



HI-SINCERITY
MICROELECTRONICS CORP.

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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

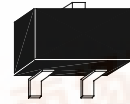
These diodes feature very low turn-on voltage and fast switching. There is a PN junction guard ring against excessive voltage such as electronics attic discharges protects these devices.

Absolute Maximum Ratings

- Maximum Temperatures
Storage Temperature -65~+125 °C
Junction Temperature +125 °C
- Maximum Power Dissipation
Total Power Dissipation ($T_A=25^{\circ}\text{C}$) 230 mW
- Maximum Voltages and Currents ($T_A=25^{\circ}\text{C}$)
Repetitive Peak Reverse Voltage 30 V
Forward Continuous Current 200 mA
Repetitive Peak Forward Current 300 mA
Surge Forward Current ($t_p<1\text{s}$) 600 mA

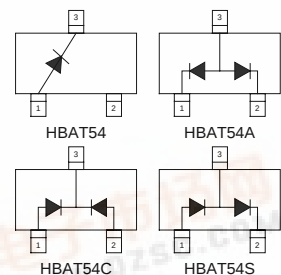
Electrical Characteristics ($T_A=25^{\circ}\text{C}$)

Characteristic	Symbol	Condition	Min.	Max.	Unit
Reverse breakdown Voltage	$V_{(BR)}$	$I_R=10\mu\text{A}$	30	-	V
Forward Voltage	$V_{F(1)}$	$I_F=0.1\text{mA}$	-	240	mV
	$V_{F(2)}$	$I_F=1\text{mA}$	-	320	mV
	$V_{F(3)}$	$I_F=10\text{mA}$	-	400	mV
	$V_{F(4)}$	$I_F=30\text{mA}$	-	500	mV
	$V_{F(5)}$	$I_F=100\text{mA}$	-	1000	mV
Reverse Current	I_R	$V_R=25\text{V}$	-	2.0	μA
Total Capacitance	C_T	$V_R=1\text{V}$, $f=1\text{MHz}$	-	10	pF
Reverse Recovery Time	T_{rr}	$I_F=I_R=10\text{mA}$, $R_L=100\Omega$, measured at $I_R=1\text{mA}$	-	5	nS



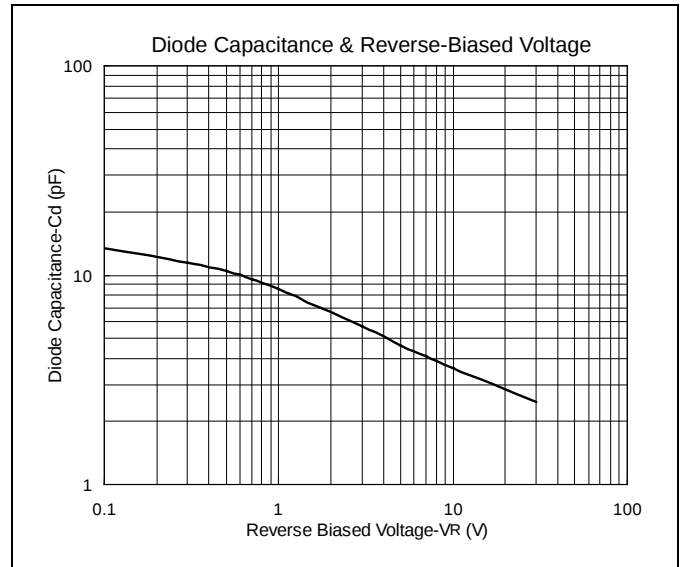
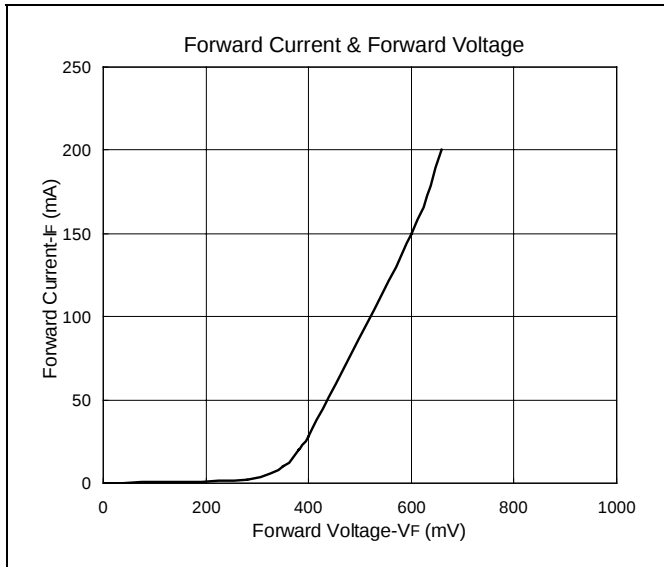
SOT-23

Diagram:



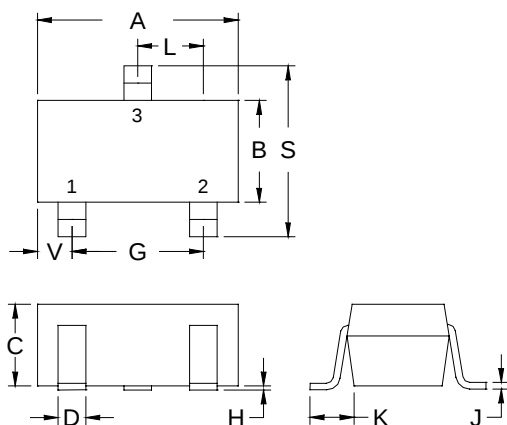


Characteristics Curve



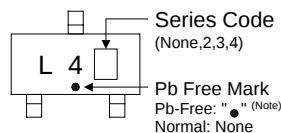


SOT-23 Dimension



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

Marking:



HBAT54: (L4), HBAT54A: (L42), HBAT54C: (L43),
HBAT54S: (L44)

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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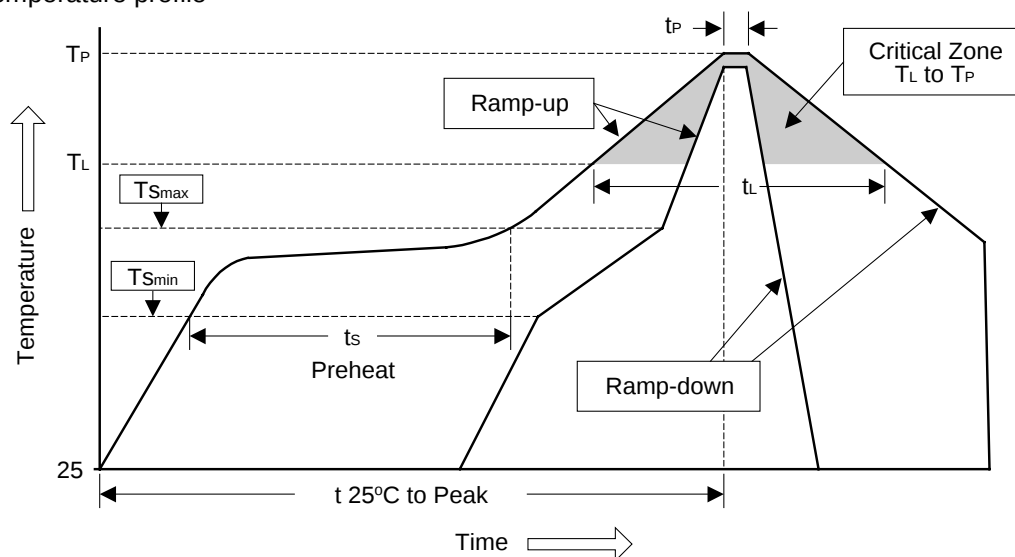
- **Head Office** (Hi-Sincerity Microelectronics Corp.): 10F., No. 61, Sec. 2, Chung-Shan N. Rd. Taipei Taiwan R.O.C.
Tel: 886-2-25212056 Fax: 886-2-25632712, 25368454
- **Factory 1:** No. 38, Kuang Fu S. Rd., Fu-Kou Hsin-Chu Industrial Park Hsin-Chu Taiwan. R.O.C
Tel: 886-3-5983621~5 Fax: 886-3-5982931



Soldering Methods for HSMC's Products

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

Figure 1: Temperature profile



Profile Feature	Sn-Pb Eutectic Assembly	Pb-Free Assembly
Average ramp-up rate (T_L to T_P)	<3°C/sec	<3°C/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°C/sec	<3°C/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°C/sec	<6°C/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