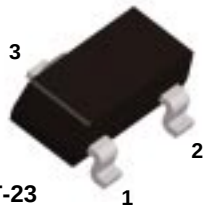
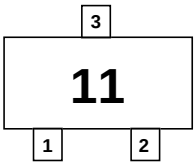
FAIRCHILD SEMICONDUCTOR TM

Discrete POWER & Signal Technologies

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

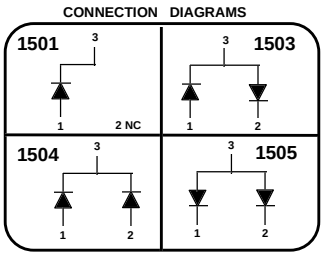


SOT-23



MARKING

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



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

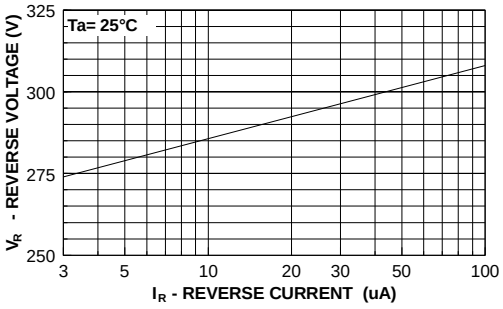
High Conductance Low Leakage Diode
(continued)

Electrical Characteristics
TA = 25°C unless otherwise noted

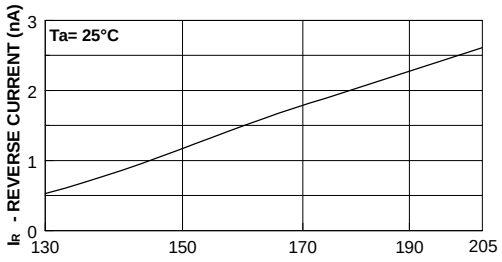
Symbol	Parameter	Test Conditions	Min	Max	Units
B_V	Breakdown Voltage	I_R = 5.0 µA	200		V
I_R	Reverse Current	V_R = 125 V		1.0	nA
		V_R = 125 V, T_A = 150°C		3.0	µA
		V_R = 180 V		10	nA
		V_R = 180 V, T_A = 150°C		5.0	µA
V_F	Forward Voltage	I_F = 1.0 mA	620	720	mV
		I_F = 10 mA	720	830	mV
		I_F = 50 mA	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

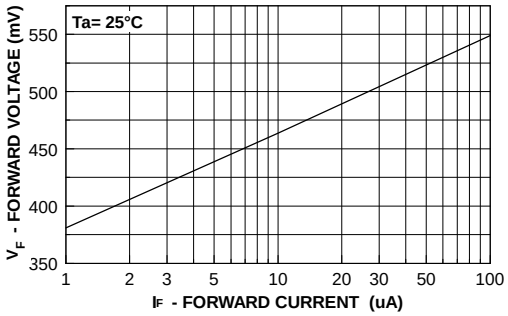


REVERSE CURRENT vs REVERSE VOLTAGE
IR - 130 - 205 Volts

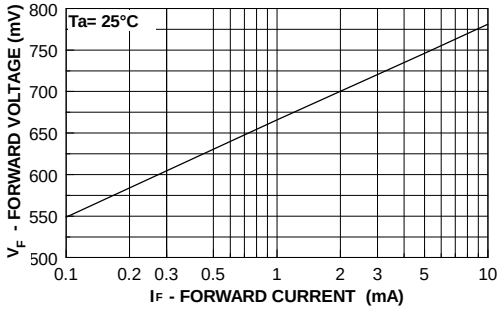


GENERAL RULE: The Reverse Current of a diode will approximately double for every ten (10) Degree C increase in Temperature

FORWARD VOLTAGE vs FORWARD CURRENT
VF - 1 to 100 uA

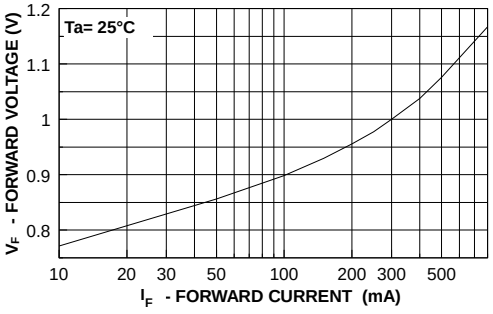


FORWARD VOLTAGE vs FORWARD CURRENT
VF - 0.1 to 10 mA

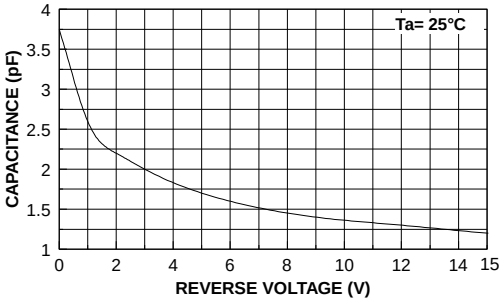


Typical Characteristics (continued)

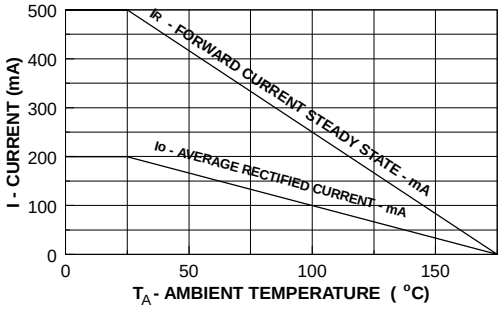
FORWARD VOLTAGE vs FORWARD CURRENT
VF - 10 to 800 mA



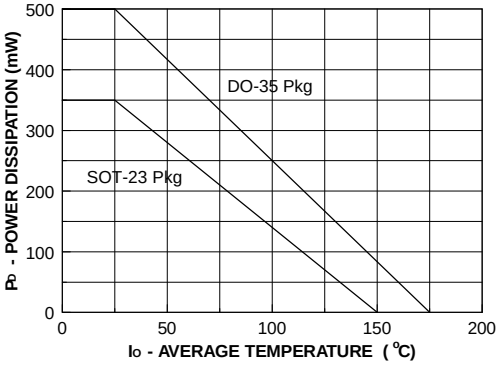
CAPACITANCE vs REVERSE VOLTAGE
VR - 0 to 15 V



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



POWER DERATING CURVE



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