

FAIRCHILD SEMICONDUCTOR

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FAIRCHILD

A Schlumberger Company

BAY72/BAY80

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 +260°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 μ 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
		0.73	0.92			V	$I_F = 100$ mA
		0.63	0.78			V	$I_F = 50$ mA
						V	$I_F = 10$ mA
						V	$I_F = 1.0$ mA
I_R	Reverse Current				100	nA	$V_R = 120$ V
					150	μ A	$V_R = 120$ V, $T_A = 100^\circ$ C
			100			nA	$V_R = 100$ V
			100			μ A	$V_R = 100$ V, $T_A = 125^\circ$ C
BV	Breakdown Voltage	125		150		V	$I_R = 100$ μ A
C	Capacitance		5.0		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, $R_L = 75$ Ω
			400			ns	$I_f = 30$ mA, $V_R = 35$ V
V_{fr}	Fwd. Rec. Voltage (note 5)		2.5			v	$R_L = 2.0$ k Ω , $C_L = 10$ pF
V_{fr}	Fwd. Rec. Voltage (note 5)		2.5			V	$I_f = 100$ mA (pulsed)
t_{fr}	Fwd. Rec. Time (note 5)		50			ns	$I_f = 100$ mA (pulsed)
Q_s	Stored Charge (note 6)		250			pC	$I_f = 20$ mA, $I_r = 1.0$ mA
RE	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 Ω , 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 50 Ω in the diode test clips. t_r 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 μ s wide at base, 20 ns maximum rise time, repetition rate = 100 kHz max.
- Measured on the Tektronix "S" 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 Ω , load capacitance 20 pF.
- For product family characteristic curves, refer to Chapter 4, D1.

