

High-speed switching diode

Features

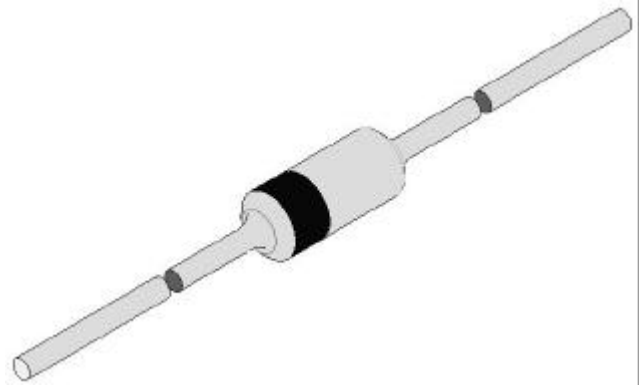
1. High reliability
2. High speed ($t_{rr}= 4 \text{ ns}$)

Applications

Extreme fast switches

Construction

Silicon epitaxial planar



Absolute Maximum Ratings

$T_j=25^\circ\text{C}$

Parameter	Test Conditions	Type	Symbol	Value	Unit
Repetitive peak reverse voltage			V_{RRM}	100	V
Reverse voltage			V_R	75	V
Peak forward surge current	$t_p=1\mu\text{ s}$		I_{FSM}	2	A
Repetitive peak forward voltage			I_{FRM}	500	mA
Forward current			I_F	300	mA
Average forward current	$V_R=0$		I_{FAV}	150	mA
Power dissipation	$l=4\text{mm } T_L= 25^\circ\text{C}$		P_V	500	mW
Junction temperature			T_j	175	?
Storage temperature range			T_{stg}	-65~+175	?

Maximum Thermal Resistance

$T_j=25^\circ\text{C}$

Parameter	Test Conditions	Symbol	Value	Unit
Junction ambient	$l=4\text{mm } T_L=\text{constant}$	R_{thJA}	350	K/W

Electrical Characteristics

$T_j=25^\circ$

Parameter	Test Conditions	Type	Symbol	Min	Typ	Max	Unit
Forward voltage	$I_F=5\text{mA}$	1N4448	V_F	0.62		0.72	V
	$I_F=10\text{mA}$	1N4148	V_F		0.86	1	V
	$I_F=100\text{mA}$	1N4448	V_F		0.93	1	V
Reverse current	$V_R=20\text{V}$		I_R			25	nA
	$V_R=20\text{V}, T_j=150^\circ$		I_R			50	μA
	$V_R=75\text{V}$		I_R			5	μA
Breakdown current	$I_R=100\mu\text{A}, t_p/T=0.01, t_p=0.3\text{ms}$		$V_{(BR)}$	100			V
Diode capacitance	$V_R=0, f=1\text{MHz}, V_{HF}=50\text{mV}$		C_D			4	pF
Rectification efficiency	$V_{HF}=2\text{V}, f=100\text{MHz}$		η_R	45			%
Reverse recovery time	$I_F=I_R=10\text{mA}, i_R=1\text{mA}$		t_{rr}			8	ns
	$I_F=10\text{mA}, V_R=6\text{V}, i_R=0.1 \times I_R, R_L=1000$		t_{rr}			4	ns

Characteristics ($T_j=25^\circ$ unless otherwise specified)

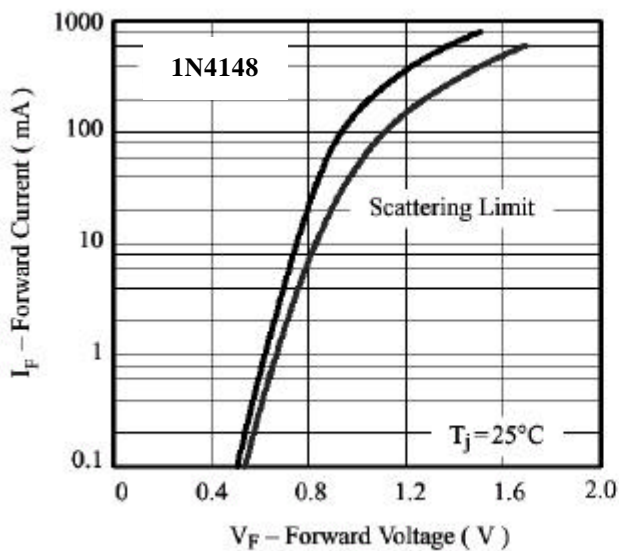


Figure 1. Forward Current vs. Forward Voltage

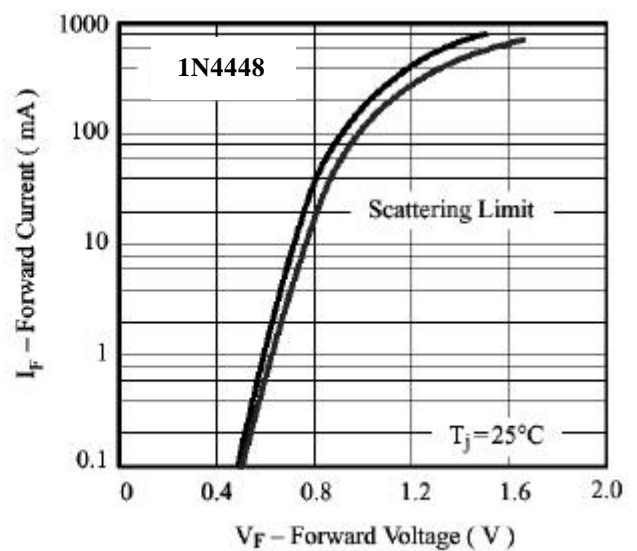


Figure 2. Forward Current vs. Forward Voltage