Silicon – Diode Array

FSA2509M

16 Diode Array

60V/350mA

DATASHEET

OEM – Fairchild

Source: Fairchild Databook 1978

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

FSA2509M·FSA2509P·FSA2510M·FSA2510P

PLANAR AIR-ISOLATED MONOLITHIC DIODE ARRAYS*

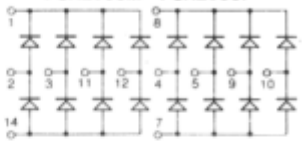
- **C . . . 5.0 pF (MAX)**
- **ΔV_F . . . 15 mV (MAX) @ 10 mA**

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 μs	2.0 A

CONNECTION DIAGRAM 5

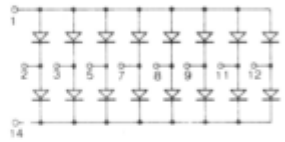
FSA2509M • FSA2509P



Package Outlines

TO-116-2 (Ceramic)	FSA2509M
TO-116 (Plastic)	FSA2509P

FSA2510M • FSA2510P



See Package Outlines

TO-116-2 (Ceramic)	FSA2510M
TO-116 (Plastic)	FSA2510P

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

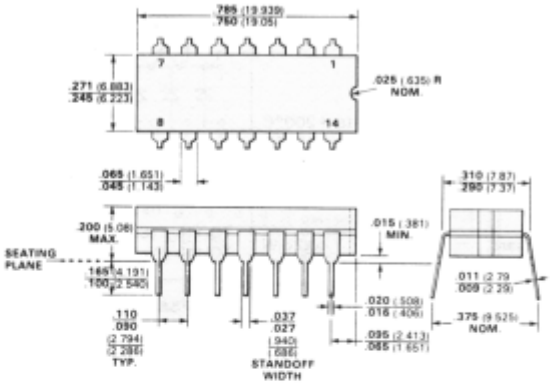
SYMBOL	CHARACTERISTIC	MIN	MAX	UNITS	TEST CONDITIONS
BV	Breakdown Voltage	60		V	I_R = 10 μA
V_F	Forward Voltage (Note 3)		1.0	V	I_F = 100 mA
			1.1	V	I_F = 200 mA
			1.3	V	I_F = 500 mA
ΔV_F	Forward Voltage Match (Note 6)		15	mV	I_F = 10 mA
I_R	Reverse Current (Note 4)		100	nA	V_R = 40 V
			200	μA	V_R = 40 V, T_A = 150°C
C	Capacitance (Note 5)		5.0	pF	V_R = 0, f = 1.0 MHz
t_{fr}	Forward Recovery Time (Note 6)		40	ns	I_f = 500 mA
t_{rr}	Reverse Recovery Time (Note 6)		10	ns	$I_f = I_r$ = 10 mA to 200 mA, R_L = 100 Ω, I_{rr} = 0.1 I_R
			50	ns	I_f = 500 mA, I_r = 50 mA, R_L = 100 Ω, I_{rr} = 5.0 mA

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.

*DUAL 8-DIODE AND 16-DIODE CORE DRIVER MATRICES

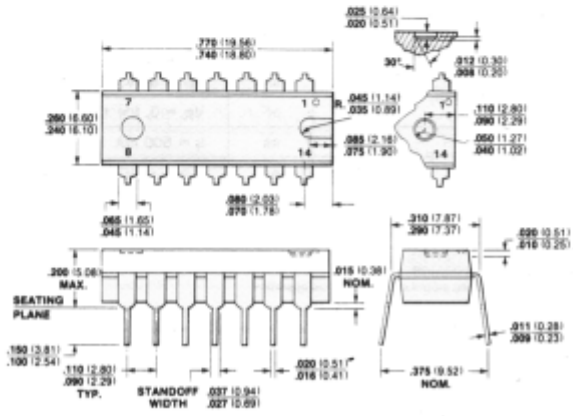
FAIRCHILD • DIODE ARRAYS

TO-116-2 OUTLINE



NOTES:
Alloy 42 pins, tin plated
Gold plated pins available
Hermetically sealed ceramic package
Pins are intended for insertion in hole rows on .300" (7.620) centers
They are purposely shipped with "positive" misalignment to facilitate insertion
Board-drilling dimensions should equal your practice for .020" (0.508) diameter pin
Package weight is 2.0 grams

TO-116 OUTLINE



NOTES:
Alloy 42 pins, tin plated
Gold plated pins available
Transfer moulded DM-6B plastic package
Pins are intended for insertion in hole rows on .300" (7.62) centers
They are purposely shipped with "positive" misalignment to facilitate insertion
Board drilling dimensions should equal your practice for .020 (0.508) inch diameter pin
Package weight is 0.9 gram

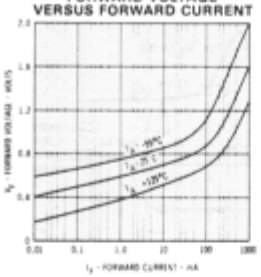
CURVE SET NUMBER D15

AIR-ISOLATED MONOLITHIC DIODE ARRAY

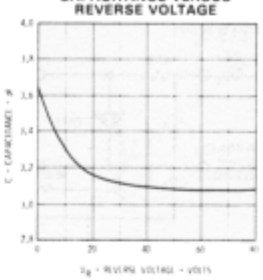
TYPICAL ELECTRICAL CHARACTERISTIC CURVES

AT 25°C AMBIENT TEMPERATURE UNLESS OTHERWISE NOTED

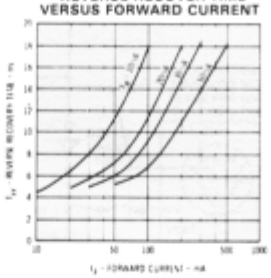
FORWARD VOLTAGE VERSUS FORWARD CURRENT



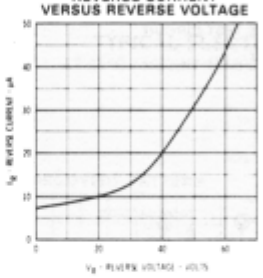
CAPACITANCE VERSUS REVERSE VOLTAGE



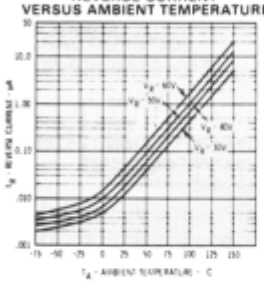
REVERSE RECOVER TIME VERSUS FORWARD CURRENT



REVERSE CURRENT VERSUS REVERSE VOLTAGE



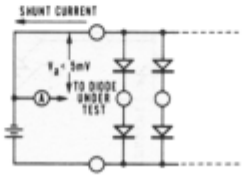
REVERSE CURRENT VERSUS AMBIENT TEMPERATURE



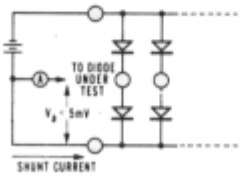
TEST CIRCUITS

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

COMMON CATHODE DIODES



COMMON ANODE DIODES



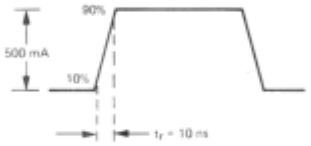
CURVE SET NUMBER D15

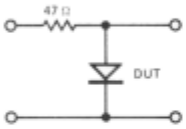
AIR-ISOLATED MONOLITHIC DIODE ARRAY

TEST CIRCUITS

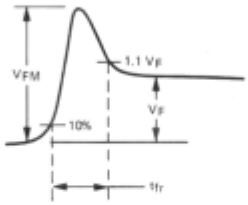
Test requirement for V_{FM} and t_{fr} is as shown below; all leads should be as short as possible.

INPUT CURRENT PULSE



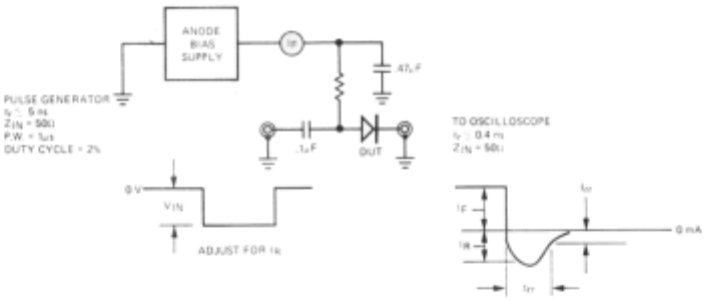


OUTPUT VOLTAGE PULSE

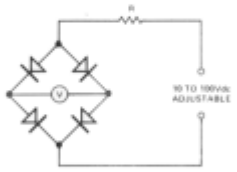


t_{rr} - REVERSE RECOVERY TIME TEST CIRCUIT

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



ΔV_F BRIDGE MATCHING CIRCUIT



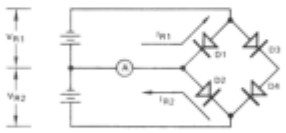
NOTES:

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.