



# 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

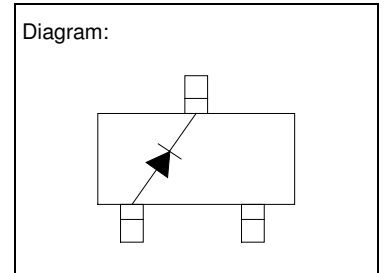
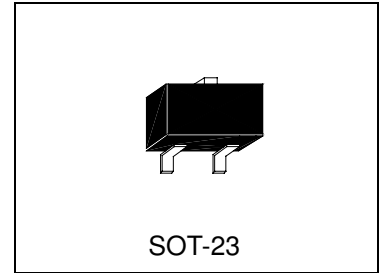
- Small SMD Package (SOT-23)
- Ultra-high Speed
- Low Forward Voltage
- Fast Reverse Recovery Time

## Absolute Maximum Ratings

- Maximum Temperatures
  - Storage Temperature ..... -65 ~ +150 °C
  - Junction Temperature ..... +150 °C
- Maximum Power Dissipation
  - Total Power Dissipation (T<sub>A</sub>=25°C) ..... 250 mW
- Maximum Voltages and Currents (T<sub>A</sub>=25°C)
  - Repetitive Peak Reverse Voltage ..... 85 V
  - V<sub>R</sub> Coinuous Reverse Voltage ..... 70 V
  - I<sub>F</sub> Continuous Forward Current ..... 200 mA
  - I<sub>FSM</sub> Peak Forward Surge Current ..... 500 mA
  - I<sub>FSM</sub> Non-Repetitive Peak Forward Current t=1uS ..... 4 A
  - I<sub>FSM</sub> Non-Repetitive Peak Forward Current t=1mS ..... 1 A
  - I<sub>FSM</sub> Non-Repetitive Peak Forward Current t=1S ..... 0.5 A

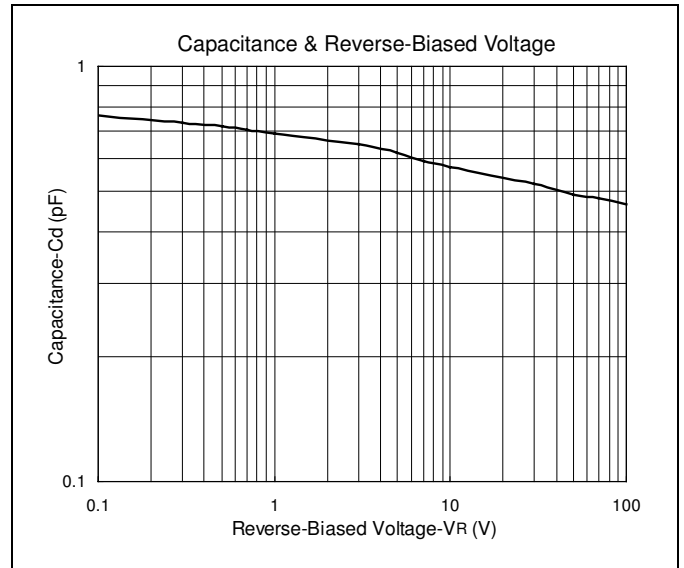
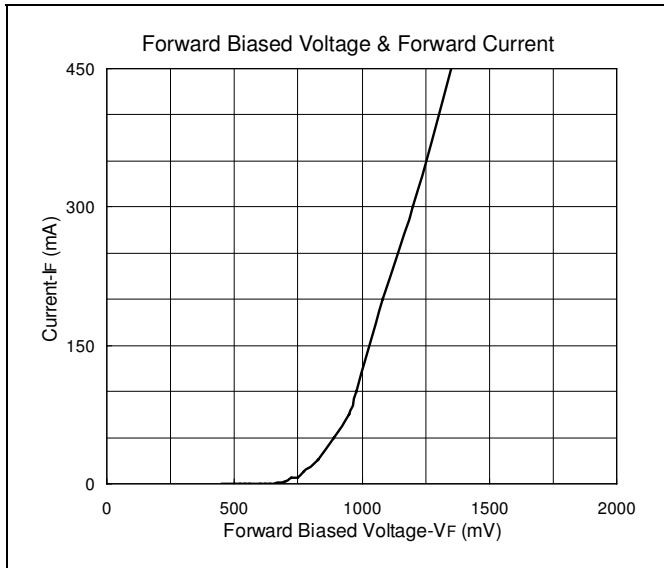
## Electrical Characteristics (T<sub>A</sub>=25°C)

Characteristic	Symbol	Condition	Min	Max	Unit
Forward Voltage	V <sub>F</sub>	I <sub>F</sub> =10mA	-	1	V
Reverse Breakdown Voltage	V <sub>R</sub>	I <sub>R</sub> =100uA	100		V
Reverse Current	I <sub>R(1)</sub>	V <sub>R</sub> =25V	-	25	nA
	I <sub>R(2)</sub>	V <sub>R</sub> =75V	-	5	uA
Diode Capacitance	C <sub>d</sub>	V <sub>R</sub> =0, F=1MHz	-	1.5	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	-	4	ns





## Characteristics Curve





### SOT-23 Dimension

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

**Marking:**

Pb Free Mark  
Pb-Free: "●" (Note)  
Normal: None

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:

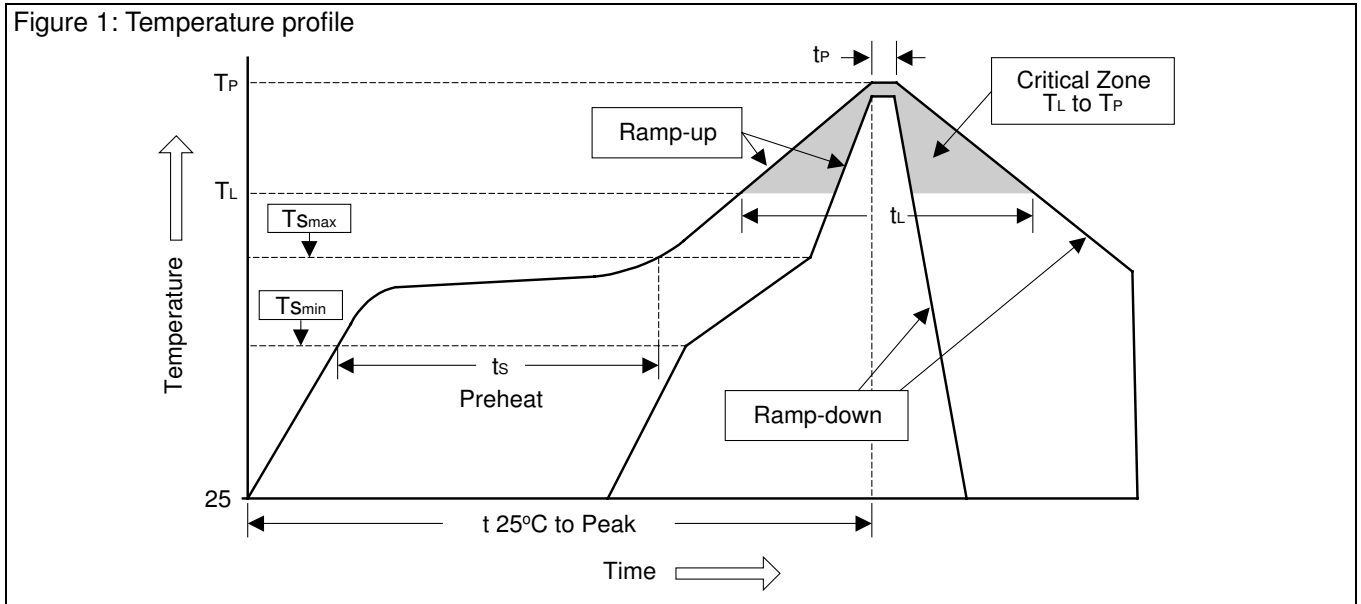
- **Head Office** (Hi-Sincerity Microelectronics Corp.): 10F., No. 61, Sec. 2, Chung-Shan N. Rd. Taipei Taiwan R.O.C.  
Tel: 886-2-25212056 Fax: 886-2-25632712, 25368454
- **Factory 1:** No. 38, Kuang Fu S. Rd., Fu-Kou Hsin-Chu Industrial Park Hsin-Chu Taiwan. R.O.C  
Tel: 886-3-5983621~5 Fax: 886-3-5982931



## 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