

BAT54GW

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BAT54GW

200mA, 30V Surface Mount Schottky Diodes

Features

- Low Forward voltage.
- Surface device type mounting.
- Lead-free parts meet RoHS requirements.
- Suffix "-H" indicates Halogen free parts, ex. BAT54GW-H.

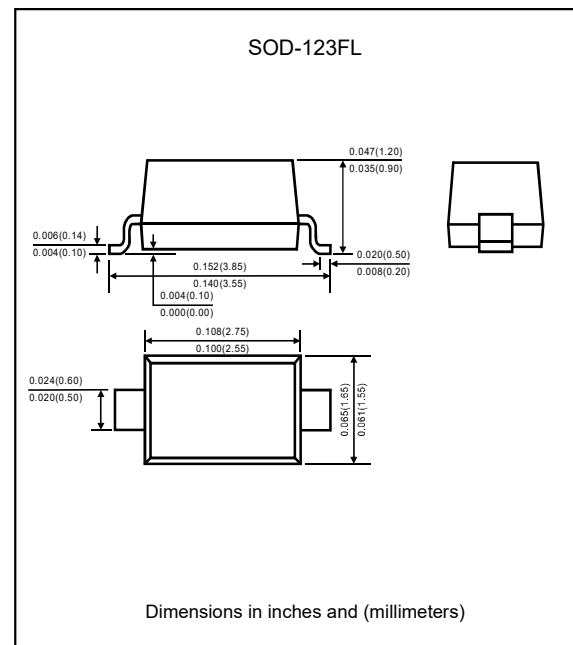
Applications

- Ultra high-speed switching.
- Voltage clamping.
- Protection circuits.

Mechanical data

- Epoxy:UL94-V0 rated flame retardant.
- Case : Molded plastic, SOD-123F.
- Terminals : Solder plated, solder able per MIL-STD-750, Method 2026.
- Polarity : Indicated by cathode band.
- Mounting Position : Any.
- Weight : Approximated 0.009 gram.

Package outline



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

Parameter	Symbol	Value	Unit
Reverse voltage	V_R	30	V
Forward current	I_F	200	mA
Repetitive peak forward current	I_{FRM}	300	mA
Peak forward surge current ($t_p=10\text{ms}$)	I_{FSM}	600	mA
Power dissipation	P_D	230	mW
Thermal resistance from junction ambient	$R_{\theta JA}$	500	$^{\circ}\text{C/W}$
Junction temperature	T_J	125	$^{\circ}\text{C}$
Storage temperature range	T_{STG}	-65 to +150	$^{\circ}\text{C}$

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

Parameter	Conditions	Symbol	Min.	Typ.	Max.	Unit
Forward voltage	$I_F=0.1\text{mA}$	V_F			240	V
	$I_F=1\text{mA}$				320	
	$I_F=10\text{mA}$				400	
	$I_F=30\text{mA}$				500	
	$I_F=100\text{mA}$				800	
Reverse leakage current	$V_R=25\text{V}$	I_R			2	μA
Junction capacitance	$V_R=1\text{V}$, $f=1\text{MHz}$	C_T			10	pF
Reverse recovery time	$I_F=10\text{mA}$, $V_R=6\text{V}$, $I_R=10\text{mA}$, $R_L=100\Omega$	t_{rr}			6	ns

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Rating and characteristic curves

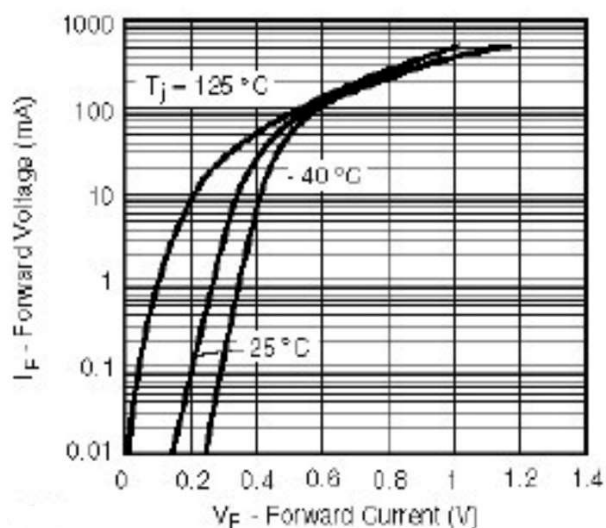


Figure 1. Typical forward voltage forward current at various temperature

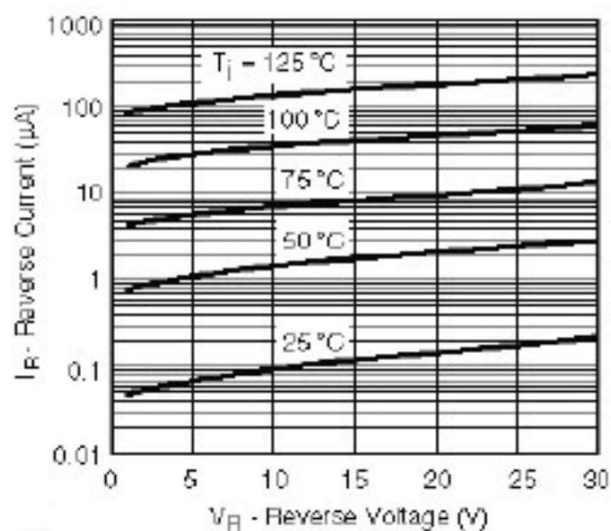


Figure 2. Typical variation of reverse current at various temperatures

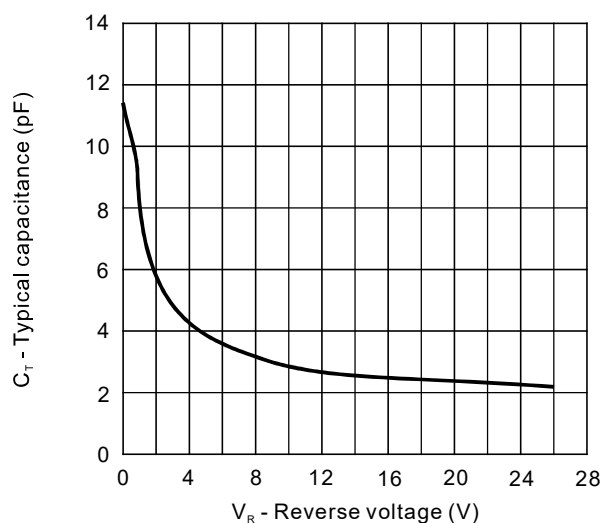


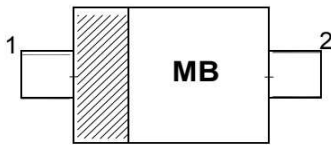
Figure 3. Typical capacitance °C vs. reverse applied voltage V_R

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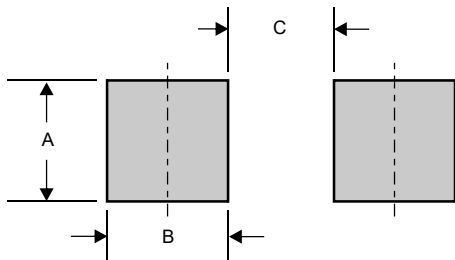
Pinning information

Pin	Simplified outline	Symbol
Pin1 cathode Pin2 anode		

Marking



Suggested solder pad layout

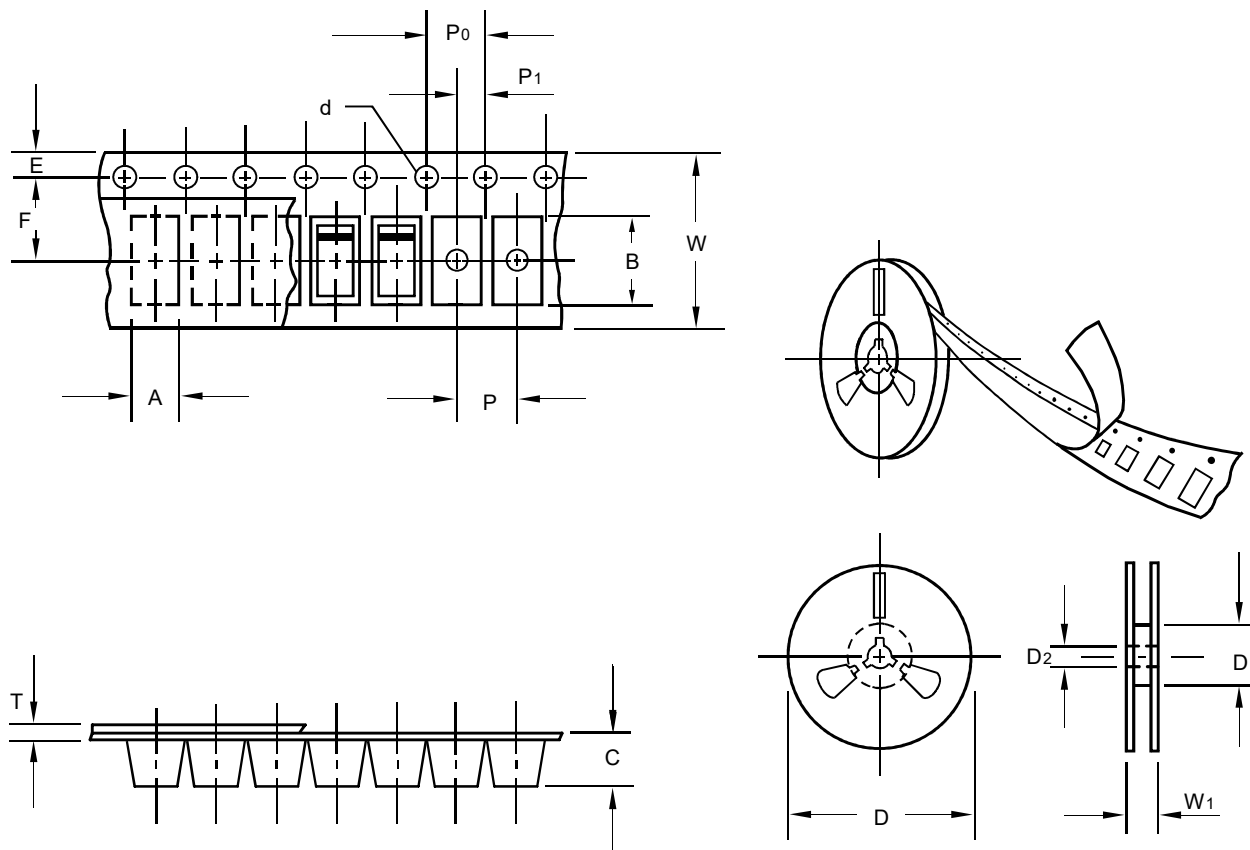


Dimensions in inches and (millimeters)

PACKAGE	A	B	C
SOD-123F	0.028 (0.70)	0.028 (0.70)	0.091 (2.30)

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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.

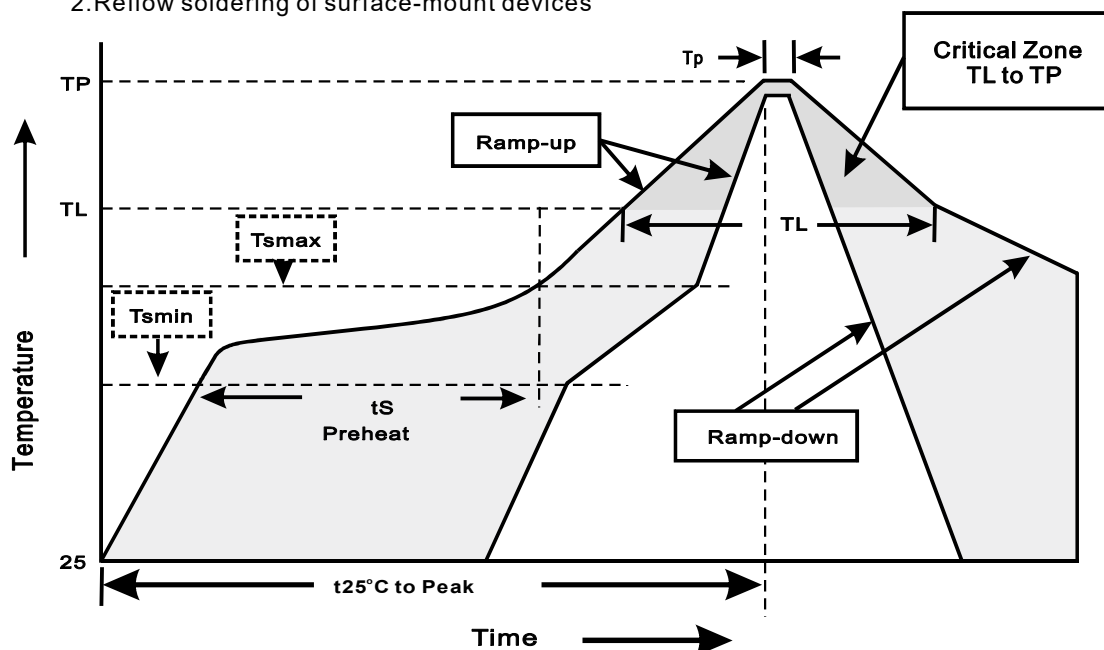
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Reel packing

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(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

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High reliability test capabilities

Item Test	Conditions	Reference
1. Solder Resistance	at $260 \pm 5^{\circ}\text{C}$ for $10 \pm 2\text{sec.}$	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	$V_Z = V_{Z\text{ Nom}} * 80\%$ at $T_J = 150^{\circ}\text{C}$ for 168 hrs.	MIL-STD-750D METHOD-1038
4. Pressure Cooker	$15P_{\text{SIG}}$ at $T_A = 121^{\circ}\text{C}$ for 4 hrs.	JESD22-A102
5. 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
6. Humidity	at $T_A = 85^{\circ}\text{C}$, RH=85% for 1000hrs.	MIL-STD-750D METHOD-1021
7. High Temperature Storage Life	at 175°C for 1000 hrs.	MIL-STD-750D METHOD-1031