

How to Identify a Diode?

Diodes are usually classified based on the semiconductor material used during the manufacturing process. Germanium and Silicon are two semiconductor materials used to make diodes. Germanium diodes are used in low level signal detection applications (Egs. IN 4148, OA 71, OA 91, IN34 etc.). The great majority of junction diodes are Silicon types and are called as " General purpose" diodes. They have high reverse voltage and forward current ratings make them ideal for rectifications.

Two classification systems are available to identify diodes. The European system uses three letter alphabets as codes. The first letter denotes the semiconductor material. A for germanium and B for silicon. The second letter specify the function of diode

A – General purpose
B – Tuning
Z – Zener
Q – LED

Thus if a code BA is printed on the body of the diode, it represents Silicon tuning diode. American system of classification uses the code IN as first two letters. For example IN 4001, IN 4148. This system has one drawback that the code will not show the function of the diode. So it is necessary to go through the manufacturer's data sheets to identify the function. Polarity identification is simple. The diode is a two lead device and there is a white or black band at the cathode end.

Diodes used for rectification should have sufficient Peak inverse voltage (PIV). The peak inverse voltage is the maximum voltage a diode can withstand when it is reverse biased. 1N 4001 diode can withstand up to 50 Volts and 1N 4007 has a toleration of 1000 Volts. The important characteristics of general purpose rectifier diodes are given in table 1.

Table 1

Type of diode	Repetitive peak reverse voltage V _{rrm}	Average forward current – V _r	Forward voltage – V _f	Reverse current - I _r
1N 4001	50V	1A	1.1 V	10 uA
1N 4002	100 V	1A	1.1V	10uA
1N 4003	200 V	1A	1.1V	10uA
1N 4004	400 V	1A	1.1V	10uA
1N 4005	600 V	1A	1.1V	10uA
1N 4007	1000 V	1A	1.1V	10uA

So a suitable option is a rectifier diode 1N4007. Usually a silicon diode has a Forward voltage drop of 0.6 V. The current rating (Forward current) of rectifier diodes also vary. Most of the general purpose rectifier diodes in the 1N series have 1 ampere current rating.