

BAT42W / BAT43W**List**

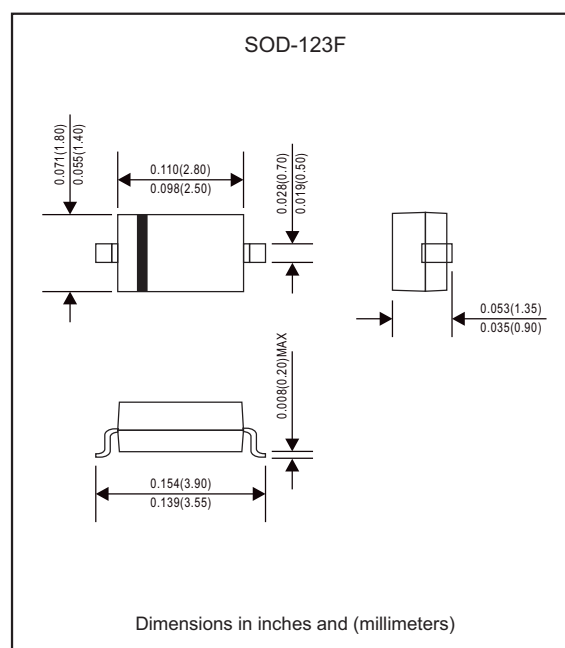
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BAT42W / BAT43W**200mA Surface Mount Small Signal Schottky Diode- 30V****Features**

- Low Forward Voltage Drop.
- Fast Switching.
- Ultra-Small Surface Mount Package.
- Lead-free parts for green partner, exceeds environmental standards of MIL-STD-19500 /228
- Suffix "-H" indicates Halogen-free part, ex.BAT42W-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	CONDITION	Symbol	Value	UNIT
Peak repetitive reverse voltage		V_{RRM}	30	V
Working peak reverse voltage		V_{RWM}	30	V
DC blocking voltage		V_R	30	V
RMS reverse voltage		$V_{R(RMS)}$	21	V
Average rectified output current (Note 1)		I_{FAV}	200	mA
Non-repetitive peak forward surge current	@ $t < 1.0\text{ms}$	I_{FSM}	4.0	A
Power Dissipation		P_D	200	mW
Thermal Resistance (Note 1)	Junction to Ambient	$R_{\theta JA}$	500	$^{\circ}\text{C/W}$
Operating temperature		T_J	$-55 \sim +125$	$^{\circ}\text{C}$
Storage temperature		T_{STG}	$-65 \sim +125$	$^{\circ}\text{C}$

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

PARAMETER	CONDITION	Symbol	MIN.	MAX.	UNIT
Reverse breakdown voltage	$I_R = 100\mu\text{A}$	$V_{(BR)R}$	30		V
Forward voltage	$I_F = 200\text{mA}$ Both types $I_F = 10\text{mA}$ BAT42W $I_F = 50\text{mA}$ BAT42W $I_F = 2.0\text{mA}$ BAT43W $I_F = 15\text{mA}$ BAT43W	V_F	- - - 0.26 -	1.0 0.4 0.65 0.33 0.45	V
Reverse current	$V_R = 25\text{V}$ $V_R = 25\text{V}, T_J = 100^{\circ}\text{C}$	I_R		500 100	nA uA
Junction capacitance	$V_R = 1.0\text{V}, f = 1.0\text{MHz}$	C_T		10	pF
Reverse recover time	$I_F = I_R = 10\text{mA}, I_{rr} = 0.1 \times I_R, R_L = 100\Omega$	t_{rr}		5.0	ns

Note:

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

Rating and characteristic curves (BAT42W / BAT43W)

Fig. 1 FORWARD CURRENT DERATING CURVE

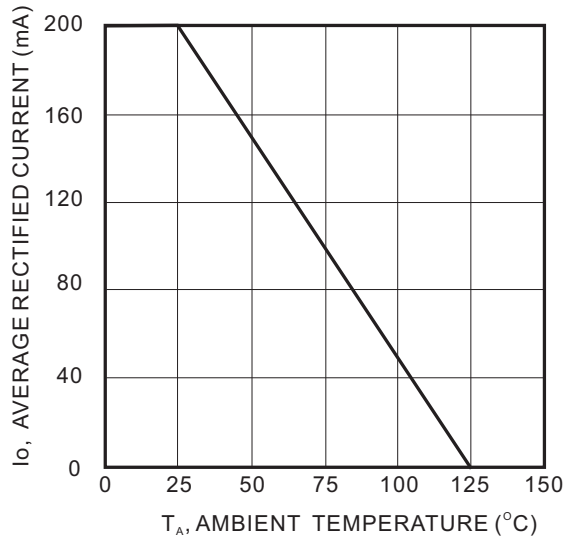


Fig. 2 TYPICAL FORWARD CHARACTERISTICS

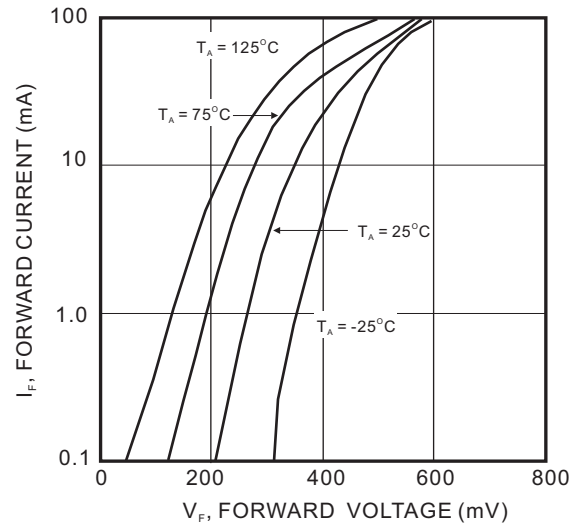


Fig. 3 TYPICAL REVERSE CHARACTERISTICS

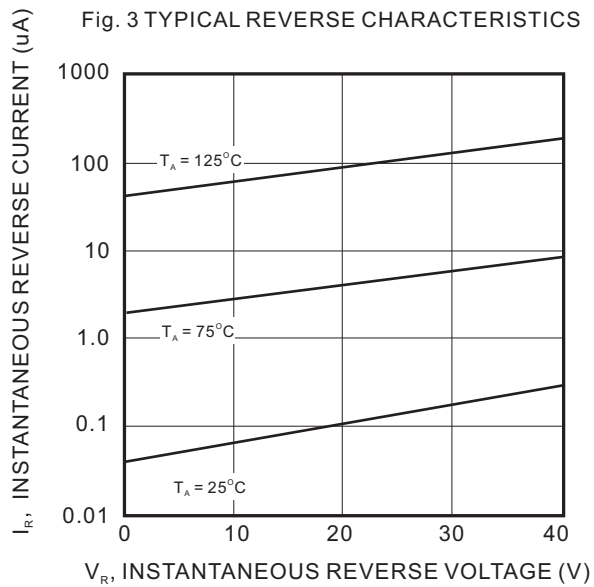
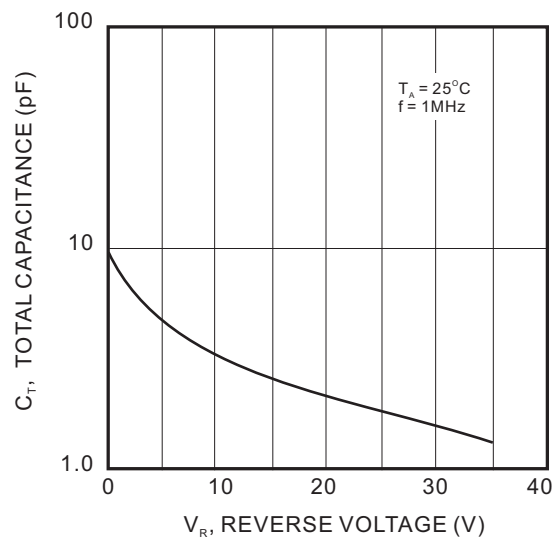


Fig. 4 TOTAL CAPACITANCE VS. REVERSE VOLTAGE

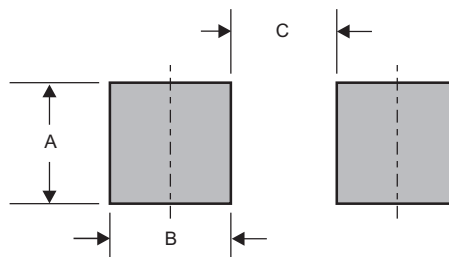


BAT42W / BAT43W**Pinning information**

Pin	Simplified outline	Symbol
Pin1 cathode Pin2 anode		

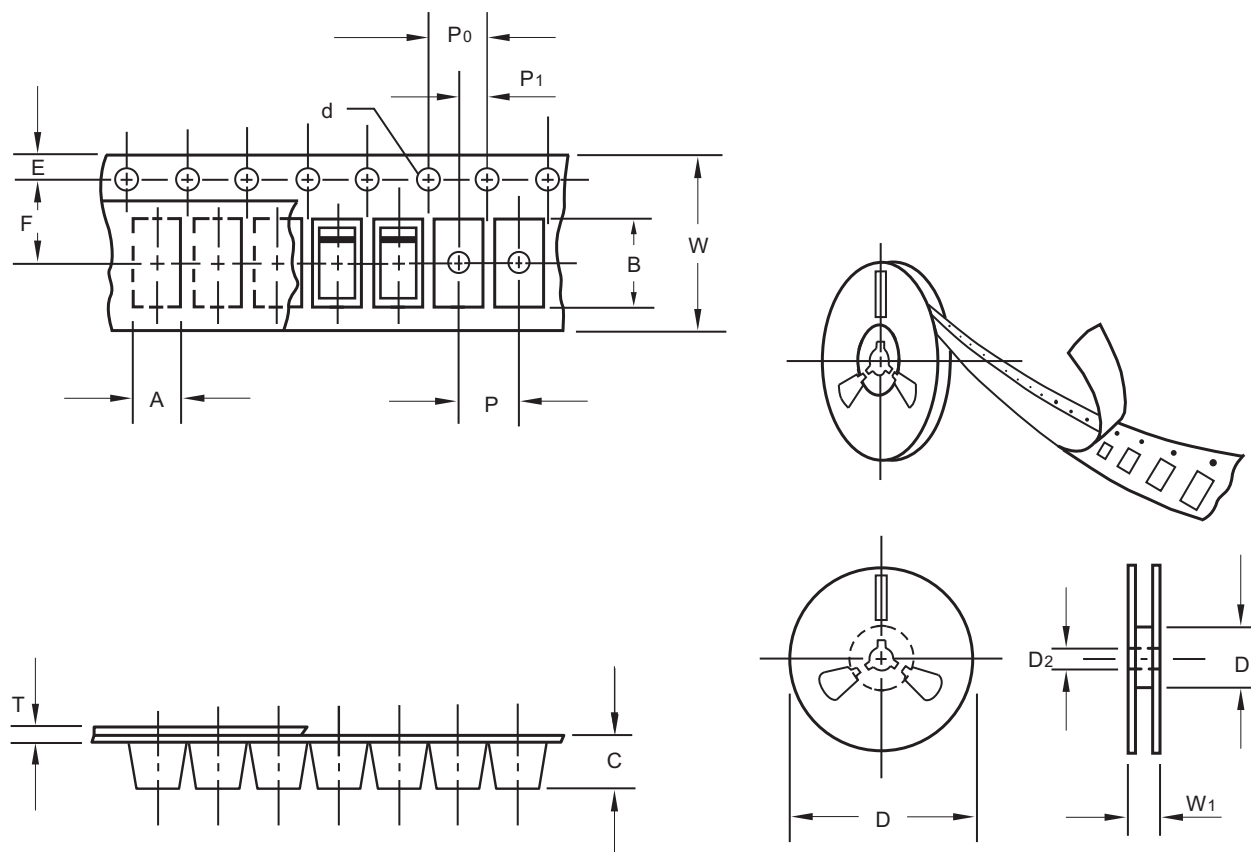
Marking

Type number	Marking code
BAT42W BAT43W	S7,PX S8,PY

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)

BAT42W / BAT43W**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

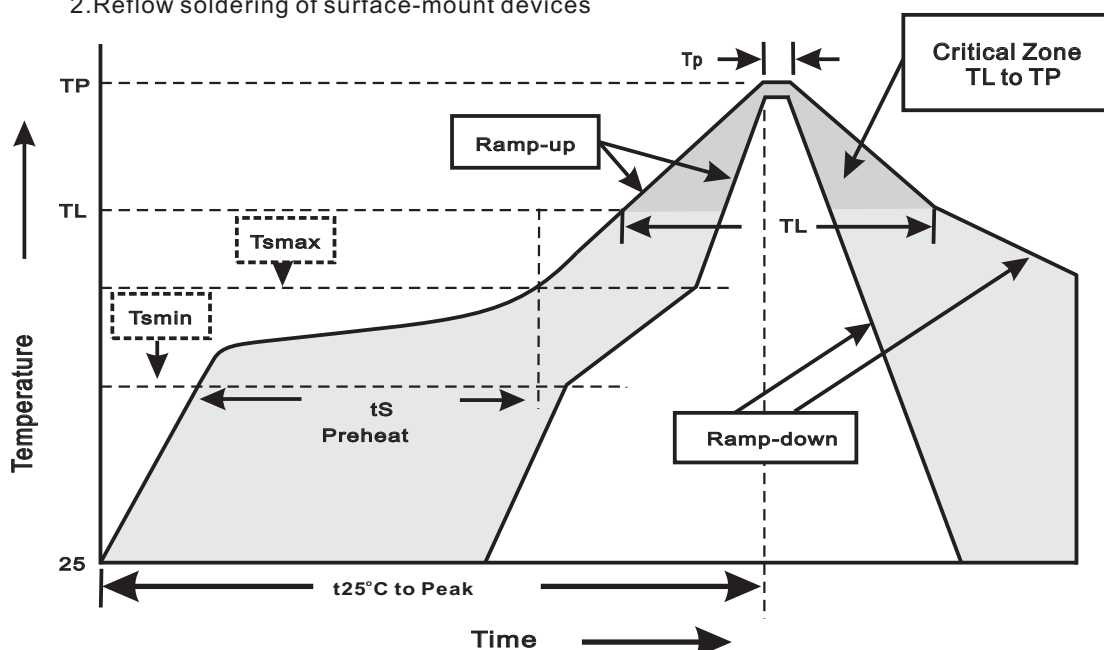
Note: Devices are packed in accordance with EIA standard RS-481-A and specifications listed above.

BAT42W / BAT43W**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*183*123	178	382*262*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 _{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

BAT42W / BAT43W**High reliability test capabilities**

Item Test	Conditions	Reference
1. Solder Resistance	at $260 \pm 5^\circ\text{C}$ for $10 \pm 2\text{sec.}$ immerse body into solder $1/16'' \pm 1/32''$	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. 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 at $t < 1\text{s}$	MIL-STD-750D METHOD-4066-2
10. Humidity	at $T_A = 85^\circ\text{C}$, 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