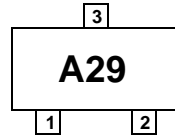
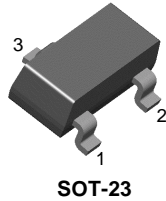
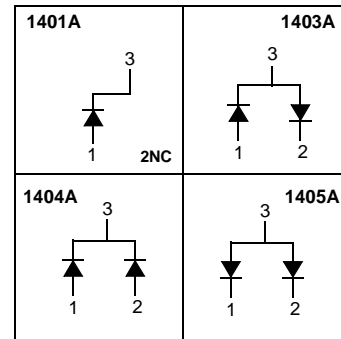


## MMBD1401A / 1403A / 1404A / 1405A



**MARKING**  
MMBD1401A A29 MMBD1404A A33  
MMBD1403A A32 MMBD1405A A34

### Connection Diagram



### High Voltage General Purpose Diode

Sourced from Process 2V.

### Absolute Maximum Ratings \* $T_A = 25^\circ\text{C}$ 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
$i_{f(surge)}$	Non-repetitive Peak Forward Surge Current		
	Pulse Width = 1.0 second	1.0	A
	Pulse Width = 1.0 microsecond	2.0	A
$T_{STG}$	Storage Temperature Range	-55 to +150	$^\circ\text{C}$
$T_J$	Operating Junction Temperature	150	$^\circ\text{C}$

\* These ratings are limiting values above which the serviceability of the diode may be impaired.

#### NOTES:

- 1) These ratings are based on 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

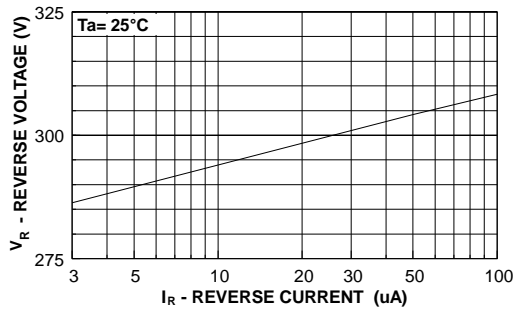
Symbol	Parameter	Max.	Units
		MMBD1401A - 1405A*	
$P_D$	Power Dissipation	350	mW
	Derate above 25 $^\circ\text{C}$	2.8	mW/ $^\circ\text{C}$
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	357	$^\circ\text{C}/\text{W}$

\* Device mounted on glass epoxy PCB 1.6" x 1.6" x 0.06"; mounting pad for the collector lead min. 0.93 in 2

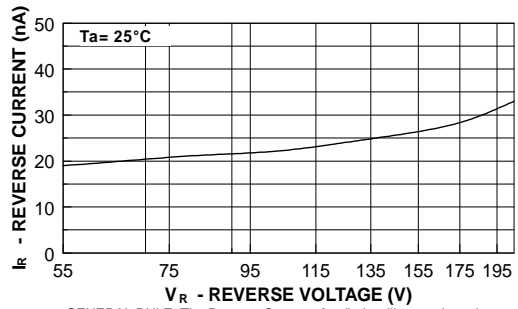
## Electrical Characteristics T<sub>A</sub>=25°C unless otherwise noted

Symbol	Parameter	Test Conditions	Min.	Max.	Units
B <sub>V</sub>	Breakdown Voltage	I <sub>R</sub> = 100μA	250		V
I <sub>R</sub>	Reverse Leakage	V <sub>R</sub> = 120V V <sub>R</sub> = 175V		40 100	nA nA
V <sub>F</sub>	Forward Voltage	I <sub>F</sub> = 10mA I <sub>F</sub> = 50mA I <sub>F</sub> = 200mA I <sub>F</sub> = 200mA I <sub>F</sub> = 300mA I <sub>F</sub> = 300mA	760	800 920 1.1 1.0 1.25 1.1	mV mV V V V V
C <sub>O</sub>	Diode Capacitance	V <sub>R</sub> = 0, f = 1.0MHz		2.0	pF
T <sub>RR</sub>	Reverse Recovery Time	I <sub>F</sub> = I <sub>R</sub> = 30mA I <sub>RR</sub> = 1.0mA, R <sub>L</sub> = 100Ω		50	nS

## Typical Characteristics

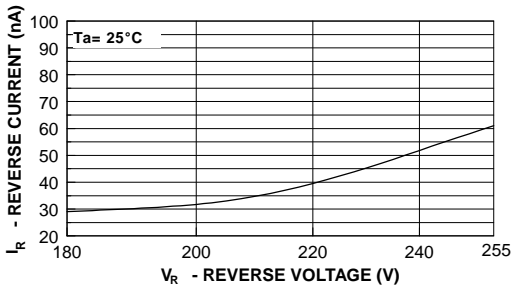


**Figure 1. Reverse Voltage vs Reverse Current**  
BV - 1.0 to 100μA



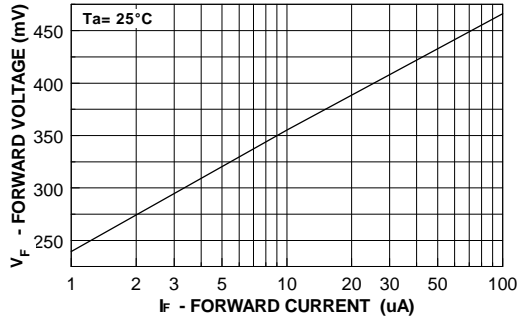
**Figure 2. Reverse Current vs Reverse Voltage**  
IR - 55 to 205V

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



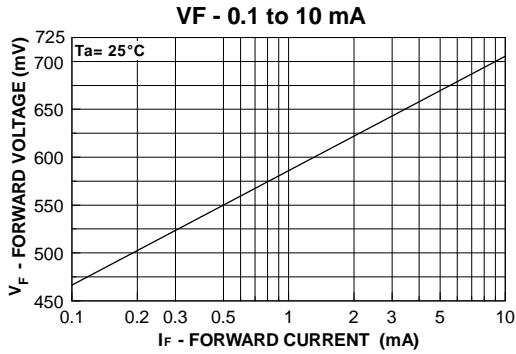
**Figure 3. Reverse Current vs Reverse Voltage**  
IR - 180 to 255V

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

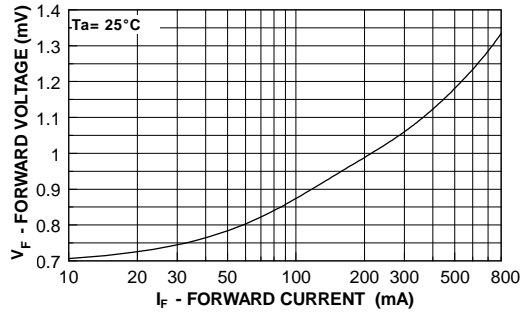


**Figure 4. Forward Voltage vs Forward Current**  
VF - 1.0 to 100μA

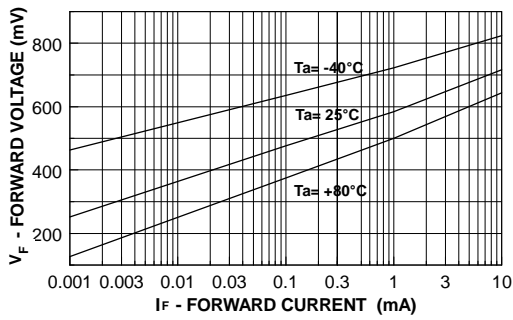
**Typical Characteristics** (Continued)



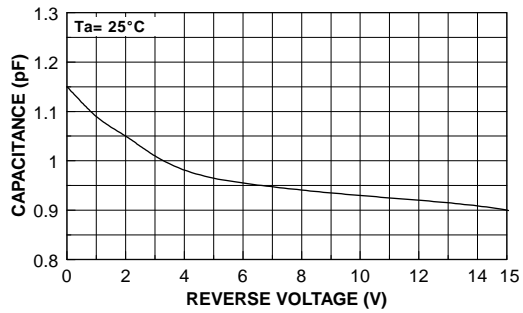
**Figure 5. Forward Voltage vs Forward Current**  
VF - 0.1 to 10mA



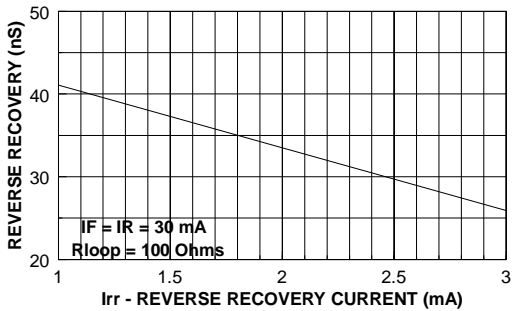
**Figure 6. Forward Voltage vs Forward Current**  
VF - 10 to 800mA



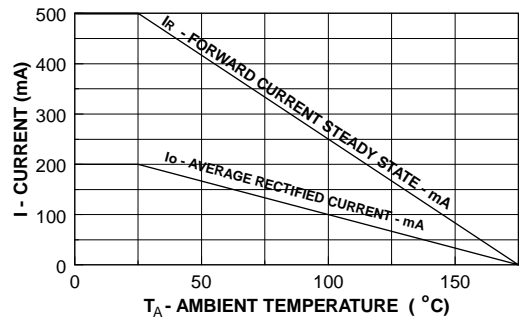
**Figure 7. Forward Voltage vs Ambient Temperature**  
VF - 1.0µA - 10mA (-40 to +80°C)



**Figure 8. Capacitance vs Reverse Voltage**  
VR - 0 to 5V



**Figure 9. Reverse Recovery Time vs**  
Reverse Recovery Current (Irr)



**Figure 10. Average Rectified Current(I<sub>O</sub>) &**  
Forward Current (I<sub>F</sub>) vs Ambient Temperature(T<sub>A</sub>)

# Typical Characteristics (Continued)

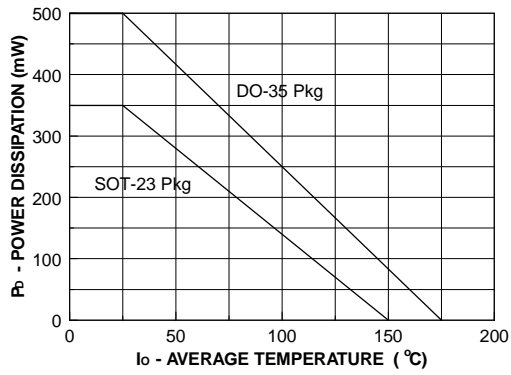


Figure 11. Power Derating Curve

MMBD1401A / 1403A / 1404A / 1405A

## TRADEMARKS

The following are registered and unregistered trademarks Fairchild Semiconductor owns or is authorized to use and is not intended to be an exhaustive list of all such trademarks.

ACE <sub>x</sub> <sup>™</sup>	FAST <sup>®</sup>	ISOPLANAR <sup>™</sup>	Power247 <sup>™</sup>	Stealth <sup>™</sup>
ActiveArray <sup>™</sup>	FAST <sub>r</sub> <sup>™</sup>	LittleFET <sup>™</sup>	PowerEdge <sup>™</sup>	SuperFET <sup>™</sup>
Bottomless <sup>™</sup>	FPS <sup>™</sup>	MICROCOUPLER <sup>™</sup>	PowerSaver <sup>™</sup>	SuperSOT <sup>™</sup> -3
CoolFET <sup>™</sup>	FRFET <sup>™</sup>	MicroFET <sup>™</sup>	PowerTrench <sup>®</sup>	SuperSOT <sup>™</sup> -6
CROSSVOLT <sup>™</sup>	GlobalOptoisolator <sup>™</sup>	MicroPak <sup>™</sup>	QFET <sup>®</sup>	SuperSOT <sup>™</sup> -8
DO <sub>M</sub> E <sup>™</sup>	GTO <sup>™</sup>	MICROWIRE <sup>™</sup>	Q <sub>S</sub> <sup>™</sup>	SyncFET <sup>™</sup>
EcoSPARK <sup>™</sup>	HiSeC <sup>™</sup>	MSX <sup>™</sup>	QT Optoelectronics <sup>™</sup>	TinyLogic <sup>®</sup>
E <sup>2</sup> CMOS <sup>™</sup>	I <sup>2</sup> C <sup>™</sup>	MSXPro <sup>™</sup>	Quiet Series <sup>™</sup>	TINYOPTO <sup>™</sup>
EnSigna <sup>™</sup>	<i>i-Lo</i> <sup>™</sup>	OCX <sup>™</sup>	RapidConfigure <sup>™</sup>	TruTranslation <sup>™</sup>
FACT <sup>™</sup>	ImpliedDisconnect <sup>™</sup>	OCXPro <sup>™</sup>	RapidConnect <sup>™</sup>	UHC <sup>™</sup>
FACT Quiet Series <sup>™</sup>		OPTOLOGIC <sup>®</sup>	μSerDes <sup>™</sup>	UltraFET <sup>®</sup>
Across the board. Around the world. <sup>™</sup>		OPTOPLANAR <sup>™</sup>	SILENT SWITCHER <sup>®</sup>	VCX <sup>™</sup>
The Power Franchise <sup>®</sup>		PACMAN <sup>™</sup>	SMART START <sup>™</sup>	
Programmable Active Droop <sup>™</sup>		POP <sup>™</sup>	SPM <sup>™</sup>	

## DISCLAIMER

FAIRCHILD SEMICONDUCTOR RESERVES THE RIGHT TO MAKE CHANGES WITHOUT FURTHER NOTICE TO ANY PRODUCTS HEREIN TO IMPROVE RELIABILITY, FUNCTION OR DESIGN. FAIRCHILD DOES NOT ASSUME ANY LIABILITY ARISING OUT OF THE APPLICATION OR USE OF ANY PRODUCT OR CIRCUIT DESCRIBED HEREIN; NEITHER DOES IT CONVEY ANY LICENSE UNDER ITS PATENT RIGHTS, NOR THE RIGHTS OF OTHERS.

## LIFE SUPPORT POLICY

FAIRCHILD'S PRODUCTS ARE NOT AUTHORIZED FOR USE AS CRITICAL COMPONENTS IN LIFE SUPPORT DEVICES OR SYSTEMS WITHOUT THE EXPRESS WRITTEN APPROVAL OF FAIRCHILD SEMICONDUCTOR CORPORATION.

As used herein:

1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body, or (b) support or sustain life, or (c) whose failure to perform when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in significant injury to the user.
2. A critical component is any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.

## PRODUCT STATUS DEFINITIONS

### Definition of Terms

Datasheet Identification	Product Status	Definition
Advance Information	Formative or In Design	This datasheet contains the design specifications for product development. Specifications may change in any manner without notice.
Preliminary	First Production	This datasheet contains preliminary data, and supplementary data will be published at a later date. Fairchild Semiconductor reserves the right to make changes at any time without notice in order to improve design.
No Identification Needed	Full Production	This datasheet contains final specifications. Fairchild Semiconductor reserves the right to make changes at any time without notice in order to improve design.
Obsolete	Not In Production	This datasheet contains specifications on a product that has been discontinued by Fairchild semiconductor. The datasheet is printed for reference information only.