

CONTROL DEVICES

HIGH SPEED NIP DIODES

DESCRIPTION

The GC4300 series are high speed (anode base) NIP diodes made with high resistivity reverse epitaxial silicon material. These diodes are passivated with silicon dioxide for high stability and reliability and have been proven by thousands of device hours in high reliability systems.

The NIP diode is used when negative bias current is available for forward conduction and will operate with as little as -10 mA bias. These diodes have somewhat faster speeds as compared with similar PIN diodes.

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

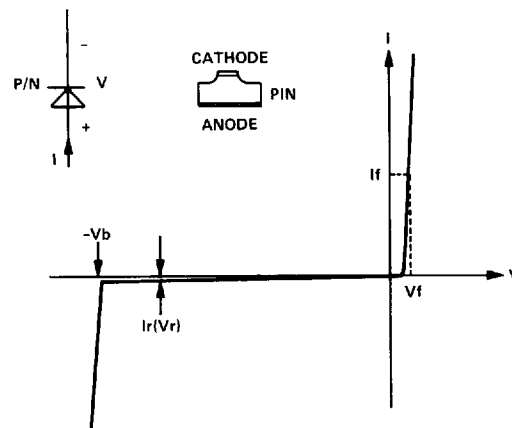
APPLICATIONS

The GC4300 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 high speed switches (ECM systems), TR switches, channel or antenna selection switches (telecommunications), duplexers (radar) and digital phase shifters (phased arrays).

The GC4300 series are also used as passive and 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 ($I_R = 10\mu\text{A MAX.}$) V_B (MIN.)	JUNCTION CAPACITANCE ¹ C_J-10 (MAX.)	SERIES RESISTANCE ² (20mA, 1 GHz) R_{S20} (MAX.)	CARRIER LIFETIME ($I_R = 6\text{mA}$, $I_F = 10\text{mA}$) T_L (TYP.)	THERMAL RESISTANCE θ_{JC} (MAX.)
GC4371	70 VOLTS	0.10 pF	0.9 OHMS	70 NS	70°C/W
GC4372	70	0.20	0.7	70	70
GC4373	70	0.30	0.6	70	60
GC4374	70	0.40	0.5	70	50
GC4375	70	0.50	0.4	70	40
GC4310	100	0.06	1.5	170	80
GC4311	100	0.10	1.0	170	70
GC4312	100	0.20	0.9	170	70
GC4313	100	0.30	0.8	170	60
GC4314	100	0.40	0.6	170	50
GC4315	100	0.50	0.4	170	40
GC4320	200	0.06	1.5	200	80
GC4321	200	0.10	1.2	200	70
GC4322	200	0.20	1.0	200	70
GC4323	200	0.30	0.9	200	60
GC4324	200	0.40	0.8	200	50
GC4325	200	0.50	0.5	200	40

NOTES:

- CAPACITANCE IS MEASURED AT 1 MHz AND -10 VOLTS.
- RESISTANCE IS MEASURED USING TRANSMISSION LOSS TECHNIQUES.
- THESE DEVICES ARE AVAILABLE IN STANDARD CASE STYLES 00, 15, 30, 35 AND 85.

The tabulated specifications above are for the style 30 package which is standard. Diodes are also available in various chip configurations as well as other ceramic and glass package styles shown herein.

Each type offers a trade off 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.)

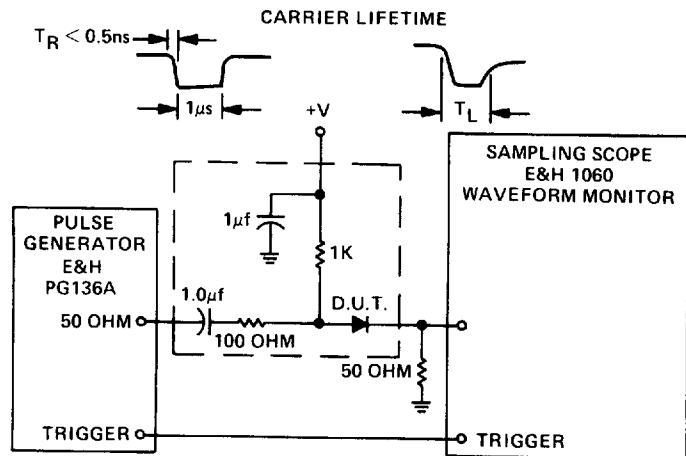
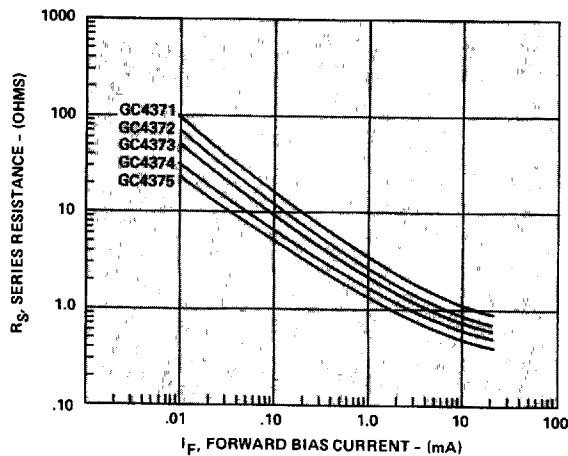
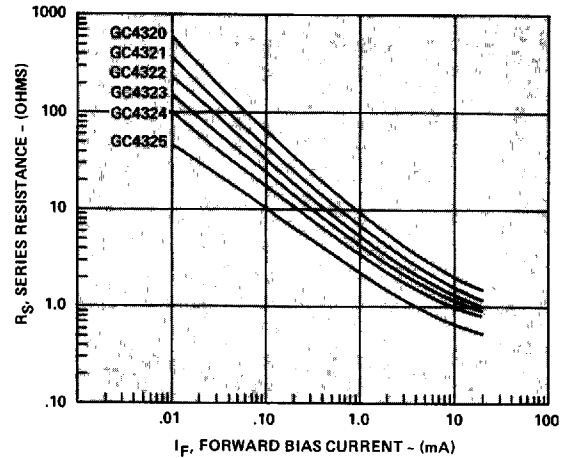
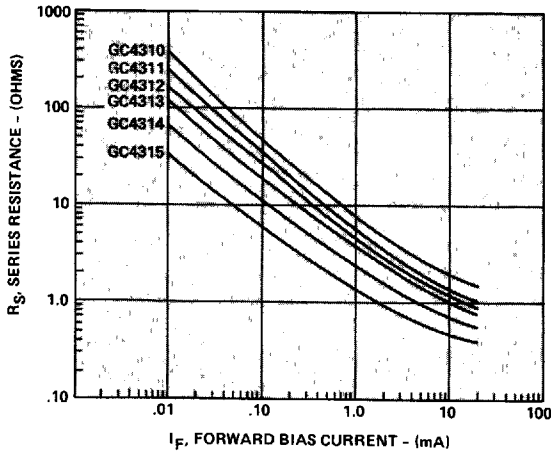
RATINGS

Operating Temperature	-55°C to +150°C
Storage Temperature:	-65°C to +200°C
Maximum Leakage Current:	0.5μA at 80% of minimum rated breakdown

CONTROL DEVICES

HIGH SPEED NIP DIODES

TYPICAL PERFORMANCE CURVES

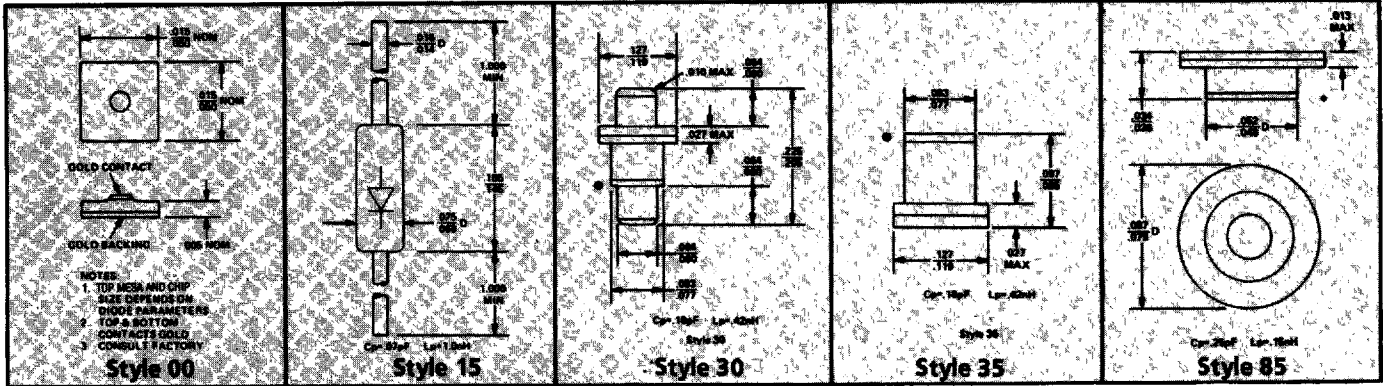


The value of the reverse current (IR) is approximately 6 mA and the forward current (IF) is 1.7 IR. The input pulse is provided by a pulse generator having a rise time of less than one nanosecond. Lifetime is measured between 50% and 90% points of output pulse as shown.

CONTROL DEVICES

HIGH SPEED NIP DIODES

PACKAGE STYLES



(•) Heat sink end. Dimensions are in inches.

Note: See Semiconductor Package Outlines sheet for complete outline drawings of all cases.

Other Package Styles Are Available on Request.

The cathode is the heat sink end of each package. Reverse polarity is available at a slightly higher cost.

ENGINEERING NOTES: