

HIGH VOLTAGE NIP DIODES

DESCRIPTION

The GC4500 series are high voltage, high power (anode base) NIP diodes. These high resistivity silicon devices are passivated with silicon dioxide for high stability and reliability and have been proven by thousands of device hours in high reliability systems.

These devices can withstand storage temperatures from -65°C to +200°C and will operate over the range from -55° to +150°C. All devices meet or exceed military environmental specifications of MIL-S-19500.

The NIP diode is used when negative bias current is available for forward conduction and will operate typically with -50 mA bias. Breakdown voltages are available up to 900 volts. These diodes have somewhat faster speeds as compared with similar PIN diodes.

APPLICATIONS

The GC4500 series can be used in RF circuits as an on/off element, as a switch or as a current controlled resistor in attenuators extending over the frequency range from UHF through Ku band.

Switch applications include medium high power switches (ECM systems), TR or latching switches, channel or antenna selection switches (telecommunications), duplexers (radar) and digital phase shifters (phase arrays).

The GC4500 series are also used as active limiters for low to moderate RF power levels.

Attenuator type applications include amplitude modulators, AGC attenuators, power levelers and level set attenuators.

ELECTRICAL SPECIFICATIONS

MODEL NUMBER	BREAKDOWN VOLTAGE ($I_R = 10\mu\text{A MAX}$) VB (MIN) (Volts)	JUNCTION CAPACITANCE ¹ C _{J-50} (MAX) (pF)	SERIES RESISTANCE ² (100mA, 100 MHz) R _{S100} (MAX) (Ohms)	CARRIER LIFETIME ($I_R=6\text{mA}, I_F=10\text{mA}$) T _L (TYP) (μSec)	THERMAL RESISTANCE (MAX) (°C/W)
GC4510	100	0.10	1.0	.100	40
GC4511	100	0.25	0.6	.200	25
GC4512	100	0.50	0.5	.300	20
GC4513 ³	100	0.75	0.4	.400	10
GC4530	300	0.10	1.5	.300	50
GC4531	300	0.25	1.2	.500	30
GC4532	300	0.50	1.0	.750	20
GC4533 ³	300	0.75	0.8	1.000	15

Notes:

1. Capacitance is measured at 1 MHz and -50 VOLTS
2. Resistance is measured using transmission loss techniques.
3. These devices are not available in all the package styles. Please consult the factory for specific case styles offered.

The tabulated specifications above are for case style 30, which is standard.

Each type offers trade offs in series resistance, junction capacitance and carrier lifetime; the proper choice of which depends on the end application. Reverse polarity PIN diodes and high voltage NIP and PIN diodes are also available. (See data sheets for GC4200, GC4500 and GC4400 series respectively.)

RATINGS

Maximum Leakage Current: 0.5μA at 80% of minimum rated breakdown

Operating Temperature: -55°C to +150°C

Storage Temperature: -65°C to +200°C

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TYPICAL PERFORMANCE CURVES

