

3469674 FAIRCHILD SEMICONDUCTOR

84D 27296 D

**FAIRCHILD**

A Schlumberger Company

**BAY72/BAY80**

7-01-09

General Purpose High  
Conductance Diodes

- $V_F$  ... 1.0V (MAX) @ 100 mA (BAY72)
- $V_F$  ... 1.0V (MAX) @ 150 mA (BAY80)

**PACKAGES**

BAY72 DO-35  
BAY80 DO-35

**ABSOLUTE MAXIMUM RATINGS (Note 1)**

**Temperatures**

Storage Temperature Range -65°C to +200°C  
Maximum Junction Operating Temperature +175°C  
Lead Temperature +280°C

**Power Dissipation (Note 2)**

Maximum Total Power Dissipation at 25°C Ambient 500 mW  
Linear Power Derating Factor (from 25°C) 3.33 mW/°C

**Maximum Voltage and Currents**

WIV	Working Inverse Voltage	BAY 72	100 V
		BAY 80	120 V
$I_O$	Average Rectified Current		200 mA
$I_F$	Continuous Forward Current		500 mA
$I_F$	Peak Repetitive Forward Current		600 mA
$I_F$ (surge)	Peak Forward Surge Current		1.0 A
	Pulse Width = 1 s		4.0 A
	Pulse Width = 1 $\mu$ s		

**ELECTRICAL CHARACTERISTICS (25°C Ambient Temperature unless otherwise noted)**

SYMBOL	CHARACTERISTIC	BAY 72		BAY 80		UNITS	TEST CONDITIONS
		MIN	MAX	MIN	MAX		
$V_F$	Forward Voltage	0.78	1.00		1.00	V	$I_F = 150$ mA $I_F = 100$ mA $I_F = 50$ mA $I_F = 10$ mA $I_F = 1.0$ mA
		0.73	0.92			V	
		0.63	0.78			V	
						V	
						V	
$I_R$	Reverse Current				100	nA	$V_R = 120$ V $V_R = 120$ V, $T_A = 100^\circ$ C $V_R = 100$ V $V_R = 100$ V, $T_A = 125^\circ$ C
			100		150	$\mu$ A	
			100			$\mu$ A	
BV	Breakdown Voltage	125		150		V	$I_R = 100$ $\mu$ A
C	Capacitance		6.0		6.0	pF	$V_R = 0$ , $f = 1$ MHz
$t_{rr}$	Rev. Rec. Time (note 3) (note 4)		50		60	ns	$I_F = I_R = 30$ mA, $R_L = 75$ $\Omega$ $I_F = 30$ mA, $V_R = 35$ V
			400			ns	
$V_{FR}$	Fwd. Rec. Voltage (note 5)		2.5			v	$R_L = 2.0$ K $\Omega$ , $C_L = 10$ pF
$V_{FR}$	Fwd. Rec. Voltage (note 5)		2.5			V	$I_F = 100$ mA (pulsed)
$t_{FR}$	Fwd. Rec. Time (note 5)		60			ns	$I_F = 100$ mA (pulsed)
$Q_g$	Stored Charge (note 6)		250			pC	$I_F = 20$ mA, $I_R = 1.0$ mA
$\eta_R$	Rect. Efficiency (note 7)	35				%	$f = 100$ MHz

**NOTES:**

- These ratings are limiting values above which the serviceability of the diode may be impaired.
- These are steady state limits. The factory should be consulted on applications involving pulsed or low duty-cycle operation.
- Recovery to 1.0 mA.
- Recovery to 400 K $\Omega$ , Jan 256 Circuit.
- The oscilloscope used as the response detector shall have a bandwidth of at least 10 MHz (3 dB down), and shall be calibrated using a deposited carbon resistor of 60  $\Omega$  in the diode test clips.  $t_{FR}$  is defined as the difference between the 10% point of the pulse and the point where  $V_F$  is to be within 10% of the quiescent value. Pulse conditions shall be 0.1  $\mu$ s wide at base, 20 ns maximum rise time, repetition rate = 100 kHz max.
- Measured on the Tektronix "B" unit.
- Rectification efficiency is defined as the ratio of dc load voltage to peak rf input to the circuit. Load resistance of 5.0 K $\Omega$ , load capacitance 20 pF.
- For product family characteristic curves, refer to Chapter 4, D1.