



1N4148

DIODE

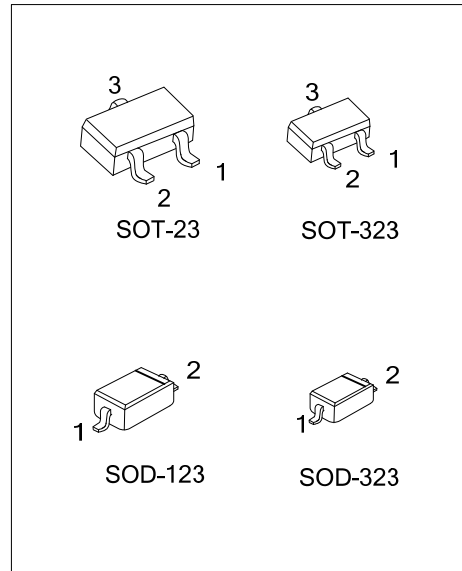
HIGH-SPEED SWITCHING DIODE

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 |

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 (3) G: Halogen Free, L: Lead Free</p> |
|--|--|

MARKING

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

■ ABSOLUTE MAXIMUM RATINGS (Ta=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 second | I_{FSM} | 1.0 | A |
| | Pulse Width = 1.0 microsecond | | 4.0 | A |
| Power Dissipation | | P_D | 500 | mW |
| Operating Junction Temperature | | T_J | +175 | °C |
| Storage Temperature Range | | 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.

■ THERMAL DATA

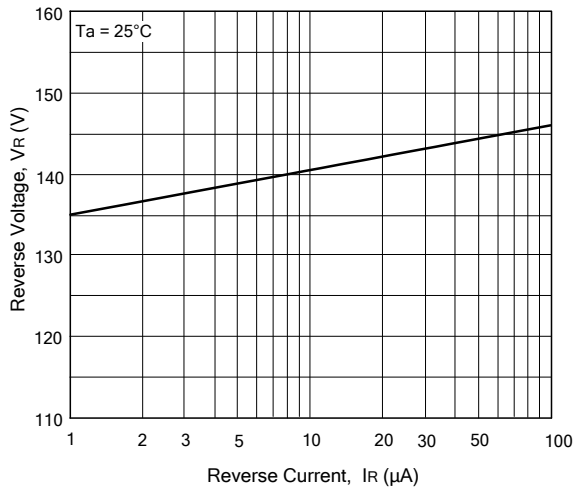
| CHARACTERISTIC | SYMBOL | RATINGS | UNIT |
|---------------------|---------------|---------|------|
| Junction to Ambient | θ_{JA} | 300 | °C/W |

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

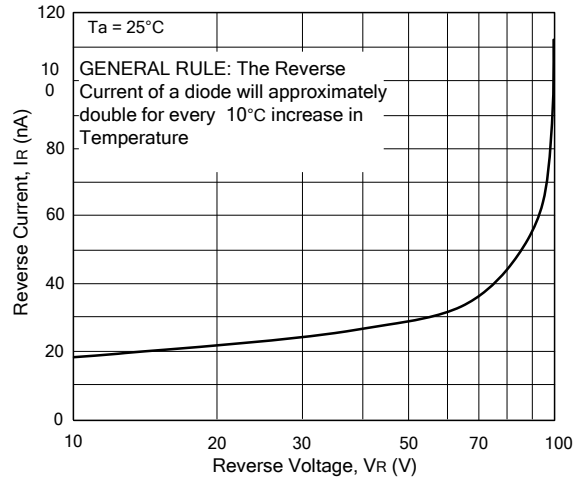
| PARAMETER | SYMBOL | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|-----------------------|----------|--|-----|-----|-----|---------|
| Breakdown Voltage | V_R | $I_R = 100\mu A$ | 100 | | | V |
| | | $I_R = 5.0\mu A$ | 75 | | | V |
| Forward Voltage | V_F | $I_F = 10\text{ mA}$ | | | 1.0 | V |
| Reverse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

TYPICAL CHARACTERISTICS

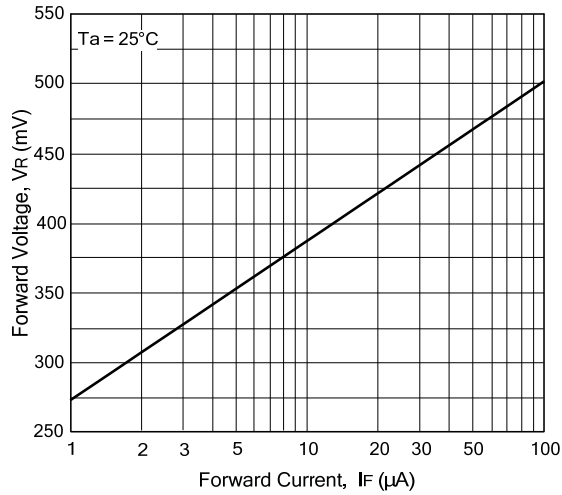
Reverse Voltage vs. Reverse Current
 $V_R - 1.0 \sim 100\mu A$



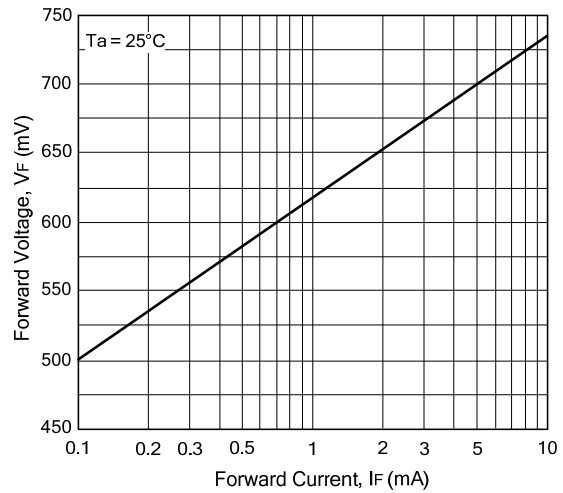
Reverse Current vs. Reverse Voltage
 $I_R - 10 \sim 100 V$



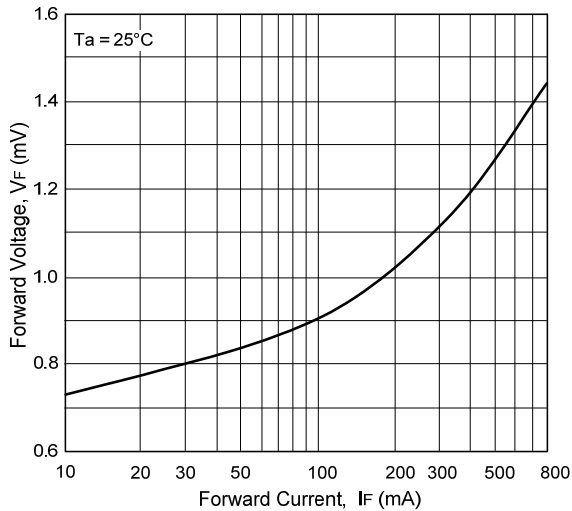
Forward Voltage vs. Forward Current
 $V_F - 1 \sim 100\mu A$



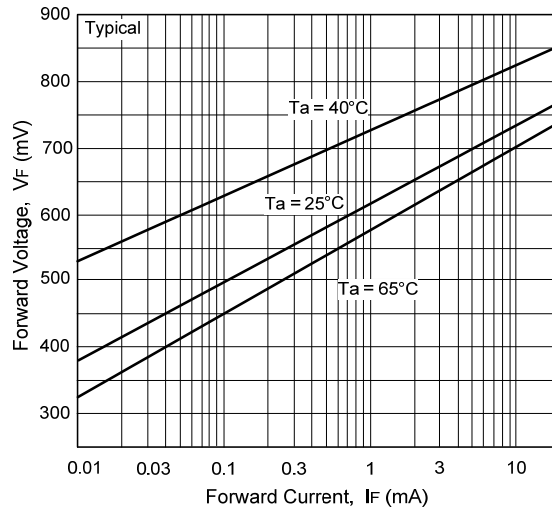
Forward Voltage vs. Forward Current
 $V_F - 0.1 \sim 10 mA$



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

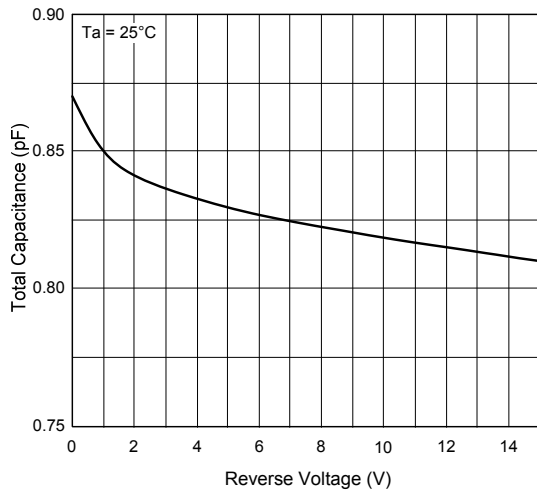


Forward Voltage vs. Ambient Temperature
 $V_F - 0.01 - 20 mA (-40 \sim +65^\circ C)$

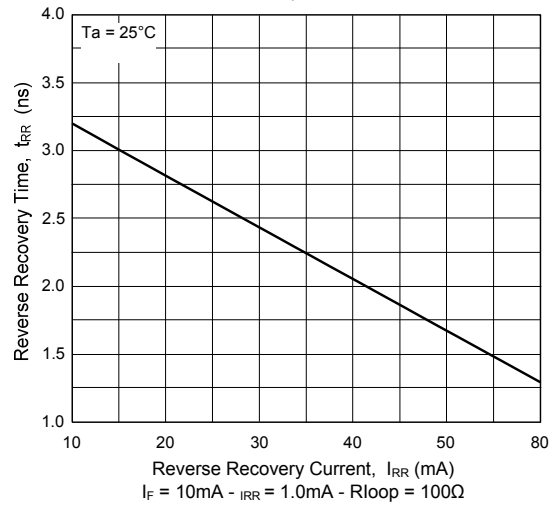


■ TYPICAL CHARACTERISTICS(Cont.)

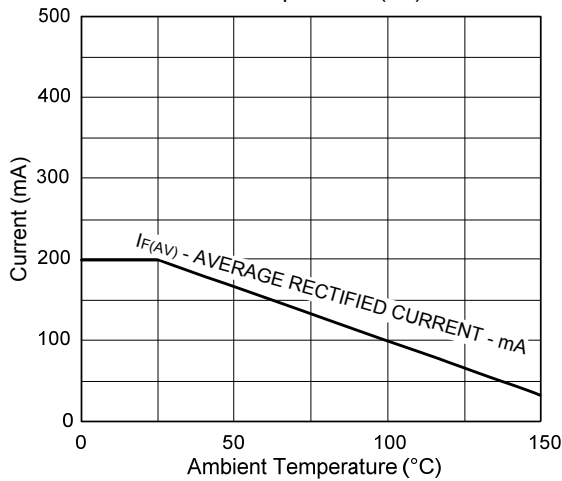
Total Capacitance



Reverse Recovery Time vs. Reverse Recovery Current



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



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