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## Designing with GSI's Flow Through Mode Control Pin

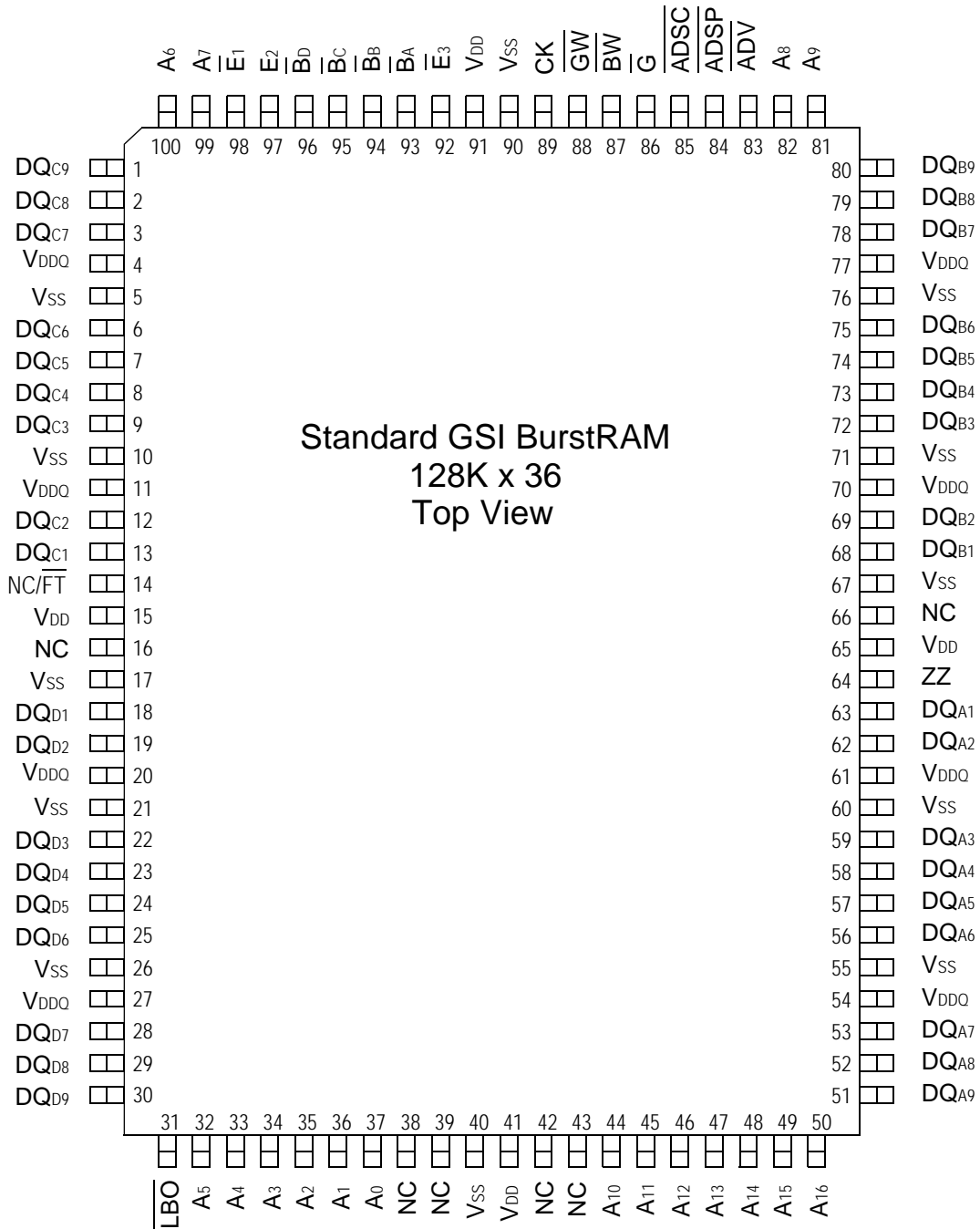
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The choice between flow through and pipeline synchronous SRAMs is a decision every hardware designer must make. This poses a problem when companies find themselves with multiple projects, some requiring flow through and some requiring pipeline SRAMs. GSI Technology has addressed this problem by providing a JEDEC standard pin out allowing designers to select which mode they require via a pin.

The  $\overline{FT}$  mode pin (pin 14) controls the function of the Data Output register. Tying the  $\overline{FT}$  mode pin low bypasses the Data Output register allowing data to be placed on the data pins after the control inputs are clocked. This enables the data to be clocked on the cycle directly following the read control. Tying the  $\overline{FT}$  mode pin high or not connecting it at all, activates the rising edge triggered Data Output register and places the SRAM in pipeline mode. This means that data is placed in the Data Output register on the cycle following the read command and then released to the data pins to be clocked on the next cycle.

The advantages of designing with a SRAM that has a  $\overline{FT}$  mode pin are obvious. Customers can cut down on expensive excess paperwork, inventory management, and overhead by purchasing one part that can be used in numerous products. A designer can comfortably design a part with this option into their system and meet all JEDEC standards as well as fill a previous generation slot with a compatible GSI part. It also makes it easier for the vendor to supply upside orders on demand since inventory is not locked into one part.

GSI Technology offers the  $\overline{FT}$  mode pin on all 2M, 4M, 8M, and 16M BurstRAMs as well as all 8M and 16M NBTs with the exception of 4M, 8M, and 16M BurstRAMs signified with a "F" in the part number (i.e. - GS880F36T). Since the  $\overline{FT}$  mode pin has a pull up defaulting it to pipeline mode when left floating, GSI created a flow through only part for those customers with a previous flow through design where pin 14 is either tied high or left floating.



For JEDEC Industry Standards: [http://www.jedec.org/download/pub21/3\\_7\\_8-r9.pdf](http://www.jedec.org/download/pub21/3_7_8-r9.pdf). JEDEC Standard No. 21-C page 3.7.8-5.