

# 1N4148

DIODE

## HIGH-SPEED SWITCHING DIODE

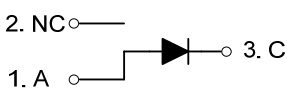
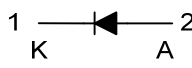
### DESCRIPTION

The UTC **1N4148** 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

- \* Ultra-high speed
- \* Low forward voltage
- \* Fast reverse recovery time

### SYMBOL

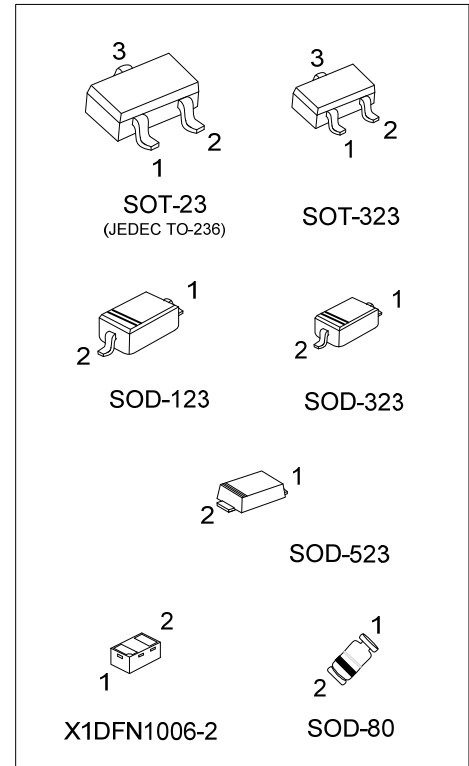
|                                                                                     |                                                                                     |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| SOT-23 / SOT-323                                                                    | SOD-123 / SOD-323<br>SOD-523 / SOD-80<br>X1DFN1006-2                                |
|  |  |

### ORDERING INFORMATION

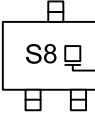
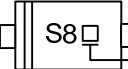
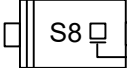
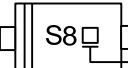
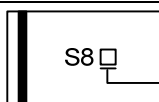
| Ordering Number |               | Package     | Pin Assignment |    |   | Packing   |
|-----------------|---------------|-------------|----------------|----|---|-----------|
| Lead Free       | Halogen Free  |             | 1              | 2  | 3 |           |
| 1N4148L-AE3-R   | 1N4148G-AE3-R | SOT-23      | A              | NC | C | Tape Reel |
| 1N4148L-AL3-R   | 1N4148G-AL3-R | SOT-323     | A              | NC | C | Tape Reel |
| 1N4148L-CA2-R   | 1N4148G-CA2-R | SOD-123     | A              | C  | - | Tape Reel |
| 1N4148L-CB2-R   | 1N4148G-CB2-R | SOD-323     | A              | C  | - | Tape Reel |
| 1N4148L-CC2-R   | 1N4148G-CC2-R | SOD-523     | A              | C  | - | Tape Reel |
| 1N4148L-CE2-R   | 1N4148G-CE2-R | SOD-80      | A              | C  | - | Tape Reel |
| 1N4148L-KAA-R   | 1N4148G-KAA-R | X1DFN1006-2 | K              | A  | - | Tape Reel |

Note: Pin assignment: A: Anode C: Cathode NC: No Connection

|                                                                                               |                                                                                                                                                                                                 |
|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>1N4148G-AE3-R</p> <p>(1) Packing Type</p> <p>(2) Package Type</p> <p>(3) Green Package</p> | <p>(1) R: Tape Reel</p> <p>(2) AE3: SOT-23, AL3: SOT-323, CA2: SOD-123, CB2: SOD-323, CC2: SOD-523, CE2: SOD-80<br/>KAA: X1DFN1006-2</p> <p>(3) G: Halogen Free and Lead Free, L: Lead Free</p> |
|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|



## ■ MARKING

| SOT-23 / SOT-323                                                                                                  | SOD-123                                                                                                            |
|-------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|
|  L: Lead Free<br>G: Halogen Free |  L: Lead Free<br>G: Halogen Free |
| SOD-323                                                                                                           | SOD-523                                                                                                            |
|  L: Lead Free<br>G: Halogen Free |  L: Lead Free<br>G: Halogen Free |
| X1DFN1006-2                                                                                                       | -                                                                                                                  |
|  L: Lead Free<br>G: Halogen Free | -                                                                                                                  |

■ **ABSOLUTE MAXIMUM RATINGS** ( $T_A=25^{\circ}\text{C}$ , unless otherwise specified)

| PARAMETER                                 |                       | SYMBOL      | RATINGS    | UNIT               |
|-------------------------------------------|-----------------------|-------------|------------|--------------------|
| Maximum Repetitive Reverse Voltage        |                       | $V_{RRM}$   | 100        | V                  |
| Average Rectified Forward Current         |                       | $I_{F(AV)}$ | 200        | mA                 |
| Non-repetitive Peak Forward Surge Current | Pulse Width = 1.0 sec | $I_{FSM}$   | 1.0        | A                  |
|                                           | Pulse Width = 1.0 ms  |             | 4.0        | A                  |
| Power Dissipation(Note 3)                 | SOT-23                | $P_D$       | 350        | mW                 |
|                                           | SOD-123               |             | 400        | mW                 |
|                                           | SOT-323               |             | 270        | mW                 |
|                                           | SOD-323/SOD-523       |             | 200        | mW                 |
|                                           | SOD-80                |             | 500        | mW                 |
|                                           | X1DFN1006-2           |             | 250        | mW                 |
| Junction Temperature                      |                       | $T_J$       | +150       | $^{\circ}\text{C}$ |
| Storage Temperature                       |                       | $T_{STG}$   | -65 ~ +200 | $^{\circ}\text{C}$ |

Notes: 1. Absolute maximum ratings are those values beyond which the device could be permanently damaged.

Absolute maximum ratings are stress ratings only and functional device operation is not implied.

2. These ratings are based on a maximum junction temperature of  $200^{\circ}\text{C}$ .

3. Device mounted on FR-4 PCB minimum land pad.

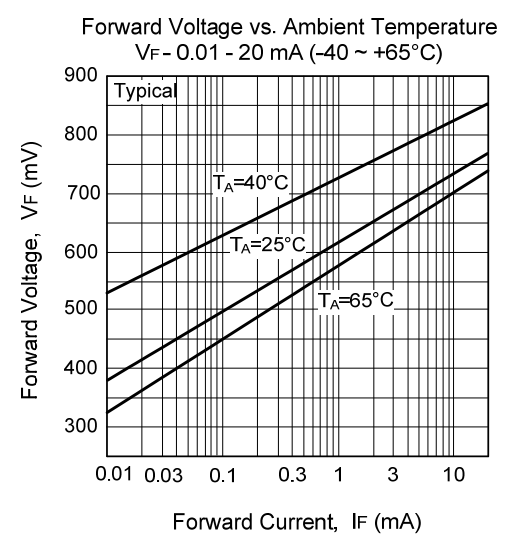
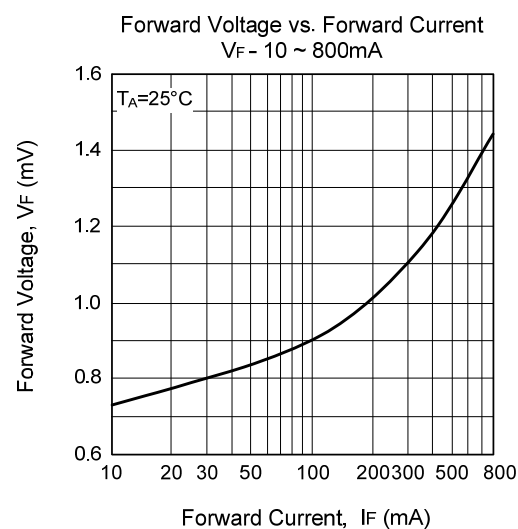
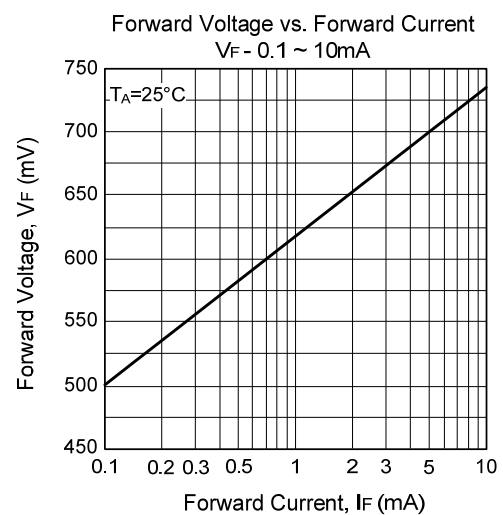
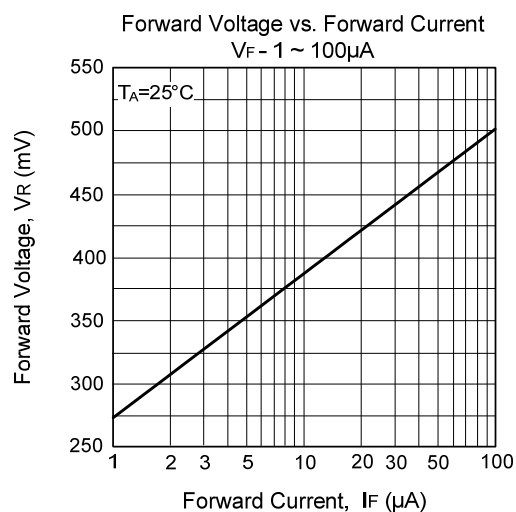
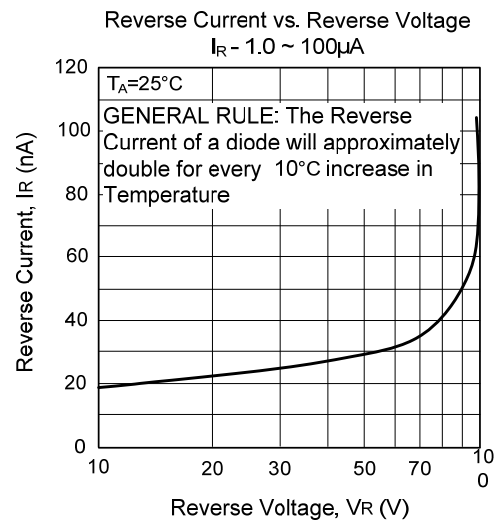
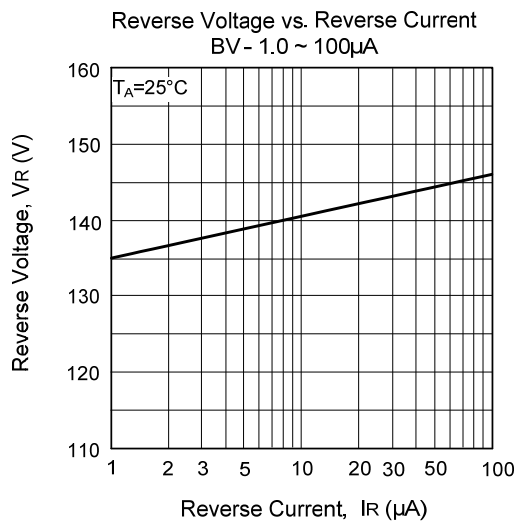
■ **THERMAL DATA**

| CHARACTERISTIC      |                 | SYMBOL        | RATINGS | UNIT                 |
|---------------------|-----------------|---------------|---------|----------------------|
| Junction to Ambient | SOT-23          | $\theta_{JA}$ | 357     | $^{\circ}\text{C/W}$ |
|                     | SOD-123         |               | 312     | $^{\circ}\text{C/W}$ |
|                     | SOT-323         |               | 460     | $^{\circ}\text{C/W}$ |
|                     | SOD-323/SOD-523 |               | 625     | $^{\circ}\text{C/W}$ |
|                     | SOD-80          |               | 250     | $^{\circ}\text{C/W}$ |
|                     | X1DFN1006-2     |               | 500     | $^{\circ}\text{C/W}$ |

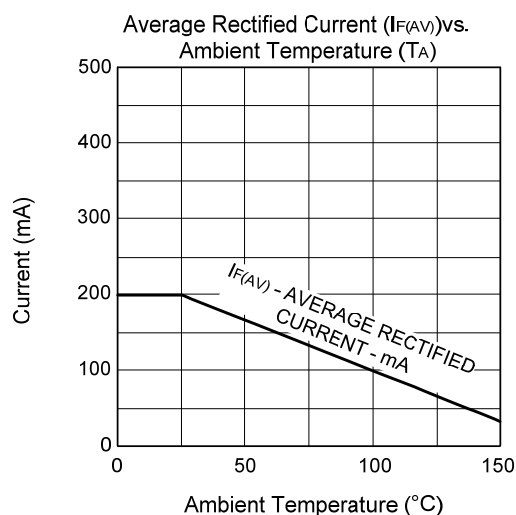
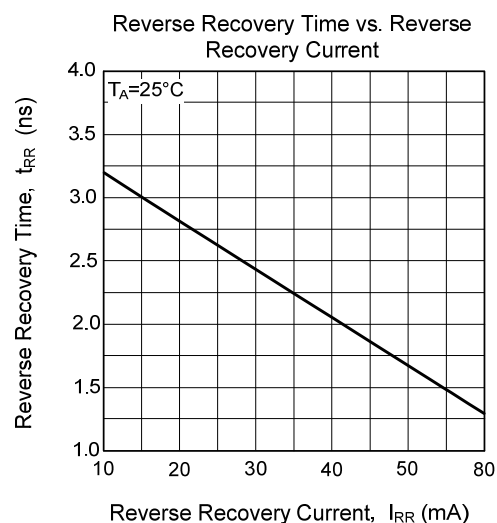
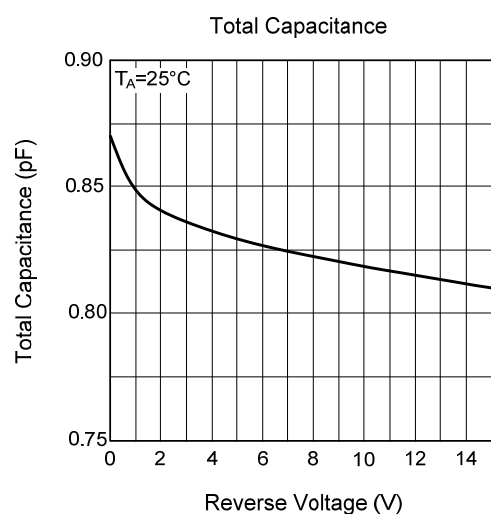
■ **ELECTRICAL CHARACTERISTICS** ( $T_A=25^{\circ}\text{C}$ , unless otherwise specified)

| PARAMETER             | SYMBOL   | TEST CONDITIONS                                                                          | MIN | TYP | MAX | UNIT          |
|-----------------------|----------|------------------------------------------------------------------------------------------|-----|-----|-----|---------------|
| Breakdown Voltage     | $V_R$    | $I_R=100\mu\text{A}$                                                                     | 100 |     |     | V             |
|                       |          | $I_R=5.0\mu\text{A}$                                                                     | 75  |     |     | V             |
| Forward Voltage       | $V_F$    | $I_F=10\text{mA}$                                                                        |     |     | 1.0 | V             |
| Reverse Current       | $I_R$    | $V_R=20\text{V}$                                                                         |     |     | 25  | nA            |
|                       |          | $V_R=75\text{V}$                                                                         |     |     | 5.0 | $\mu\text{A}$ |
| Total Capacitance     | $C_T$    | $V_R=0, f=1.0\text{MHz}$                                                                 |     |     | 4.0 | pF            |
| Reverse Recovery Time | $t_{rr}$ | $I_F=10\text{mA}, V_R=6.0\text{V} (60\text{mA})$<br>$I_{RR}=1.0\text{mA}, R_L=100\Omega$ |     |     | 4.0 | ns            |

# TYPICAL CHARACTERISTICS



# ■ TYPICAL CHARACTERISTICS (Cont.)



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