Diode Datasheet Review

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Diode Information

- Diode: **1N4148**

- Manufacturer: **ONSEMI**

- Application: High-speed switching in electronic circuits such as communication devices and signal processing systems.

Datasheet Link

https://www1.futureelectronics.com/doc/ON%20Semiconductor/FAIR-S-A0001232564-1.pdf

Short Explanation

For this task, I reviewed the manufacturer's datasheet for the 1N4148 diode. This diode is manufactured by **ONSEMI** and is mainly used for fast switching applications because it can turn on and off very quickly without causing delays in the circuit.

The forward voltage of the diode at a current of 5.0 mA is a minimum of 0.62V and a maximum of 0.72V. The diode can withstand up to 100 V in reverse bias (maximum reverse voltage), allowing it to safely block voltage in the opposite direction.

The DC forward current is 300mA but the maximum forward current (recurrent) is 400 mA, so it is better suited for low-power electronic circuits rather than high-current applications. Another advantage is its wide operating temperature range of −65°C to +200°C, which makes it reliable in different environmental conditions.

Real Application: Digital Logic Protection

The 1N4148 is commonly used to protect digital logic circuits (like Arduino or microcontroller input pins) from negative voltages. When connected between the

input pin and ground (cathode to pin, anode to ground), it clips any negative voltage to about -0.7V, preventing damage to sensitive chips that can only handle 0V to 5V. Its fast-switching speed ensures it responds immediately to voltage spikes, and the low current requirement matches typical digital signal levels (a few milliamps).

Overall, the 1N4148 is a dependable small-signal diode that is commonly used in switching circuits, protection circuits, and signal processing because of its speed and stability.