

## 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-PRF-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 500 volts. (Higher voltages available on request. Consult factory for details.) These diodes have somewhat faster speeds as compared with similar PIN diodes.

This series of diodes meets RoHS requirements per EU Directive 2002/95/EC. The standard terminal finish is gold unless otherwise specified. Consult the factory if you have special requirements.

## 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 lobing 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.

## KEY FEATURES

- Available as packaged devices or as chips for hybrid applications
- High power handling
- Suitable for applications to 18Ghz
- Low Loss
- Low Distortion
- RoHS Compliant<sup>1</sup>

<sup>1</sup> Products are supplied with a Gold finish and are suitable for RoHS complaint assembly. Consult factory for details.

## APPLICATIONS/BENEFITS

- TR Switches
- Antenna Selector Switches
- Duplexers
- Digital Phase Shifters

## ABSOLUTE MAXIMUM RATINGS AT 25° C (UNLESS OTHERWISE SPECIFIED)

Rating	Symbol	Value	Unit
Maximum Leakage Current @80% of Minimum Rated $V_B$	$I_R$	0.5	uA
Storage Temperature	$T_{STG}$	-65 to +200	°C
Operating Temperature	$T_{OP}$	-55 to +150	°C

For the most current data, consult our website: [www.MICROSEMI.com](http://www.MICROSEMI.com)  
 Specifications are subject to change, consult factory for further information.



These devices are ESD sensitive and must be handled using ESD precautions.



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**GC4510 – GC4533**

**CONTROL DEVICES**

**High Voltage NIP Diodes**

**RoHS Compliant**



**DEVICE ELECTRICAL PARAMETERS @ 25°C (unless otherwise specified)**

<b>Model Number</b>	<b>V<sub>B</sub>(V)</b> <small>I<sub>R</sub>=10μA</small> <b>(Min)</b>	<b>C<sub>J</sub>(pF)</b> <sup>1</sup> <small>@V<sub>R</sub>=50V</small> <b>(Max)</b>	<b>R<sub>s</sub>(Ω)</b> <sup>2</sup> <small>@100 mA</small> <b>(Max)</b>	<b>T<sub>L</sub>(uS)</b> <small>I<sub>R</sub>=6mA/I<sub>F</sub>=10mA</small> <b>(Typ)</b>	<b>Thermal Resistance</b> <b>θ ('C/W)</b> <b>(Max)</b>
GC4510 – 00	100	0.1	1.0	0.1	40
GC4511 – 00	100	0.25	0.6	0.2	25
GC4512 – 00	100	0.5	0.5	0.3	20
GC4513 – 00 <sup>3</sup>	100	0.75	0.4	0.4	10
GC4530 – 00	300	0.1	1.5	0.3	50
GC4531 – 00	300	0.25	1.2	0.5	30
GC4532 – 00	300	0.5	1.0	0.75	20
GC4533 – 00 <sup>3</sup>	300	0.75	0.8	1.0	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.

**DEVICE NOTES**

The tabulated specifications above are for package style 00. Diodes are also available in various packaged configurations. Some limitations apply. Consult factory for details.

Each type offers trade offs in series resistance, junction capacitance, carrier lifetime and breakdown voltage; the proper choice of which depends on the end application. Standard polarity diodes (PIN) and faster speed PIN and NIP diodes are also available. (See data sheets for GC4400, GC4200, and GC4300 series respectively.)



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**GC4510 – GC4533**

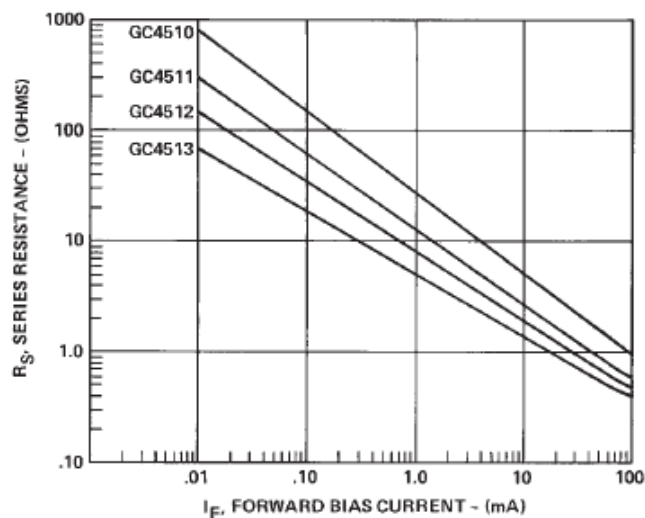
**CONTROL DEVICES**

**High Voltage NIP Diodes**

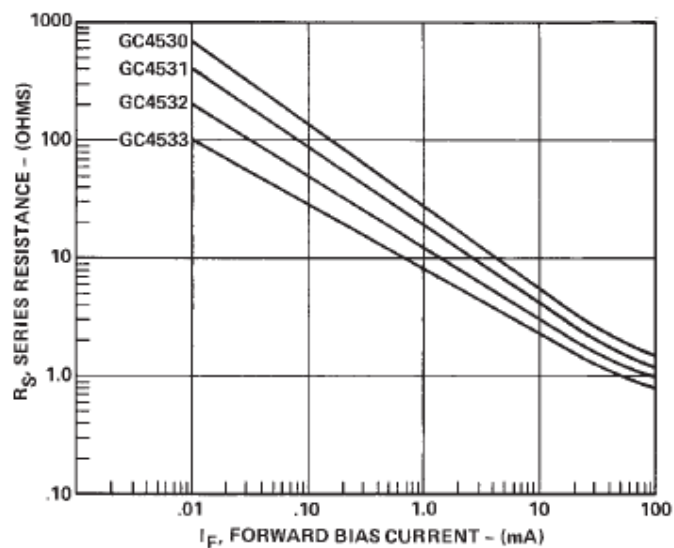
RoHS Compliant



**TYPICAL RS CURVES**

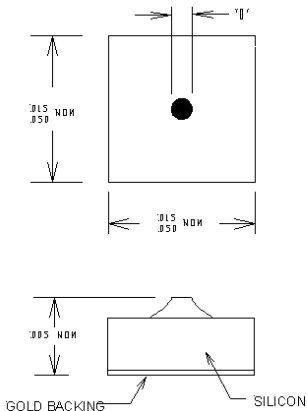


**TYPICAL RS CURVES**



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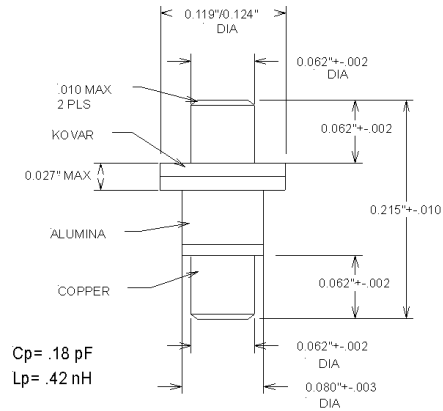
**GRAPHS**

**PACKAGE STYLE 00**

**NOTES:**

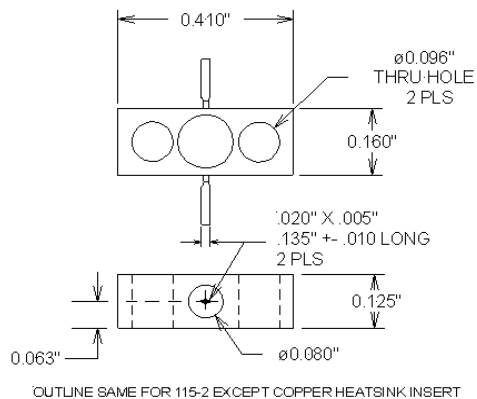
1. TOP CONTACT, CHIP SIZE, AND CHIP THICKNESS DEPENDS ON DIODE PARAMETERS. CONSULT FACTORY.
2. TOP AND BOTTOM CONTACTS GOLD.

**Notes:**

- Dimensions vary by model number
- Consult factory for details
- Order as GC45xx – 00

**PACKAGE STYLE 30**

**Notes:**

- Order as GC45xx – 30

**PACKAGE STYLE 115**

**Notes:**

- Order as GC45xx – 115

OTHER PACKAGE STYLES AVAILABLE ON REQUEST  
CONSULT FACTORY

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