

Transitron

RATINGS AND SPECIFICATIONS USED WITH TRANSITRON GERMANIUM DIODES

AN ABSOLUTE MAXIMUM RATING is a limiting value, beyond which the performance of any individual semiconductor device may be permanently impaired.

A MAXIMUM RATING is a limiting value above which the serviceability of any individual semiconductor device may be temporarily impaired.

1. MINIMUM FORWARD CURRENT AT SPECIFIED FORWARD VOLTAGE. (Usually $\geq 1V$) Every diode will pass a forward current equal to or greater than this value with the specified voltage applied across it. In general, Transitron diodes exceed this minimum value by a wide margin, and it is generally more useful to employ the values obtained from the forward characteristic curves.
2. CONTINUOUS DC FORWARD CURRENT. This is the largest value of DC forward current that can be continuously passed through the diode without causing excess self heating. It is a maximum rating.
3. PEAK OPERATING CURRENT. This is the allowable peak current in sinusoidal half-wave rectifier applications. It is a maximum rating for this application.

This rating may be exceeded in pulse service where the pulse duration is less than 200 micro-seconds, providing the RMS value is less than the rated continuous DC operating current.

4. PEAK PULSE CURRENT. This is a maximum rating in pulse service where the pulse duration is less than 1 microsecond, and the RMS current is less than the rated continuous DC operating current.
5. SURGE CURRENT FOR 1 SECOND. This is the limiting value in any application to prevent irreversible changes in characteristics. It is an absolute maximum rating.
6. MAXIMUM INVERSE CURRENT AT SPECIFIED VOLTAGE. Every diode will have an inverse current equal to or less than this value with the specified voltage applied, and at an operating temperature of 25°C.



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7. MAXIMUM INVERSE VOLTAGE (MIV). This is the inverse voltage at which the diode dissipates 0.25 watts of power. This rating is used by Transitron in place of a Peak Inverse Voltage rating. (PIV is the inverse voltage at which the dynamic resistance of the diode is zero.) Since the MIV is always 5 to 50 volts lower than the PIV, the Transitron rating of MIV is considerably more conservative than a PIV rating. All Transitron diodes will have an MIV equal to or greater than the published rating
8. CONTINUOUS INVERSE OPERATING VOLTAGE. This is the maximum value of inverse operating voltage that can be continuously applied to the diode. Its published value is for 25°C operation, and it should be reduced for germanium diodes by 5 to 10% per 10°C at elevated operating temperatures.
9. AMBIENT TEMPERATURE RANGE. This is the allowable operating temperature range over which the diode can be safely operated without danger of causing an irreversible change of its characteristics.
10. MAXIMUM AVERAGE POWER DISSIPATION. This is the maximum value of average power dissipation, considering both the forward and inverse operating powers, that the diode can be subjected to without excessive self heating. The published value is for operation at 25°C, and the published derating must be applied at elevated temperatures to insure dependable operation. This rating is the limiting value in determining the maximum operating conditions, both forward and inverse, for the diode.
11. AVERAGE SHUNT CAPACITANCE. This is the total effective shunt capacitance as measured in tuned detector service.
12. AVERAGE 100 MC RECTIFICATION EFFICIENCY. This is the ratio of DC load voltage to peak RF input voltage in a detector circuit. It is measured with a 2 volts RMS input to a circuit with a load resistance of 5000 ohms and a load capacitance of 20 uufd. The published values are average quantities obtained by measuring a large group of diodes.

IN AN APPLICATION WHERE IT IS DESIRED TO EXCEED ANY OF THE PUBLISHED RATINGS ON A DIODE, IT IS RECOMMENDED THAT THE APPLICATIONS ENGINEERING GROUP AT TRANSITRON BE CONSULTED.