



# HBAT54 Series

## Description

Silicon Schottky Barrier Double Diodes

- HBAT54: Single Diode, also available as double diodes.
- HBAT54A: Common Anode.
- HBAT54C: Common Cathode.
- HBAT54S: Series Connected.

## Features

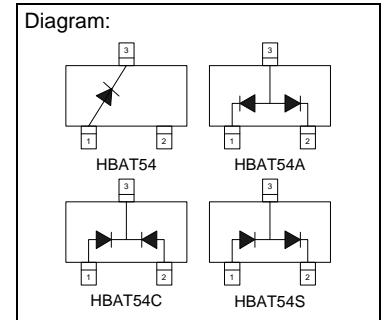
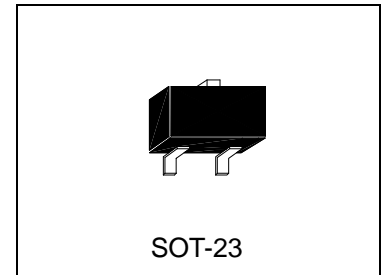
These diodes feature very low turn-on voltage and fast switching. There is a PN junction guard ring against excessive voltage such as electronics attic discharges protects these devices.

## Absolute Maximum Ratings

- Maximum Temperatures  
 Storage Temperature ..... -65~+125 °C  
 Junction Temperature ..... +125 °C
- Maximum Power Dissipation  
 Total Power Dissipation (T<sub>A</sub>=25°C) ..... 230 mW
- Maximum Voltages and Currents (T<sub>A</sub>=25°C)  
 Repetitive Peak Reverse Voltage ..... 30 V  
 Forward Continuous Current ..... 200 mA  
 Repetitive Peak Forward Current ..... 300 mA  
 Surge Forward Current (tp<1s)..... 600 mA

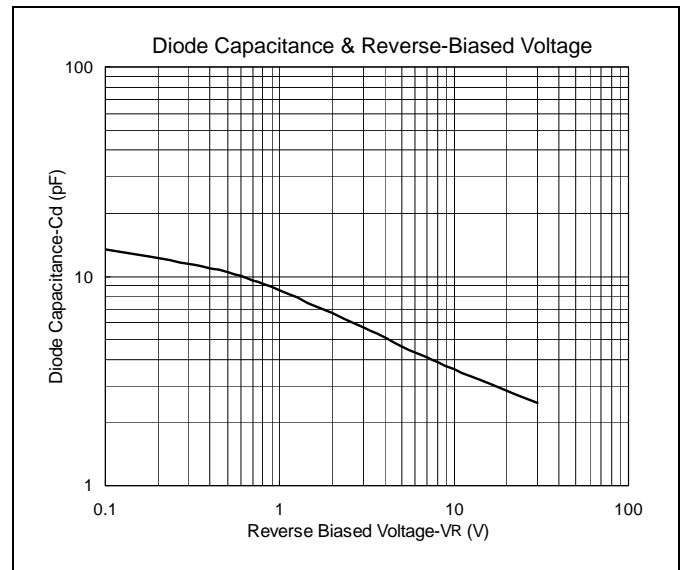
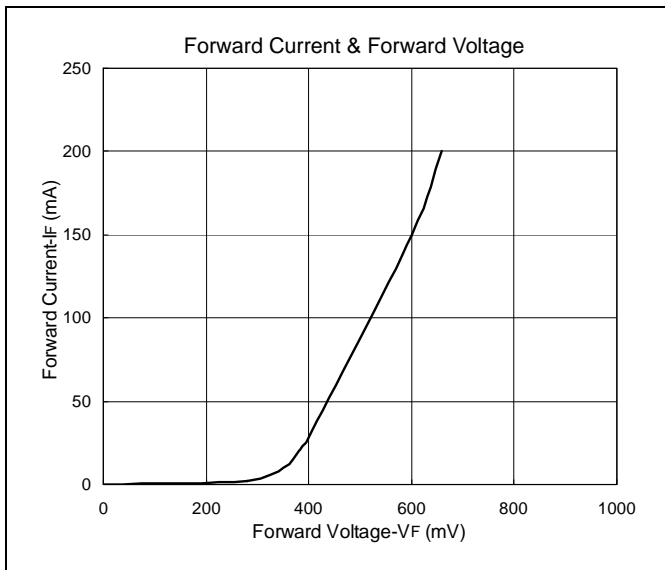
## Electrical Characteristics (T<sub>A</sub>=25°C)

Characteristic	Symbol	Condition	Min.	Max.	Unit
Reverse breakdown Voltage	V <sub>(BR)</sub>	I <sub>R</sub> =10uA	30	-	V
Forward Voltage	V <sub>F(1)</sub>	I <sub>F</sub> =0.1mA	-	240	mV
	V <sub>F(2)</sub>	I <sub>F</sub> =1mA	-	320	mV
	V <sub>F(3)</sub>	I <sub>F</sub> =10mA	-	400	mV
	V <sub>F(4)</sub>	I <sub>F</sub> =30mA	-	500	mV
	V <sub>F(5)</sub>	I <sub>F</sub> =100mA	-	1000	mV
Reverse Current	I <sub>R</sub>	V <sub>R</sub> =25V	-	2.0	uA
Total Capacitance	C <sub>T</sub>	V <sub>R</sub> =1V, f=1MHz	-	10	pF
Reverse Recovery Time	T <sub>rr</sub>	I <sub>F</sub> =I <sub>R</sub> =10mA, R <sub>L</sub> =100Ω, measured at I <sub>R</sub> =1mA	-	5	nS





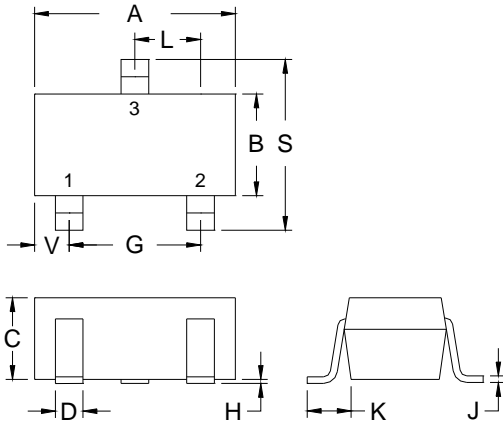
## Characteristics Curve





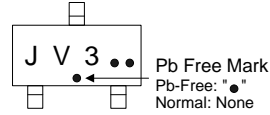
### SOT-23 Dimension

#### BAT54



3-Lead SOT-23 Plastic  
 Surface Mounted Package  
 HSMC Package Code: N

#### Marking:



Note: Pb-free product can distinguish by the green label or the extra description on the right side of the label.

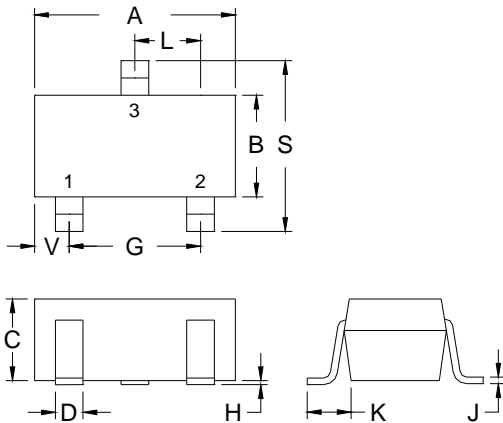
Pin Style: 1.Anode 2.Cathode  
 3.Common Connection

- Material:
- Lead solder plating: Sn60/Pb40 (Normal), Sn/3.0Ag/0.5Cu or Pure-Tin (Pb-free)
  - Mold Compound: Epoxy resin family, flammability solid burning class: UL94V-0

DIM	Min.	Max.
A	2.80	3.04
B	1.20	1.60
C	0.89	1.30
D	0.30	0.50
G	1.70	2.30
H	0.013	0.10
J	0.085	0.177
K	0.32	0.67
L	0.85	1.15
S	2.10	2.75
V	0.25	0.65

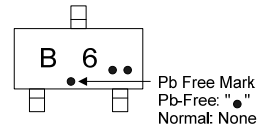
\*: Typical, Unit: mm

#### BAT54A



3-Lead SOT-23 Plastic  
 Surface Mounted Package  
 HSMC Package Code: N

#### Marking:



Note: Pb-free product can distinguish by the green label or the extra description on the right side of the label.

Pin Style: 1.Anode 2.Cathode  
 3.Common Connection

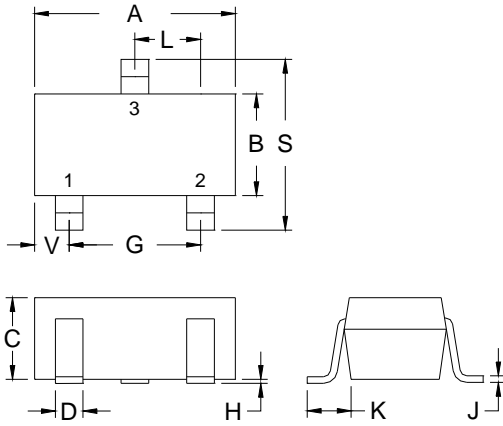
- Material:
- Lead solder plating: Sn60/Pb40 (Normal), Sn/3.0Ag/0.5Cu or Pure-Tin (Pb-free)
  - Mold Compound: Epoxy resin family, flammability solid burning class: UL94V-0

DIM	Min.	Max.
A	2.80	3.04
B	1.20	1.60
C	0.89	1.30
D	0.30	0.50
G	1.70	2.30
H	0.013	0.10
J	0.085	0.177
K	0.32	0.67
L	0.85	1.15
S	2.10	2.75
V	0.25	0.65

\*: Typical, Unit: mm

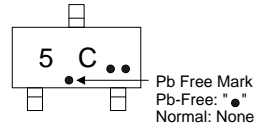


### BAT54C



3-Lead SOT-23 Plastic  
 Surface Mounted Package  
 HSMC Package Code: N

#### Marking:



Note: Pb-free product can distinguish by the green label or the extra description on the right side of the label.

Pin Style: 1.Anode 2.Cathode  
 3.Common Connection

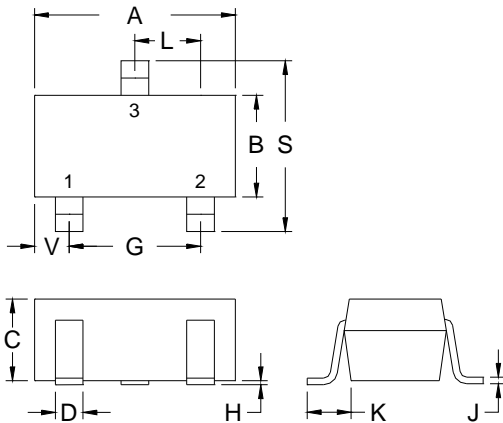
#### Material:

- Lead solder plating: Sn60/Pb40 (Normal), Sn/3.0Ag/0.5Cu or Pure-Tin (Pb-free)
- Mold Compound: Epoxy resin family, flammability solid burning class: UL94V-0

DIM	Min.	Max.
A	2.80	3.04
B	1.20	1.60
C	0.89	1.30
D	0.30	0.50
G	1.70	2.30
H	0.013	0.10
J	0.085	0.177
K	0.32	0.67
L	0.85	1.15
S	2.10	2.75
V	0.25	0.65

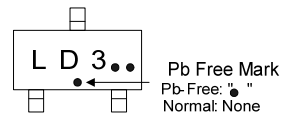
\*: Typical, Unit: mm

### BAT54S



3-Lead SOT-23 Plastic  
 Surface Mounted Package  
 HSMC Package Code: N

#### Marking:



Note: Pb-free product can distinguish by the green label or the extra description on the right side of the label.

Pin Style: 1.Anode 2.Cathode  
 3.Common Connection

#### Material:

- Lead solder plating: Sn60/Pb40 (Normal), Sn/3.0Ag/0.5Cu or Pure-Tin (Pb-free)
- Mold Compound: Epoxy resin family, flammability solid burning class: UL94V-0

DIM	Min.	Max.
A	2.80	3.04
B	1.20	1.60
C	0.89	1.30
D	0.30	0.50
G	1.70	2.30
H	0.013	0.10
J	0.085	0.177
K	0.32	0.67
L	0.85	1.15
S	2.10	2.75
V	0.25	0.65

\*: Typical, Unit: mm

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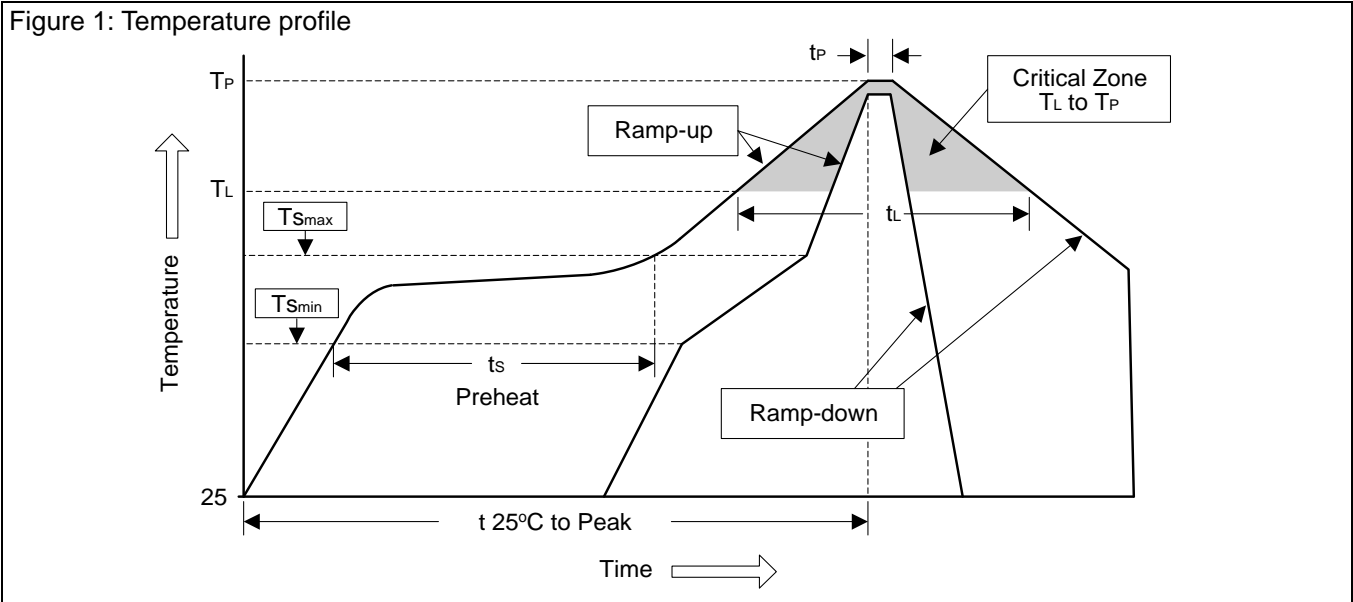
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 Tel: 886-3-5983621~5 Fax: 886-3-5982931



### Soldering Methods for HSMC's Products

1. Storage environment: Temperature=10°C~35°C Humidity=65%±15%
2. Reflow soldering of surface-mount devices



Profile Feature	Sn-Pb Eutectic Assembly	Pb-Free Assembly
Average ramp-up rate ( $T_L$ to $T_P$ )	$<3^{\circ}\text{C}/\text{sec}$	$<3^{\circ}\text{C}/\text{sec}$
Preheat		
- Temperature Min ( $T_{Smin}$ )	100°C	150°C
- Temperature Max ( $T_{Smax}$ )	150°C	200°C
- Time (min to max) ( $t_s$ )	60~120 sec	60~180 sec
$T_{Smax}$ to $T_L$		
- Ramp-up Rate	$<3^{\circ}\text{C}/\text{sec}$	$<3^{\circ}\text{C}/\text{sec}$
Time maintained above:		
- Temperature ( $T_L$ )	183°C	217°C
- Time ( $t_L$ )	60~150 sec	60~150 sec
Peak Temperature ( $T_P$ )	240°C +0/-5°C	260°C +0/-5°C
Time within 5°C of actual Peak Temperature ( $t_P$ )	10~30 sec	20~40 sec
Ramp-down Rate	$<6^{\circ}\text{C}/\text{sec}$	$<6^{\circ}\text{C}/\text{sec}$
Time 25°C to Peak Temperature	$<6$ minutes	$<8$ minutes

### 3. Flow (wave) soldering (solder dipping)

Products	Peak temperature	Dipping time
Pb devices.	245°C ±5°C	5sec ±1sec
Pb-Free devices.	260°C +0/-5°C	5sec ±1sec