



# HyperRAM™

## DRAM Based Memory with HyperBus™ Interface

### ► Features:

- Hidden Refresh operation
- Very Low Bus Signal Count :
  - 12 pins for 1.8V [with CK,CK# ]
  - 11 pins for 3.0V [CK only]
- Max. Frequency :
  - 166MHz at VDD = 1.8V
  - 100MHz at VDD = 3.0V

### • Low Power Consumption:

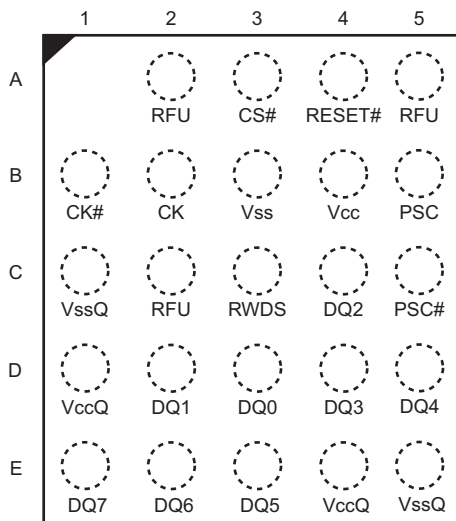
	64Mb	128Mb	256Mb	Units
Burst Operation Current @ 166MHz, 1.8V	60	75	75	mA
Standby Current @ 105°C, 1.8V	300	1200	1200	uA
Deep Power Down Current @ 105°C, 1.8V	20	20	20	uA

### ► Package:

- KGD/KTD
- 24-pin BGA

### ► HyperRAM™ Pin-Outs (In evaluation):

- 24-pin [5 x 5 ball array]
- PKG Body Size : 6 mm x 8 mm
- Ball Pitch : 1.0mm



### ► Densities:

- 64Mb [8Mb x 8] , 32Mb [4Mb x 8],
- 128Mb [16Mb x 8], 256Mb [32Mb x 8], 512Mb [64Mb x 8]

### ► Availability:

- 64Mb, 128Mb, 256Mb
  - Production Now!
- 512Mb
  - Call Factory

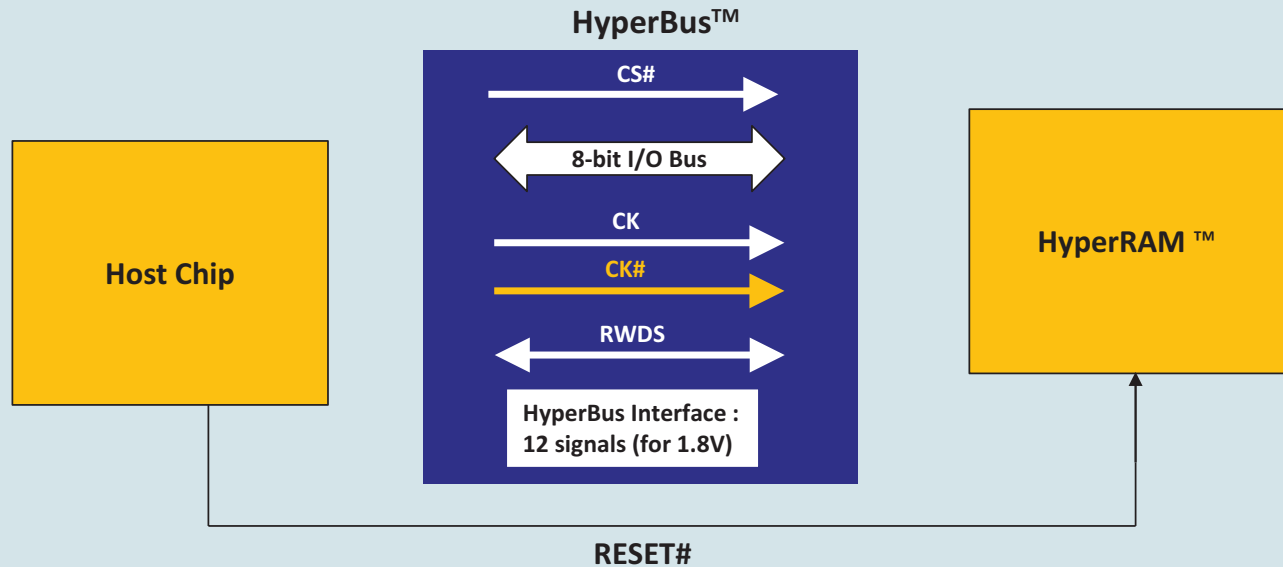
### ► Automotive Temperature Grades:

- Automotive, A1 [-40°C to 85°C]
- Automotive, A2 [-40°C to 105°C]
- Automotive, A3 [-40°C to 125°C]  
Note: A3 grade is for 128Mb only

### ► Applications:

- Infotainment
- Advanced Driver Assistance Systems
- Smart Appliance
- Factory Automation
- Medical
- LED Projector
- D-SLR Camera
- Auto-Cluster

# HyperRAM™ Interface



## ► Low Signal Pin Count for HyperBus™:

- 12 signals for 1.8V Device [ with CK,CK#]
- 11 signals for 3.0V Device [ with CK only]
- \* RESET# is not included in the HyperBus™ signal.
- Differential Clock [CK,CK#] for 1.8V device & Single Ended Clock [CK only] for 3.0V device
- Up to 166MHz Double-Data-Rate [DDR] 8-bit I/O bus for high throughput : 333 MB/s bandwidth
- Read Write Data Strobe [RWDS] to:
  - Indicate Refresh Collision
  - Edge Aligned with Read Data for Read Operations
  - Byte mask for write operations
- Clocks [CK,CK#] are not required to be free-running