

# Surface Mount General Purpose Schottky Diodes

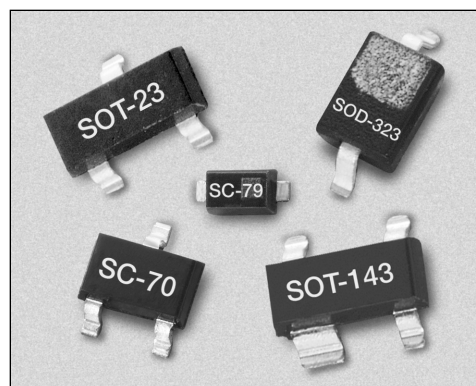


## Features

- Tight Parameter Distribution
- Available as Singles and Pairs
- 100% DC Tested
- Designed for High Volume Commercial Applications
- Available in Tape and Reel Packaging

## Description

This series of 8, 20 and 70 V rated low cost plastic packaged Schottky diodes are designed for general purpose use in RF applications as detectors, mixers and switches and in digital pulse forming applications. All diodes are fully characterized including SPICE model parameters and deliver tight parameter distribution, minimizing performance variability. They are available in SC-70, SC-79, SOD-323, SOT-23 and SOT-143 packages. Wiring configurations include singles, common cathode, series pairs and unconnected pairs. Available in tape and reel for pick and place manufacturing.



## Absolute Maximum Ratings

| Characteristic                           | Value               |
|------------------------------------------|---------------------|
| Reverse Voltage ( $V_R$ )                | Rated $V_B$         |
| Forward Current - Steady State ( $I_F$ ) | 50 mA               |
| Forward Current - 1 mS Pulse ( $I_F$ )   | 1 A                 |
| Power Dissipation ( $P_D$ )              | 75 mW               |
| Storage Temperature ( $T_{ST}$ )         | -65°C to +150°C     |
| Operating Temperature ( $T_{OP}$ )       | -65°C to +150°C     |
| Junction Temperature ( $T_J$ )           | 150°C               |
| Soldering Temperature                    | 260°C for 5 Seconds |
| ESD Human Body Model                     | Class 1B            |

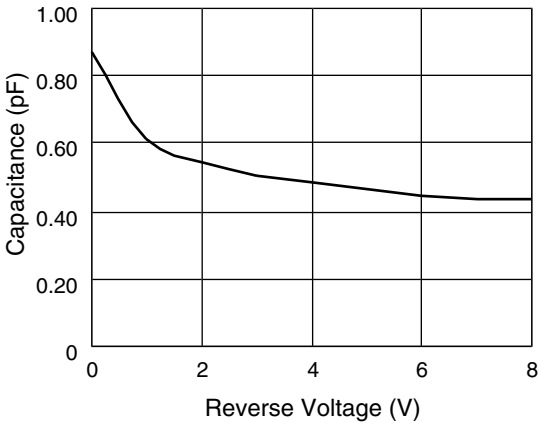
|                |                |                |                |                |                  |
|----------------|----------------|----------------|----------------|----------------|------------------|
|                |                |                |                |                |                  |
| Single         | Single         | Single         | Common Cathode | Series Pair    | Unconnected Pair |
| SC-79          | SOD-323        | SOT-23         | SOT-23         | SOT-23         | SOT-143          |
| ◆ SMS3922-079  | ◆ SMS3922-011  | ◆ SMS3922-001  | ◆ SMS3922-004  | ◆ SMS3922-005  | ◆ SMS3922-015    |
| Cathode Mark   | Cathode Mark   | Marking: SA1   | Marking: SA3   | Marking: SA2   | Marking: SA7     |
| ◆ SMS3923-079  | ◆ SMS3923-011  | ◆ SMS3923-001  | ◆ SMS3923-004  | ◆ SMS3923-005  | ◆ SMS3923-015    |
| Cathode Mark   | Cathode Mark   | Marking: SB1   | Marking: SB3   | Marking: SB2   | Marking: SB7     |
| ◆ SMS3924-079  | ◆ SMS3924-011  | ◆ SMS3924-001  | ◆ SMS3924-004  | ◆ SMS3924-005  | ◆ SMS3924-015    |
| Cathode Mark   | Cathode Mark   | Marking: SC1   | Marking: SC3   | Marking: SC2   | Marking: SC7     |
| $L_S = 0.7$ nH | $L_S = 1.5$ nH | $L_S = 1.5$ nH | $L_S = 1.5$ nH | $L_S = 1.5$ nH | $L_S = 1.5$ nH   |
|                |                |                |                | SC-70          |                  |
|                |                |                |                | ◆ SMS3922-075  |                  |
|                |                |                |                | Marking: SA2   |                  |
|                |                |                |                | ◆ SMS3923-075  |                  |
|                |                |                |                | Marking: SB2   |                  |
|                |                |                |                | ◆ SMS3924-075  |                  |
|                |                |                |                | Marking: SC2   |                  |
|                |                |                |                | $L_S = 1.4$ nH |                  |

◆ Available through distribution.

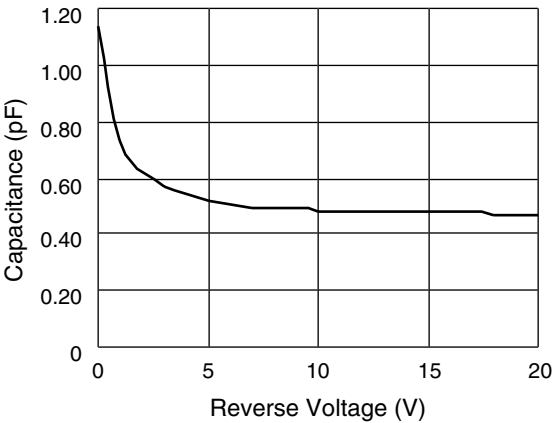
Electrical Specifications at 25°C

| Part Number    | $V_B$ @ 10 $\mu A$ (V) | $I_R$           | $C_T$ @ 0 V (pF) | $V_F$ @ 1 mA (mV) | Pair Configuration<br>(b) $V_F$ @ 1 mA (mV) | $V_F$             |
|----------------|------------------------|-----------------|------------------|-------------------|---------------------------------------------|-------------------|
|                | Min.                   |                 |                  |                   | Max.                                        | Max.              |
| SMS3922 Series | 8                      | @ 1 V < 100 nA  | 0.63–1.03        | 280–340           | 10                                          | @ 10 mA < 450 mV  |
| SMS3923 Series | 20                     | @ 15 V < 500 nA | 0.83–1.23        | 310–370           | 10                                          | @ 35 mA < 1000 mV |
| SMS3924 Series | 70                     | @ 50 V < 200 nA | 1.43–1.83        | 490–550           | 10                                          | @ 15 mA < 1000 mV |

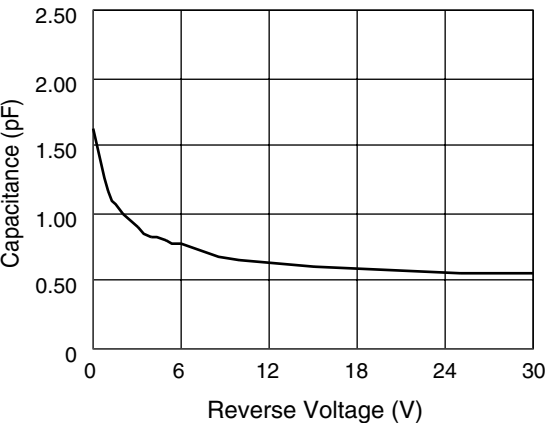
Typical Performance Data



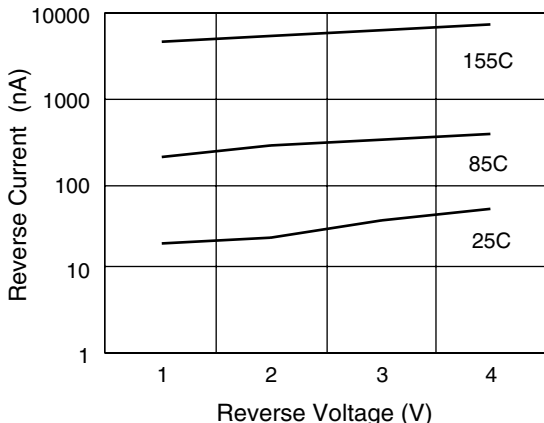
SMS3922 Total Capacitance vs. Reverse Voltage



SMS3923 Total Capacitance vs. Reverse Voltage



SMS3924 Total Capacitance vs. Reverse Voltage

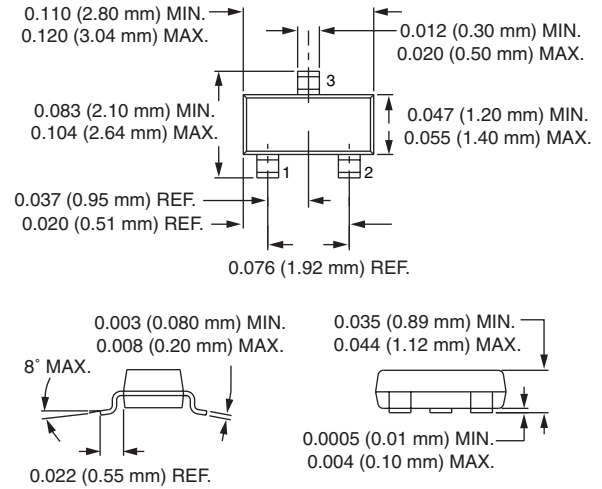


SMS3922 Reverse Current vs. Reverse Voltage

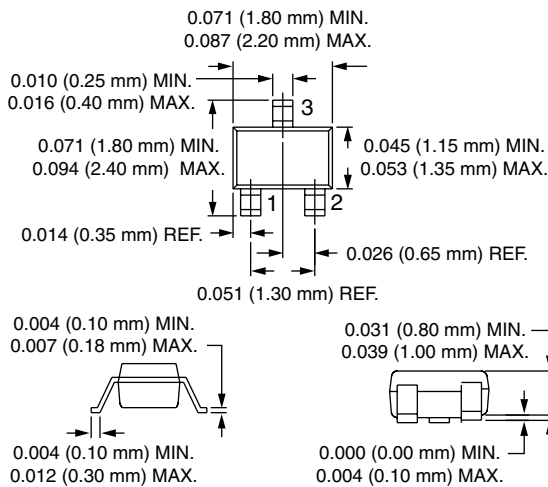
## SPICE Model Parameters

| Parameter | Unit | SMS3922 | SMS3923 | SMS3924 |
|-----------|------|---------|---------|---------|
| IS        | A    | 3E-8    | 5E-9    | 2E-11   |
| RS        | Ω    | 9       | 11      | 11      |
| N         |      | 1.08    | 1.05    | 1.08    |
| TT        | S    | 8E-11   | 8E-11   | 8E-11   |
| CJO       | pF   | 0.7     | 0.9     | 1.5     |
| M         |      | 0.26    | 0.24    | 0.4     |
| EG        | eV   | 0.69    | 0.69    | 0.69    |
| XTI       |      | 2       | 2       | 2       |
| FC        |      | 0.5     | 0.5     | 0.5     |
| BV        | V    | 20      | 46      | 100     |
| IBV       | A    | 1E-5    | 1E-5    | 1E-5    |
| VJ        | V    | 0.595   | 0.64    | 0.84    |

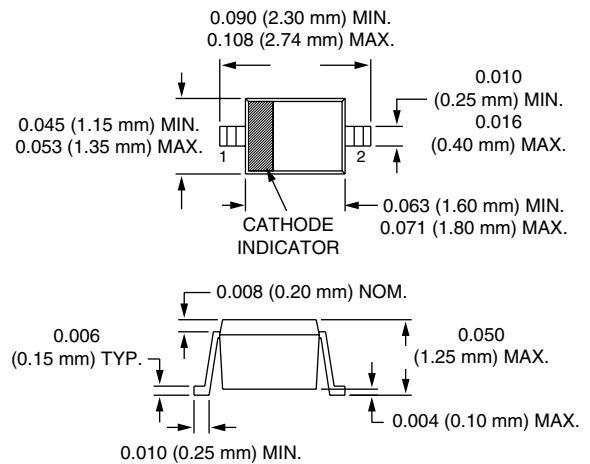
## SOT-23



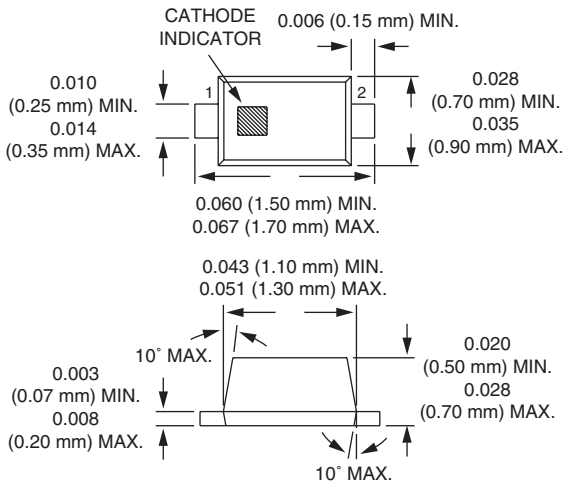
## SC-70



## SOD-323



## SC-79



## SOT-143

