



# 1N4148

**DIODE**

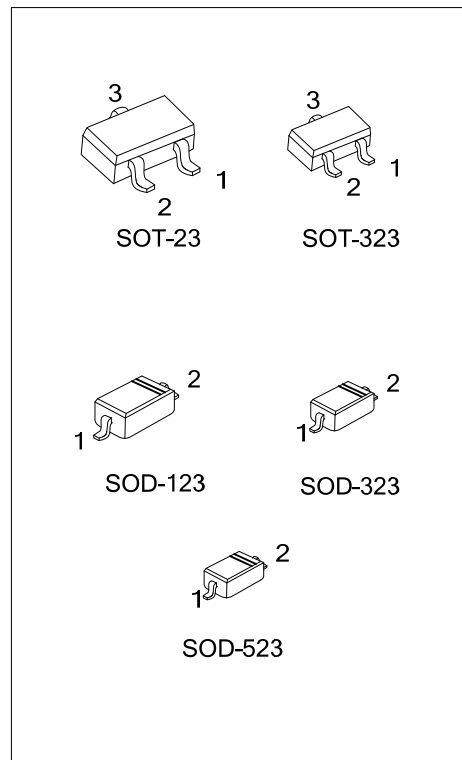
## HIGH-SPEED SWITCHING DIODE

■ **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



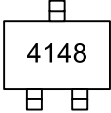
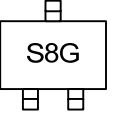
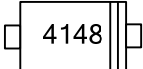

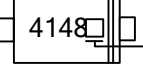
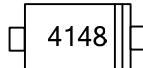

■ **ORDERING INFORMATION**

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>
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■ MARKING

PACKAGE	MARKING	
	Lead Free	Halogen Free
SOT-23/ SOT-323/		
SOD-123		
SOD-323	 <span style="margin-left: 20px;">L: Lead Free G: Halogen Free</span>	
SOD-523		

■ ABSOLUTE MAXIMUM RATINGS (T<sub>A</sub>=25°C, unless otherwise specified)

PARAMETER		SYMBOL	RATINGS	UNIT
Maximum Repetitive Reverse Voltage		V <sub>RRM</sub>	100	V
Average Rectified Forward Current		I <sub>F(AV)</sub>	200	mA
Non-repetitive Peak Forward Surge Current	Pulse Width = 1.0 sec	I <sub>FSM</sub>	1.0	A
	Pulse Width = 1.0 ms		4.0	A
Power Dissipation(Note 3)	SOD-123	P <sub>D</sub>	400	mW
	SOT-23		350	
	SOT-323		270	
	SOD-323/ SOD-523		200	
Junction Temperature		T <sub>J</sub>	+175	°C
Storage Temperature		T <sub>STG</sub>	-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

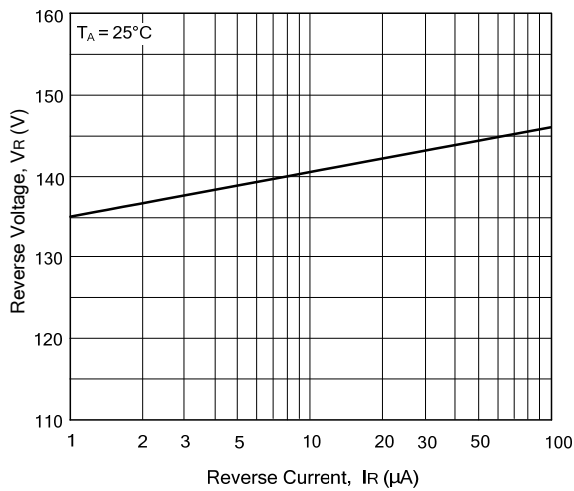
CHARACTERISTIC		SYMBOL	RATINGS	UNIT
Junction to Ambient	SOD-123	θ <sub>JA</sub>	312	°C/W
	SOT-23		357	
	SOT-323		460	
	SOD-323/ SOD-523		500	

■ ELECTRICAL CHARACTERISTICS (T<sub>A</sub>=25°C, unless otherwise specified)

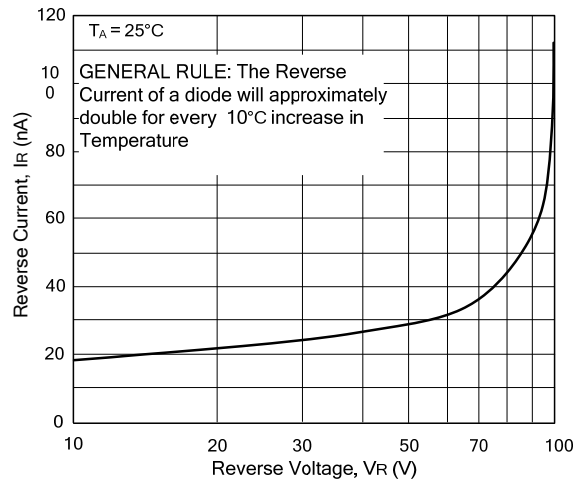
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Breakdown Voltage	V <sub>R</sub>	I <sub>R</sub> = 100μA	100			V
		I <sub>R</sub> = 5.0μA	75			V
Forward Voltage	V <sub>F</sub>	I <sub>F</sub> = 10 mA			1.0	V
Reverse Current	I <sub>R</sub>	V <sub>R</sub> = 20 V			25	nA
		V <sub>R</sub> = 75 V			5.0	μA
Total Capacitance	C <sub>T</sub>	V <sub>R</sub> = 0, f = 1.0MHz			4.0	pF
Reverse Recovery Time	t <sub>rr</sub>	I <sub>F</sub> = 10 mA, V <sub>R</sub> = 6.0 V (60mA) I <sub>RR</sub> = 1.0 mA, R <sub>L</sub> = 100Ω			4.0	ns

## TYPICAL CHARACTERISTICS

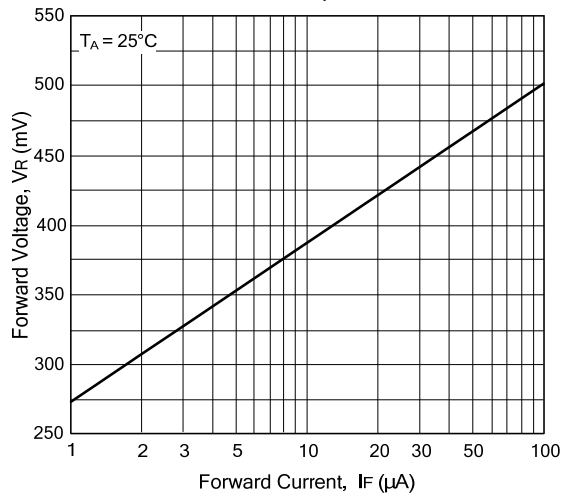
Reverse Voltage vs. Reverse Current  
BV - 1.0 ~ 100 $\mu$ A



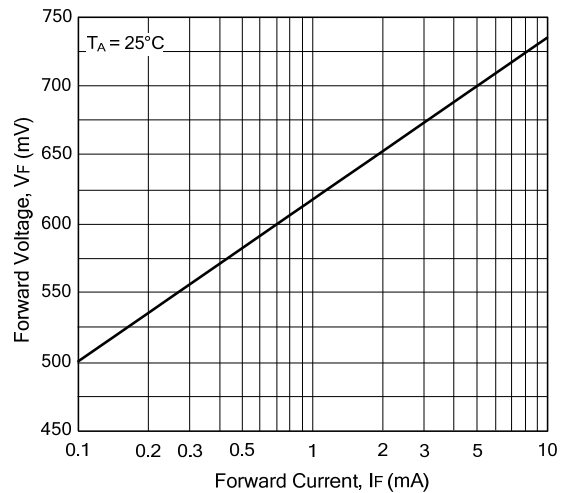
Reverse Current vs. Reverse Voltage  
 $I_R$  - 10 ~ 100 V



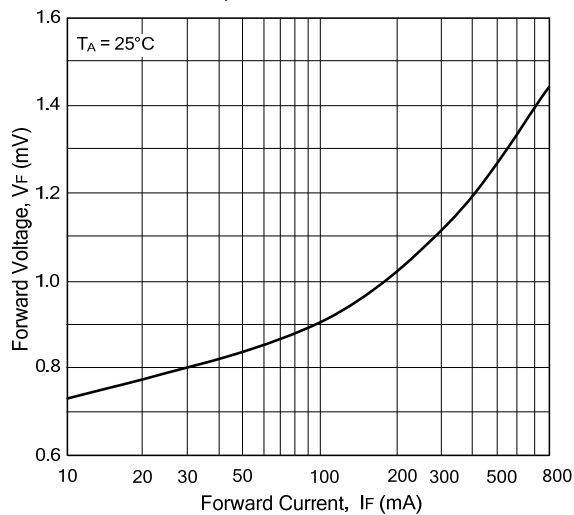
Forward Voltage vs. Forward Current  
 $V_F$  - 1 ~ 100 $\mu$ A



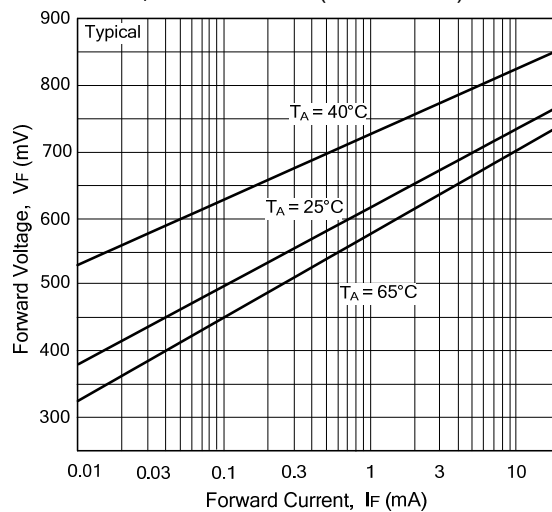
Forward Voltage vs. Forward Current  
 $V_F$  - 0.1 ~ 10 mA



Forward Voltage vs. Forward Current  
 $V_F$  - 10 ~ 800 mA

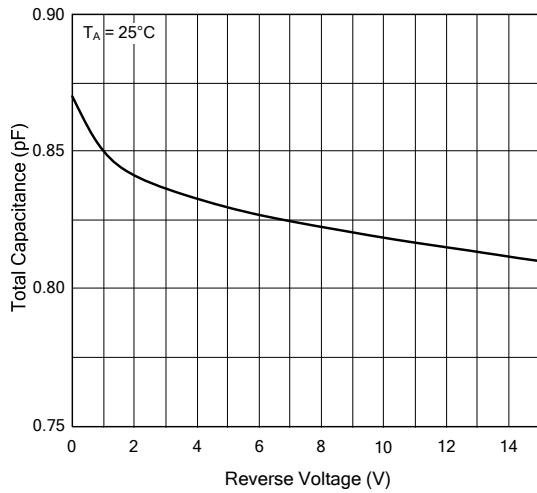


Forward Voltage vs. Ambient Temperature  
 $V_F$  - 0.01 - 20 mA (-40 ~ +65°C)

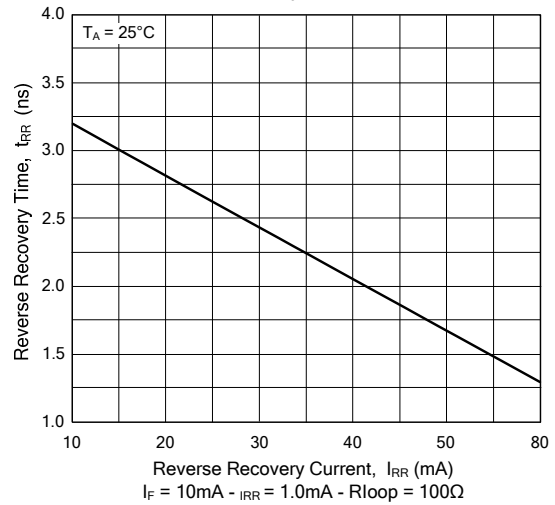


■ TYPICAL CHARACTERISTICS(Cont.)

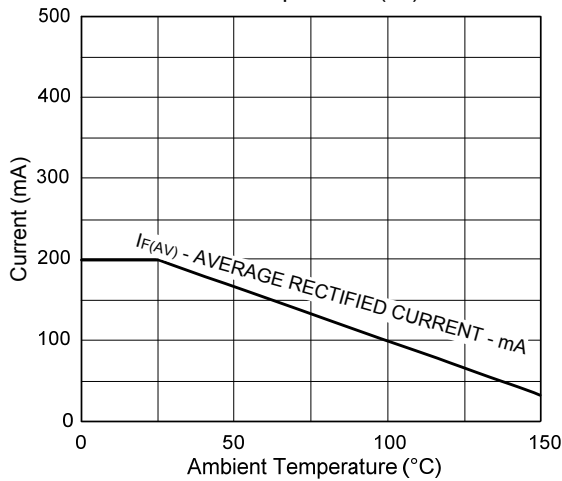
Total Capacitance



Reverse Recovery Time vs. Reverse Recovery Current



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



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