



# FMD8000

## PROGRAMMABLE BIPOLAR LINEAR ARRAY FAMILY

### DESCRIPTION

The FMD8000 is a family of mask programmable BIPOLAR linear arrays optimized for analog applications.

The core of the array consists of NPN / PNP transistors diodes and resistors.

Each transistor structure can be configured as either a diode, and NPN or a PNP transistor.

The NPN transistor can be configured as:

- Two NPNs with common collector
- One NPN with 1,2 or 3 emitters
- One NPN and one Zener diode

The PNP transistor can be configured as either a single collector or a dual collector (1/2 the current each) PNP.

Resistors of various types and values as well junction capacitors and large NPNs / PNPs transistors make these arrays very versatile.

Functions such as opamps, comparators, OTA's, V-to-I converters, Oscillators and regulators can be configured easily.

The family of FMD8000 Bipolar linear arrays is one of the most cost effective semi-custom solutions available for analog applications. The development cycle is quite short and the in some cases prototype boards can be built using kit parts from the actual process.

This family of arrays has effectively replaced many "No longer available ICs" from other vendors that used to offer Bipolar linear arrays.

### FEATURES

- Operating voltage range (up to 20 Volts)
- 20 V, junction isolated Bipolar process
- NPN bandwidths up to 800 MHz
- Increased current handling capacity (up to 20mA on large NPN transistors)
- Architecture allows over 90% component utilization
- Low development cost and quick turnaround
- Ideal for robust analog applications
- Various die sizes available from 33 up to 600 NPN/PNP transistors
- Excellent component matching
- Low-Noise, Low-power, High-performance
- Extensive MacroTile library simplifies and speeds circuit design

### APPLICATIONS

- Sensors/Transducers
- Controls
- Telecommunications
- Interface circuits
- Signal conditioning
- Timers

# FMD8000 FAMILY OF BIPOLAR LINEAR ARRAYS AVAILABLE

Die Size mils	33 x 33	47 x 53	53 x 66	70 x 66	74 x 79	98 x 79	98 x 105	118 x 119
Die Size square mils	1089	2491	3498	4620	5846	7742	10290	14042
Pads	4	17	22	25	30	30	41	48
Dual NPN/PNP Transistors	14	27	39	60	80	120	180	280
Schottky NPN Transistors	4	10	11	12	16	24	36	56
Large NPN Transistors	1	1	2	3	4	9	5	9
Large PNP Transistors	0	1	2	3	3	6	4	5
Total Transistors	33	66	93	143	183	279	405	630
750 Ohm Resistors	120	214	412	635	900	1270	1735	2400
Total Base Resistance	90k	160k	310k	475k	675k	950k	1.3M	1.8M
Base Pinch Resistors	2	9	9	8	11	8	14	16
Epi Pinch Resistors	1	2	2	2	2	2	2	2
Junction Capacitors	1	2	4	7	7	9	12	10
Cross-Unders	40	70	160	200	300	450	650	950

### NPN Transistor

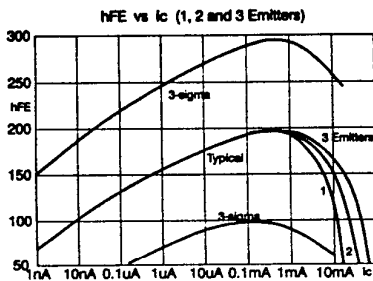


Figure 1

### PNP Transistor

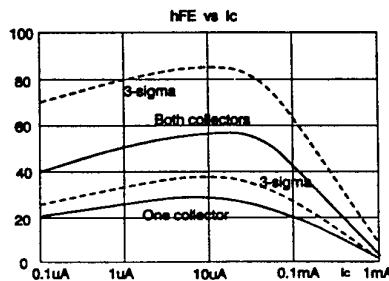


Figure 2

### Large NPN Transistor

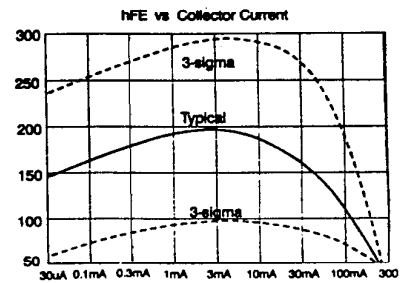


Figure 3

### Large PNP Transistor

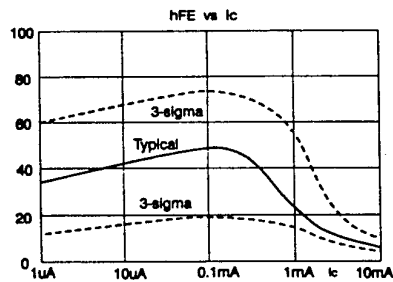


Figure 4

### Schottky Diode

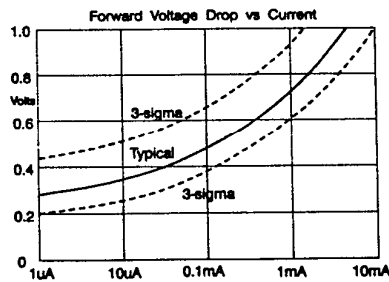


Figure 5

### Resistor

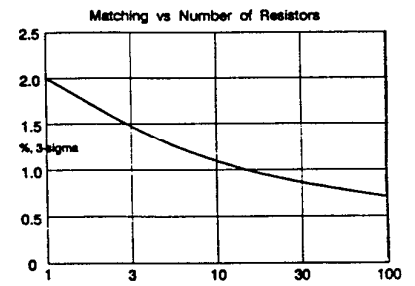


Figure 6

## COMPONENTS

### MACROTILE LIBRARY

The following is a partial list of MacroTiles designed for the FMD8000 Bipolar Linear Array

- OPA101 Operational amplifier
- OPA102 Operational amplifier (Darlington input)
- OPA105 AC Amplifier
- OPA108 Buffer
- VT1101 V-to-I Converter
- CMP101 Comparator
- REF100 Bandgap Reference
- OTA100 Operational Transconductance Amplifier
- FMD8000-001 Signal conditioning for proximity sensor applications
- FMD8000-002 Signal conditioning for ultra-sound sensor applications
- FMD8000-003 Signal conditioning for capacitive sensor applications
- FMD8000-004 Signal conditioning for hall-effect sensor applications

For an updated list of MacroTiles available or for more information contact your local representative or FMD.

### NOTE

- Existing MacroTiles for the FMD8000 Bipolar Linear Array can be modified and re-simulated for new applications.
- FMD will design custom MacroTiles to meet your particular specification.

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