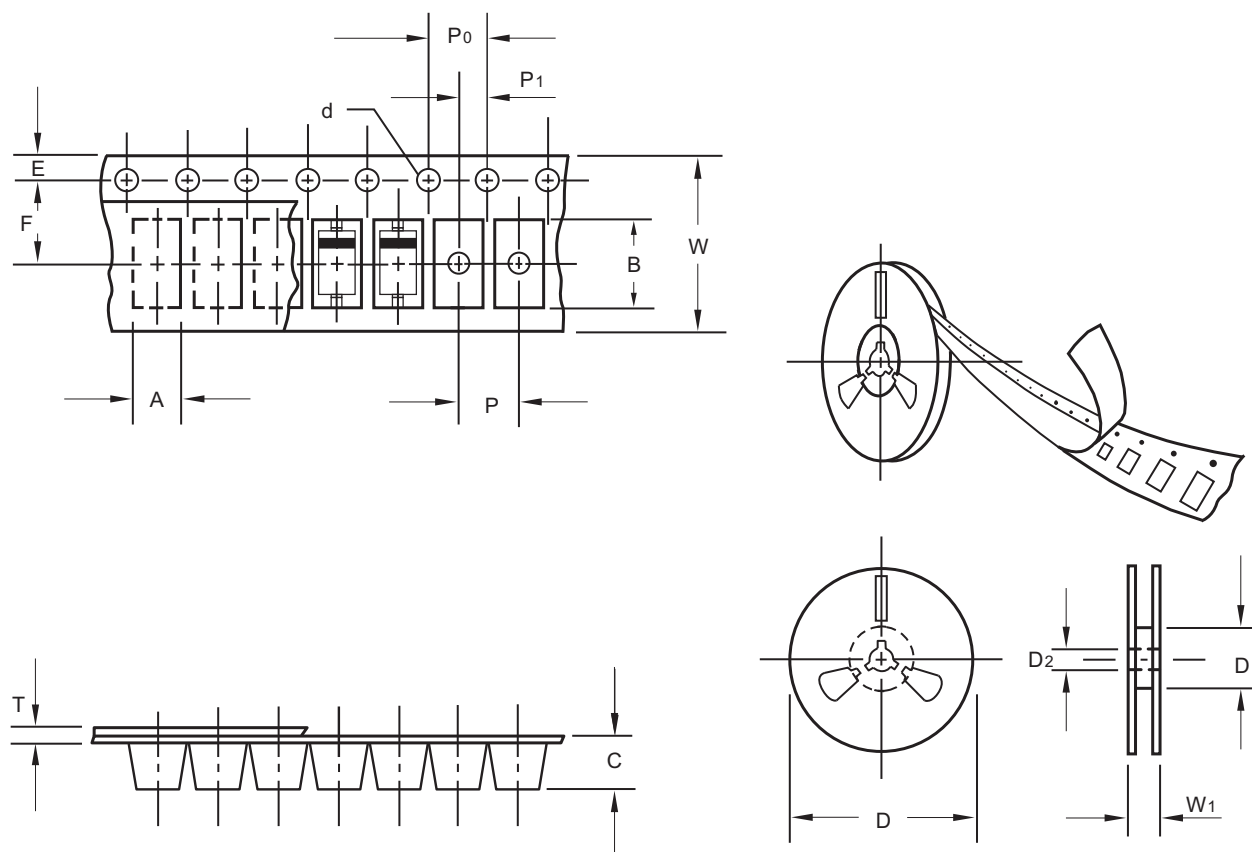
Suggested solder pad layout

Dimensions in inches and (millimeters)

PACKAGE	A	B	C
SOD-323F	0.033 (0.83)	0.025 (0.63)	0.063 (1.60)

B0520WS-Q1/B0530WS-Q1/B0540WS-Q1

Packing information



unit:mm

Item	Symbol	Tolerance	SOD-323F
Carrier width	A	0.1	1.48
Carrier length	B	0.1	3.30
Carrier depth	C	0.1	1.25
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	12.30

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

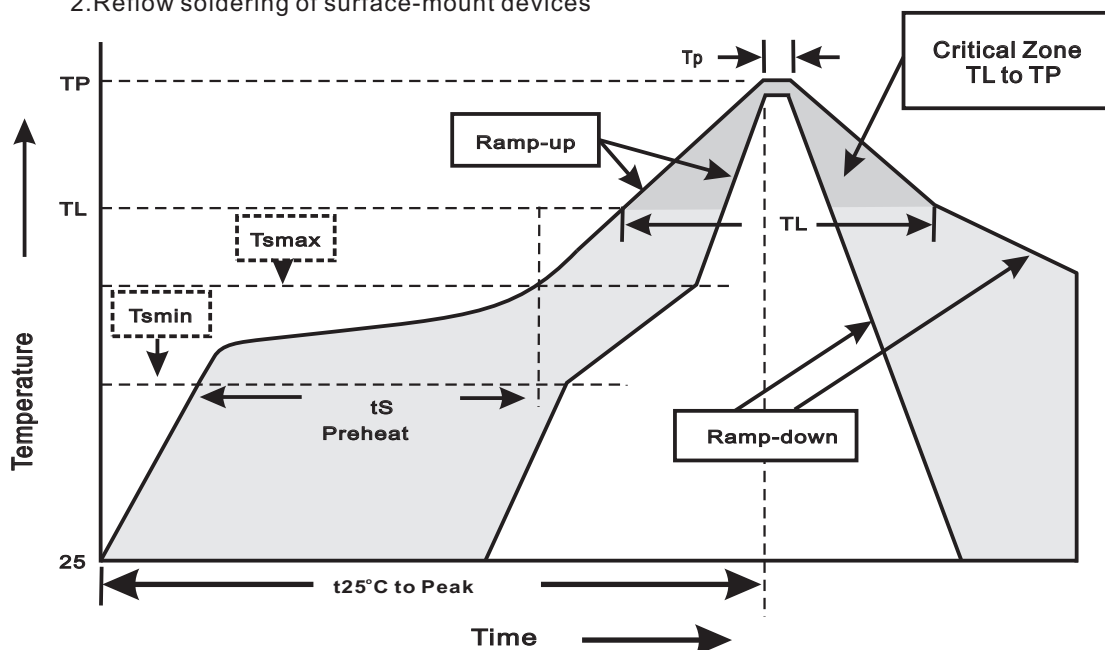
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Reel packing

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-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 _{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

B0520WS-Q1/B0530WS-Q1/B0540WS-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