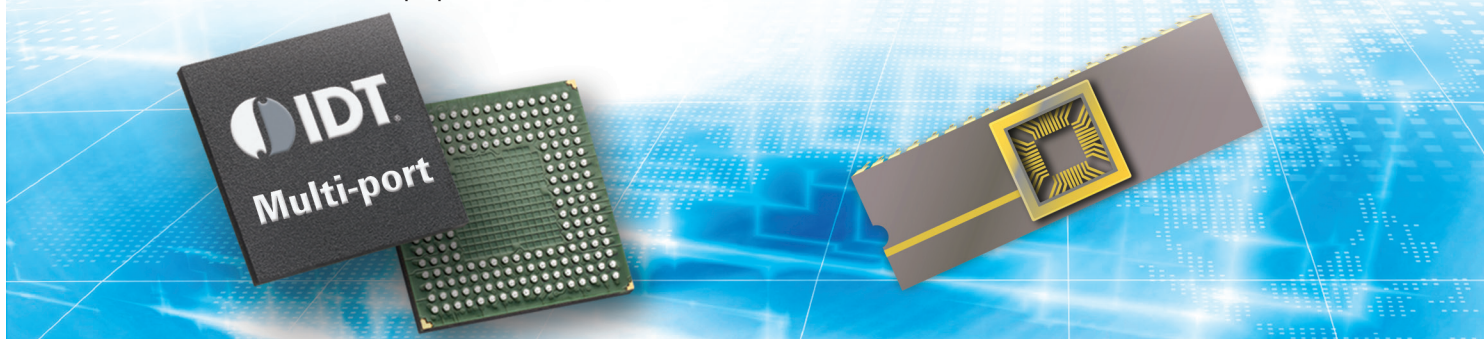


IDT is the industry's leading supplier of multi-port memories, offering the most comprehensive and highest-performance products available.

The IDT Multi-Port Memories portfolio, aimed at the communications market includes more than 125 types of asynchronous and synchronous dual-ports, four-ports and bank-switchable dual-ports ideal for switches, routers, hubs, equipment control, fibre channel line cards and RAID controllers.



### ASYNCHRONOUS DUAL-PORT RAM BENEFITS

- Increased bandwidth (~2x SRAM)
- Reduced design complexity
- Shorter time to market
- Solves bus matching issues from x8, x9, x16, x18 up to x36 bit bus widths
- Allows mismatched voltage parts to be used together. 1.8V, 2.5V 3.3V and 5V I/O's can be adapted
- Buffers component speed mismatch from DC to 10nS
- 8 Kb to 18 Mb densities allow a wide range of applications

**What is a multi-port device?** Multi-ports integrate memory and control logic to enable simultaneous access to a common central memory through two or four independent connections (Dual-ports and FourPorts).

**Asynchronous Dual-Port RAMs** — Integrated Device Technology is the leading Dual-port Ram supplier, integrating systems design experience together with high-performance circuit and Dual-port SRAM technology expertise to define Dual-port Ram products.

IDT asynchronous Dual-port memories with non-clocked control, inputs and outputs are the industry standards, with innovative features and speeds that provide superior value and performance to system level designs. IDT Dual-port memories feature simultaneous access capability, with a number of arbitration techniques available to the designer to prevent contention and system wait states. On-chip hardware arbitration, semaphore token passing and software arbitration allow the designer to select the most effective Dual-port memory for the application.

IDT is continuously working to reduce the cost of high performance shared SRAM based Dual-port memory solutions. We are and will continue to be the leading provider of Dual-port synchronous and asynchronous memories in the semiconductor industry.

| Part Number | Core Voltage (V) | Bus Width (bits) | Density (Kb) | Pkg. Code                            | I/O Type  | Access Time (ns)               | Temp. Range | Organization | Function                                  |
|-------------|------------------|------------------|--------------|--------------------------------------|-----------|--------------------------------|-------------|--------------|---|
| 7005        | 5                | 8                | 64           | FP68, GU68, PL68, PLG68, PN64, PNG64 | 5.0 V TTL | 15, 17, 20, 25, 35, 45, 55, 70 | I, M, C     | 8K x 8       | Busy, Interrupt, Semaphore, Master, Slave |
| 7006        | 5                | 8                | 128          | FP68, GU68, PL68, PLG68, PN64, PNG64 | 5.0 V TTL | 15, 17, 20, 25, 35, 45, 55, 70 | I, M, C     | 16K x 8      | Busy, Interrupt, Semaphore, Master, Slave |
| 7007        | 5                | 8                | 256          | GU68, PL68, PLG68, PN80, PNG80       | 5.0 V TTL | 15, 20, 25, 35, 55             | I, C        | 32K x 8      | Busy, Interrupt, Semaphore, Master, Slave |
| 7008        | 5                | 8                | 512          | GU84, PL84, PLG84, PN100, PNG100     | 5.0 V TTL | 15, 20, 25, 35, 55             | I, C        | 64K x 8      | Busy, Interrupt, Semaphore, Master, Slave |
| 7009        | 5                | 8                | 1024         | PN100, PNG100                        | 5.0 V TTL | 15, 20                         | I, C        | 128K x 8     | Busy, Interrupt, Semaphore, Master, Slave |
| 70121       | 5                | 9                | 18           | PL52, PLG52                          | 5.0 V TTL | 25, 35, 55                     | I, C        | 2K x 9       | Busy, Interrupt, Master                   |

**ASYNCHRONOUS DUAL-PORT RAMS**

| Part Number | Core Voltage (V) | Bus Width (bits) | Density (Kb) | Pkg. Code                              | I/O Type     | Access Time (ns)                   | Temp. Range | Organization | Function                                  |
|-------------|------------------|------------------|--------------|--|--------------|------------------------------------|-------------|--------------|---|
| 70125       | 5                | 9                | 18           | PL52, PLG52                            | 5.0 V TTL    | 25, 35, 55                         | I, C        | 2K x 9       | Busy, Interrupt, Slave                    |
| 7014        | 5                | 9                | 36           | PL52, PLG52, PN64, PNG64               | 5.0 V TTL    | 12, 15, 20, 25                     | I, C        | 4K x 9       | Output enable                             |
| 7015        | 5                | 9                | 72           | GU68, PL68, PLG68, PN80, PNG80         | 5.0 V TTL    | 12, 15, 17, 20, 25, 35             | I, C        | 8K x 9       | Busy, Interrupt, Semaphore, Master, Slave |
| 7016        | 5                | 9                | 144          | PL68, PLG68, PN80, PNG80               | 5.0 V TTL    | 12, 15, 20, 25, 35                 | I, C        | 16K x 9      | Busy, Interrupt, Semaphore, Master, Slave |
| 7019        | 5                | 9                | 1152         | PN100, PNG100                          | 5.0 V TTL    | 15, 20                             | I, C        | 128K x 9     | Busy, Interrupt, Semaphore, Master, Slave |
| 7024        | 5                | 16               | 64           | FP84, GU84, PL84, PLG84, PN100, PNG100 | 5.0 V TTL    | 15, 17, 20, 25, 30, 35, 45, 55, 70 | I, M, C     | 4K x 16      | Busy, Interrupt, Semaphore, Master, Slave |
| 7025        | 5                | 16               | 128          | FP84, GU84, PL84, PLG84, PN100, PNG100 | 5.0 V TTL    | 15, 17, 20, 25, 30, 35, 45, 55, 70 | I, M, C     | 8K x 16      | Busy, Interrupt, Semaphore, Master, Slave |
| 70261       | 5                | 16               | 256          | PN100, PNG100                          | 5.0 V TTL    | 15, 20, 25, 35, 55                 | I, C        | 16K x 16     | Busy, Interrupt, Semaphore, Master, Slave |
| 7026        | 5                | 16               | 256          | GU84, PL84                             | 5.0 V TTL    | 15, 20, 25, 35, 55                 | I, M, C     | 16K x 16     | Busy, Interrupt, Semaphore, Master, Slave |
| 7027        | 5                | 16               | 512          | GU108, PN100, PNG100                   | 5.0 V TTL    | 15, 20, 25, 35, 55                 | I, C        | 32K x 16     | Interrupt                                 |
| 7028        | 5                | 16               | 1024         | PN100, PNG100                          | 5.0 V TTL    | 15, 20                             | I, C        | 64K x 16     | Busy, Interrupt, Semaphore, Master, Slave |
| 7034        | 5                | 18               | 72           | PN100, PNG100                          | 5.0 V TTL    | 15, 20                             | I, C        | 4K x 18      | Busy, Interrupt, Semaphore, Master, Slave |
| 7035        | 5                | 8, 18            | 144          | PN100, PNG100                          | 5.0 V TTL    | 15, 20                             | I, C        | 8K x 18      | Busy, Interrupt, Semaphore, Master, Slave |
| 7037        | 5                | 18               | 576          | PN100, PNG100                          | 5.0 V TTL    | 15, 20                             | I, C        | 32K x 18     | Busy, Interrupt, Semaphore, Master, Slave |
| 7038        | 5                | 18               | 1152         | PN100, PNG100                          | 5.0 V TTL    | 15, 20                             | I, C        | 64K x 18     | Busy, Interrupt, Semaphore, Master, Slave |
| 5962-86875  | 5                | 8                | 8            | FP48, LC48, SB48                       | 5.0 V TTL    | 35, 45, 55, 70, 90                 | M           | 1K x 8       | Busy, Interrupt, Master, Slave            |
| 5962-87002  | 5                | 8                | 16           | FP48, LC48, SB48                       | 5.0 V TTL    | 35, 45, 55, 70, 90                 | M           | 2K x 8       | Busy, Master, Slave                       |
| 5962-88610  | 5                | 16               | 32           | FP68, GU68                             | 5.0 V TTL    | 55, 70, 90                         | M           | 2K x 16      | Busy, Master, Slave                       |
| 5962-88665  | 5                | 16               | 32           | FP68, GU68                             | 5.0 V TTL    | 35, 45, 55, 70, 90                 | M           | 2K x 16      | Busy, Master, Slave                       |
| 5962-89764  | 5                | 8                | 32           | FP48, LC48, SB48                       | 5.0 V TTL    | 35, 45, 55, 70                     | M           | 4K x 8       | Chip enable, Output enable                |
| 5962-91508  | 5                | 8                | 128          | FP68, GU68                             | 5.0 V TTL    | 20, 25, 35, 45, 55, 70             | M           | 16K x 8      | Busy, Interrupt, Semaphore, Master, Slave |
| 5962-91617  | 5                | 16               | 128          | FP84, GU84                             | 5.0 V TTL    | 35, 45, 55, 70                     | M           | 8K x 16      | Busy, Interrupt, Semaphore, Master, Slave |
| 5962-91662  | 5                | 16               | 64           | FP84, GU84                             | 5.0 V TTL    | 20, 35, 45, 55, 70                 | M           | 4K x 16      | Busy, Interrupt, Semaphore, Master, Slave |
| 70V05       | 3.3              | 8                | 64           | PL68, PLG68, PN64, PNG64               | 3.3 V LVTTTL | 15, 20, 25, 35, 55                 | I, C        | 8K x 8       | Interrupt                                 |
| 70V06       | 3.3              | 8                | 128          | PL68, PLG68, PN64, PNG64               | 3.3 V LVTTTL | 15, 20, 25, 35, 55                 | I, C        | 16K x 8      | Interrupt                                 |
| 70V07       | 3.3              | 8                | 256          | GU68, PL68, PN80, PNG80, DLG68         | 3.3 V LVTTTL | 25, 35, 55                         | I, C        | 32K x 8      | Busy, Interrupt, Semaphore, Master, Slave |
| 70V08       | 3.3              | 8                | 512          | PN100, PNG100                          | 3.3 V LVTTTL | 15, 20, 25, 35                     | I, C        | 64K x 8      | Busy, Interrupt, Semaphore, Master, Slave |

## ASYNCHRONOUS DUAL-PORT RAMS

| Part Number | Core Voltage (V) | Bus Width (bits) | Density (Kb) | Pkg. Code  | I/O Type     | Access Time (ns)           | Temp. Range | Organization | Function  |
|-------------|------------------|------------------|--------------|--|--------------|----------------------------|-------------|--------------|---|
| 70V09       | 3.3              | 8                | 1024         | PN100, PNG100  | 3.3 V LVTTTL | 15, 20                     | I, C        | 128K x 8     | Busy, Interrupt, Semaphore, Master, Slave       |
| 70V18       | 3.3              | 9                | 576          | PN100, PNG100  | 3.3 V LVTTTL | 15, 20                     | I, C        | 64K x 9      | Busy, Interrupt, Semaphore, Master, Slave       |
| 70V24       | 3.3              | 16               | 64           | PL84, PN100, PNG100  | 3.3 V LVTTTL | 15, 20, 25, 35, 55         | I, C        | 4K x 16      | Interrupt, Semaphore, Master, Slave             |
| 70V25       | 3.3              | 16               | 128          | PL84, PN100, PNG100  | 3.3 V LVTTTL | 15, 20, 25, 35, 55         | I, C        | 8K x 16      | Busy, Interrupt, Semaphore, Master, Slave       |
| 70V261      | 3.3              | 16               | 256          | PN100, PNG100  | 3.3 V LVTTTL | 25, 35, 55                 | I, C        | 16K x 16     | Busy, Interrupt, Semaphore, Master, Slave       |
| 70V26       | 3.3              | 16               | 256          | GU84, PL84, PLG84  | 3.3 V LVTTTL | 25, 35, 55                 | I, C        | 16K x 16     | Busy, Interrupt, Semaphore, Master, Slave       |
| 70V27       | 3.3              | 16               | 512          | PN100, PNG100  | 3.3 V LVTTTL | 15, 20, 25, 35, 55         | I, C        | 32K x 16     | Busy, Interrupt, Semaphore, Master, Slave       |
| 70V28       | 3.3              | 16               | 1024         | PN100, PNG100  | 3.3 V LVTTTL | 15, 20                     | I, C        | 64K x 16     | Busy, Interrupt, Semaphore, Master, Slave       |
| 70V34       | 3.3              | 18               | 72           | PN100, PNG100  | 3.3 V LVTTTL | 15, 20, 25                 | I, C        | 4K x 18      | Busy, Interrupt, Semaphore, Master, Slave       |
| 70V35       | 3.3              | 18               | 144          | PN100, PNG100  | 3.3 V LVTTTL | 15, 20, 25                 | I, C        | 8K x 18      | Busy, Interrupt, Semaphore, Master, Slave       |
| 70V37       | 3.3              | 18               | 576          | PN100, PNG100  | 3.3 V LVTTTL | 15, 20                     | I, C        | 32K x 18     | Busy, Interrupt, Semaphore, Master, Slave       |
| 70V38       | 3.3              | 18               | 1152         | PN100, PNG100  | 3.3 V LVTTTL | 15, 20                     | I, C        | 64K x 18     | Busy, Interrupt, Semaphore, Master, Slave       |
| 70V631      | 3.3              | 18               | 4608         | BC256, BCG256, BF208, BFG208, PK128, PKG128                          | 3.3 V LVTTTL | 10, 12, 15                 | I, C        | 256K x 18    | Busy, Interrupt, JTAG, Master, Slave            |
| 70V639      | 3.3              | 18               | 2304         | BC256, BCG256, BF208, BFG208, PK128, PKG128                          | 3.3 V LVTTTL | 10, 12, 15                 | I, C        | 128K x 18    | Busy, Interrupt, JTAG, Master, Slave            |
| 70V657      | 3.3              | 36               | 1152         | BC256, BCG256, BF208, BFG208, DR208, DRG208                          | 3.3 V LVTTTL | 10, 12, 15                 | I, C        | 32K x 36     | Interrupt                                       |
| 70V658      | 3.3              | 36               | 2304         | BC256, BCG256, BF208, BFG208, DR208, DRG208                          | 3.3 V LVTTTL | 10, 12, 15                 | I, C        | 64K x 36     | Busy, Interrupt, JTAG, Semaphore, Master, Slave |
| 70V659      | 3.3              | 36               | 4608         | BC256, BCG256, BF208, BFG208, DR208, DRG208                          | 3.3 V LVTTTL | 10, 12, 15                 | I, C        | 128K x 36    | Busy, Interrupt, JTAG, Semaphore, Master, Slave |
| 7130        | 5                | 8                | 8            | FP48, LC48, PD48, PDG48, PL52, PLG52, PN64, PNG64, PP64, PPG64, SB48 | 5.0 V TTL    | 20, 25, 35, 55, 100        | I, M, C     | 1K x 8       | Busy, Interrupt, Master                         |
| 71321       | 5                | 8                | 16           | PL52, PLG52, PN64, PNG64, PP64, PPG64                                | 5.0 V TTL    | 20, 25, 35, 45, 55         | I, C        | 2K x 8       | Busy, Interrupt, Master                         |
| 7132        | 5                | 8                | 16           | FP48, LC48, PD48, PDG48, PL52, PLG52, SB48                           | 5.0 V TTL    | 20, 25, 35, 55, 100        | I, M, C     | 2K x 8       | Busy, Master                                    |
| 7133        | 5                | 16               | 32           | FP68, GU68, PL68, PLG68, PN100, PNG100                               | 5.0 V TTL    | 20, 25, 35, 45, 55, 70, 90 | I, M, C     | 2K x 16      | Busy, Master                                    |
| 71342       | 5                | 8                | 32           | PL52, PLG52, PN64, PNG64   | 5.0 V TTL    | 20, 25, 35, 45, 55, 70     | I, C        | 4K x 8       | Semaphore                                       |
| 7134        | 5                | 8                | 32           | FP48, LC48, PD48, PDG48, PL52, PLG52, SB48                           | 5.0 V TTL    | 20, 25, 35, 45, 55, 70     | I, M, C     | 4K x 8       | Chip enable, Output enable                      |
| 7140        | 5                | 8                | 8            | FP48, LC48, PD48, PDG48, PL52, PLG52, PN64, PNG64, SB48              | 5.0 V TTL    | 20, 25, 35, 55, 100        | I, M, C     | 1K x 8       | Busy, Interrupt, Slave                          |

## ASYNCHRONOUS DUAL-PORT RAMS

| Part Number | Core Voltage (V) | Bus Width (bits) | Density (Kb) | Pkg. Code                              | I/O Type     | Access Time (ns)       | Temp. Range | Organization | Function                |
|-------------|------------------|------------------|--------------|--|--------------|------------------------|-------------|--------------|-------------------------|
| 71421       | 5                | 8                | 16           | PL52, PLG52, PN64, PNG64               | 5.0 V TTL    | 20, 25, 35, 55         | I, C        | 2K x 8       | Busy, Interrupt, Slave  |
| 7142        | 5                | 8                | 16           | LC48, PD48, PDG48, PL52, PLG52, SB48   | 5.0 V TTL    | 20, 25, 35, 55, 100    | I, M, C     | 2K x 8       | Busy, Slave             |
| 7143        | 5                | 16               | 32           | FP68, GU68, PL68, PLG68, PN100, PNG100 | 5.0 V TTL    | 20, 25, 35, 55, 70, 90 | I, M, C     | 2K x 16      | Busy, Slave             |
| 71V30       | 3.3              | 8                | 8            | PP64, PPG64                            | 3.3 V LVTTTL | 25, 35, 55             | I, C        | 1K x 8       | Busy, Interrupt, Master |
| 71V321      | 3.3              | 8                | 16           | PL52, PLG52, PN64, PNG64, PP64, PPG64  | 3.3 V LVTTTL | 25, 35, 55             | I, C        | 2K x 8       | Busy, Interrupt, Master |

**Bank-Switchable Dual-Port RAMs** — IDT synchronous Bank-Switchable Dual Ported RAMs offer increased density while retaining many of the features of true dual-ports including access to the shared array, separate clocks per port, 166 MHz operating speed, full-boundary counters, and pinouts compatible with the dual-port family.

| Part Number | Core Voltage (V) | Bus Width (bits) | Density (Kb) | Pkg. Code                                   | I/O Type                   | I/O Frequency (MHz) | Temp. Range | Organization | Function | Output Type            |
|-------------|------------------|------------------|--------------|---|----------------------------|---------------------|-------------|--------------|----------|------------------------|
| 70V7319     | 3.3              | 18               | 4608         | BC256, BCG256, BF208, BFG208                | 2.5 V LVTTTL, 3.3 V LVTTTL | 133, 166, 200       | I, C        | 256K x 18    | JTAG     | Pipelined, Flowthrough |
| 70V7339     | 3.3              | 18               | 9216         | BC256, BCG256, BF208, BFG208                | 2.5 V LVTTTL, 3.3 V LVTTTL | 133, 166, 200       | I, C        | 512K x 18    | JTAG     | Pipelined, Flowthrough |
| 70V7519     | 3.3              | 36               | 9216         | BC256, BCG256, BF208, BFG208, DR208, DRG208 | 2.5 V LVTTTL, 3.3 V LVTTTL | 133, 166, 200       | I, C        | 256K x 36    | JTAG     | Pipelined, Flowthrough |
| 70V7599     | 3.3              | 36               | 4608         | BC256, BCG256, BF208, BFG208, DR208, DRG208 | 2.5 V LVTTTL, 3.3 V LVTTTL | 133, 166, 200       | I, C        | 128K x 36    | JTAG     | Pipelined, Flowthrough |

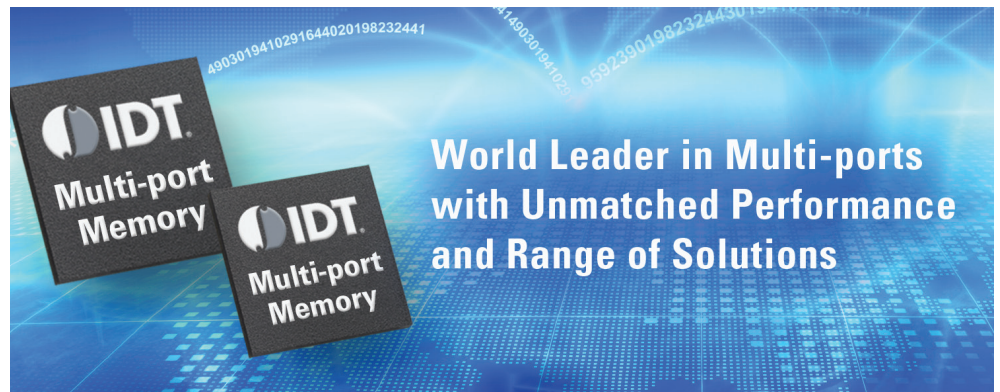
**FourPort RAMs** — IDT Four-Port RAMs are cost-effective low-power multi-ports that provide maximum functionality while taking up minimum board space.

| Part Number | Core Voltage (V) | Bus Width (bits) | Density (Kb) | Pkg. Code            | I/O Type     | I/O Frequency (MHz) | Temp. Range | Organization | Function                      | Output Type            |
|-------------|------------------|------------------|--------------|----------------------|--------------|---------------------|-------------|--------------|-------------------------------|------------------------|
| 7050        | 5                | 8                | 8            | GU108                | 5.0 V TTL    | 100, 133, 166, 200  | I, C        | 1K x 8       | Busy                          | Pipelined, Flowthrough |
| 7052        | 5                | 8                | 16           | GU108, PNG120        | 5.0 V TTL    | 100, 133, 166, 200  | I, M, C     | 2K x 8       | Busy                          | Pipelined, Flowthrough |
| 7054        | 5                | 8                | 32           | PK128, PKG128        | 5.0 V TTL    | 100, 133, 166, 200  | I, C        | 4K x 8       | Busy                          | Pipelined, Flowthrough |
| 70V5388     | 3.3              | 18               | 1152         | BC256, BCG256, BG272 | 3.3 V LVTTTL | 100, 133, 166, 200  | I, C        | 64K x 18     | Counters, Interrupt, Fourport | Pipelined, Flowthrough |



**ASYNCHRONOUS LOW-POWER DUAL-PORT RAM BENEFITS**

- True Dual-Ported memory cells which allow simultaneous reads of the same memory location
- 1.8V core voltage (significantly reduces power consumption)
- ADM (address/data multiplexed interface)
- Standard SRAM interface
- Organizations: 4K x 16 (64K) / 8K x 16 (128K) / 16K x 16 (256K)
- Low operating and standby currents: 15 mA (typ.) operating current / 2  $\mu$ A (typ.) standby current
- Multiple voltage configurations (1.8V, 2.5V and 3.0V)
- Power supply isolation functionality to aid system power management
- Input Read and Output Drive registers
- Small packages (6x6x1mm, 0.5mm-pitch fpBGA100 / 5x5x1mm, 0.5mm-pitch fpBGA81)
- Reduced design complexity
- Shorter time-to-market



**Asynchronous Low-Power Dual-Port RAMs** — IDT is a leading low-power dual-port RAM supplier, integrating low voltage design expertise together with high-performance circuit and dual-port SRAM technology.

An asynchronous low-power dual-port is a memory with non-clocked inputs and outputs for data, address, and control functions based on a low 1.8V core voltage for ultra-low power consumption.

Our family of low-power dual-port memories set the industry-standard, with innovative features and speeds that provide superior value and performance to system-level designs. IDT dual-port memories feature simultaneous access capability, with a number of arbitration techniques available to the designer to prevent contention and system wait states.

| Part Number | Core Voltage (V) | Bus Width (bits) | Density (Kb) | Pkg. Code | I/O Type                              | Access Time (ns) | Temp. Range | Organization | Function   |
|-------------|------------------|------------------|--------------|-----------|---------------------------------------|------------------|-------------|--------------|--|
| 70P244      | 1.8              | 16               | 64           | BYG81     | 1.8V LVCMOS, 2.5V LVCMOS, 3.0V LVTTTL | 40, 55           | I           | 4K x 16      | Interrupt, Std. SRAM Interface   |
| 70P245      | 1.8              | 16               | 64           | BYG100    | 1.8V LVCMOS, 2.5V LVCMOS, 3.0V LVTTTL | 65               | I           | 4K x 16      | ADM Interface, Busy, Input Read Register, Interrupt, Output Drive Register, Std.SRAM Interface |
| 70P249      | 1.8              | 16               | 64           | BYG100    | 1.8V LVCMOS, 2.5V LVCMOS, 3.0V LVTTTL | 65, 90           | I           | 4K x 16      | ADM Interface, Busy, Input Read Register, Interrupt, Output Drive Register, Std.SRAM Interface |
| 70P254      | 1.8              | 16               | 128          | BYG81     | 1.8V LVCMOS, 2.5V LVCMOS, 3.0V LVTTTL | 40, 55           | I           | 8K x 16      | Interrupt, Std. SRAM Interface   |
| 70P255      | 1.8              | 16               | 128          | BYG100    | 1.8V LVCMOS, 2.5V LVCMOS, 3.0V LVTTTL | 65, 90           | I           | 8K x 16      | ADM Interface, Busy, Input Read Register, Interrupt, Output Drive Register, Std.SRAM Interface |
| 70P259      | 1.8              | 16               | 128          | BYG100    | 1.8V LVCMOS, 2.5V LVCMOS, 3.0V LVTTTL | 65, 90           | I           | 8K x 16      | ADM Interface, Busy, Input Read Register, Interrupt, Output Drive Register, Std.SRAM Interface |
| 70P264      | 1.8              | 16               | 256          | BYG81     | 1.8V LVCMOS, 2.5V LVCMOS, 3.0V LVTTTL | 40, 55           | I           | 16K x 16     | Interrupt, Std. SRAM Interface   |
| 70P265      | 1.8              | 16               | 256          | BYG100    | 1.8V LVCMOS, 2.5V LVCMOS, 3.0V LVTTTL | 65               | I           | 16K x 16     | ADM Interface, Busy, Interrupt, Output Drive Register, Std. SRAM Interface                     |
| 70P269      | 1.8              | 16               | 256          | BYG100    | 1.8V LVCMOS, 2.5V LVCMOS, 3.0V LVTTTL | 65, 90           | I           | 16K x 16     | ADM Interface, Busy, Interrupt, Output Drive Register, Std. SRAM Interface                     |

## SYNCHRONOUS DUAL-PORT RAM BENEFITS

- Increased bandwidth - Dual-ports deliver 2x the speed of similar SRAMs
- Reduced design complexity by solving inter-chip connection issues
- Improved time-to-market by using proven off the shelf devices
- Solves voltage, bus speed, and bus width mismatch issues
- Densities range from 8 Kb up to 36 Mb, allowing a wide range of applications

**Synchronous Dual-Port RAMs**— IDT Synchronous Dual-Port RAM memory cells allow access to simultaneous access of address from both ports.

Integrated Device Technology is the leading Synchronous Multiport Ram supplier, effectively bringing systems design experience together with high-performance circuit and Multiport SRAM technology expertise to define synchronous and asynchronous Dual-Port and FourPort Ram products.

Our family of Dual-Port memories are the industry standards, with innovative features and speeds that provide superior value and performance to system level designs. IDT Dual-Port memories feature simultaneous access capability, with a number of arbitration techniques available to the designer to prevent contention and system wait states. On-chip hardware arbitration, semaphore token passing and software arbitration allow the designer to select the most efficient Dual-port memory for the application.

| Part Number | Core Voltage (V) | Bus Width (bits) | Density (Kb) | Pkg. Code                                   | I/O Type                   | I/O Frequency (MHz) | Temp. Range | Organization | Function   | Output Type            |
|-------------|------------------|------------------|--------------|---|----------------------------|---------------------|-------------|--------------|--|------------------------|
| 709079      | 5                | 8                | 256          | PN100, PNG100                               | 5.0 V TTL                  | 40, 50, 67          | I, C        | 32K x 8      | Counters, Dual Clocks  | Flowthrough, Pipelined |
| 709089      | 5                | 8                | 512          | PN100, PNG100                               | 5.0 V TTL                  | 40, 50, 67          | I, C        | 64K x 8      | Counters, Dual Clocks  | Pipelined, Flowthrough |
| 709099      | 5                | 8                | 1024         | PN100, PNG100                               | 5.0 V TTL                  | 50, 67, 83          | I, C        | 128K x 8     | Counters, Dual Clocks  | Pipelined, Flowthrough |
| 709149      | 5                | 9                | 36           | PN80, PNG80                                 | 5.0 V TTL                  | 125                 | I, C        | 4K x 9       | Dual Clocks  | Pipelined, Flowthrough |
| 70914       | 5                | 9                | 36           | PL68, PLG68, PN80, PNG80                    | 5.0 V TTL                  | 40, 50, 63          | I, C        | 4K x 9       | Dual Clocks  | Flowthrough            |
| 709159      | 5                | 9                | 72           | PN100, PNG100                               | 5.0 V TTL                  | 67, 83, 100         | I, C        | 8K x 9       | Counters, Dual Clocks  | Pipelined, Flowthrough |
| 709269      | 5                | 16               | 256          | PN100, PNG100                               | 5.0 V TTL                  | 40, 50, 67          | I, C        | 16K x 16     | Counters, Dual Clocks  | Pipelined, Flowthrough |
| 709279      | 5                | 16               | 512          | PN100, PNG100                               | 5.0 V TTL                  | 40, 50, 67          | I, C        | 32K x 18     | Counters, Dual Clocks  | Pipelined, Flowthrough |
| 709289      | 5                | 16               | 1024         | PN100, PNG100                               | 5.0 V TTL                  | 50, 67, 83          | I, C        | 64K x 16     | Counters, Dual Clocks  | Pipelined, Flowthrough |
| 709349      | 5                | 18               | 72           | PN100, PNG100                               | 5.0 V TTL                  | 67, 83, 100         | I, C        | 4K x 18      | Counters, Dual Clocks  | Pipelined, Flowthrough |
| 709359      | 5                | 18               | 144          | PN100, PNG100                               | 5.0 V TTL                  | 67, 83, 100         | I, C        | 8K x 18      | Counters, Dual Clocks  | Pipelined, Flowthrough |
| 709369      | 5                | 18               | 288          | PN100, PNG100                               | 5.0 V TTL                  | 50, 67, 83          | I, C        | 8K x 18      | Counters, Dual Clocks  | Pipelined, Flowthrough |
| 709379      | 5                | 18               | 576          | PN100, PNG100                               | 5.0 V TTL                  | 50, 67, 83          | I, C        | 32K x 18     | Counters, Dual Clocks  | Pipelined, Flowthrough |
| 70T3319     | 2.5              | 18               | 4608         | BC256, BCG256, BF208, BFG208                | 2.5 V LVTTTL, 3.3 V LVTTTL | 133, 166, 200       | I, C        | 256K x 18    | Collision Detect, Counters, Dual Clocks, Interrupt, JTAG, Sleep Mode | Pipelined, Flowthrough |
| 70T3339     | 2.5              | 18               | 9216         | BC256, BCG256, BF208, BFG208                | 2.5 V LVTTTL, 3.3 V LVTTTL | 133, 166, 200       | I, C        | 512K x 18    | Collision Detect, Counters, Dual Clocks, Interrupt, JTAG, Sleep Mode | Pipelined, Flowthrough |
| 70T3399     | 2.5              | 18               | 2304         | BC256, BCG256, BF208, BFG208                | 2.5 V LVTTTL, 3.3 V LVTTTL | 133, 166, 200       | I, C        | 128K x 18    | Collision Detect, Counters, Dual Clocks, Interrupt, JTAG, Sleep Mode | Pipelined, Flowthrough |
| 70T3509M    | 2.5              | 36               | 36864        | BP256, BPG256                               | 2.5 V LVTTTL, 3.3 V LVTTTL | 133                 | I, C        | 1024K x 36   | Interrupt, Sleep Mode  | Pipelined, Flowthrough |
| 70T3519     | 2.5              | 36               | 9216         | BC256, BCG256, BF208, BFG208, DR208, DRG208 | 2.5 V LVTTTL, 3.3 V LVTTTL | 133, 166, 200       | I, C        | 256K x 36    | Collision Detect, Counters, Dual Clocks, Interrupt, JTAG, Sleep Mode | Pipelined, Flowthrough |
| 70T3539M    | 2.5              | 36               | 18432        | BC256, BCG256                               | 2.5 V LVTTTL, 3.3 V LVTTTL | 133, 166            | I, C        | 512K x 36    | Counters, Dual Clocks, Interrupt, Sleep Mode                         | Pipelined, Flowthrough |

## SYNCHRONOUS DUAL-PORT RAMS

| Part Number | Core Voltage (V) | Bus Width (bits) | Density (Kb) | Pkg. Code                                   | I/O Type                   | I/O Frequency (MHz) | Temp. Range | Organization | Function   | Output Type            |
|-------------|------------------|------------------|--------------|---|----------------------------|---------------------|-------------|--------------|--|------------------------|
| 70T3589     | 2.5              | 36               | 2304         | BC256, BCG256, BF208, BFG208, DR208, DRG208 | 2.5 V LVTTTL, 3.3 V LVTTTL | 133, 166, 200       | I, C        | 64K x 36     | Collision Detect, Counters, Dual Clocks, Interrupt, JTAG, Sleep Mode | Pipelined, Flowthrough |
| 70T3599     | 2.5              | 36               | 4608         | BC256, BCG256, BF208, BFG208, DR208, DRG208 | 2.5 V LVTTTL, 3.3 V LVTTTL | 133, 166, 200       | I, C        | 128K x 36    | Collision Detect, Counters, Dual Clocks, Interrupt, JTAG, Sleep Mode | Pipelined, Flowthrough |
| 70T3719M    | 2.5              | 72               | 256          | BBG324                                      | 2.5 V LVTTTL, 3.3 V LVTTTL | 133                 | I, C        | 256K x 72    | Collision Detect, Interrupt, Sleep Mode                              | Pipelined, Flowthrough |
| 70T3799M    | 2.5              | 72               | 9216         | BBG324                                      | 2.5 V LVTTTL, 3.3 V LVTTTL | 133, 166            | I, C        | 128K x 72    | Collision Detect, Interrupt, Sleep Mode                              | Pipelined, Flowthrough |
| 70V3319     | 3.3              | 18               | 4608         | BC256, BCG256, BF208, BFG208, PK128, PKG128 | 2.5 V LVTTTL, 3.3 V LVTTTL | 133, 166            | I, C        | 256K x 18    | Counters, Dual Clocks, JTAG  | Pipelined, Flowthrough |
| 70V3379     | 3.3              | 18               | 576          | BC256, BCG256, BF208, BFG208, PK128, PKG128 | 2.5 V LVTTTL, 3.3 V LVTTTL | 100, 133            | I, C        | 32K x 18     | Counters, Dual Clocks  | Pipelined              |
| 70V3389     | 3.3              | 18               | 1152         | BC256, BCG256, BF208, BFG208, PK128, PKG128 | 2.5 V LVTTTL, 3.3 V LVTTTL | 100, 133            | I, C        | 64K x 18     | Counters, Dual Clocks  | Pipelined              |
| 70V3399     | 3.3              | 18               | 2304         | BC256, BCG256, BF208, BFG208, PK128, PKG128 | 2.5 V LVTTTL, 3.3 V LVTTTL | 133, 166            | I, C        | 128K x 36    | Counters, Dual Clocks, JTAG  | Pipelined, Flowthrough |
| 70V3569     | 3.3              | 36               | 576          | BC256, BCG256, BF208, BFG208, DR208, DRG208 | 2.5 V LVTTTL, 3.3 V LVTTTL | 100, 133            | I, C        | 16K x 36     | Counters, Dual Clocks  | Pipelined              |
| 70V3579     | 3.3              | 36               | 1152         | BC256, BCG256, BF208, BFG208, DR208, DRG208 | 2.5 V LVTTTL, 3.3 V LVTTTL | 100, 133            | I, C        | 32K x 36     | Counters, Dual Clocks  | Pipelined              |
| 70V3589     | 3.3              | 36               | 2304         | BC256, BCG256, BF208, BFG208, DR208, DRG208 | 2.5 V LVTTTL, 3.3 V LVTTTL | 133, 166            | I, C        | 64K x 36     | Counters, Dual Clocks, JTAG  | Pipelined, Flowthrough |
| 70V3599     | 3.3              | 36               | 4608         | BC256, BCG256, BF208, BFG208, DR208, DRG208 | 2.5 V LVTTTL, 3.3 V LVTTTL | 133, 166            | I, C        | 128K x 36    | Counters, Dual Clocks, JTAG  | Pipelined, Flowthrough |
| 70V9079     | 3.3              | 8                | 256          | PN100, PNG100                               | 3.3 V LVTTTL               | 50, 67, 83, 100     | I, C        | 32K x 8      | Counters, Dual Clocks  | Pipelined, Flowthrough |
| 70V9089     | 3.3              | 8                | 512          | PN100, PNG100                               | 3.3 V LVTTTL               | 40, 50, 67          | I, C        | 64K x 8      | Counters, Dual Clocks  | Pipelined, Flowthrough |
| 70V9099     | 3.3              | 18               | 576          | PN100, PNG100                               | 3.3 V LVTTTL               | 50, 67, 83, 100     | I, C        | 32K x 18     | Counters, Dual Clocks  | Pipelined, Flowthrough |
| 70V9159     | 3.3              | 9                | 72           | PN100, PNG100                               | 3.3 V LVTTTL               | 67, 83, 100         | I, C        | 8K x 9       | Counters, Dual Clocks  | Pipelined, Flowthrough |
| 70V9169     | 3.3              | 9                | 144          | PN100, PNG100                               | 3.3 V LVTTTL               | 67, 83, 100         | I, C        | 16K x 9      | Counters, Dual Clocks  | Pipelined, Flowthrough |
| 70V9179     | 3.3              | 9                | 288          | PN100, PNG100                               | 3.3 V LVTTTL               | 50, 67, 83          | I, C        | 32K x 9      | Counters, Dual Clocks  | Pipelined, Flowthrough |
| 70V9199     | 3.3              | 9                | 1152         | PN100, PNG100                               | 3.3 V LVTTTL               | 50, 67, 83          | I, C        | 128K x 9     | Counters, Dual Clocks  | Pipelined, Flowthrough |
| 70V9269     | 3.3              | 16               | 256          | PK128, PKG128                               | 3.3 V LVTTTL               | 40, 50, 67, 83, 100 | I, C        | 16K x 16     | Counters, Dual Clocks  | Pipelined, Flowthrough |
| 70V9279     | 3.3              | 16               | 512          | PK128, PKG128                               | 3.3 V LVTTTL               | 50, 67, 83, 100     | I, C        | 32K x 16     | Counters, Dual Clocks  | Pipelined, Flowthrough |
| 70V9289     | 3.3              | 16               | 1024         | PK128, PKG128                               | 3.3 V LVTTTL               | 50, 67, 83          | I, C        | 64K x 16     | Counters, Dual Clocks  | Pipelined, Flowthrough |
| 70V9359     | 3.3              | 18               | 144          | PN100, PNG100                               | 3.3 V LVTTTL               | 67, 83, 100         | I, C        | 8K x 18      | Counters, Dual Clocks  | Pipelined, Flowthrough |
| 70V9369     | 3.3              | 18               | 288          | PN100, PNG100                               | 3.3 V LVTTTL               | 50, 67, 83, 100     | I, C        | 16K x 18     | Counters, Dual Clocks  | Pipelined, Flowthrough |
| 70V9389     | 3.3              | 18               | 1152         | PK128, PKG128                               | 3.3 V LVTTTL               | 50, 67, 83, 100     | I, C        | 64K x 18     | Counters, Dual Clocks  | Pipelined, Flowthrough |

## PACKAGE KEY

| Package Code<br>(Use for<br>Package Search) | Package<br>Description | Pin Count | Description                          | Pb or Green | Top Mark | Dimensions    |                |               |                   | Devices<br>Per Reel | Devices<br>Per Tray/<br>Tube | Class    |
|---|------------------------|-----------|--------------------------------------|-------------|----------|---------------|----------------|---------------|-------------------|---------------------|------------------------------|----------|
|   |                        |           |                                      |             |          | Pitch<br>(mm) | Length<br>(mm) | Width<br>(mm) | Thickness<br>(mm) |                     |                              |          |
| BA256                                       | CABGA                  | 256       | Chip Array BGA 17 x 17.0 mm x 1.0 mm | Pb          | BA       | 1.00          | 17.00          | 17.00         | 1.70              | 1000                | 90                           | Plastic  |
| BBG324                                      | PBGA                   | 324       | PBGA 19 x 19mm x 1 mm                | Green       | BBG      | 1.00          | 19.00          | 19.00         | 1.76              | 750                 | 84                           | Plastic  |
| BC256, BCG256                               | CABGA                  | 256       | Chip Array BGA 17 x 17.0 mm x 1.0 mm | Pb, Green   | BC, BCG  | 1.00          | 17.00          | 17.00         | 1.40              | 1000                | 90                           | Plastic  |
| BF208, BFG208                               | CABGA                  | 208       | Chip Array BGA 15 x 15 mm x 0.8 mm   | Pb, Green   | BF, BFG  | 0.80          | 15.00          | 15.00         | 1.40              | 1000                | 126                          | Plastic  |
| BG272, BGG272                               | PBGA                   | 272       | PBGA 27 x 27 mm x 1.27 mm            | Pb, Green   | BG, BGG  | 1.27          | 27.00          | 27.00         | 2.00              | 250                 | 40                           | Plastic  |
| BP256, BPG256                               | CABGA                  | 256       | Chip Array BGA 17 x 17 mm x 1.0 mm   | Pb, Green   | BP, BPG  | 1.00          | 17.00          | 17.00         | 1.76              | 1000                | 90                           | Plastic  |
| BYG81                                       | CABGA                  | 81        | Chip Array BGA 5 x 5 mm x 0.5 mm     | Green       | BYG      | 0.50          | 5.00           | 5.00          | 1.00              | 3000                | 490                          | Plastic  |
| BYG100                                      | CABGA                  | 100       | Chip Array BGA 6 x 6 mm x 0.5 mm     | Green       | BYG      | 0.50          | 6.00           | 6.00          | 1.00              | 3000                | 360                          | Plastic  |
| DR208, DRG208                               | PQFP                   | 208       | PQFP 28 x 28 x 3.5 mm w/drop in heat | Pb, Green   | DR, DRG  | 0.50          | 28.00          | 28.00         | 3.50              | -                   | 24                           | Plastic  |
| FP48  | FPACK                  | 48        | FlatPack                             | Pb          | F        | 1.27          | 19.00          | 19.00         | 2.20              | -                   | 9                            | Hermetic |
| FP68  | FPACK                  | 68        | FlatPack                             | Pb          | F        | 1.27          | 24.00          | 24.00         | 2.00              | -                   | 9                            | Hermetic |
| FP84  | FPACK                  | 84        | FlatPack                             | Pb          | F        | 1.27          | 29.20          | 29.21         | 2.54              | -                   | 6                            | Hermetic |
| GD68  | PGA                    | 68        | CGA CAV Down Small Outline           | Pb          | G        | 2.54          | 28.20          | 28.20         | 2.41              | -                   | 21                           | Hermetic |
| GU108                                       | PGA                    | 108       | CGA CAV UP                           | Pb          | G        | 2.54          | 30.48          | 30.48         | 3.68              | -                   | 21                           | Hermetic |
| GU121                                       | PGA                    | 121       | CGA CAV UP                           | Pb          | G        | 0.00          | 0.00           | 0.00          | 0.00              | -                   | 6                            | Hermetic |
| GU68  | PGA                    | 68        | CGA CAV UP                           | Pb          | G        | 2.54          | 29.46          | 29.46         | 3.68              | -                   | 21                           | Hermetic |
| GU84  | PGA                    | 84        | CGA CAV UP                           | Pb          | G        | 2.54          | 27.94          | 27.94         | 3.68              | -                   | 21                           | Hermetic |
| LC48  | LCC                    | 48        | Leadless CC Std. Outline             | Pb          | L48      | 1.02          | 14.20          | 14.22         | 1.78              | -                   | 34                           | Hermetic |
| PD48, PDG48                                 | PDIP                   | 48        | Plastic DIP 600 MIL                  | Pb, Green   | P, PDG   | 2.54          | 61.70          | 15.24         | 3.80              | -                   | 7                            | Plastic  |
| PK128, PKG128                               | TQFP                   | 128       | TQFP 14 x 20 x 1.4 mm                | Pb, Green   | PK, PFG  | 0.50          | 20.00          | 14.00         | 1.40              | 1000                | 72                           | Plastic  |
| PL52, PLG52                                 | PLCC                   | 52        | PLCC                                 | Pb, Green   | J, JG    | 1.27          | 19.00          | 19.00         | 3.63              | 400                 | 24                           | Plastic  |
| PL68, PLG68                                 | PLCC                   | 68        | PLCC                                 | Pb, Green   | J, JG    | 1.27          | 24.00          | 24.00         | 3.63              | 250                 | 18                           | Plastic  |
| PL84, PLG84                                 | PLCC                   | 84        | PLCC                                 | Pb, Green   | J, JG    | 1.27          | 29.21          | 29.21         | 3.63              | 200                 | 15                           | Plastic  |
| PN100, PNG100                               | TQFP                   | 100       | TQFP 14 x 14 x 1.4 mm                | Pb, Green   | PN, PFG  | 0.50          | 14.00          | 14.00         | 1.40              | 750                 | 90                           | Plastic  |
| PN120, PNG120                               | TQFP                   | 120       | TQFP 14 x 14 x 1.4 mm                | Pb, Green   | PN, PFG  | 0.40          | 14.00          | 14.00         | 1.40              | 750                 | 90                           | Plastic  |
| PN64, PNG64                                 | TQFP                   | 64        | TQFP 14 x 14 x 1.4 mm                | Pb, Green   | PN, PFG  | 0.80          | 14.00          | 14.00         | 1.40              | 750                 | 90                           | Plastic  |
| PN80, PNG80                                 | TQFP                   | 80        | TQFP 14 x 14 x 1.4 mm                | Pb, Green   | PN, PFG  | 0.65          | 14.00          | 14.00         | 1.40              | 750                 | 90                           | Plastic  |
| PP64, PPG64                                 | TQFP                   | 64        | TQFP 10 x 10 x 1.4 mm                | Pb, Green   | PP, TFG  | 0.50          | 10.00          | 10.00         | 1.40              | 1250                | 160                          | Plastic  |
| PPG52                                       | TQFP                   | 52        | TQFP 10 x 10 x 1.4 mm                | Green       | PPG      | 0.65          | 10.00          | 10.00         | 1.40              | 1250                | 160                          | Plastic  |
| SB48  | SB                     | 48        | SideBraze 600 MIL                    | Pb          | C        | 2.54          | 61.72          | 15.24         | 3.30              | -                   | 8                            | Hermetic |
| SB64  | SB                     | 64        | SideBraze 600 MIL                    | Pb          | C        | 2.54          | 82.29          | 22.86         | 3.56              | -                   | 6                            | Hermetic |

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