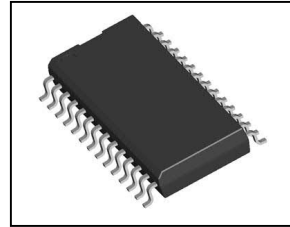
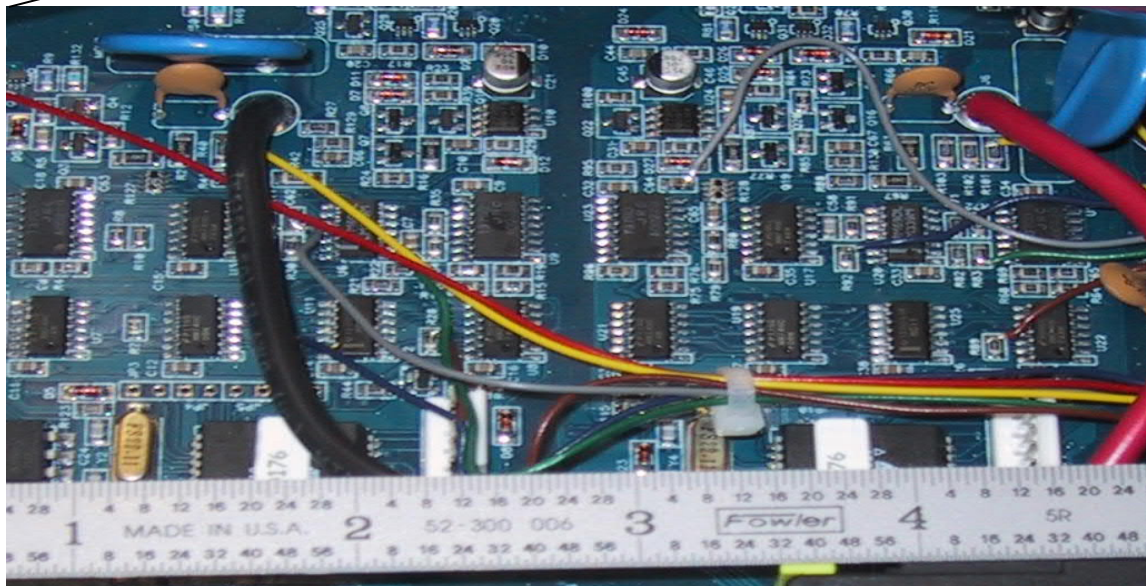




# 700 Series Bipolar Analog Arrays



**Cost Effective**  
**Short Design Cycle**  
**0.9V to 20V Operation**  
**Prototypes in 3 Weeks!!!**  
**Capable of -55°C to +125°C**



In the above design, a 736 array replaced 18 ICs and over 130 discrete components with a single 28L SOIC. Including design time, the entire cycle took 12 weeks with prototypes that worked first time. Board area: 8.3 sq. inches before, 0.225 sq. inches after.

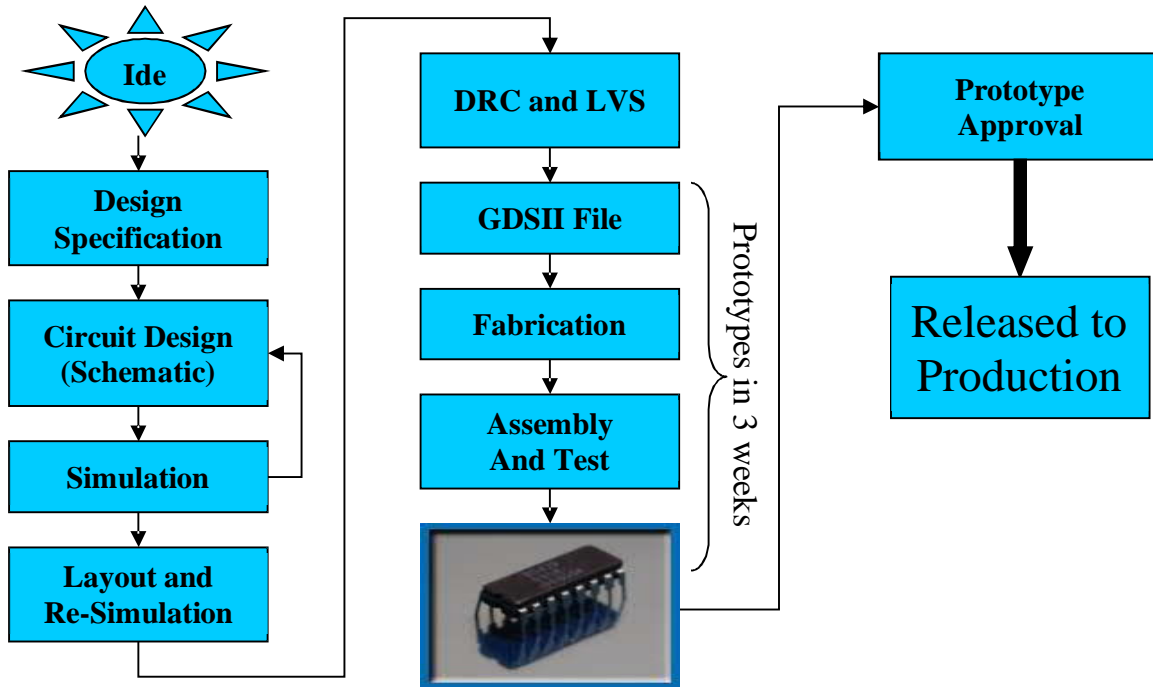
The 700 series arrays, designed and maintained by Array Design Incorporated, are a proven family of devices to meet your 20 volt bipolar analog and mixed-signal applications. The arrays are a series of nine base chips with a configurable top metal layer for quick time-to-market.

| Chip Series              | 710 | 711  | 712  | 713  | 723  | 724  | 734  | 736  | 747  |
|--------------------------|-----|------|------|------|------|------|------|------|------|
| Pads                     | 4   | 8    | 17   | 22   | 25   | 30   | 30   | 41   | 48   |
| NPN/PNP Transistors      | 14  | 22   | 27   | 39   | 60   | 80   | 120  | 180  | 280  |
| Schottky NPN Transistors | 4   | 6    | 10   | 11   | 12   | 16   | 24   | 36   | 56   |
| Large NPN Transistors    | 1   | 1    | 1    | 2    | 3    | 4    | 9    | 5    | 9    |
| Large PNP Transistors    | 0   | 1    | 1    | 2    | 3    | 3    | 6    | 4    | 5    |
| Total Transistors        | 33  | 52   | 66   | 93   | 143  | 183  | 279  | 405  | 630  |
| 750 Ohm Resistors        | 120 | 190  | 210  | 411  | 635  | 895  | 1268 | 1735 | 2439 |
| Base Resistance (Ohms)   | 90k | 142k | 160k | 310k | 475k | 675k | 950k | 1.3M | 1.8M |
| Base Pinch Resistors     | 2   | 2    | 9    | 9    | 7    | 11   | 8    | 14   | 16   |
| Epi Pinch Resistors      | 1   | 1    | 2    | 2    | 2    | 2    | 2    | 2    | 2    |
| Junction Capacitors      | 1   | 2    | 2    | 4    | 7    | 7    | 9    | 12   | 10   |
| Cross Unders             | 40  | 60   | 70   | 160  | 200  | 300  | 450  | 650  | 950  |

# Device Engineering Incorporated

## Development:

- Development fees can be kept low with an a la carte approach.
- Full-turnkey design, layout only, or GDSII flows are available. Only one metal layer is required for customization.
- Development fees include ten prototypes. Prototypes available 3-4 weeks after layout signoff.
- Parametric test development is included, and full analog testing is available for an additional fee.



## Resources:

- Comprehensive Design Manual from Array Design, Inc. - Background for the engineer contemplating a first design as well as a thorough reference for the experienced designer.
- Extensive Application Library - The design manual contains dozens of reference function circuits and detailed tutorials to aid you in completing your specific project.
- State Of The Art Design Tools:
  - Simulation - SIMetrix from Newbury Technology Limited is the recommended design tool. This low cost, state of the art design tool can fully utilize all the device model libraries, schematic symbol libraries, Layout Versus Schematic, etc.
  - Other industry standard design tools (SPICE) may be used for circuit design by using the DEI supplied 700 series models.
  - Layout - Full support for LVS and Design Rules Checking is provided for the widely used and inexpensive ICED tool, from IC Editors, Incorporated.
  - Complete layout patterns, including graphic templates for all the arrays are available from DEI. These GDSII stream files can be used for design on any IC layout tool.
  - Bread boarding - Kit parts are available for all arrays to bread board your circuit and evaluate your design concepts.

# Device Engineering Incorporated

## Packaging:

Multiple packages are available for each array size to meet your specific requirements. The table below shows the standard packages. Additional package options are available. Contact factory for inquiries on a particular package.

For customers who require die, we can provide tested or untested die in wafer form or in waffle pack.

| Pins                                      | 8 | 14 | 16 | 18 | 20 | 24 | 28 | 40 | 44 | 48 | 52 |
|---|---|----|----|----|----|----|----|----|----|----|----|
| <b>Plastic</b>                            |   |    |    |    |    |    |    |    |    |    |    |
| Dual In-Line (DIP), 300 mil               | X | X  | X  | X  | X  | X  |    |    |    |    |    |
| Dual In-Line (DIP), 600 mil               |   |    |    |    |    | X  | X  | X  |    | X  |    |
| Small Outline (SOIC), narrow (150 mil)    | X | X  | X  |    |    |    |    |    |    |    |    |
| Small Outline (SOIC), wide body (300 mil) |   |    | X  |    | X  | X  | X  |    |    |    |    |
| Plastic Leaded Chip Carrier (PLCC)        |   |    |    |    |    |    | X  |    | X  |    | X  |
| Plastic Quad Flat Pack (PQFP)             |   |    |    |    |    | X  |    |    |    | X  | X  |
| <b>Ceramic</b>                            |   |    |    |    |    |    |    |    |    |    |    |
| Dual In-Line, 300 mil                     | X | X  | X  | X  | X  |    |    |    |    |    |    |
| Dual In-Line, 600 mil                     |   |    |    |    |    | X  | X  | X  |    | X  |    |
| Ceramic Small Outline (CSOP)              | X |    | X  |    |    |    |    |    |    |    |    |
| Ceramic Quad Flat Pack (CQFP)             |   |    |    |    |    |    | X  |    | X  |    | X  |

Parts can be marked with customer logo and part number.



## Production:

- Prototype approval to hundreds of parts in 3-4 weeks (Risk Production).
- Prototype approval to thousands of production parts in 6-8 weeks.
- DEI's standard product flow is currently used to produce dozens of products for DEI.
- Whether your product needs are in the 100's of units per year or in the 100's of thousands of units per year, DEI has the production, packaging, and test capability to supply your production needs.
- Screening may include temperature testing, burn-in, or MIL-STD-883 processing.

## Quality:

DEI is an AS9100 and ISO9001 certified IC manufacturer and product development company. DEI is an established supplier for the Aerospace, Military, Industrial, and Commercial markets.

# Device Engineering Incorporated

## About Device Engineering Incorporated:

- An ISO9001 and AS9100 certified company.
- Fabless Semiconductor Company.
- Supplier of analog and mixed signal custom, semi-custom, and standard products since 1990.
- Staff experience exceeds over 125 man years in Analog and Mixed Signal Design.
- Longevity of supply is guaranteed by a 10 year foundry commitment.
- We have the know-how, background, and commitment to insure the success of your project.

## Contact Information:

For more information on the 700 Series Arrays, contact us at:

Device Engineering  
385 East Alamo Drive  
Chandler, Arizona 85225

or visit our web-site at: <https://deiaz.com/index.php/resources/data-sheets>

Phone: (480) 303-0822

Fax: (480) 303-0824

SIMetrix is a product of Newbury Technology Limited. The 700 Series has been created and is maintained by Array Design Incorporated, San Francisco, CA 94110-5151.