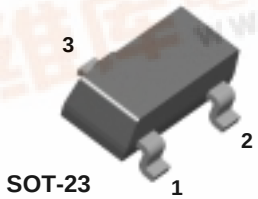
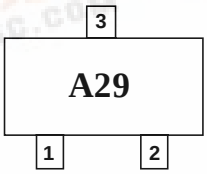
FAIRCHILD SEMICONDUCTOR TM

MMBD1401A / 1403A / 1404A / 1405A



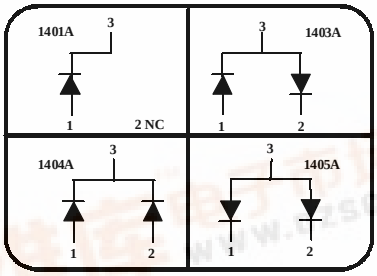
SOT-23



MARKING

MMBD1401A	A29	MMBD1404A	A33
MMBD1403A	A32	MMBD1405A	A34

CONNECTION DIAGRAMS



High Voltage General Purpose Diode

Sourced from Process 2V.

Absolute Maximum Ratings*

TA = 25°C unless otherwise noted

Symbol	Parameter	Value	Units
W_{IV}	Working Inverse Voltage	175	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
		MMBD1401A-1405A*	
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 Voltage General Purpoise Diode

(continued)

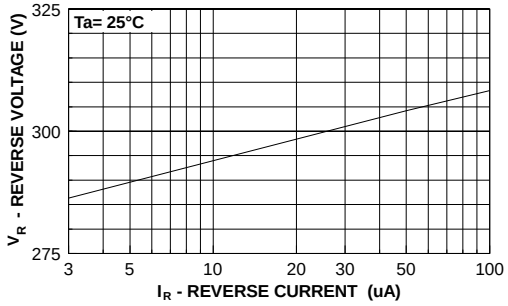
Electrical Characteristics

TA = 25°C unless otherwise noted

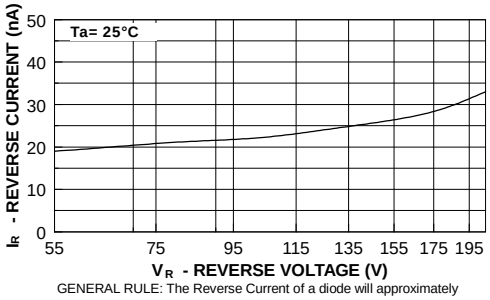
Symbol	Parameter	Test Conditions	Min	Max	Units
B_V	Breakdown Voltage	I_R = 100 μA	250		V
I_R	Reverse Current	V_R = 120 V		40	nA
		V_R = 175 V		100	nA
V_F	Forward Voltage	I_F = 10 mA		800	mV
		I_F = 50 mA	760	920	mV
	MMBD1401A / 1403A	I_F = 200 mA		1.1	V
	MMBD1404A / 1405A	I_F = 200 mA		1.0	V
	MMBD1401A / 1403A	I_F = 300 mA		1.25	V
	MMBD1404A / 1405A	I_F = 300 mA		1.1	V
C_O	Diode Capacitance	V_R = 0, f = 1.0 MHz		2.0	pF
T_{RR}	Reverse Recovery Time	I_F = I_R = 30 mA, I_{RR} = 1.0 mA, R_L = 100Ω		50	nS

Typical Characteristics

REVERSE VOLTAGE vs REVERSE CURRENT
BV - 1.0 to 100 uA

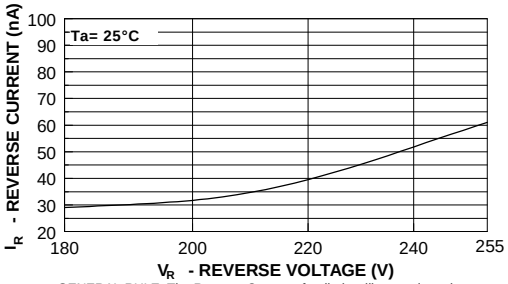


REVERSE CURRENT vs REVERSE VOLTAGE
IR - 55 to 205 V



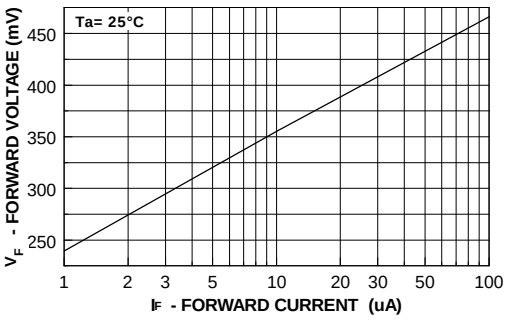
GENERAL RULE: The Reverse Current of a diode will approximately double for every ten (10) Degree C increase in Temperature

REVERSE CURRENT vs REVERSE VOLTAGE
IR - 180 to 255 V



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

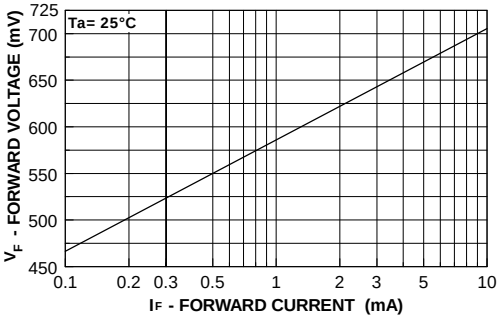
FORWARD VOLTAGE vs FORWARD CURRENT
VF - 1.0 to 100 uA



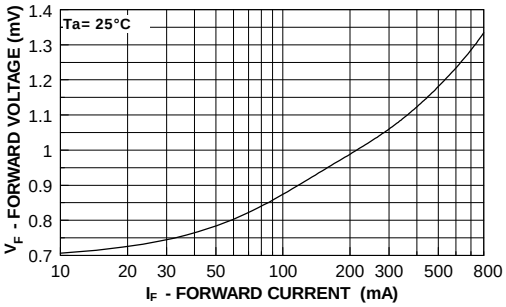
High Voltage General Purpoise Diode
(continued)

Typical Characteristics (continued)

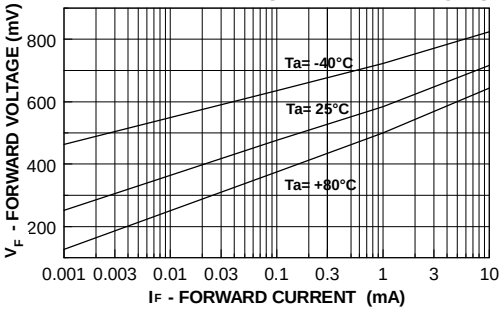
FORWARD VOLTAGE vs FORWARD CURRENT
VF - 0.1 to 10 mA



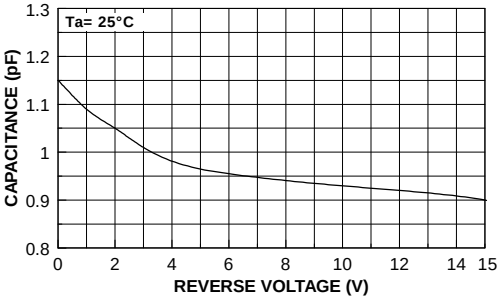
FORWARD VOLTAGE vs FORWARD CURRENT
VF - 10 to 800 mA



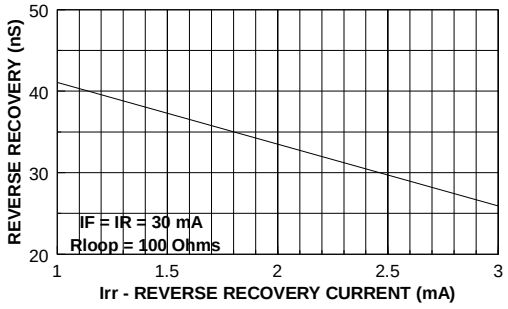
Forward Voltage vs Ambient Temperature
VF - 1.0 uA - 10 mA (-40 to + 80 Deg C)



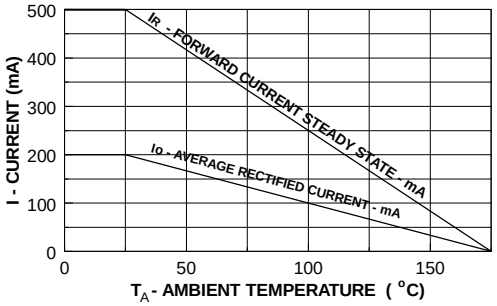
CAPACITANCE vs REVERSE VOLTAGE
VR - 0 to 15 V



REVERSE RECOVERY TIME vs
REVERSE RECOVERY CURRENT (Irr)



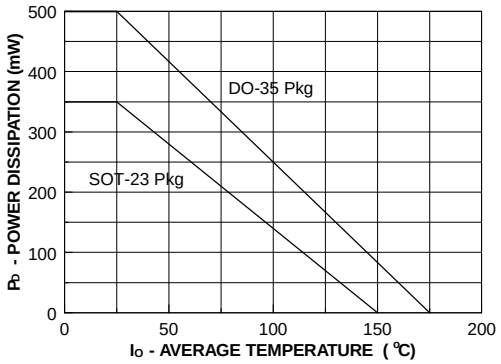
Average Rectified Current (Io) &
Forward Current (I_F) versus
Ambient Temperature (T_A)



High Voltage General Purpose Diode
(continued)

Typical Characteristics (continued)

POWER DERATING CURVE



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