



HMBD914

HIGH-SPEED SWITCHING DIODE

Description

The HMBD914 is designed for high-speed switching application in hybrid thick-and thin-film circuits. The device is manufactured by the silicon epitaxial planar process and packed in plastic surface mount package.

Features

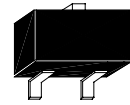
- Small SMD Package (SOT-23)
- Ultra-high Speed
- Low Forward Voltage
- Fast Reverse Recovery Time

Absolute Maximum Ratings

- Maximum Temperatures
Storage Temperature -65 ~ +150 °C
Junction Temperature +150 °C
- Maximum Power Dissipation
Total Power Dissipation ($T_A=25^{\circ}\text{C}$) 250 mW
- Maximum Voltages and Currents ($T_A=25^{\circ}\text{C}$)
Repetitive Peak Reverse Voltage 85 V
 V_R Coinuous Reverse Voltage 70 V
 I_F Continuous Forward Current 200 mA
 I_{FSM} Peak Forward Surge Current 500 mA
 I_{FSM} Non-Repetitive Peak Forward Current $t=1\mu\text{S}$ 4 A
 I_{FSM} Non-Repetitive Peak Forward Current $t=1\text{mS}$ 1 A
 I_{FSM} Non-Repetitive Peak Forward Current $t=1\text{S}$ 0.5 A

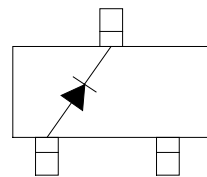
Electrical Characteristics ($T_A=25^{\circ}\text{C}$)

Characteristic	Symbol	Condition	Min	Max	Unit
Forward Voltage	V_F	$I_F=10\text{mA}$	-	1	V
Reverse Breakdown Voltage	V_R	$I_R=100\mu\text{A}$	100		V
Reverse Current	$I_{R(1)}$	$V_R=25\text{V}$	-	25	nA
	$I_{R(2)}$	$V_R=75\text{V}$	-	5	μA
Diode Capacitance	C_d	$V_R=0, F=1\text{MHz}$	-	1.5	pF
Reverse Recovery Time	T_{rr}	$I_F=I_R=10\text{mA}, R_L=100\Omega$, Measured at $I_R=1\text{mA}$	-	4	ns



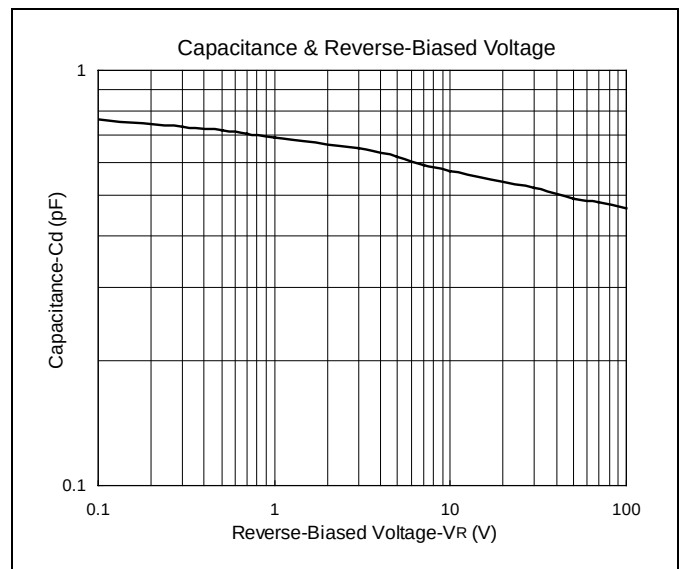
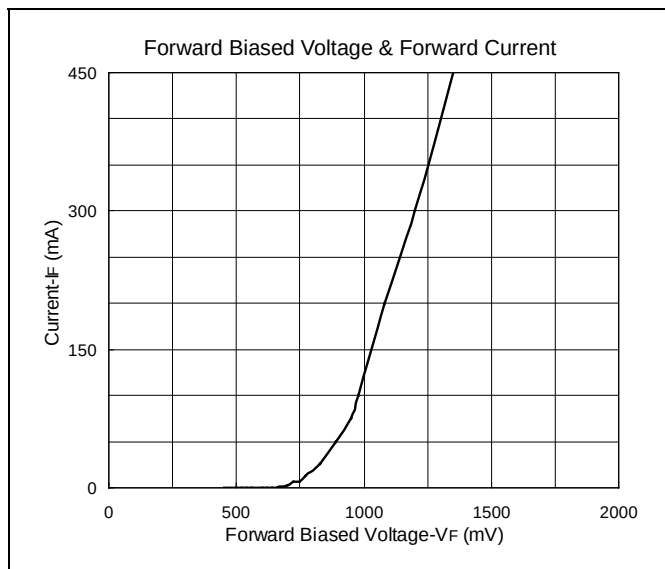
SOT-23

Diagram:



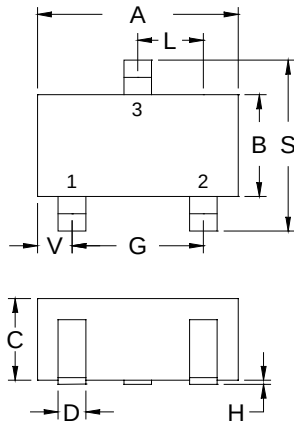


Characteristics Curve



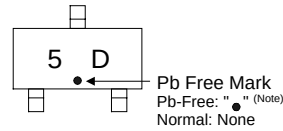


SOT-23 Dimension



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.NC 3.Cathode

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

Important Notice:

- All rights are reserved. Reproduction in whole or in part is prohibited without the prior written approval of HSMC.
- HSMC reserves the right to make changes to its products without notice.
- **HSMC semiconductor products are not warranted to be suitable for use in Life-Support Applications, or systems.**
- HSMC assumes no liability for any consequence of customer product design, infringement of patents, or application assistance.

Head Office And Factory:

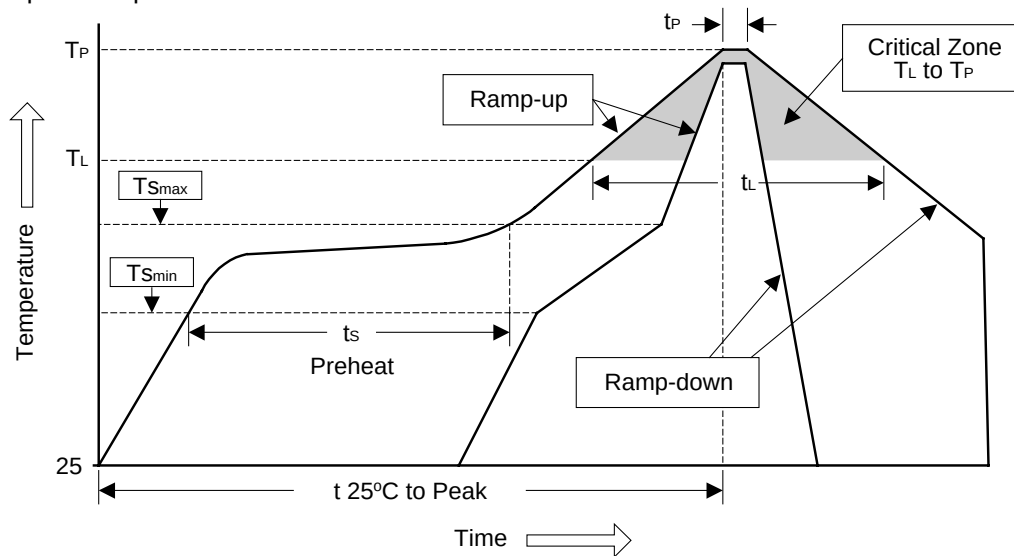
- **Head Office** (Hi-Sincerity Microelectronics Corp.): 10F., No. 61, Sec. 2, Chung-Shan N. Rd. Taipei Taiwan R.O.C.
Tel: 886-2-25212056 Fax: 886-2-25632712, 25368454
- **Factory 1:** No. 38, Kuang Fu S. Rd., Fu-Kou Hsin-Chu Industrial Park Hsin-Chu Taiwan. R.O.C
Tel: 886-3-5983621~5 Fax: 886-3-5982931



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