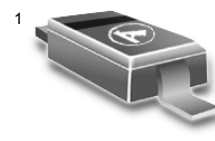


# Silicon Hot-Carrier Diodes

## Schottky Barrier Diode

These devices are designed primarily for high-efficiency UHF and VHF detector applications. They are readily adaptable to many other fast switching RF and digital applications. They are supplied in an inexpensive plastic package for low-cost, high-volume consumer and industrial/commercial requirements. They are available in a Surface Mount package.

- Extremely Low Minority Carrier Lifetime – 15 ps (Typ)
- Very Low Capacitance – 1.5 pF (Max) @  $V_R = 15$  V
- Low Reverse Leakage –  $I_R = 13$  nAdc (Typ)
- Device Marking: 4T


**MMDL301T1**
**30 VOLTS SILICON  
HOT-CARRIER DETECTOR  
AND SWITCHING DIODES**

**PLASTIC SOD- 323  
CASE 477**

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

Symbol	Rating	Value	Unit
$V_R$	Reverse Voltage	30	Volts

### THERMAL CHARACTERISTICS

Symbol	Characteristic	Max	Unit
$P_D$	Total Device Dissipation FR-5 Board,* $T_A = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	200 1.57	mW mW/ $^\circ\text{C}$
$R_{\theta JA}$	Thermal Resistance Junction to Ambient	635	$^\circ\text{C}/\text{W}$
$T_J, T_{stg}$	Junction and Storage Temperature Range	-55 to +150	$^\circ\text{C}$

\*FR-5 Minimum Pad

### ORDERING INFORMATION

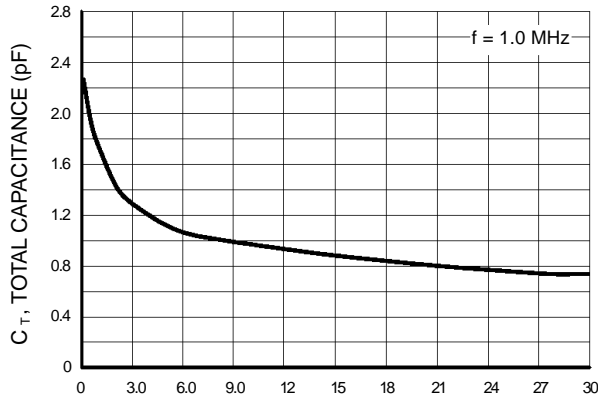
Device	Package	Shipping
MMDL301T1	SOD-323	3000 / Tape & Reel

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

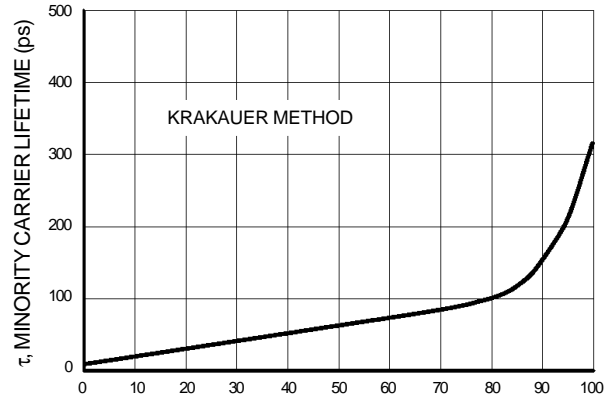
Characteristic	Symbol	Min	Typ	Max	Unit
Reverse Breakdown Voltage ( $I_R = 10 \mu\text{A}$ )	$V_{(BR)R}$	30	—	—	Volts
Diode Capacitance ( $V_R = 15$ V, $f = 1.0\text{MHz}$ ) Figure 1	$C_T$	—	0.9	1.5	pF
Reverse Leakage ( $V_R = 25$ V ) Figure 3	$I_R$	—	13	200	nAdc
Forward Voltage ( $I_F = 1.0$ mAdc ) Figure 4	$V_F$	—	0.38	0.45	Vdc
Forward Voltage ( $I_F = 10$ mAdc ) Figure 4	$V_F$	—	0.52	0.6	Vdc

MMDL301T1

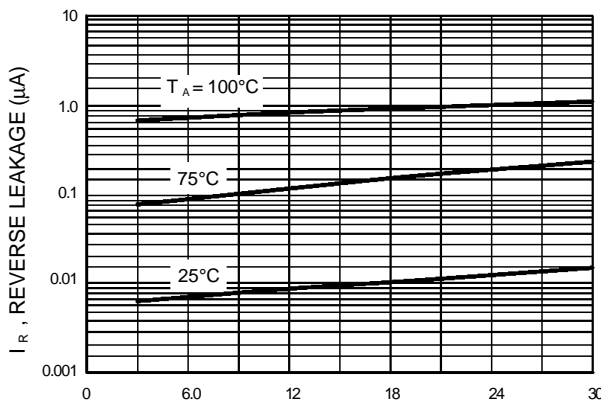
TYPICAL ELECTRICAL CHARACTERISTICS



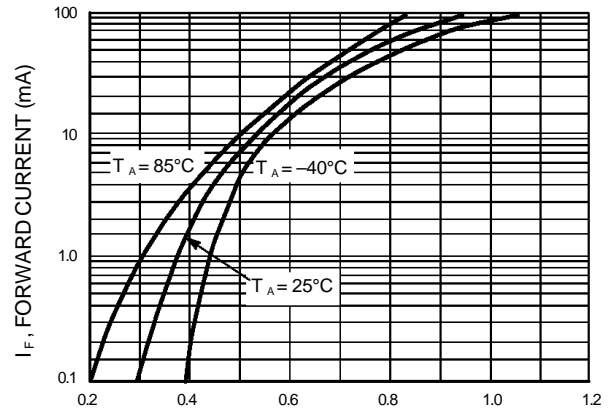
$V_R$ , REVERSE VOLTAGE (VOLTS)  
**Figure 1. Total Capacitance**



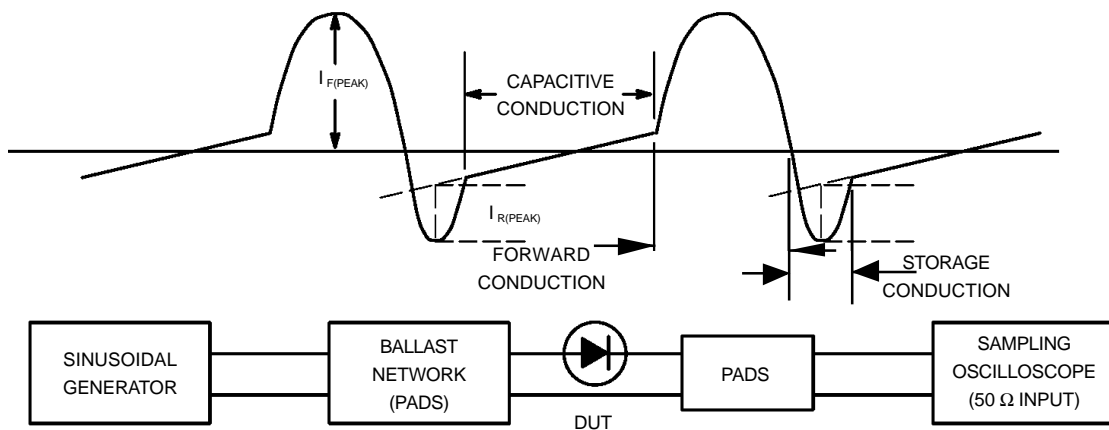
$I_F$ , FORWARD CURRENT (mA)  
**Figure 2. Minority Carrier Lifetime**



$V_R$ , REVERSE VOLTAGE (VOLTS)  
**Figure 3. Reverse Leakage**



$V_F$ , FORWARD VOLTAGE (VOLTS)  
**Figure 4. Forward Voltage**

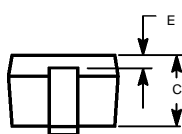
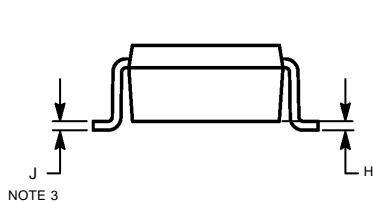
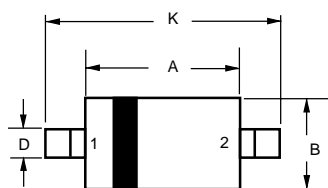


**Figure 5. Krakauer Method of Measuring Lifetime**

**MMDL301T1**

**PACKAGE DIMENSIONS**

**SOD-323**  
 PLASTIC PACKAGE  
 CASE 477-02  
 ISSUE A



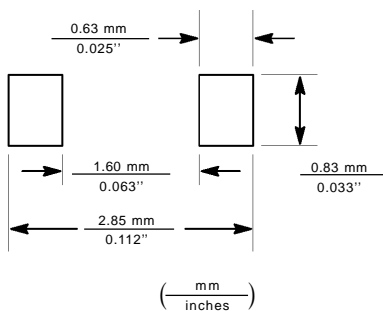
NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. LEAD THICKNESS SPECIFIED PER L/F DRAWING WITH SOLDER PLATING.

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	1.60	1.80	0.063	0.071
B	1.15	1.35	0.045	0.053
C	0.80	1.00	0.031	0.039
D	0.25	0.40	0.010	0.016
E	0.15 REF		0.006 REF	
H	0.00	0.10	0.000	0.004
J	0.089	0.177	0.0035	0.0070
K	2.30	2.70	0.091	0.106

STYLE 1:

- PIN 1. CATHODE  
 2. ANODE



**SOD-323**  
 Soldering Footprint