



1N4148

DIODE

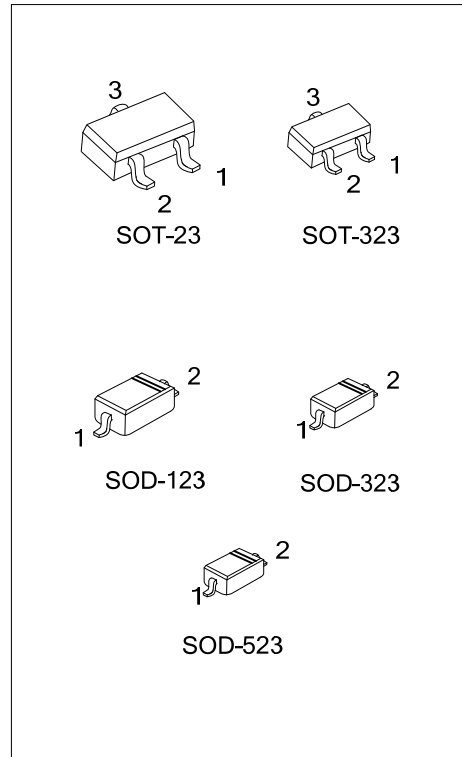
HIGH-SPEED SWITCHING DIODE

■ **DESCRIPTION**

The UTC **1N4148** is designed for high-speed switching application in hybrid thick-and thin-film circuits. The devices 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



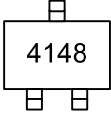
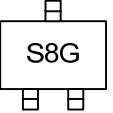
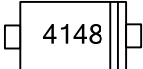

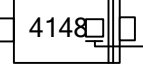
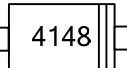

■ **ORDERING INFORMATION**

| Ordering Number | | Package | Pin Assignment | | | Packing |
|-----------------|---------------|---------|----------------|---|---|-----------|
| Lead Free | Halogen Free | | 1 | 2 | 3 | |
| 1N4148L-AE3-R | 1N4148G-AE3-R | SOT-23 | NC | A | C | Tape Reel |
| 1N4148L-AL3-R | 1N4148G-AL3-R | SOT-323 | NC | A | 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 |

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

| | |
|--|--|
| <p>1N4148L-AE3-R</p> <p>(1) Packing Type (2) Package Type (3) Lead Plating</p> | <p>(1) R: Tape Reel (2) AE3: SOT-23, AL3: SOT-323 CA2: SOD-123, CB2: SOD-323, CC2: SOD-523 (3) G: Halogen Free, L: Lead Free</p> |
|--|--|

■ MARKING

| PACKAGE | MARKING | |
|---------------------|---|---|
| | Lead Free | Halogen Free |
| SOT-23/ SOT-323/ |  |  |
| SOD-123 |  |  |
| SOD-323 |  <p>L: Lead Free G: Halogen Free</p> | |
| SOD-523 |  |  |

■ ABSOLUTE MAXIMUM RATINGS (T_A=25°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) | SOD-123 | P _D | 400 | mW |
| | SOT-23 | | 350 | |
| | SOT-323 | | 270 | |
| | SOD-323/ SOD-523 | | 200 | |
| Junction Temperature | | T _J | +175 | °C |
| Storage Temperature | | T _{STG} | -65 ~ +200 | °C |

Note: 1. These ratings are based on a maximum junction temperature of 200°C.

2. 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.

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

■ THERMAL DATA

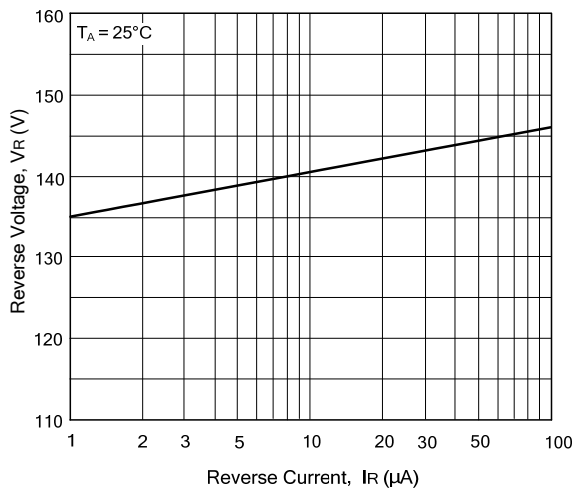
| CHARACTERISTIC | | SYMBOL | RATINGS | UNIT |
|---------------------|------------------|-----------------|---------|------|
| Junction to Ambient | SOD-123 | θ _{JA} | 312 | °C/W |
| | SOT-23 | | 357 | |
| | SOT-323 | | 460 | |
| | SOD-323/ SOD-523 | | 500 | |

■ ELECTRICAL CHARACTERISTICS (T_A=25°C, unless otherwise specified)

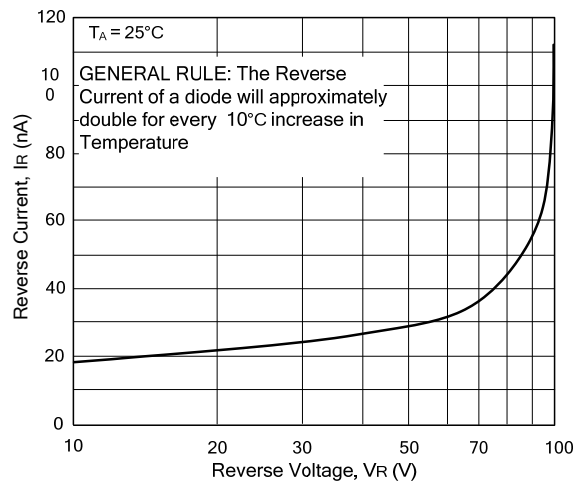
| PARAMETER | SYMBOL | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|-----------------------|-----------------|--|-----|-----|-----|------|
| Breakdown Voltage | V _R | I _R = 100μA | 100 | | | V |
| | | I _R = 5.0μA | 75 | | | V |
| Forward Voltage | V _F | I _F = 10 mA | | | 1.0 | V |
| Reverse Current | I _R | V _R = 20 V | | | 25 | nA |
| | | V _R = 75 V | | | 5.0 | μA |
| Total Capacitance | C _T | V _R = 0, f = 1.0MHz | | | 4.0 | pF |
| Reverse Recovery Time | t _{rr} | I _F = 10 mA, V _R = 6.0 V (60mA) I _{RR} = 1.0 mA, R _L = 100Ω | | | 4.0 | ns |

TYPICAL CHARACTERISTICS

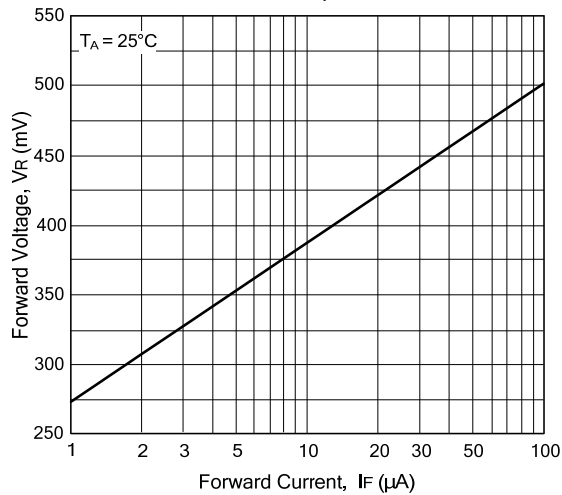
Reverse Voltage vs. Reverse Current
 $V_R - 1.0 \sim 100\mu A$



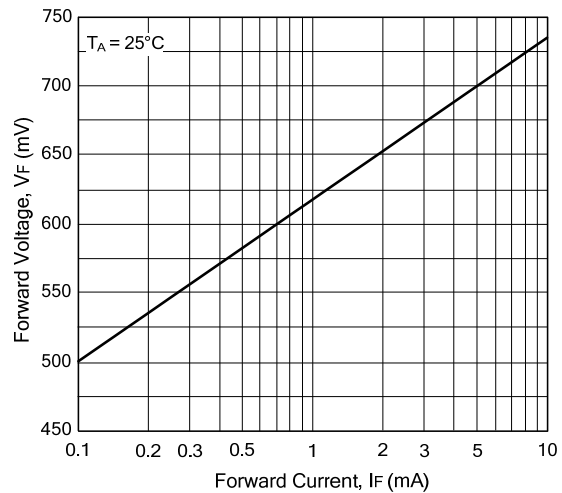
Reverse Current vs. Reverse Voltage
 $I_R - 10 \sim 100 V$



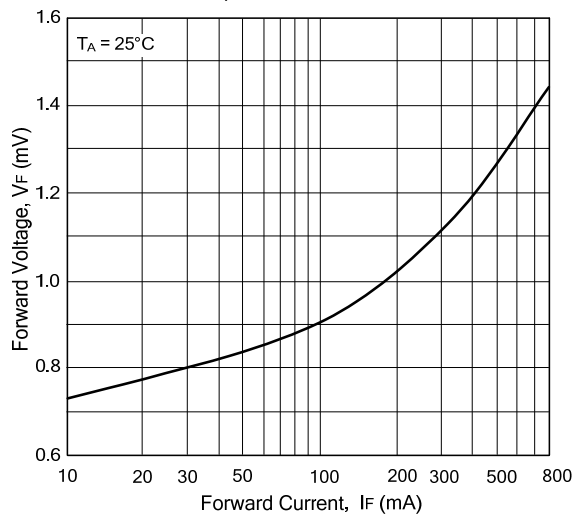
Forward Voltage vs. Forward Current
 $V_F - 1 \sim 100\mu A$



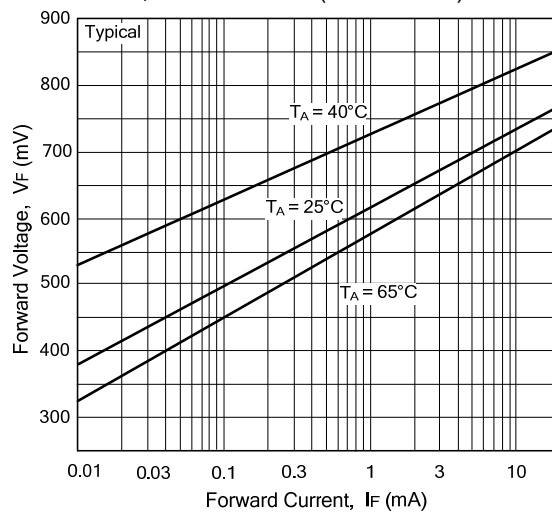
Forward Voltage vs. Forward Current
 $V_F - 0.1 \sim 10 mA$



Forward Voltage vs. Forward Current
 $V_F - 10 \sim 800 mA$

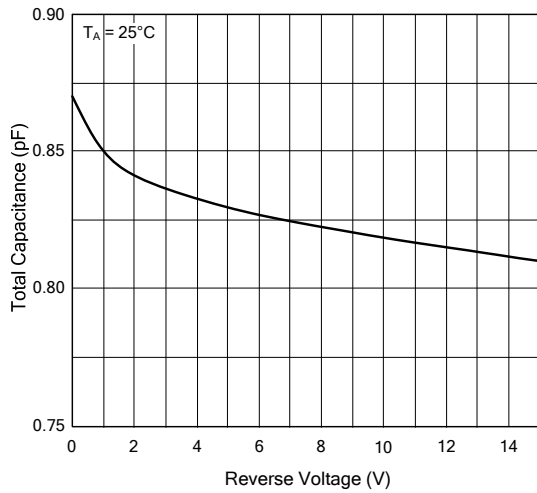


Forward Voltage vs. Ambient Temperature
 $V_F - 0.01 - 20 mA (-40 \sim +65^\circ C)$

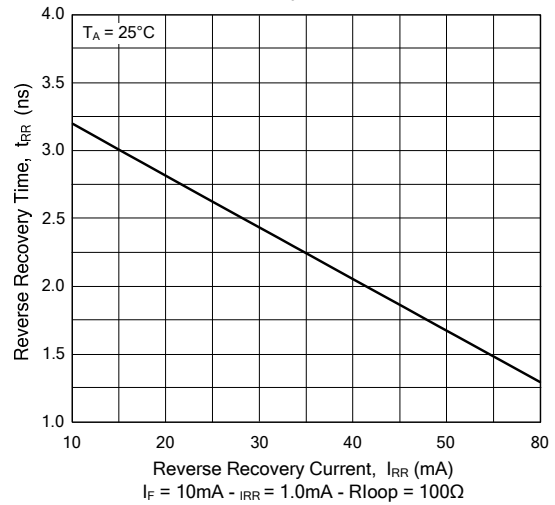


■ TYPICAL CHARACTERISTICS(Cont.)

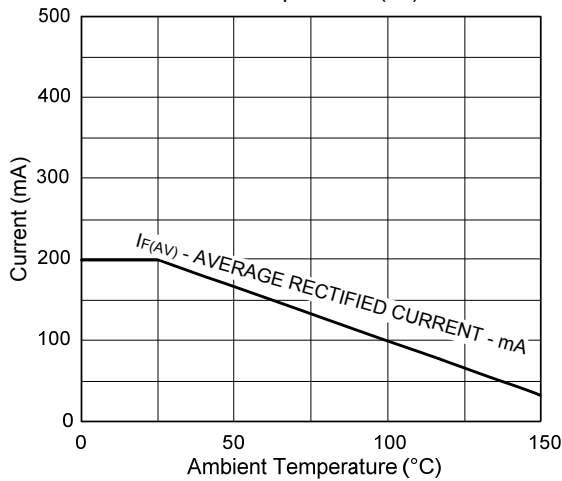
Total Capacitance



Reverse Recovery Time vs. Reverse Recovery Current



Average Rectified Current ($I_{F(AV)}$) vs. Ambient Temperature (T_A)



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