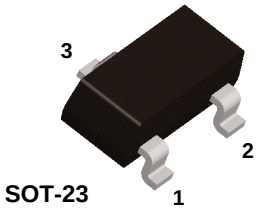
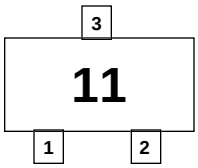
National Semiconductor™

Discrete POWER & Signal Technologies

MMBD1501/A / 1503/A / 1504/A / 1505/A



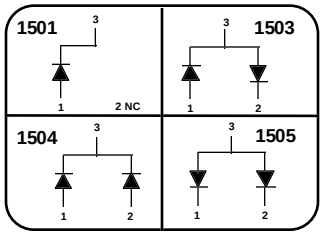
SOT-23



MARKING

MMBD1501	11	MMBD1501A	A11
MMBD1503	13	MMBD1503A	A13
MMBD1504	14	MMBD1504A	A14
MMBD1505	15	MMBD1505A	A15

CONNECTION DIAGRAMS



High Conductance Low Leakage Diode

Sourced from Process 1L.

Absolute Maximum Ratings*

TA = 25°C unless otherwise noted

Symbol	Parameter	Value	Units
W_{IV}	Working Inverse Voltage	180	V
I_O	Average Rectified Current	200	mA
I_F	DC Forward Current	600	mA
i_f	Recurrent Peak Forward Current	700	mA
$i_{f(surge)}$	Peak Forward Surge Current Pulse width = 1.0 second Pulse width = 1.0 microsecond	 1.0 2.0	 A A
T_{stg}	Storage Temperature Range	-55 to +150	°C
T_J	Operating Junction Temperature	150	°C

*These ratings are limiting values above which the serviceability of any semiconductor device may be impaired.

NOTES:
1) These ratings are based on a maximum junction temperature of 150 degrees C.
2) These are steady state limits. The factory should be consulted on applications involving pulsed or low duty cycle operations

Thermal Characteristics

TA = 25°C unless otherwise noted

Symbol	Characteristic	Max	Units
		MMBD1501/A/ 1503-1505/A*	
P_D	Total Device Dissipation Derate above 25°C	350 2.8	mW mW/°C
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	357	°C/W

*Device mounted on glass epoxy PCB 1.6" X 1.6" X 0.06"; mounting pad for the collector lead min. 0.93 in2

High Conductance Low Leakage Diode

(continued)

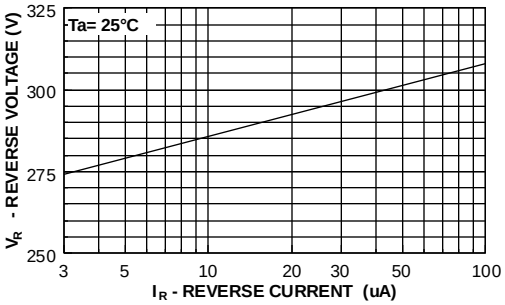
Electrical Characteristics

TA = 25°C unless otherwise noted

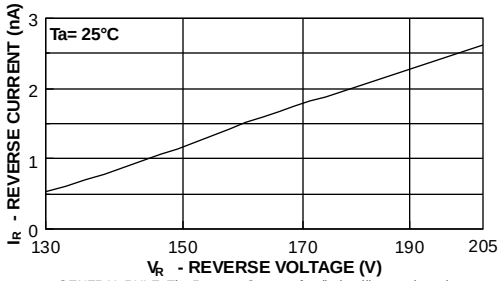
Symbol	Parameter	Test Conditions	Min	Max	Units
B_V	Breakdown Voltage	I_R = 5.0 µA	200		V
I_R	Reverse Current	V_R = 125 V		1.0	nA
		V_R = 125 V, T_A = 150°C		3.0	µA
		V_R = 180 V		10	nA
		V_R = 180 V, T_A = 150°C		5.0	µA
V_F	Forward Voltage	I_F = 1.0 mA	620	720	mV
		I_F = 10 mA	720	830	mV
		I_F = 50 mA	800	890	mV
		I_F = 100 mA	830	930	mV
		I_F = 200 mA	0.87	1.1	V
		I_F = 300 mA	0.9	1.15	V
C_O	Diode Capacitance	V_R = 0, f = 1.0 MHz		4.0	pF

Typical Characteristics

REVERSE VOLTAGE vs REVERSE CURRENT
BV - 3.0 to 100 uA

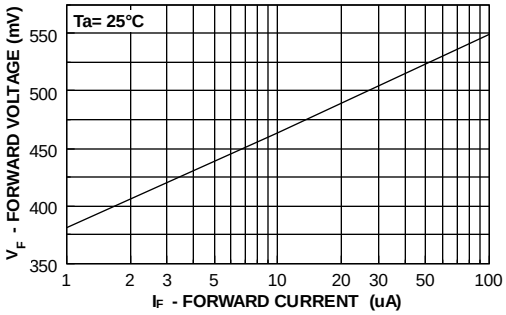


REVERSE CURRENT vs REVERSE VOLTAGE
IR - 130 - 205 Volts

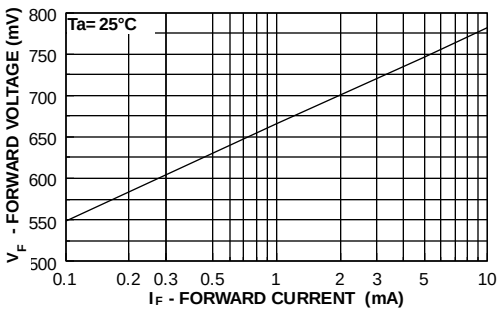


GENERAL RULE: The Reverse Current of a diode will approximately double for every ten (10) Degree C increase in Temperature

FORWARD VOLTAGE vs FORWARD CURRENT
VF - 1 to 100 uA



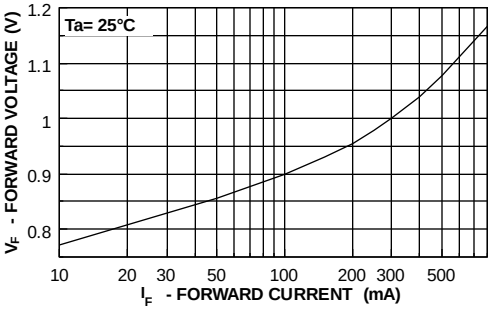
FORWARD VOLTAGE vs FORWARD CURRENT
VF - 0.1 to 10 mA



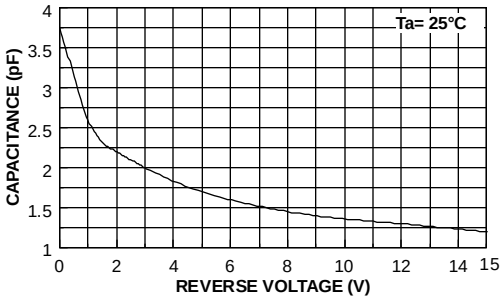
High Conductance Low Leakage Diode
(continued)

Typical Characteristics (continued)

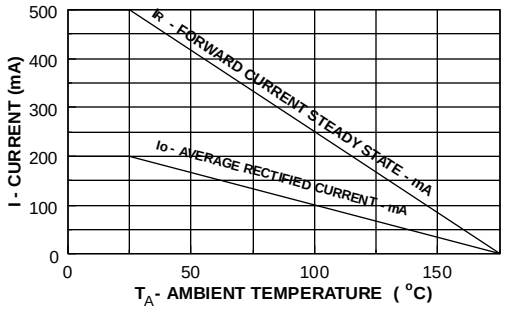
FORWARD VOLTAGE vs FORWARD CURRENT
VF - 10 to 800 mA



CAPACITANCE vs REVERSE VOLTAGE
VR - 0 to 15 V



Average Rectified Current (Io) & Forward Current (I_F) versus Ambient Temperature (T_A)



POWER DERATING CURVE