









size	Tear	Component name	On-chip SRAM (estimated)*	Application
260 nm	1997	PowerPC 740/750	64k	Desktops, video game consoles, embedded
250 nm	1999	DEC Alpha 21264A	128k	Workstations, servers
180 nm	2000	Intel Pentium III	288k	Desktop
130 nm	2002	AMD Athlon XP and MP	384k-640k	Desktops, workstations, servers
130 nm	2006	MPC5554	64k	Embedded
90 nm	2007	PowerPC 750CL	320k	Laptops, video game consoles, embedded
90 nm	2008	MPC8640D	2176k	Networking, Embedded
65 nm	2007	AMD Athlon (64) X2	1280-3328k	Desktop
45- 22 nm	2008- 2012	Intel® Core [™] i7 processor family	4-16M	Desktops, laptops, workstations, servers















Category	Description
Detected error	An error detected by the watchdog monitor (WDM), a hardware of software exception or a software assertion.
No effect	The outcome No effect occurs when nothing can be observed that is different from a fault free experiment. The injected error is either overwritten or remains in the system but does not have any impact on the outputs of the system (dormant error).
Non-critical failure	A negligible deviation in the control system outputs caused by an undetected error.
Critical failure	A significant change in engine thrust caused by an undetected error.
Failed experiment	Occurs when the fault injection routine uses a non-valid fault time. It can happen if the address for the injected fault is never executed by the software or if it is executed a fewer number of times than specified as condition for the fault injection routine.

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Hardware exception	No	Description
Bus error	2	Occurs when the processor attempts to use information from an aborted bus cycle (illegal memory access).
Address error	3	Occurs if a misaligned memory access is attempted. For instance a word transfer to an odd address.
Illegal instruction	4	Occurs if the processor attempts to execute an unimplemented instruction.
Line 1111 Emulator	11	A special case of illegal instruction. The name originates from the contents of the most significant bits for unimplemented instructions.
Format error	14	This check ensures that the program does not make erroneous assumptions about information in the stack frame.

Software exception	Description Raised by execution checks generated by the MATRIXx-tool.		
EXEC_ERROR			
MATH_ERROR	Raised when the predefined ADA exception NUMERIC_ERROR or CONSTRAINT_ERROR is raised. This happens if a numeric operation is undefined or when a variable is erroneously assigned.		
TIME_ OVERFLOW	Two types of scheduler errors can cause time overflow. 1) If the scheduler is interrupted while executing the non-interruptible critical section and 2) If a subsystem is ready to run but has still not finished running. Both are due to inconsistency in the scheduler.		
STOP_BLOCK	This refers to a Stop Simulation Block.		
UCB_ERROR	Error in a User Code Block.		
UNKNOWN_ ERROR	An error that is not recognized by the code generated by MATRIXx. A possible cause is an incorrect user-written error condition.		
OTHERS	Raised if an unexpected exception occurs, i.e. it is not identified as any of the other defined exceptions.		