Silicon Bridge - Diode

FSA2704M

60V/350mA

DATASHEET

OEM – Fairchild

Source: Fairchild Databook 1978

Datasheet Rev. 1.3 – 03/19 - data without warranty / liability

FSA2702M · FSA2703M · FSA2704M · FSA2705M

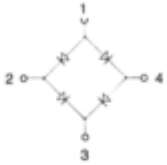
PLANAR AIR-ISOLATED MONOLITHIC DIODE BRIDGE ARRAYS

- ΔV_F . . . 3 mV (MAX) FSA2702M, FSA2703M
- ΔI_R . . . 1 μA (MAX) FSA2702M, FSA2703M

ABSOLUTE MAXIMUM RATINGS (Note 1)

Temperatures		
Storage Temperature Range		−55°C to +200°C
Maximum Junction Operating Temperature		175°C
Lead Temperature		+260°C
Power Dissipation (Note 2)		
Maximum Dissipation		500 mW
Linear Derating Factor (from 25°C)		3.33 mW/°C
Maximum Voltage and Currents		
WIV	Working Inverse Voltage	40 V
I_F	Continuous Forward Current	300 mA
I_f	Recurrent Peak Forward Current	600 mA
I_f (surge)	Peak Forward Surge Current	
	Pulse Width = 1.0 s	1.0 A
	Pulse Width = 1.0 μs	4.0 A

CONNECTION DIAGRAM



See Package Outlines

TO-33	FSA2702M, FSA2704M
TO-72	FSA2703M, FSA2705M

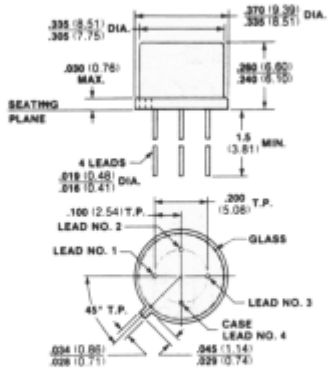
ELECTRICAL CHARACTERISTICS (25°C Ambient Temperature unless otherwise noted)

SYMBOL	CHARACTERISTIC	MIN	MAX	UNITS	TEST CONDITIONS
BV	Breakdown Voltage	60		V	I_R = 100 μA
I_R	Reverse Current (Note 4)		100 100	nA μA	V_R = 40 V V_R=40 V, T_A = 150°C
C	Capacitance (Note 5)		4.0	pF	V_R = 0
V_F	Forward Voltage (Note 3)		1.000 .920 .850 .780 .740 .700 .650 .620	V V V V V V V V	I_F = 200 mA I_F = 100 mA I_F = 50 mA I_F = 20 mA I_F = 10 mA I_F = 5.0 mA I_F = 2.0 mA I_F = 1.0 mA
t_{rr}	Reverse Recovery Time (Note 6)		6.0 8.0	ns ns	I_f = I_r = 10 mA, I_{rr} = 1.0 mA I_f = I_r = 200 mA, I_{rr} = 20 mA
ΔV_f	Forward Voltage Match (Note 6) FSA2702, FSA2703		3.0	mV	I_F = 10 μA to 10 mA T_A = −55°C to +100°C
ΔI_R	Reverse Current Match (Note 6) FSA2702, FSA2703		1.0	μA	V_R = 10 V, T_A = −55°C to +100°C

NOTES:
1. These ratings are limiting values above which life or satisfactory performance may be impaired.
2. These are steady state limits. The factory should be consulted on applications involving pulsed or low duty cycle operation.
3. V_F is measured using an 8 ms pulse.
4. See test circuits (Note 6) for measurement of reverse current of an individual diode.
5. The capacitance is measured from pin-to-pin across any one of the diodes. The interaction of other diodes is therefore included in the measured value.
6. For product family characteristic curves and test circuits, refer to Chapter 4 D15.

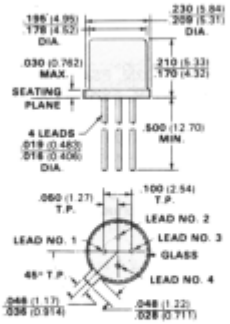
FAIRCHILD • DIODE ARRAYS

JEDEC TO-33 OUTLINE



NOTES:
Kovar leads, gold plated
Hermetically sealed package
Package weight is 1.22 grams

TO-72 OUTLINE



NOTES:
Kovar leads, gold plated
Hermetically sealed package
Package weight is 0.36 gram

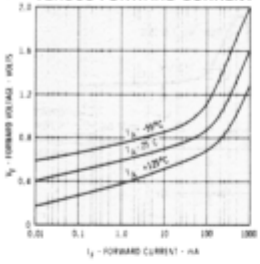
CURVE SET NUMBER D15

AIR-ISOLATED MONOLITHIC DIODE ARRAY

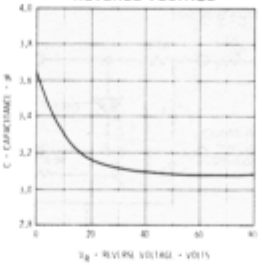
TYPICAL ELECTRICAL CHARACTERISTIC CURVES

AT 25°C AMBIENT TEMPERATURE UNLESS OTHERWISE NOTED

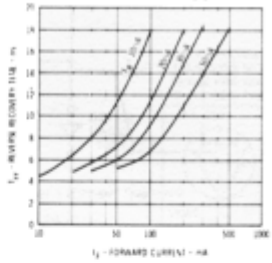
FORWARD VOLTAGE VERSUS FORWARD CURRENT



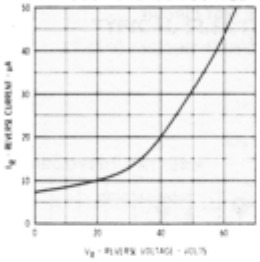
CAPACITANCE VERSUS REVERSE VOLTAGE



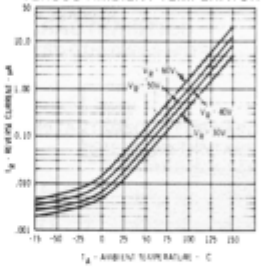
REVERSE RECOVER TIME VERSUS FORWARD CURRENT



REVERSE CURRENT VERSUS REVERSE VOLTAGE



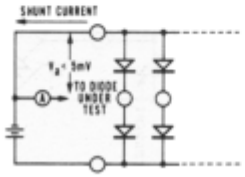
REVERSE CURRENT VERSUS AMBIENT TEMPERATURE



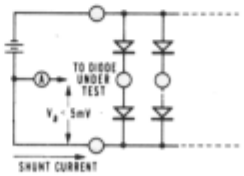
TEST CIRCUITS

To measure reverse current of an individual diode, the following test circuits are used:

COMMON CATHODE DIODES



COMMON ANODE DIODES



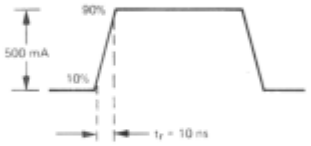
CURVE SET NUMBER D15

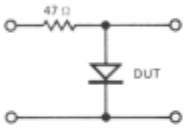
AIR-ISOLATED MONOLITHIC DIODE ARRAY

TEST CIRCUITS

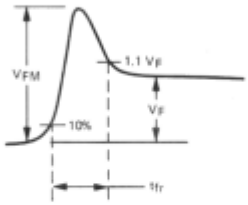
Test requirement for V_{FM} and t_{fr} is as shown below; all leads should be as short as possible.

INPUT CURRENT PULSE



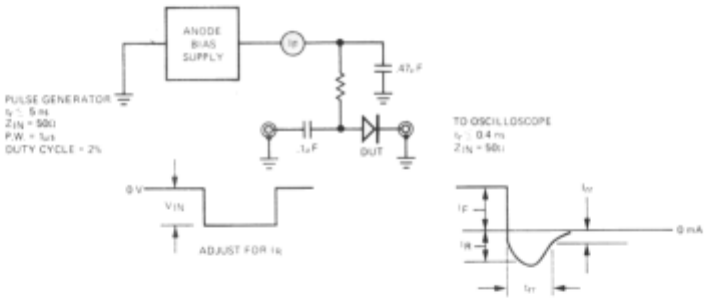


OUTPUT VOLTAGE PULSE

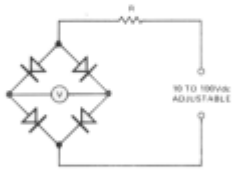


t_{rr} - REVERSE RECOVERY TIME TEST CIRCUIT

$I_f = I_r$, $I_{rr} = 0.1\ I_r$



ΔV_F BRIDGE MATCHING CIRCUIT



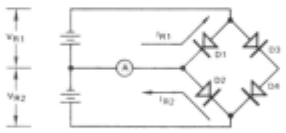
NOTES:

1. R Varies depending on the current range. For the most often used current ranges, R is as follows:

Current Range (amperes)	R (ohms)
10^{-5} to 10^{-4}	10^6
10^{-4} to 10^{-3}	10^5
10^{-3} to 10^{-2}	10^4
or 10^{-n} to 10^{-n+1}	10^{n+1}

2. V indicates mismatch of assembly.

ΔI_R BRIDGE MATCHING CIRCUIT



NOTES:

1. $V_{R2} = V_{R1}$ ±1%.
2. $I_{R2} - I_{R1} = \Delta I_R$ (difference in I_R between diodes D1 & D2). To measure diodes D3 & D4, reverse cathode-anodeterminal connections.
3. A is a center reading pico ammeter. ΔI_R indicated directly on A.