

# Silicon – Diode Array

## **FSA2565P**

13 Diode Array

60V/350mA

# DATASHEET

OEM – Fairchild

Source: Fairchild Databook 1978

## FSA2563M • FSA2563P • FSA2564M • FSA2564P FSA2565M • FSA2565P • FSA2566M • FSA2566P

### PLANAR AIR-ISOLATED MONOLITHIC DIODE ARRAYS

- C... 3.0 pf (max)
- $V_F$ ... 15 mV (max) @ 10 mA

#### ABSOLUTE MAXIMUM RATINGS (Note 1)

##### Temperatures

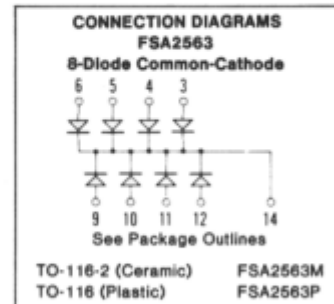
Storage Temperature Range (M Suffix)	-55°C to +200°C
(P Suffix)	-55°C to +150°C
Maximum Junction Operating Temperature	+150°C
Lead Temperature	+260°C

##### Power Dissipation (Note 2)

Maximum Dissipation per Junction at 25°C Ambient	400 mW
Maximum Dissipation per Package at 25°C Ambient	650 mW
Linear Derating Factor (from 25°C) Junction	3.2 mW/°C
Package	5.2 mW/°C

##### Maximum Voltage and Currents

WIV	Working Inverse Voltage	40 V
$I_F$	Continuous Forward Current	350 mA
$i_f$ (surge)	Peak Forward Surge Current	
	Pulse Width = 1.0 s	1.0 A
	Pulse Width = 1.0 $\mu$ s	2.0 A



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

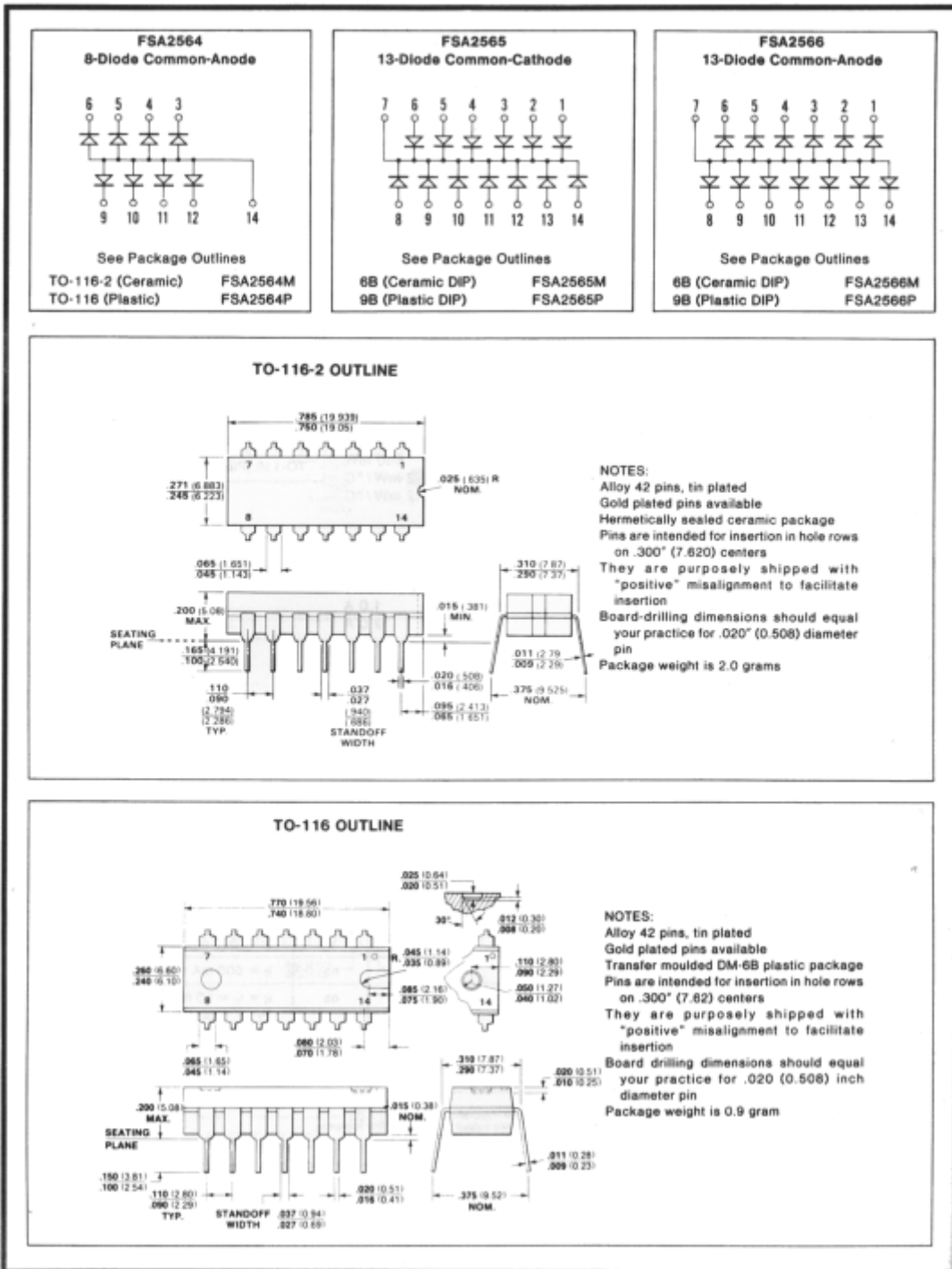
SYMBOL	CHARACTERISTIC	MIN	MAX	UNITS	TEST CONDITIONS
BV	Breakdown Voltage	60		V	$I_R = 10 \mu A$
$V_F$	Forward Voltage (Note 3)		1.0 1.1 1.3	V	$I_F = 100 \text{ mA}$ $I_F = 200 \text{ mA}$ $I_F = 500 \text{ mA}$
$I_R$	Reverse Current (Note 4)		100 100	nA $\mu A$	$V_R = 40 \text{ V}$ $V_R = 40 \text{ V}, T_A = 125^\circ \text{C}$
C	Capacitance (Note 5)		3	pF	$V_R = 0 \text{ V}, f = 1 \text{ MHz}$
$V_{FM}$	Peak Forward Voltage (Note 6)		4	V	$I_F = 500 \text{ mA}$
$t_{fr}$	Forward Recovery Time (Note 6)		40	ns	$I_f = 500 \text{ mA}$
$t_{rr}$	Reverse Recovery Time (Note 6)		10 50	ns	$I_f = I_r = 10 \text{ mA to } 200 \text{ mA}$ $R_L = 100\Omega, I_{rr} = 0.1 I_r$ $I_f = 500 \text{ mA}, I_r = 50 \text{ mA}$ $R_L = 100\Omega, I_{rr} = 5 \text{ mA}$
$\Delta V_F$	Forward Voltage Match (Note 6)		15	mV	$I_F = 10 \text{ mA}$

#### NOTES:

- These ratings are limiting values above which life or satisfactory performance may be impaired.
- These are steady state limits. The factory should be consulted on applications involving pulsed or low duty-cycle operation.
- $V_F$  is measured using an 8  $\mu$ s pulse.
- See test circuits (Note 6) for measurement of reverse current of an individual diode.
- 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.
- For product family characteristic curves and test circuits, refer to Chapter 4, D15.

\*COMMON ANODE, COMMON CATHODE

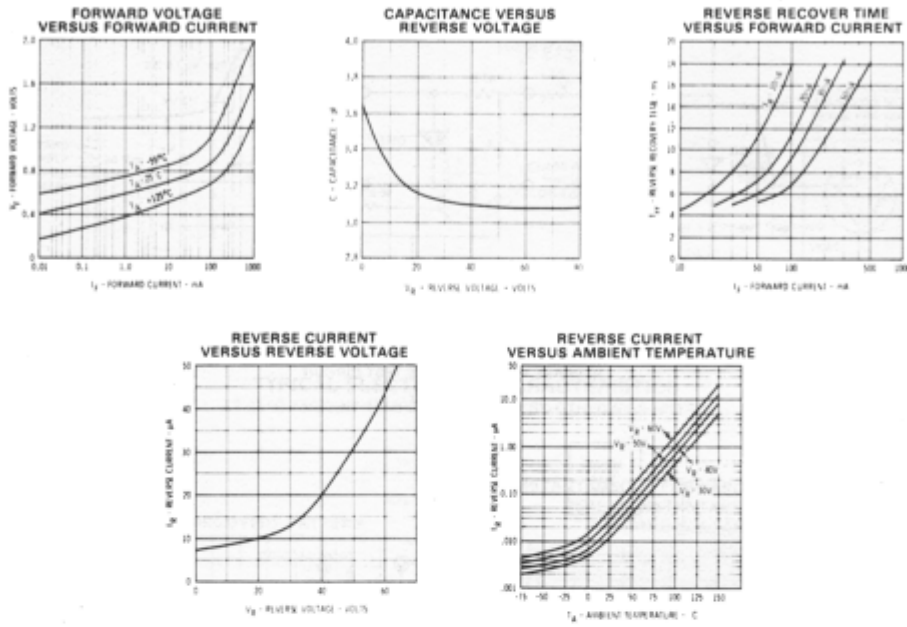
FAIRCHILD • DIODE ARRAYS





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

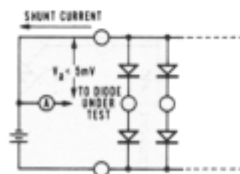
**TYPICAL ELECTRICAL CHARACTERISTIC CURVES**  
 AT 25°C AMBIENT TEMPERATURE UNLESS OTHERWISE NOTED



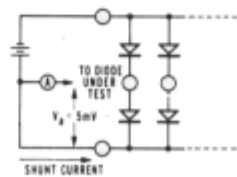
**TEST CIRCUITS**

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

**COMMON CATHODE DIODES**



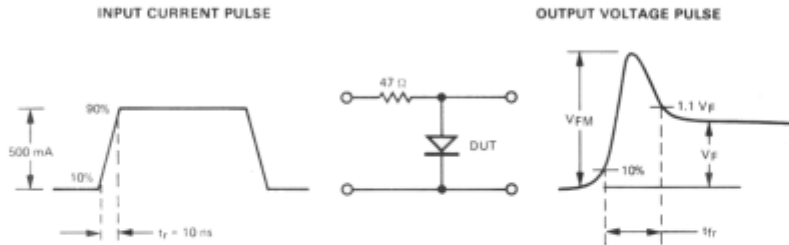
**COMMON ANODE DIODES**



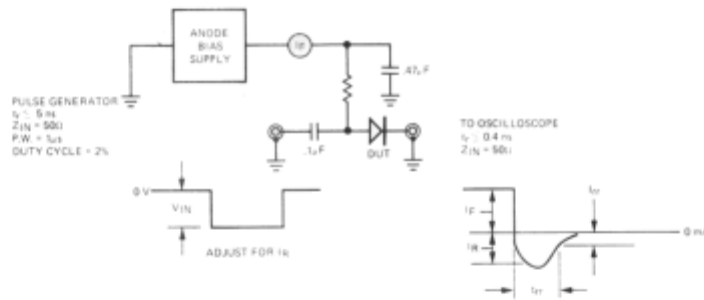
**CURVE SET NUMBER D15**  
**AIR-ISOLATED MONOLITHIC DIODE ARRAY**

**TEST CIRCUITS**

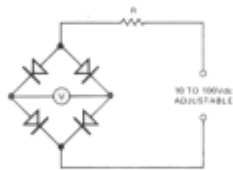
Test requirement for  $V_{FM}$  and  $t_{rr}$  is as shown below; all leads should be as short as possible.



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



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



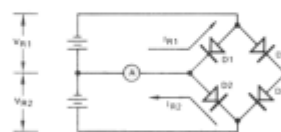
**NOTES:**

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.

**$\Delta I_R$  BRIDGE MATCHING CIRCUIT**



**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.