CA3019

Ultra-Fast Low-Capacitance Matched Diodes

For Applications in Communications and Switching Systems

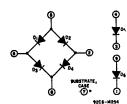
Features:

- Excellent diode match
- Low leakage current
- Low pedestal voltage when gating Companion Application Note, ICAN-5299: "Application of the RCA-CA3019 Integrated-Circuit Diode Array"

The RCA-CA3019 consists of six ultra-fast, low capacitance diodes on a common monolithic substrate. Integrated circuit construction assures excellent static and dynamic matching of the diodes, making the array extremely useful for a wide variety of applications in communication and sultoblact extreme. switching systems.

Four of the diodes are internally connected as a "quad" and two are independently accessible. The substrate is internally connected to the 10-lead TO-5-style case.

For applications such as balanced modulators or ring modulators where capacitive balance is important, the substrate



*Connect to most negative circuit potential.

Fig. 1 — Schematic Diagram.

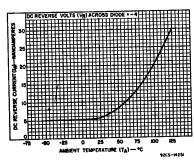
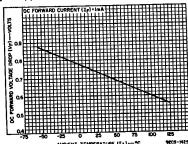


Fig. 3 - Reverse (leakage) current (any diode) as a function of temperature.

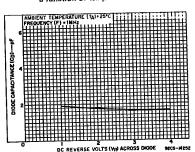
Applications:

- Modulator
- Mixer
- Balanced modulator
- Analog switch
 Diode gate for chopper-modulator applications

should be returned to a DC potential which is significantly more negative (with respect to the active diodes) than the peak signal applied.



DC forward voltage drop (any diode) as a function of temperature.



Diode capacitance (any diode) as a function of reverse voltage.

File Number 236

CA3019

T. 43.24

Absolute-Maximum Ratings:

DISSIPATION: Any one diode unit Total for device		20 max. mW 120 max. mW
TEMPERATURE RANGE: Storage		-65 to +200 °C
Operating		_55 to +125 °C
DC Forward Current, I Peak Recurrent Forward	•	
Current, I	٠	100 mA
Current, I _f (surge) VOLTAGE: See Table	•	100 mA

Absolute-Maximum Voltage Limits:

TERM.	VOLTAGE LIMITS		CONDITIONS		
	NEG.	POS.	TERM.	VOLT.	
1	3	+12	7	-6	
2	-3	+12	7	-6	
3	-3	+12	7	-6	
4	-3	+12	7	-6	
5	-3	+12	7	-6	
6	-3	+12	7	-6	
7	-18	0	1,2, 3,6, 8	0	
8	-3	+12	7	-6	
9	-3	+12	7	-6	
10	NO CONNECTION				
CASE	INTERNALLY CONNECTED TO TERMINAL 7 DO NOT GROUND				

ELECTRICAL CHARACTERISTICS, at $T_A = 25^{\circ}C$

Characteristics Apply for Each Diode Unit, Unless Otherwise Specified

		LIMITS TYPE CA3019			
CHARACTERISTICS	SPECIAL TEST CONDITIONS				.]
CHARACTERISTIO			Тур.	Max.	Units
DC Forward Voltage Drop	DC Forward Current (I _F) = 1 mA		0.73	0.78	
DC Reverse Breakdown Voltage	DC Reverse Current $(I_R) = -10 \mu A$	4	6		
DC Reverse Breakdown Voltage Between any Diode Unit and Substrate	DC Reverse Current ($ R = -10 \mu A$	25	80	-	v
DC Reverse (Leakage) Current	DC Reverse Voltage (VR) =-4 V		0.0055	10	μΑ
DC Reverse (Leakage) Current Between any Diode Unit and Substrate	DC Reverse Voltage $(V_R) = -4 V$	_	0.010	10	μА
Magnitude of Diode Offset Voltage (Difference in DC Forward Voltage Drops of any Two Diode Units)	DC Forward Current (IF)= 1 mA	-	1	5	mV
Single Diode Capacitance	Frequency (f) = 1 MHz DC Reverse Voltage (V _R) = -2V	-	1.8	_	pF
Diode Quad-to-Substrate Capacitance	Frequency (f) = 1 MHz DC Reverse Voltage (VR) between Terminal 2,5,6, or 8 of Diode Quad and Terminal 7 (Substrate) = -2 V				
	Terminal 2 or 6 to Terminal 7	<u> </u>	4.4		pF
	Terminal 5 or 8 to Terminal 7	-	2.7	<u> </u>	pF
Series Gate Switching Pedestal Voltage		_	10		m\