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		
	Pulse Width = 1 s		1.0 A
	Pulse Width = 1 μs		4.0 A

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

SYMBOL	CHARACTERISTIC	BAY 72 MIN	BAY 72 MAX	BAY 80 MIN	BAY 80 MAX	UNITS	TEST CONDITIONS
V_F	Forward Voltage				1.00	V	I_F = 150 mA
		0.78	1.00			V	I_F = 100 mA
		0.73	0.92			V	I_F = 50 mA
		0.63	0.78			V	I_F = 10 mA
		0.51	0.64			V	I_F = 1.0 mA
I_R	Reverse Current				100	nA	V_R = 120 V
					150	μA	V_R = 120 V, T_A = 100°C
			100			nA	V_R = 100 V
			100			μA	V_R = 100 V, T_A = 125°C
BV	Breakdown Voltage	125		150		V	I_R = 100 μA
C	Capacitance		5.0		6.0	pF	V_R = 0, f = 1 MHz
t_{rr}	Rev. Rec. Time (note 3)		50		60	ns	$I_f = I_r$ = 30 mA, R_L = 75 Ω
	(note 4)		400			ns	I_f = 30 mA, V_R = 35 V
V_{fr}	Fwd. Rec. Voltage (note 5)		2.5			v	R_L = 2.0 KΩ, 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 Change (note 6)		250			pC	I_f = 20 mA, I_r = 1.0 mA
R_E	Rect. Efficiency (note 7)	35				%	f = 100 MHz

NOTES:
1. These ratings are limiting values above which the serviceability of the diode may be impaired.
2. These are steady state limits. The factory should be consulted on applications involving pulsed or low duty-cycle operation.
3. Recovery to 1.0 mA.
4. Recovery to 400 kΩ, Jan 256 Circuit.
5. 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_{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 μs wide at base, 20 ns maximum rise time, repetition rate = 100 kHz max.
6. Measured on the Tektronix "S" unit.
7. Rectification efficiency is defined as the ratio of dc load voltage to peak rf input to the circuit. Load resistance of 5.0 kΩ, load capacitance 20 pF.
8. For product family characteristic curves, refer to Chapter 4, D1.