Geo Semiconductor Inc.

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AB-101
Application Brief: DDR1 Memory Options for Realta

The Realta sxT2 IC and the Niobe Reference board which demonstrates the various capabilities of the sxT2 IC both require DDR1 memories for buffering the video frames.

As memory technologies have evolved, newer versions of the standard that provide higher densities of memories and greater performance have evolved. Each of the succeeding standards (DDR2 and DDR3) require lower voltages for both operation and bus termination, and are therefore, fundamentally incompatible with systems that use only DDR1. However, due to the large installed base of systems that continue to use DDR1 memory, memory suppliers have continued to evolve and improve DDR1 memories. As a result of these improvements, the part numbers that were originally specified for use with the Realta sxT2 IC are now obsolete.

This application brief lists the currently available suppliers and part numbers that are compatible with the sxT2 IC and the Realta Board. For most typical designs, 128Mbytes of memory is adequate, and this is the amount of memory included in the Niobe Reference Board. Geo Semiconductor has done board level testing on the Winbond W9412G6IH4 and verified interoperability on the Niobe Reference Board. It should also be noted that while most memories are specified at 2.5V ± 0.1V, some memories are specified at a nominal voltage of 2.6V. Please take into consideration that fact that the sxT2 IC is rated for a maximum of 2.625V for normal operation. The amount of memory needed for a given application can be calculated by using the HDK BufferCalc Tool, which can be obtained from your Geo Semiconductor distributor / representative.

Available 250 MHz DDR1 parts for Realta

Speed	250 MHz	250 MHz	250 MHz	250 MHz
Size	128 Mbit	256 Mbit	256 Mbit	512 Mbit
Configuration	8Mx16	8Mx32	16Mx16	32Mx16
Package	TSOP II 66 pin	BGA 144 pin	TSOP II 66 pin	TSOP II 66 pin
# of parts	8	4	8	8
Total memory	128 MByte (Note 2)	128 MByte (Note 2)	256 MByte (Note 3)	512 MByte (Note 4)
Samsung	K4D261638K-LC40 2.5V ±0.125V			
Hynix	HY5DU281622FTP-4 2.6V +0.1V,-0.2V		HY5DU561622FTP-4 2.6V +0.1V,-0.2V	
Micron (1)				
Elpida	EDD1216AJTA-4B-E 2.6V ±0.1V			EDD5116AGTA-4B-E 2.5V ±0.125V
ProMOS	V58C2128164SCI-4 2.5V ±0.1V	V58C2256324SAH-4 2.5V ±0.125V	V58C2256164SGI-4 2.5V ±0.2V	
Powerchip (1)				
Etron	EM6A9160TSA-4G 2.5V ±0.125V		EM6AA160TS-4G 2.5V ±0.125V	
Winbond	W9412G6IH-4 2.5V ±0.1V		W9425G6EH-4 2.6V ±0.1V	

(1) From Micron and Powerchip the fastest parts are 200 MHz.
(2) A total of 128 MByte is sufficient for most Realta applications. This is the size used on Niobe.
(3) A total of 256 MByte is required for some Realta applications. Use the HDK BufferCalc Tool to determine the required size.
(4) A total of 512 MByte is never required, but the parts are compatible.
(5) Realta uses a nominal supply voltage of 2.5V, but is rated to operate at up to 2.625V.

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