

# Silicon Bridge - Diode

## **FSA2702M**

60V/350mA

# DATASHEET

OEM – Fairchild

Source: Fairchild Databook 1978

## FSA2702M • FSA2703M • FSA2704M • FSA2705M

### PLANAR AIR-ISOLATED MONOLITHIC DIODE BRIDGE ARRAYS

- $\Delta V_F$  ... 3 mV (MAX) FSA2702M, FSA2703M
- $\Delta I_R$  ... 1  $\mu$ A (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

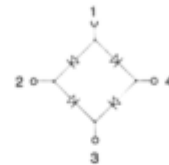
##### Power Dissipation (Note 2)

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	1.0 A
	Pulse Width = 1.0 s	4.0 A
	Pulse Width = 1.0 $\mu$ s	

#### CONNECTION DIAGRAM



See Package Outlines

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

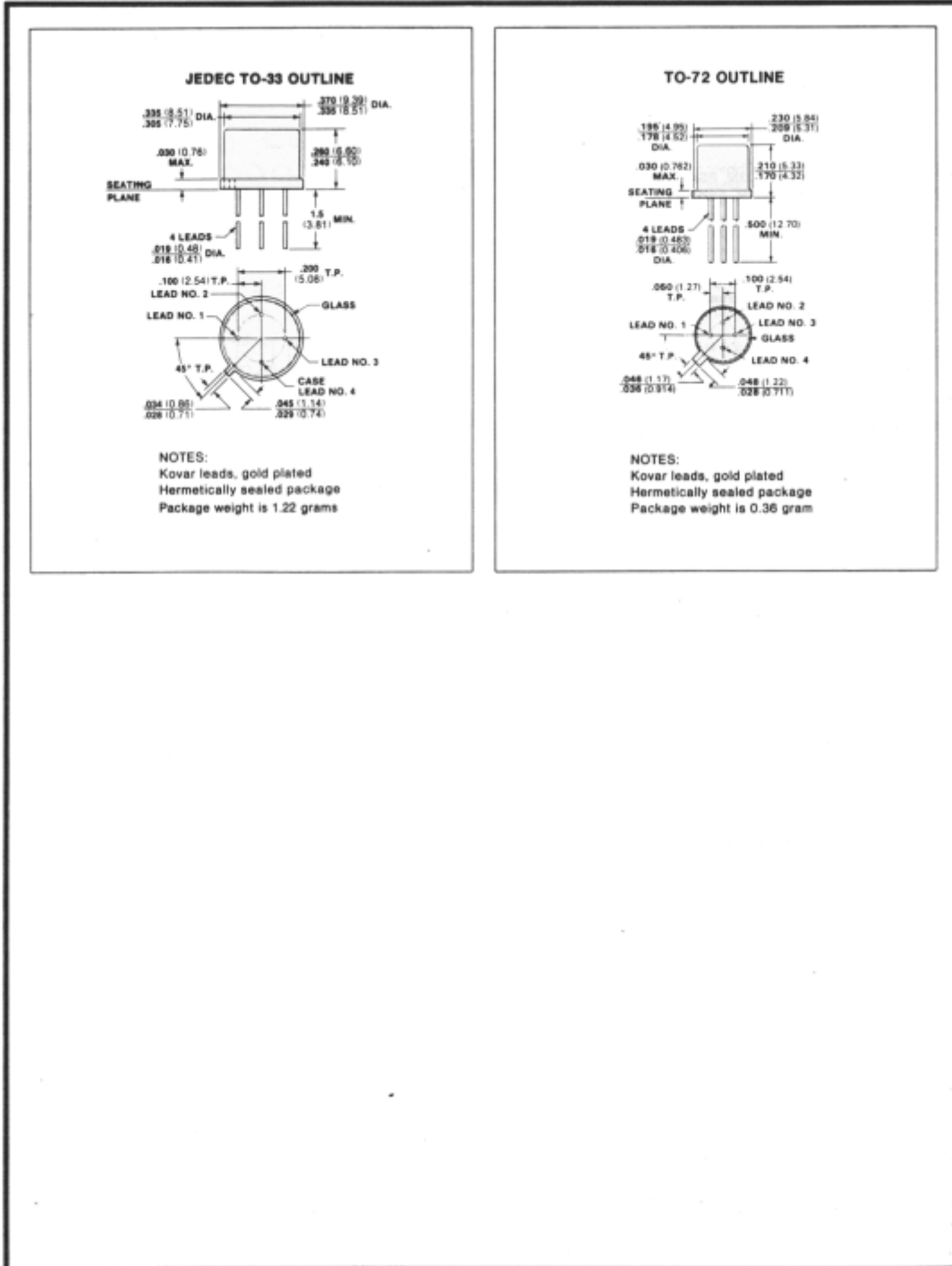
#### ELECTRICAL CHARACTERISTICS (25°C Ambient Temperature unless otherwise noted)

SYMBOL	CHARACTERISTIC	MIN	MAX	UNITS	TEST CONDITIONS
BV	Breakdown Voltage	60		V	$I_R = 100 \mu$ A
$I_R$	Reverse Current (Note 4)		100	nA $\mu$ A	$V_R = 40$ V $V_R = 40$ V, $T_A = 150^\circ$ 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	$I_F = 200$ 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	$I_F = I_R = 10$ mA, $t_{rr} = 1.0$ mA $I_F = I_R = 200$ mA, $t_{rr} = 20$ mA
$\Delta V_F$	Forward Voltage Match (Note 6) FSA2702, FSA2703		3.0	mV	$I_F = 10 \mu$ A to 10 mA $T_A = -55^\circ$ C to $+100^\circ$ C
$\Delta I_R$	Reverse Current Match (Note 6) FSA2702, FSA2703		1.0	$\mu$ A	$V_R = 10$ V, $T_A = -55^\circ$ C to $+100^\circ$ C

#### NOTES:

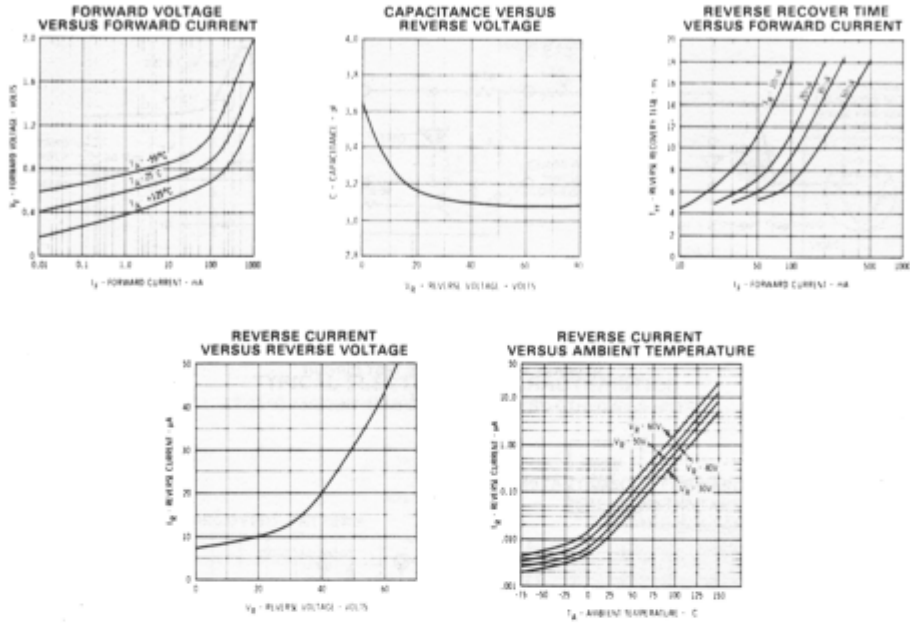
1. These ratings are limiting values above which life or satisfactory performance may be impaired.
2. These are steady state limits. The factory should be consulted on applications involving pulsed or low duty cycle operation.
3.  $V_C$  is measured using an 8 ns pulse.
4. See test circuits (Note 6) 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



**CURVE SET NUMBER D15**  
**AIR-ISOLATED MONOLITHIC DIODE ARRAY**

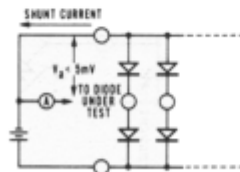
**TYPICAL ELECTRICAL CHARACTERISTIC CURVES**  
 AT 25°C AMBIENT TEMPERATURE UNLESS OTHERWISE NOTED



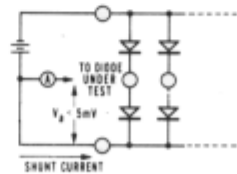
**TEST CIRCUITS**

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

**COMMON CATHODE DIODES**



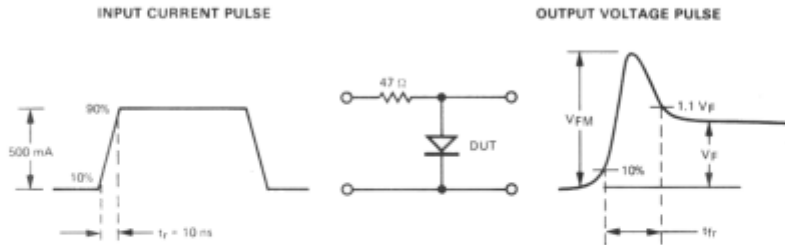
**COMMON ANODE DIODES**



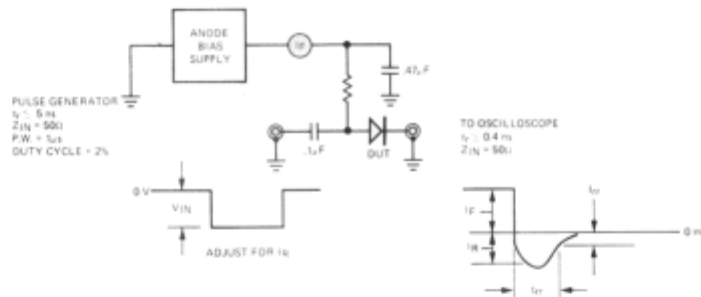
**CURVE SET NUMBER D15**  
**AIR-ISOLATED MONOLITHIC DIODE ARRAY**

**TEST CIRCUITS**

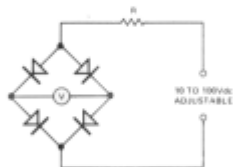
Test requirement for  $V_{FM}$  and  $t_{rr}$  is as shown below; all leads should be as short as possible.



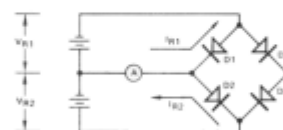
**$t_{rr}$  - REVERSE RECOVERY TIME TEST CIRCUIT**  
 $I_F = I_R = I_{rr} = 0.1 I_F$



**$\Delta V_F$  BRIDGE MATCHING CIRCUIT**



**$\Delta I_R$  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 $10^{-2}$	$10^4$
$10^{-2}$ to $10^{-1}$	$10^3$
or $10^{-n}$ to $10^{-n+1}$	$10^{n+1}$

2. V indicates mismatch of assembly.

**NOTES:**

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