

BAT42WS / BAT43WS

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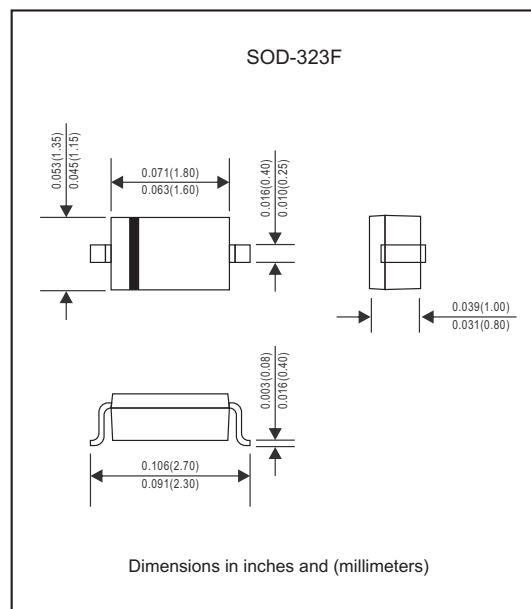
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BAT42WS / BAT43WS**200mA Surface Mount Small Signal Schottky Diodes-30V****Features**

- Low current rectification and high speed switching.
- Extremely small surface mount type.
- Up to 200mA current capability.
- Silicon epitaxial planar chip, metal silicon junction.
- Lead-free parts meet exceeds environmental standards of MIL-STD-19500 /228
- Suffix "-H" indicates Halogen-free part, ex. BAT42WS-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	CONDITIONS	Symbol	MIN.	TYP.	MAX.	UNIT
Repetitive peak reverse voltage		V_{RRM}			30	V
Continuous reverse voltage		V_R			30	V
Average rectified current		I_{FAV}			200	mA
Non-repetitive peak forward surge current	@t < 1.0ms	I_{FSM}			4.0	A
Power dissipation		P_D			200	mW
Thermal resistance	Junction to ambient (Note 1)	$R_{\theta JA}$			500	$^\circ\text{C}/\text{W}$
Operating temperature		T_J	-55		+125	$^\circ\text{C}$
Storage temperature		T_{STG}	-65		+125	$^\circ\text{C}$

Note:1. Parts Mounted on FR-4 PC Board with recommended pad layout.

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

PARAMETER	CONDITIONS	Symbol	MIN.	TYP.	MAX.	UNIT
Reverse Breakdown Voltage	$I_R = 100\mu\text{A}$	$V_{(BR)R}$	30			V
Forward voltage	$I_F = 200\text{ mA}$	BAT42WS	-		1.0	V
		BAT43WS	-		1.0	
	$I_F = 10\text{ mA}$	BAT42WS	-		0.40	
	$I_F = 50\text{ mA}$	BAT42WS	-		0.65	
	$I_F = 2.0\text{ mA}$	BAT43WS	0.26		0.33	
	$I_F = 15\text{ mA}$	BAT43WS	-		0.45	
Total capacitance	$V_R = 1.0\text{V}$, $f = 1.0\text{MHz}$	C_T			10	pF
Reverse recovery time	$I_F = I_R = 10\text{mA}$, $I_{rr} = 0.1 \times I_R$, $R_L = 100\Omega$	t_{rr}			5.0	ns
Reverse current	$V_R = 25\text{ V}$	I_R			0.5	μA
	$V_R = 25\text{ V}$, $T_J = 100^\circ\text{C}$				100	

Rating and characteristic curves (BAT42WS / BAT43WS)

FIG.1-TYPICAL FORWARD CURRENT DERATING CURVE

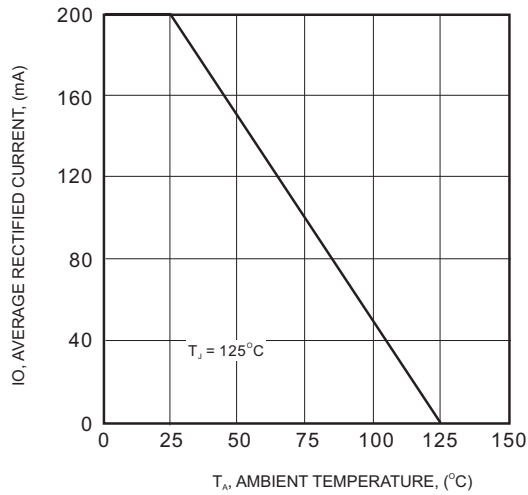


FIG.2 - TYPICAL FORWARD CHARACTERISTICS

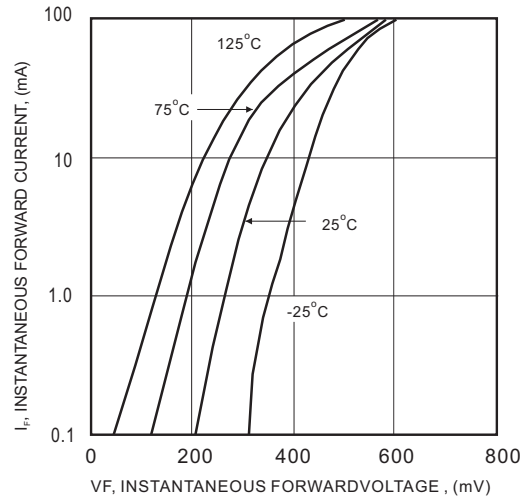


FIG.3-TYPICAL REVERSE CHARACTERISTICS

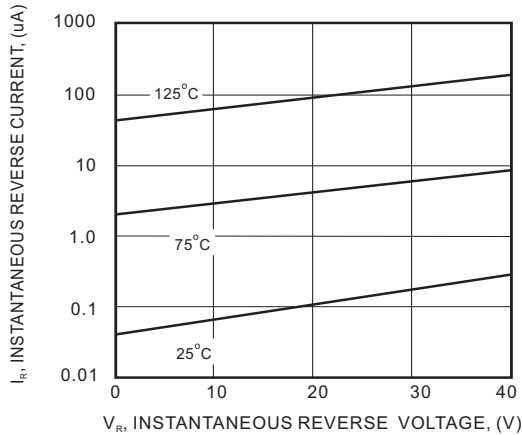
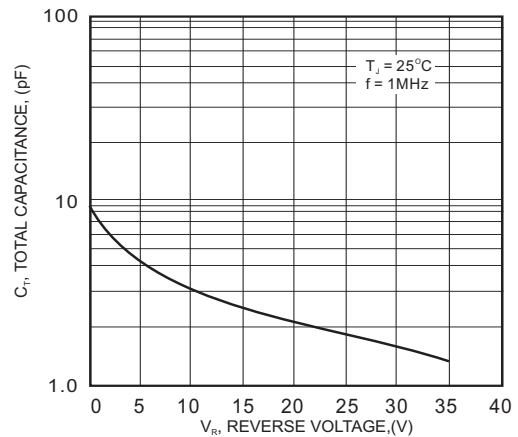




FIG.4-TYPICAL TOTAL CAPACITANCE VS. REVERSE VOLTAGE



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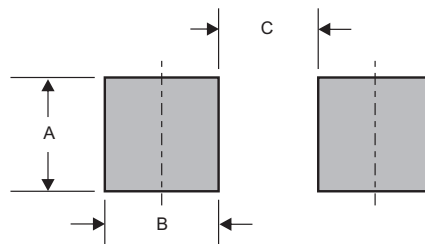
Pinning information

Pin	Simplified outline	Symbol
Pin1 cathode Pin2 anode		

Marking

Type number	Marking code
BAT42WS	S7
BAT43WS	S8

Suggested solder pad layout

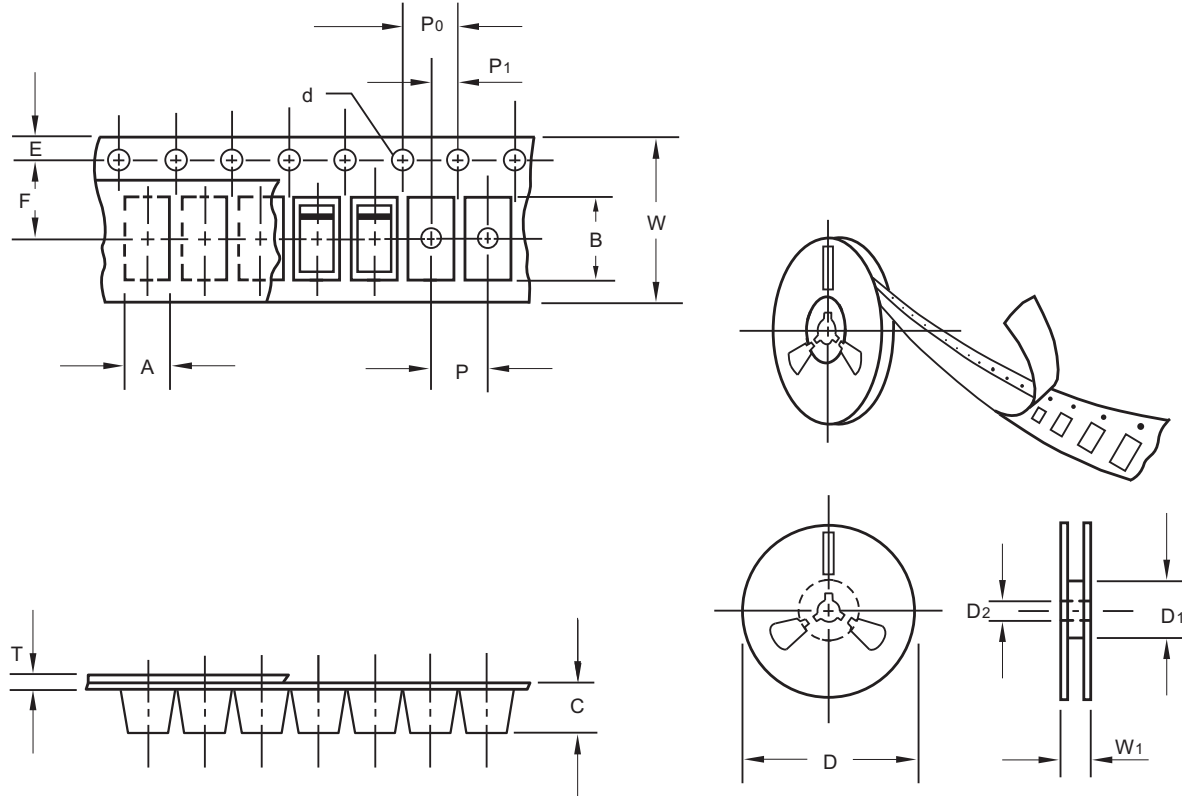


Dimensions in inches and (millimeters)

PACKAGE	A	B	C
SOD-323F	0.059 (1.50)	0.039 (1.00)	0.051 (1.30)

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Packing information



unit:mm

Item	Symbol	Tolerance	SOD-323F
Carrier width	A	0.1	1.46
Carrier length	B	0.1	2.95
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	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.

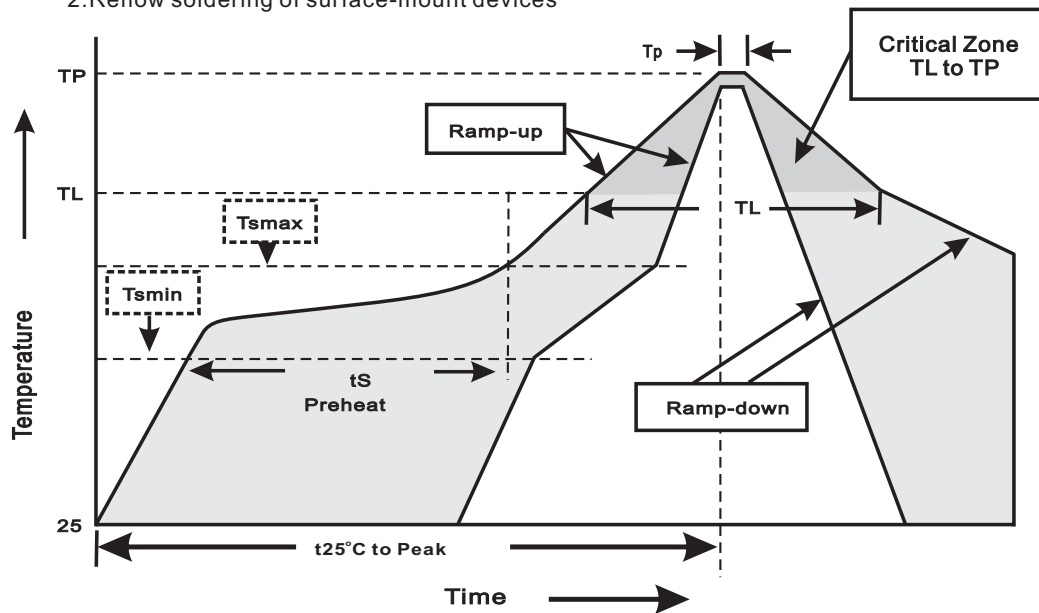
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Reel packing

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*183*123	178	382*262*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 _{min}) -Temperature Max(T _{max}) -Time(min to max)(t _s)	150°C 200°C 60~120sec
T _{max} 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

BAT42WS / BAT43WS**High reliability test capabilities**

Item Test	Conditions	Reference
1. Solder Resistance	at 260±5°C for 10±2sec. immerse body into solder 1/16"±1/32"	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. 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	Non-repetitive peak forward surge current @t < 1.0ms	MIL-STD-750D METHOD-4066-2
10. Humidity	at T _A =85°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