B0520LW / B0530W / B0540W

List

B0520LW / B0530W / B0540W

0.5A Surface Mount Schottky Barrier Rectifiers- 20-40V

Features

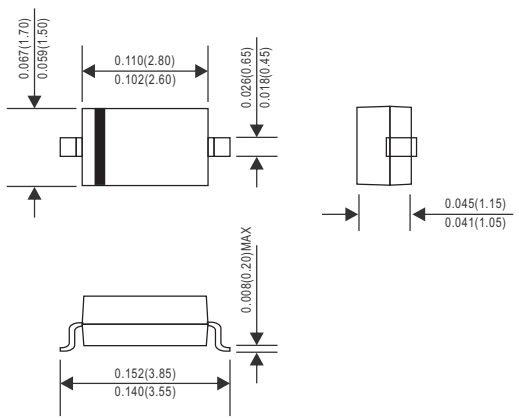
- Small surface mounting type
- Low forward voltage
- Guard ring construction for transient protection
- High conductance
- Lead-free parts meet RoHS requirments
- Suffix "-H" indicates Halogen-free parts, ex. B0520LW-H

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

SOD-123F



Dimensions in inches and (millimeters)

Maximum ratings (AT T_A=25°C unless otherwise noted)

PARAMETER	SYMBOLS	B0520LW	B0530W	B0540W	UNIT
Maximum peak repetitive peak reverse voltage Maximum working peak reverse voltage Maximum DC blocking voltage	V_{RRM} V_{RWM} V_R	20	30	40	Volts
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=8.3ms	I_{FSM}	5.5			Amps
Power dissipation	P_D	500			mW
Typical thermal resistance junction to ambient	$R_{\theta JA}$	250			°C/W
Operating junction temperature range	T_J	-55 to +125			°C
Storage temperature range	T_{STG}	-55 to +150			°C

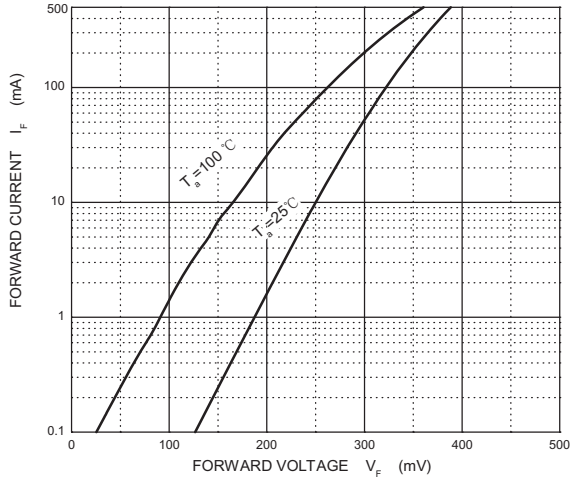
Electrical characteristics (AT T_A=25°C unless otherwise noted)

PARAMETER		SYMBOLS	MIN.	TYP.	MAX.	UNIT
Reverse breakdown voltage	B0520LW I_R=250μA B0530W I_R=200μA B0540W I_R=20μA	$V_{(BR)R}$	20 30 40			V
Forward voltage	B0520LW I_F=0.1A B0530W I_F=0.1A B0520LW I_F=0.5A B0530W I_F=0.5A B0540W I_F=0.5A B0540W I_F=1.0A	V_F			0.330 0.375 0.390 0.430 0.510 0.620	V
Reverse leakage current	B0520LW V_R=10V B0530W V_R=15V B0520LW V_R=20V B0540W V_R=20V B0530W V_R=30V B0540W V_R=40V	I_R			75 20 250 10 130 20	μA
Capacitance between terminals	B0520LW V_R=1,f=1MHz B0530W V_R=1,f=1MHz B0540W V_R=0,f=1MHz	C_T		170 170	 170	pF

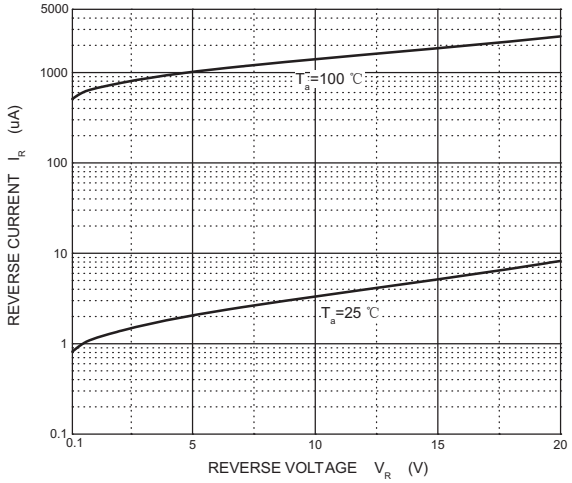
Rating and characteristic curves

B0520LW

Forward Characteristics

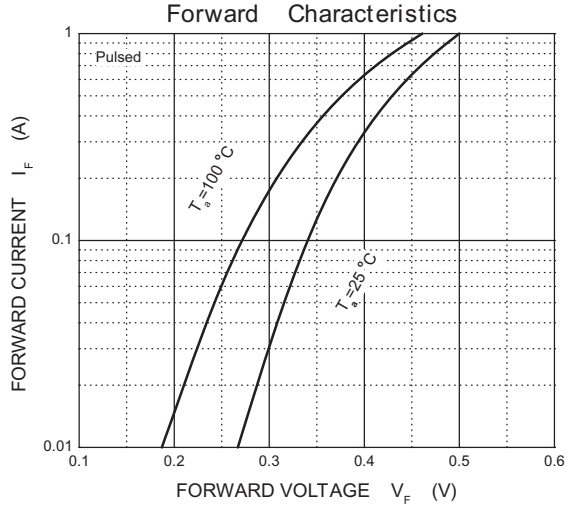


Reverse Characteristics

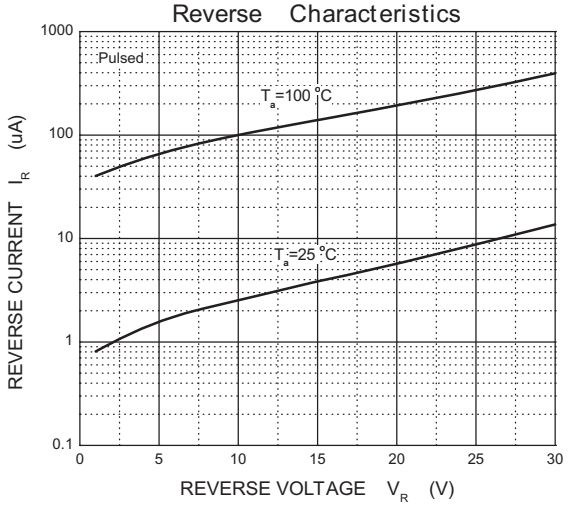


B0530W

Forward Characteristics

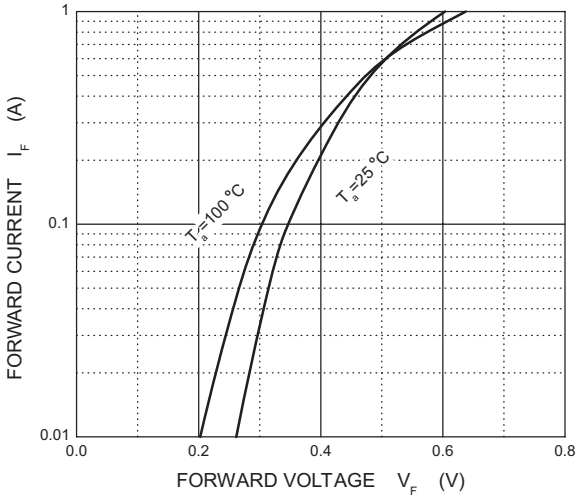


Reverse Characteristics

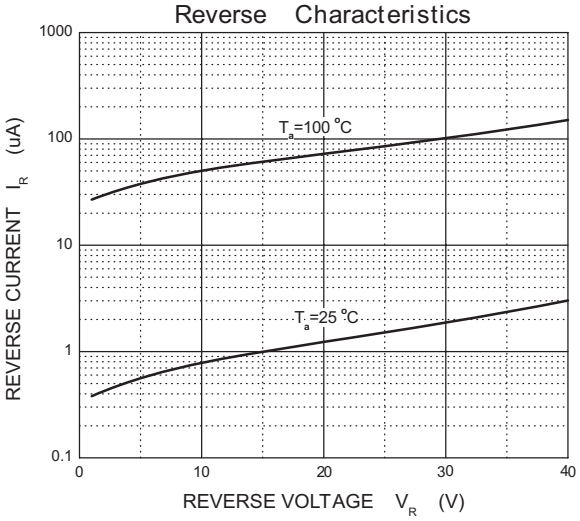


B0540W

Forward Characteristics



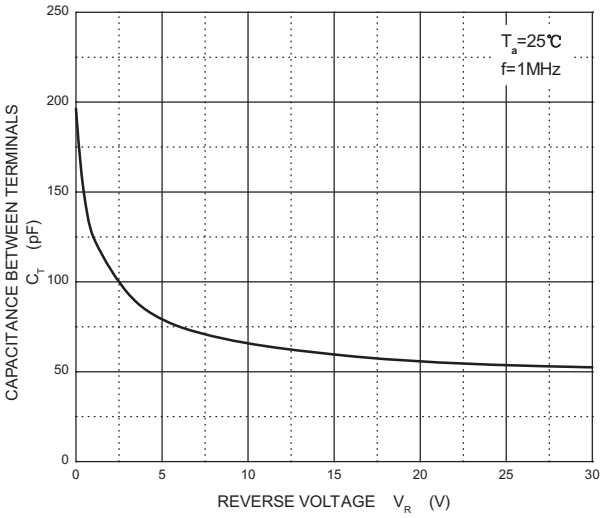
Reverse Characteristics



Rating and characteristic curves

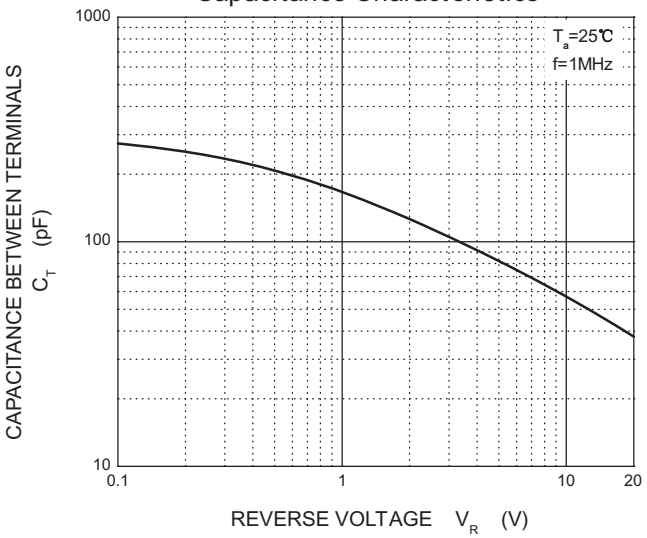
B0520LW

Capacitance Characteristics



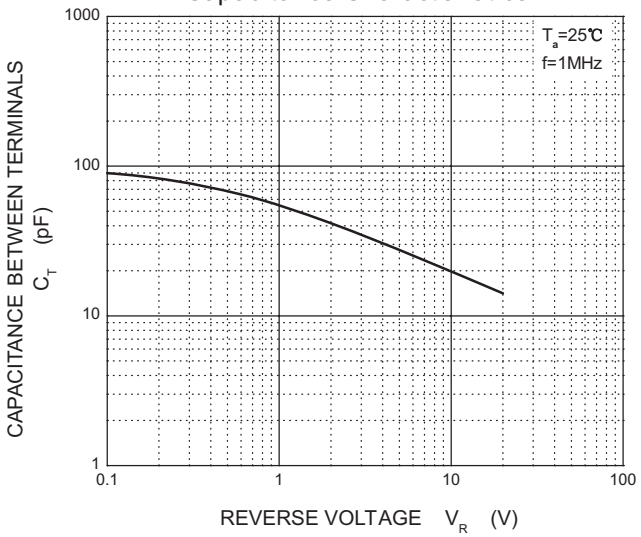
B0530W

Capacitance Characteristics

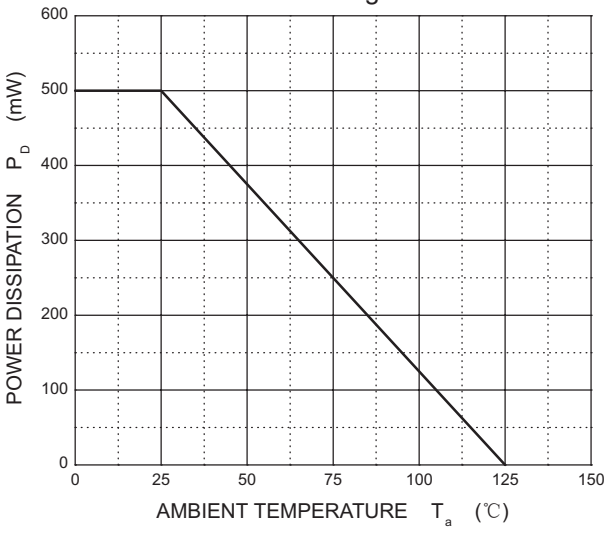


B0540W

Capacitance Characteristics



Power Derating Curve



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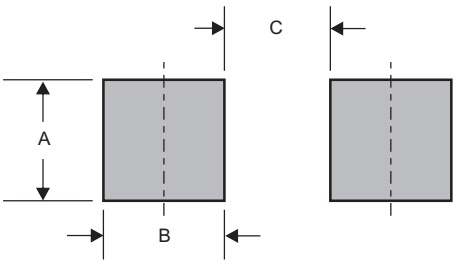
Pinning information

Pin	Simplified outline	Symbol
Pin1 cathode Pin2 anode		

Marking

Type number	Marking code
B0520LW	SD
B0530W	SE
B0540W	SF

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)

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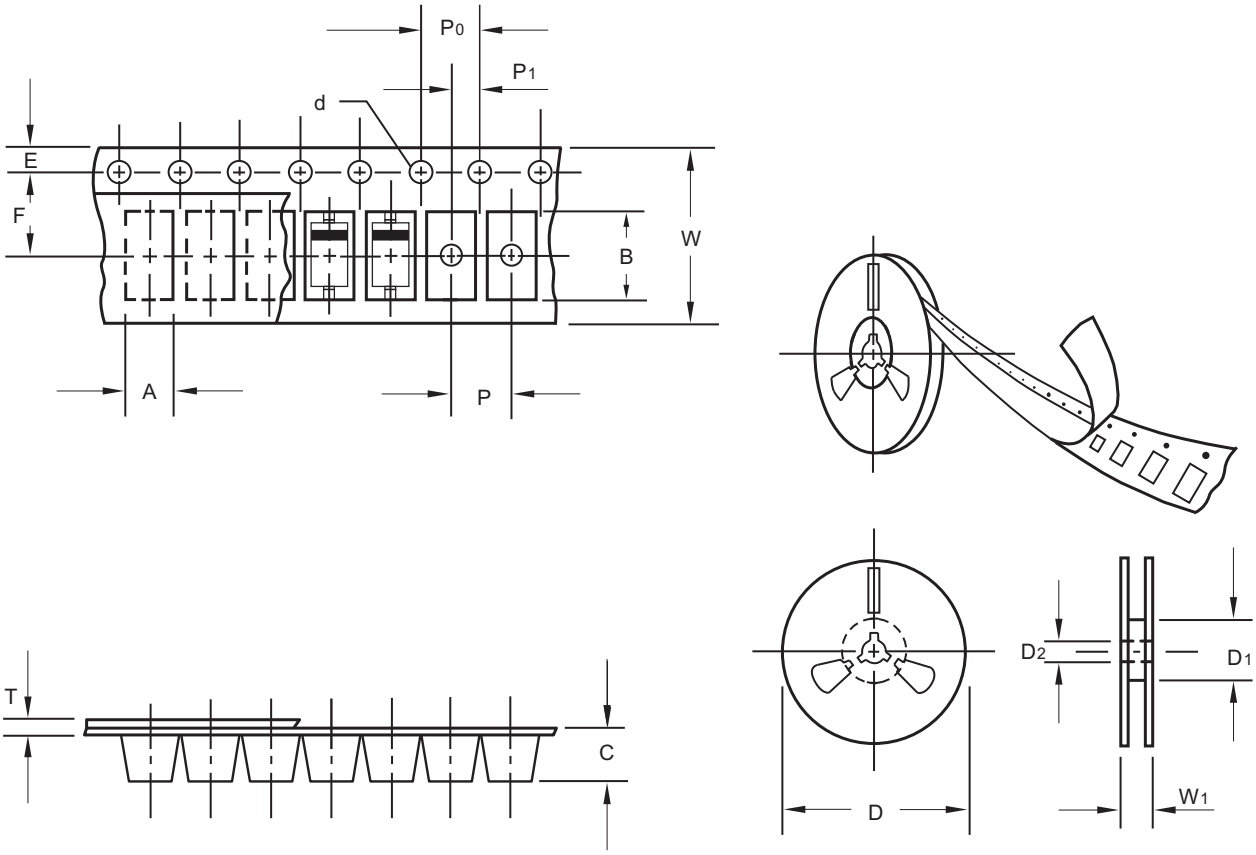
Packing information



unit:mm

Item	Symbol	Tolerance	SOD-123F
Carrier width	A	0.1	1.85
Carrier length	B	0.1	3.95
Carrier depth	C	0.1	1.57
Sprocket hole	d	0.1	1.55
13" Reel outside diameter	D	2.0	-
13" Reel inner diameter	D_1	min	-
7" Reel outside diameter	D	2.0	178.00
7" Reel inner diameter	D_1	min	54.40
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	12.3

Note:Devices are packed in accor dance with EIA standar RS-481-A and specifications listed above.

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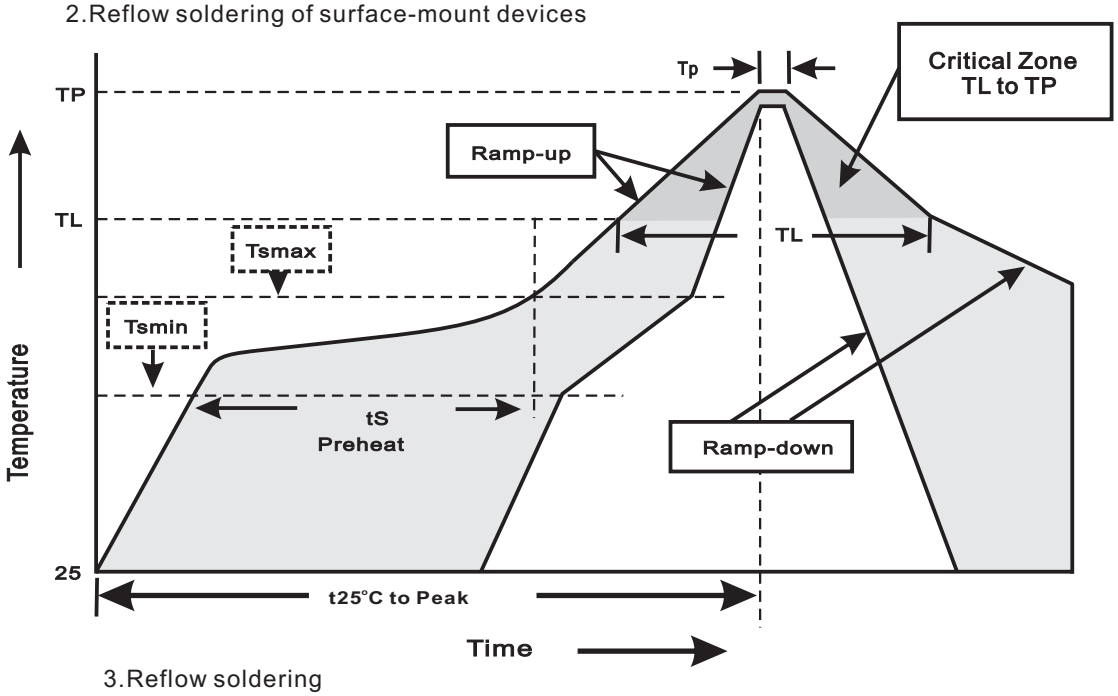
Reel packing

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-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(Tsmin) -Temperature Max(Tsmax) -Time(min to max)(t_s)	 150°C 200°C 60~120sec
Tsmax 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

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High reliability test capabilities

Item Test	Conditions	Reference
1. Solder Resistance	at 260±5°C for 10±2sec.	MIL-STD-750D METHOD-2031
2. Solderability	at 245±5°C for 5 sec.	MIL-STD-202F METHOD-208
3. High Temperature Reverse Bias	V_R=80% rate at T_J=125°C for 168 hrs.	MIL-STD-750D METHOD-1038
4. Forward Operation Life	Rated average rectifier current at T_A=25°C for 500hrs.	MIL-STD-750D METHOD-1027
5. Intermittent Operation Life	T_A = 25°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°C for 4 hrs.	JESD22-A102
7. Temperature Cycling	-55°C to +125°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	MIL-STD-750D METHOD-4066-2
9. Humidity	at T_A=85°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