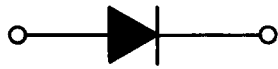




**MOTOROLA**  
Semiconductors



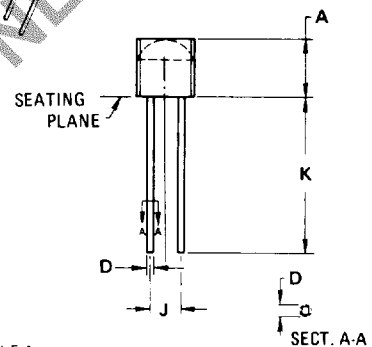
**SILICON HOT-CARRIER DIODE  
(SCHOTTKY BARRIER DIODE)**

... designed primarily for high-efficiency UHF and VHF detector applications. Readily adaptable to many other fast switching RF and digital applications. Supplied in an inexpensive plastic package for low-cost, high-volume consumer and industrial/commercial requirements.

- The Schottky Barrier Construction Provides Ultra-Stable Characteristics By Eliminating the "Cat-Whisker" or "S-Bend" Contact
- Extremely Low Minority Carrier Lifetime – 100 ps (Max)
- Very Low Capacitance – 1.5 pF (Max) @  $V_R = 20$  V
- Two Voltage Ranges – 20 V – MBD201  
– 30 V – MBD301
- Low Reverse Leakage –  $I_R = 10$  nAdc (Typ) MBD201  
= 13 nAdc (Typ) MBD301

**MBD201**  
**MBD301**

**SILICON HOT-CARRIER  
DETECTOR AND SWITCHING  
DIODES  
20-30 VOLTS**



STYLE 1:  
PIN 1. ANODE  
PIN 2. CATHODE

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	4.45	4.70	0.175	0.185
D	0.41	0.48	0.016	0.019
J	2.29	2.79	0.090	0.110
K	12.70	—	0.500	—

CASE 182-03

**MAXIMUM RATING** ( $T_J = 125^\circ\text{C}$  unless otherwise noted)

Rating	Symbol	Value	Unit
Reverse Voltage	$V_R$	20 30	Volts
Forward Power Dissipation @ $T_A = 25^\circ\text{C}$ Derate Above $25^\circ\text{C}$	$P_F$	500 5.0	mW mW/ $^\circ\text{C}$
Operating Junction Temperature Range	$T_J$	-55 to +125	$^\circ\text{C}$
Storage Temperature Range	$T_{stg}$	-65 to +150	$^\circ\text{C}$

**ELECTRICAL CHARACTERISTICS** ( $T_A = 25^\circ\text{C}$  unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
Reverse Breakdown Voltage ( $I_R = 10 \mu\text{Adc}$ )	$V_{(BR)R}$	20 30	—	—	Volts
Total Capacitance, Figure 1 ( $V_R = 15$ Volts, $f = 1.0$ MHz)	$C_T$	—	0.9	1.5	pF
Minority Carrier Lifetime, Figure 2 ( $I_F = 5.0$ mA, Krakauer Method)	$\tau$	—	15	100	ps
Reverse Leakage, Figure 3 ( $V_R = 15$ V) ( $V_R = 25$ V)	$I_R$	—	10 13	200 200	nAdc
Forward Voltage, Figure 4 ( $I_F = 10$ mAdc)	$V_F$	—	0.5	0.6	Vdc
Series Inductance ( $f = 250$ MHz, Lead Length $\approx 1/16''$ )	$L_S$	—	6.0	—	nH
Case Capacitance ( $f = 1.0$ MHz, Lead Length $\approx 1/16''$ )	$C_C$	—	0.18	—	pF

TYPICAL ELECTRICAL CHARACTERISTICS

FIGURE 1 - TOTAL CAPACITANCE

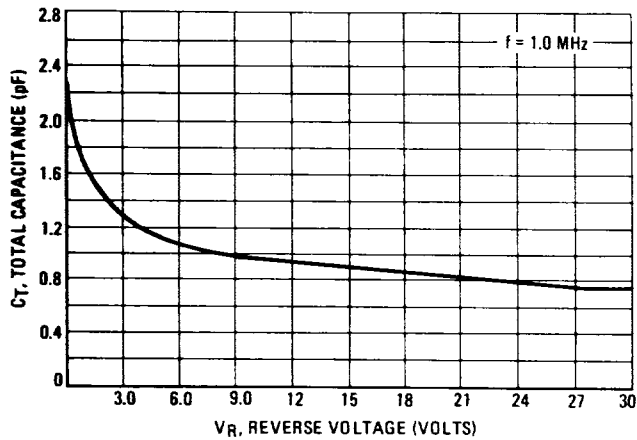


FIGURE 2 - MINORITY CARRIER LIFETIME

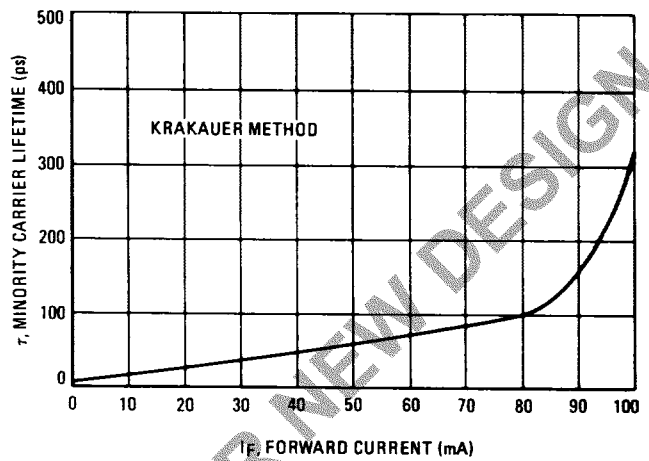


FIGURE 3 - REVERSE LEAKAGE

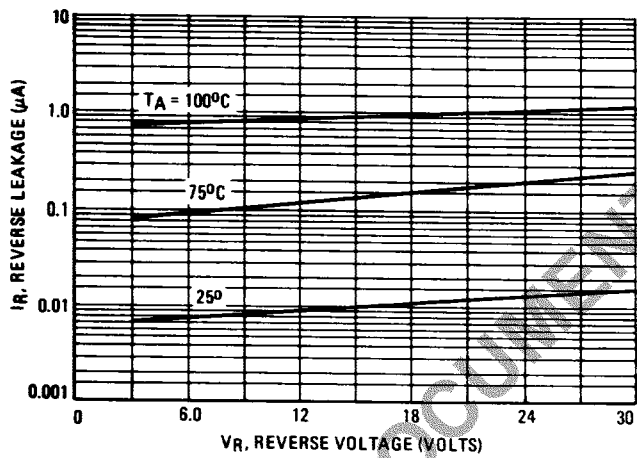
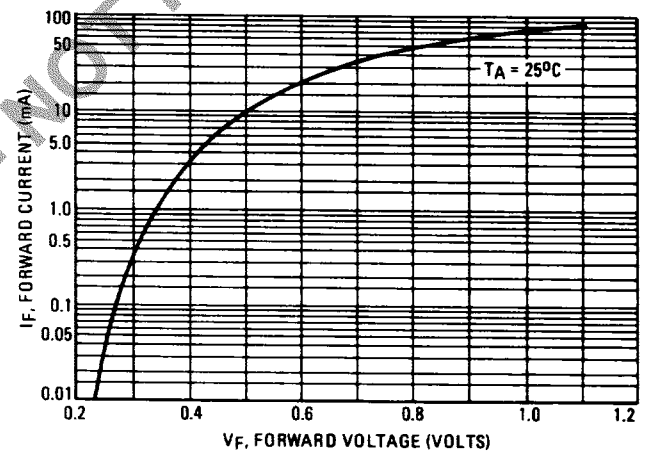


FIGURE 4 - FORWARD VOLTAGE



KRAKAUER METHOD OF MEASURING LIFE TIME

