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ASX RELEASE

5 February 2024

4DS ACHIEVES NEW WRITE SPEED MILESTONE

4DS Memory Limited (ASX:4DS) (4DS) (the Company), is pleased to announce that it has successfully completed further analysis of the Fourth Platform Lot and the results obtained are significantly better as compared to results announced on 18 September 2023.

The focus of the additional testing was to investigate the speed and power efficiency of the 60nm memory cells in the megabit array.

Specifically, analysis of the Fourth Platform Lot has verified that 4DS has demonstrated:

- Reliable write speeds of 4.7 nanoseconds
- That memory cell programming is due to the phenomenon of Electric Pulse Induced Resistance switching, or EPIR
- Variable cell level writing by voltage or time pulse modification
- Persistent memory with low energy consumption

Background

In an ASX announcement released on 18 September 2023, 4DS reported further results of the analysis of the Fourth Platform Lot. In these results, 4DS reported write speeds of 9.5 nanoseconds, outperforming DRAM write speeds. These results also reported endurance of 3 billion cycles, and variable and tuneable retention characteristics of the memory cell.

Since this release the technical team at 4DS has continued to characterise the Fourth Platform Lot to more finely understand the underlying performance characteristics of the 4DS Technology. This includes the response of the 4DS cell under different conditions, including programming voltage and time changes, which demonstrate the unique flexibility of the 4DS Interface Switching ReRAM Technology.

These investigations have led to the results being announced today.

Speed Programming Milestone

After extensive analysis 4DS has now shown that its advanced Interface Switching ReRAM memory cell can be written to in 4.7 nanoseconds, the fastest reported programming to date and significantly better than DRAM write speed of 30 nanoseconds. 4DS had previously announced cell programming at faster than DRAM write speeds but extensive characterization work by the 4DS team has confirmed this higher level of performance.

The write speed achievement is in part due to the fundamental nature of 4DS Interface Switching ReRAM technology: all 4DS cells are written with single pulse or “one shot” programming. One shot programming means that the cell responds instantly to a single pulse on the cell where most other non-volatile memory solutions require an iterative, multi-pulse programming approach, which takes substantially more time and energy than the 4DS Interface Switching ReRAM technology. 4DS Memory’s leading edge work on maximizing the performance of the memory cell has led to the series of industry first announcements that have been made and these current metrics will be of potential interest to significant industry participants, particularly Advanced AI players.

Electric Pulse Induced Resistance switching

The unique 4DS Interface Switching ReRAM technology achieves its high write speeds because of a phenomenon known as Electric Pulse Induced Resistance switching, or EPIR. In essence, this means that the entire area under the interface responds to the programming pulse coherently, setting or resetting the high or low resistance state in

the cell uniformly and with a single pulse. EPIR and one shot programming are interchangeable terms in this context.

Analog Programming Capability

Additionally, 4DS has demonstrated the ability to control the level of programming by modification of programming voltage, time, or a combination of both. Being able to program the memory cell to a specific value gives the cell an analog characteristic, which can be used directly in applications where analog programming aids in certain operations. This added dimension of analog programmability expands the potential applications that 4DS can pursue and demonstrates the unique characteristic of the 4DS Interface Switching ReRAM technology.

Mr David McAuliffe, 4DS Executive Chairman commented “Congratulations to the 4DS team for this remarkable technical achievement. This clearly establishes 4DS as the industry leader in potentially bringing Interface Switching ReRAM to market, and we welcome the opportunity to work with industry partners in memory, Advanced AI, and foundry services to explore how 4DS can bring added competitiveness and higher performance to their offerings.”

Mr Peter Himes, industry veteran and recently announced Board Advisor to 4DS commented “Achieving this technical milestone is significant for two reasons. First, at 4.7 nanoseconds the 4DS memory cell requires one of the lowest energy per bit of any persistent memory solution, and operating within the DRAM refresh cycle means that the 4DS cell can be refreshed as needed maintaining that persistence memory virtually indefinitely at very low energy consumption. And secondly, being able to program with a one shot pulse – as opposed to iterative programming that is needed for most other memory technologies – means that 4DS can truly respond at DRAM speeds without the penalty of constant DRAM refreshes. This opens up new possibilities for 4DS in the memory space as well.”

Further Mr Himes stated “Analog programmability puts 4DS at the forefront of advances into new Advanced AI processing architectures as well. There is growing interest in being able to take advantage of analog programming in neural net applications. The speed and efficiency of the 4DS memory cell in this regard should be of high interest to Advanced AI companies, and we look forward to starting these discussions in the near future and showcase the latest technical achievements.”

4DS is continuing to work on its process development and optimization. In 2024 the Company will demonstrate a 60nm and 20nm cell achieving gigabit level densities. The 4DS processes are easily integrated into any advanced CMOS process, using standard equipment and is 100% foundry compatible.

The Board has also resolved to issue Mr Peter Himes 10,000,000 unlisted options at an exercise price of AU$0.073 - the closing price on 2 February 2024. The options are subject to vesting conditions and expire 5 years from the date of issue.

4DS Interactive Investor Hub

If you have any questions on this announcement or any past 4DS announcements, check out our Investor Hub. Like, comment, ask a question and view video summaries on important announcements. Shareholders can link through to the Investor Hub via: announcements.4dsmemory.com

Authorised for release by the Board.

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About 4DS

4DS Memory Limited (ASX: 4DS), with facilities located in Silicon Valley, is a semiconductor development company of non-volatile memory technology, pioneering Interface Switching ReRAM for next generation gigabyte storage in mobile and cloud. Established in 2007, 4DS owns a patented IP portfolio, comprising 34 USA patents granted which have been developed in-house to create high-density Storage Class Memory. 4DS has a joint development agreement with Western Digital subsidiary HGST, a global storage leader, which accelerates the evolution of 4DS' technology. 4DS also collaborates with imec, a world-leading research and innovation hub in nanoelectronics and digital technologies. The combination of imec's widely acclaimed leadership in microchip technology and profound software and information and communication technology expertise makes them unique.

For more information, please visit www.4dsmemory.com.