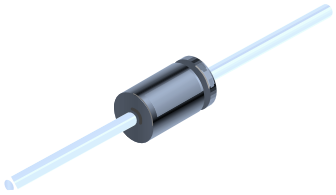
FAIRCHILD SEMICONDUCTOR®

BAV19 / 20 / 21



DO-35
Color Band Denotes Cathode

Small Signal Diode

Absolute Maximum Ratings* T_A = 25°C unless otherwise noted

Symbol	Parameter		Value	Units
V_{RRM}	Maximum Repetitive Reverse Voltage	**BAV19**	120	V
		BAV20	200	V
		BAV21	250	V
$I_{F(AV)}$	Average Rectified Forward Current		200	mA
I_{FSM}	Non-repetitive Peak Forward Surge Current			
	Pulse Width = 1.0 second		1.0	A
	Pulse Width = 1.0 microsecond		4.0	A
T_{stg}	Storage Temperature Range		-65 to +200	°C
T_J	Operating Junction Temperature		175	°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 200 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	Value	Units
P_D	Power Dissipation	500	mW
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	300	°C/W

Electrical Characteristics T_A = 25°C unless otherwise noted

Symbol	Parameter		Test Conditions	Min	Max	Units
V_R	Breakdown Voltage	**BAV19**	I_R = 100 µA	120		V
		BAV20	I_R = 100 µA	200		V
		BAV21	I_R = 100 µA	250		V
V_F	Forward Voltage		I_F = 100 mA		1.0	V
			I_F = 200 mA		1.25	V
I_R	Reverse Current		V_R = 100 V		100	nA
		BAV19	V_R = 100 V, T_A = 150°C		100	µA
			V_R = 150 V		100	nA
		BAV20	V_R = 150 V, T_A = 150°C		100	µA
			V_R = 200 V		100	nA
		BAV21	V_R = 200 V, T_A = 150°C		100	µA
C_T	Total Capacitance		V_R = 0, f = 1.0 MHz		5.0	pF
t_{rr}	Reverse Recovery Time		I_F = I_R = 30 mA, I_{RR} = 3.0 mA, R_L = 100Ω		50	ns

Typical Characteristics

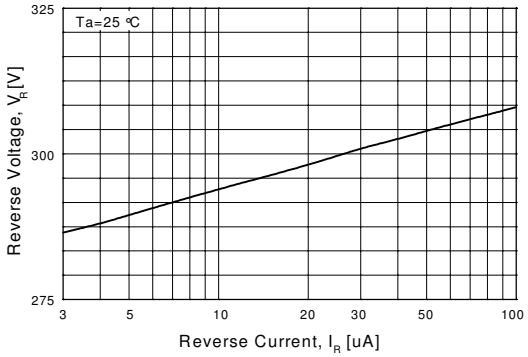
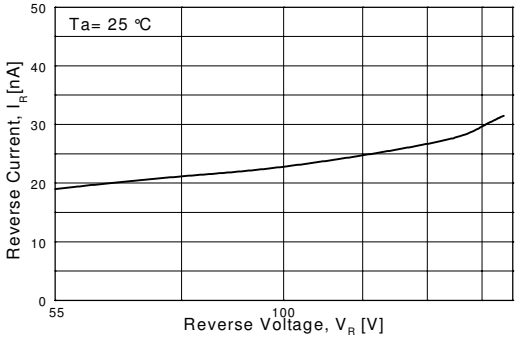
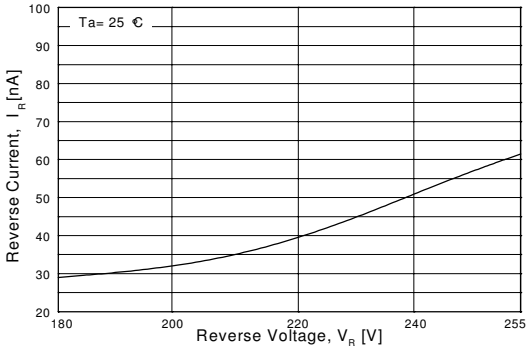


Figure 1. Reverse Voltage vs Reverse Current
BV - 1.0 to 100uA



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

Figure 2. 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

Figure 3. Reverse Current vs Reverse Roltage
IR - 180 to 225 V

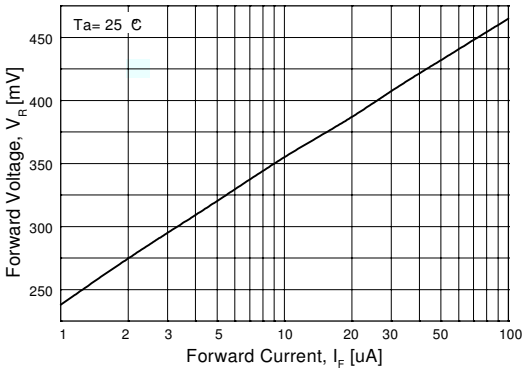


Figure 4. Forward Voltage vs Forward Current
VF - 1.0 to 100uA

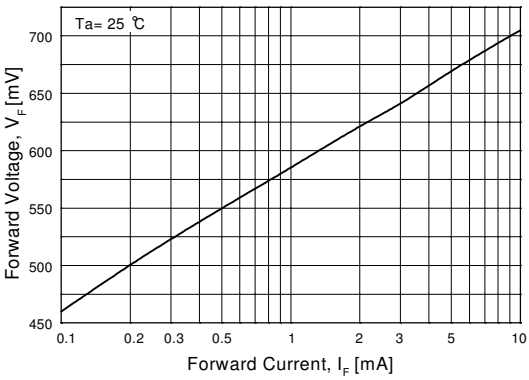


Figure 5. Forward Voltage vs Forward Current
VF - 0.1 to 10mA

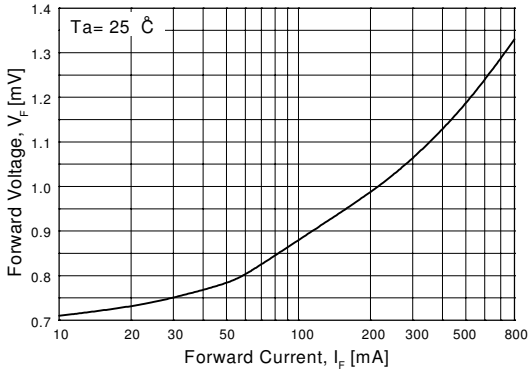


Figure 6. Forward Voltage vs Forward Current
VF - 10 to 800mA

Typical Characteristics (continued)

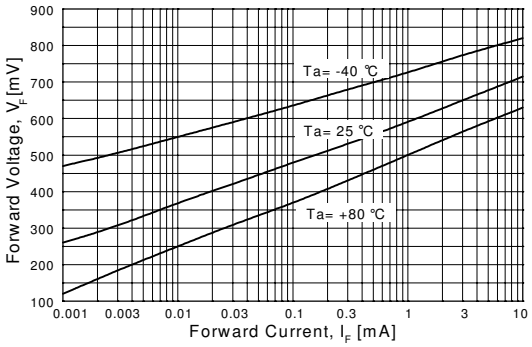


Figure 7. Forward Voltage vs Ambient Temperature VF - 1.0 uA - 10 mA (-40 to +80 Deg C)

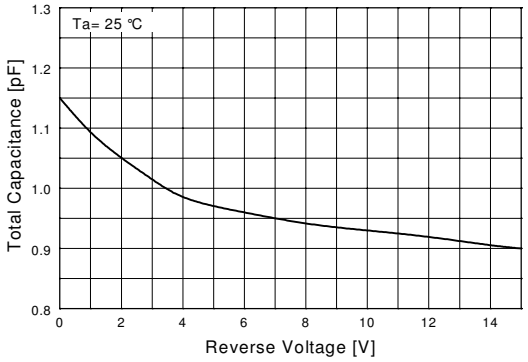


Figure 8. Total Capacitance

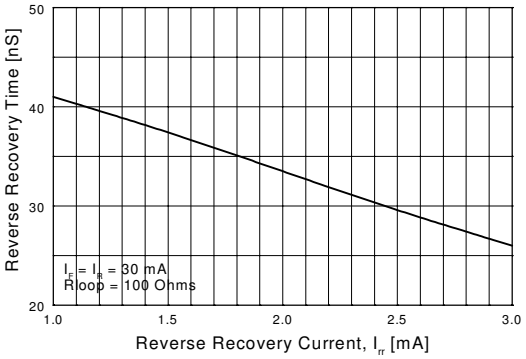


Figure 9. Reverse Recovery Time vs Reverse Recovery Current

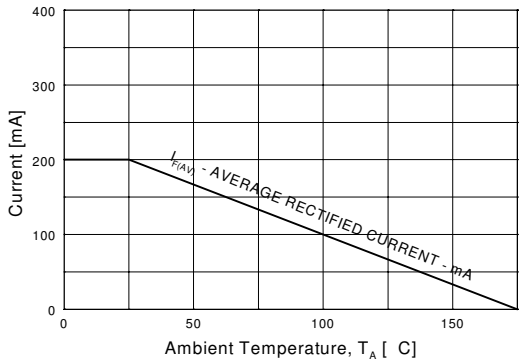


Figure 10. Average Rectified Current ($I_{F(AV)}$) versus Ambient Temperature (T_A)

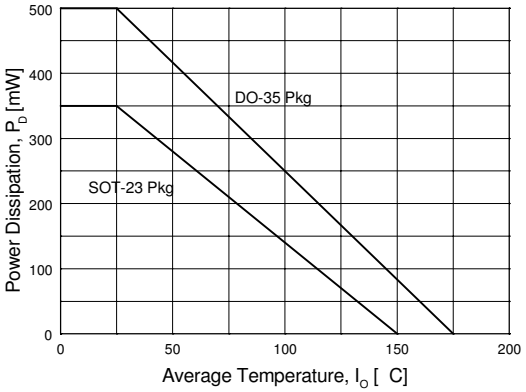


Figure 11. Power Derating Curve

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.

ACEx™	FAST ®	OPTOLOGIC™	SMART START™	VCX™
Bottomless™	FASTr™	OPTOPLANAR™	STAR*POWER™	
CoolFET™	FRFET™	PACMAN™	Stealth™	
CROSSVOLT™	GlobalOptoisolator™	POP™	SuperSOT™-3	
DenseTrench™	GTO™	Power247™	SuperSOT™-6	
DOME™	HiSeC™	PowerTrench®	SuperSOT™-8	
EcoSPARK™	ISOPLANAR™	QFET™	SyncFET™	
E^2CMOS™	LittleFET™	QS™	TinyLogic™	
EnSigna™	MicroFET™	QT Optoelectronics™	TruTranslation™	
FACT™	MicroPak™	Quiet Series™	UHC™	
FACT Quiet Series™	MICROWIRE™	SILENT SWITCHER®	UltraFET®	

STAR*POWER is used under license

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.