SGS-THOMSON MICROELECTRONICS

# SEA OF GATES - STRUCTURED ARRAYS

## ISB 35000 SERIES

0.5 micron, triple level metal HCMOS Technology. Typical delay 0.21ns for 2-input NAND gate

## GENERAL FEATURES

- 0.5 micron triple layer metal HCMOS process featuring retrograde well technology, low resistance salicided active areas, polysilicide gates and thin metal oxide
- 3.3 V optimized transistor with 5 V I/O interface capability
- Metallised generators to support SPRAM and DPRAM, plus an extensive embedded function library
- Fully independent power and ground configurations for inputs, core and outputs
- Programmable I/O ring capability up to 1000 pads
- Combines Standard Cell Features with Sea of Gates time to market

| Process Technology | Complexity | Delay (ns) | Gate Power (μw/Gate/MHz) | Single Output Drive (mA) | I/O Interface | Module Generators |
|---|---|---|---|---|---|---|
| 0.5 μm, triple level metal | 9 generics (initial) 58K to 500K usable gates | 0.21 typ. for 2-input NAND gate ND2P | .76 | up to 24 | LVCMOS<br>LVTTL<br>GTL<br>PECL<br>IEEE LVDS | See Table Next Page |

## PRODUCT RANGE

| Internal Device Name | Total Sites(1) | Estimated (2) Gates | Total Usable(3) Gates | Maximum(4) Device Pads | Maximum (5) I/O |
|---|---|---|---|---|---|
| ISB35083 | 124,416 | 82,944 | 58,060 | 188 | 172 |
| ISB35130 | 194,400 | 129,600 | 90,720 | 232 | 216 |
| ISB35166 | 249,696 | 166,464 | 116,524 | 260 | 244 |
| ISB35208 | 311,904 | 207,936 | 145,555 | 288 | 272 |
| ISB35279 | 418,176 | 278,784 | 195,148 | 332 | 316 |
| ISB35389 | 584,064 | 389,376 | 253,094 | 388 | 372 |
| ISB35484 | 726,624 | 484,416 | 314,870 | 432 | 416 |
| ISB35666 | 998,784 | 665,856 | 399,513 | 504 | 488 |
| ISB35832 | 1,247,616 | 831,744 | 499,046 | 560 | 544 |

Notes:
1. Internal sites is based on the number of placement sites available to the route and place software.
2. A factor of 1.5 is used to derive the gate complexity from the total available sites. This number is in Nand2 equivalents.
3. Factors of 70%, 65%, and 60% have been used to calculate the routing efficiency. This number may vary depending on the design.
4. 16 corner pads are dedicated to internal and external power supplies. I/O pads may be configured for additional power.
5. Maximum I/O = Total device pads minus power pads.

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## MODULE GENERATOR LIBRARY

| Cell | | Description |
|---|---|---|
| SPRAM | Metallised | 8K bits max<br>2048 word max 64 bit max<br>Zero static current<br>Tristate output |
| | Embedded | 256K bits max<br>16K word max 64 bit max<br>Zero static current<br>Tristate outputs |
| DPRAM | Metallised | 4K bits max<br>1024 word max 64 bit max<br>Zero static current<br>Separate read/write ports<br>Tristate outputs |
| | Embedded | 128K bits max<br>8K word max 64 bit max<br>Zero static current<br>Tristate outputs |
| ROM | Embedded | 2M bits max<br>32K word max 64 bit max<br>Diffusion programmable<br>Tristate outputs |

## STANDARD PACKAGE RANGE

| Type | Package | Pins |
|---|---|---|
| ISB35083 | PQFP<br>TQFP | 44 to 160<br>64 to 100, 144, 176 |
| ISB35130 | BGA<br>PQFP<br>TQFP | 256<br>44 to 160<br>64 to 100, 144, 176 |
| ISB35166 | BGA<br>PQFP<br>TQFP | 256<br>64 to 160<br>100, 144, 176 |
| ISB35208 | BGA<br>PQFP<br>TQFP | 256<br>64 to 208<br>100, 144, 176 |
| ISB35279 | BGA<br>PQFP<br>TQFP | 256<br>64 to 208<br>100, 144, 176 |
| ISB35839 | BGA<br>PQFP<br>TQFP | 256<br>128 to 208<br>144, 176 |
| ISB35484 | BGA<br>PQFP | 256, 352<br>128 to 208 |
| ISB35666 | BGA<br>PQFP | 256, 352<br>128 to 208 |