

# GLASS PACKAGED PIN DIODES FOR RF SWITCHING AND ATTENUATING

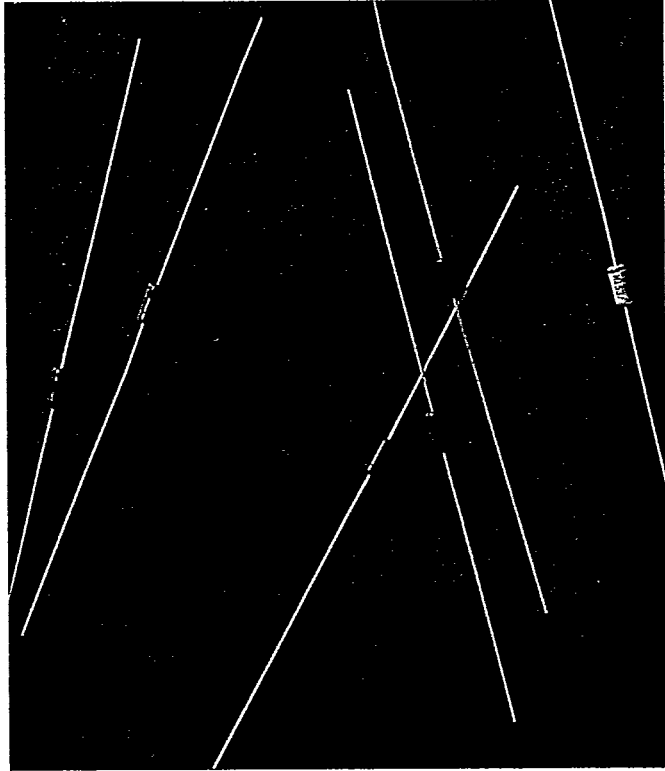


## FEATURES

- Low Series Resistance
- Low Capacitance
- Fast Switching and Current Controlled Attenuator Types
- Controlled Resistance Curves

## MAXIMUM RATINGS

- Total Power Dissipation . . . . . 250 mW at + 25°C  
Derate Linearly to 0 at + 150°C
- Operating Temperature . . . . . - 65°C to + 150°C
- Storage Temperature . . . . . - 65°C to + 150°C
- Soldering Temperature . . . + 230°C for 5 Seconds



## DESCRIPTION

The switching diodes are intended for general purpose low power RF switching applications up to approximately 2 GHz. The applications include low frequency switches, RF duplexers, digital phase shifters and other switching applications.

The current controlled resistor diodes provide a specified resistance curve as a function of applied current and a long lifetime for low distortion. These characteristics are useful in RF attenuators, modulators, AGC circuits and various analog circuits.

### GENERAL PURPOSE SWITCHING DIODES — ELECTRICAL SPECIFICATIONS AT 25°C

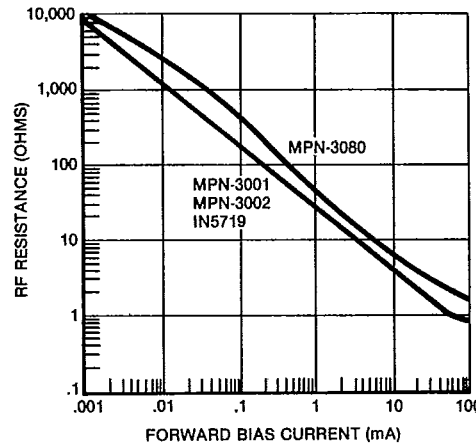
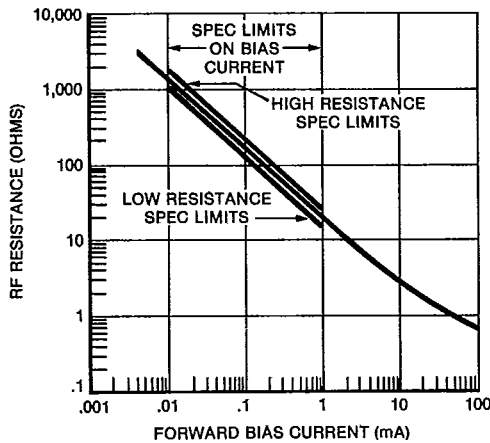
Model	Breakdown Voltage $V_{BR}$ (V)	Series Resistance $R_S$ (OHMS)	Total Capacitance $C_T$ (pF)	Minority Carrier Lifetime $\tau$ (nSec)	Reverse Recovery Time $t_{rr}$ (nSec)
	MIN	MAX	MAX	MIN	TYP
MPN-3001	200	1.0	0.25	100	100
MPN-3002	300	1.0	0.25	100	100
1N5719	150	1.25	0.30*	100	100
Test Conditions	$I_R = 10\mu A$	$I_F = 100\text{ mA}$ $f = 100\text{ MHz}$	$V_R = 50\text{ V}$ $*V_R = 100\text{ V}$ $f = 1\text{ MHz}$	$I_F = 50\text{ mA}$ $I_R = 250\text{ mA}$	$I_F = 20\text{ mA}$ $V_R = 10\text{ V}$

State-of-the-Art Microwave Diodes

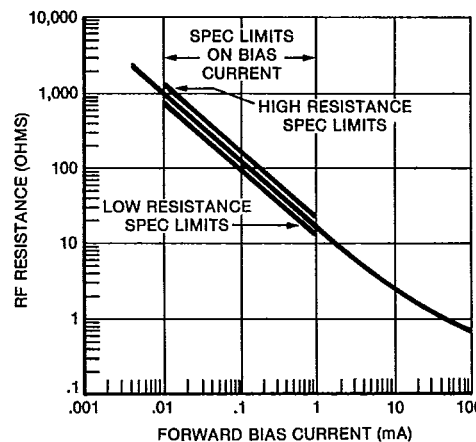
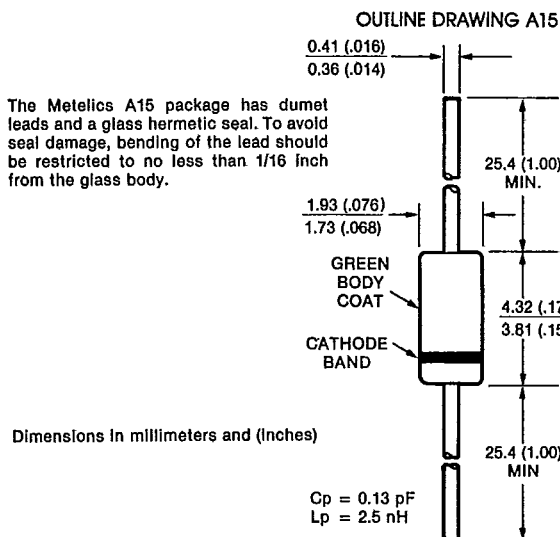
RF CURRENT CONTROLLED RESISTOR DIODES — ELECTRICAL SPECIFICATIONS AT 25°C

Model	Lifetime $\tau$ (nSec)	Breakdown Voltage $V_{BR}$ (V)	Series Resistance $R_S$ (OHMS)	Total Capacitance $C_T$ (pF)	High Resistance Limit, $R_H$ ( $\Omega$ )		Low Resistance Limit, $R_L$ ( $\Omega$ )		Maximum Difference in Resistance vs. Bias Slope, $\Delta x$
	TYP	MIN	MAX	MAX	MIN	MAX	MIN	MAX	
MPN-4165	100	100	1.5	0.30	1100	1660	16	24	.04
MPN-4166	100	100	1.5	0.30	830	1250	12	18	.04
MPN-3080	2000	100	2.5	0.40	1000			8*	
1N5767	1300	100	2.5	0.40	1000			8*	
MPN-3081	2500	100	3.5	0.40	1500			8*	

Test Conditions  $I_F = 50$  mA  $I_R = 10\mu A$   $I_F = 100$  mA  $f = 100$  MHz  $V_R = 50$  V  $f = 1$  MHz  $I_F = 0.01$  mA  $f = 100$  MHz  $I_F = 1.0$  mA  $*I_F = 20$  mA  $f = 100$  MHz Batch Matched at  $I_F = 0.01$  mA and 1.0 mA  $f = 100$  MHz



Typical RF Resistance vs. Bias for MPN-4165 Typical RF Resistance vs. Forward Bias Current.



Typical RF Resistance vs. Bias for MPN-4166