

Date: April 2004 - Update

Subject: *Pericom Reliability Qualification – CSM-S Fab 2's CMOS, 0.5 μm 1P2M Process*

Chartered Semiconductor Manufacturing – Singapore Fab 2's CMOS, 3.3 volt, 0.50-μm process was recently qualified to Pericom's standard die level process qualification. CSM-S Fab 1 was closed in March of 2004, so this process qualification is part of a continuing process to transfer products currently using similar CMOS, 1P2M processes on 150 mm wafers to their Fab 2 facility. Fab 2 uses an equivalent 0.5-μm CMOS, 1P2M and 1P3M process on 200-mm wafers. A sample from a representative lot of our PI6C2510-133 device type has successfully completed 3000 hours of Dynamic High Temperature Operating Life (DHTOL) test with no failures at 150°C and 3.6 volts applied bias. This device type was used as the qualification vehicle since it's one of the more complex of our ZD Clock Driver and Buffer products. Therefore, all products (including SiliconSwitch) using this process technology and design rule will meet Pericom's Wafer Fab Process Qualification requirements. This device also passed High Temp Storage Life (HTSL), Unbiased HAST (UHAST), and Temperature Cycle (TMCL) testing as shown in the table below.

With no failures at the 168-hour timepoint, there is no concern over possible infant mortality issues that would require 100% burn-in for products using this process. This is the same result for all current Pericom designs and processes. The equivalent long-term life test FIT rate is 37 for Pericom devices using the same process and design rules, with a calculated MTBF of 348,000 hours. FIT rates are calculated using the Arrhenius equation, with an Activation Energy of 0.5 eV, an assumed customer system operating temperature of 55 °C, and a Confidence factor of 60%.

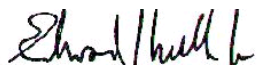
Pericom's Qualification Test results:

Rel Lot #	Device Type	Pkg. Type	Date Code	Stress Test	Stress Condition	Stress Duration	Sample Units	Results Pass/Fail
Q03007-1A	PI6C2510-133EL	L24	BY0323OC	DHTOL	150°C, 3.6 v	168 hrs	130	130/0
Q03007-1A	PI6C2510-133EL	L24	BY0323OC	DHTOL	150°C, 3.6 v	500 hrs	130	130/0
Q03007-1A	PI6C2510-133EL	L24	BY0323OC	DHTOL	150°C, 3.6 v	1000 hrs	130	130/0
Q03007-1A	PI6C2510-133EL	L24	BY0323OC	DHTOL	150°C, 3.6 v	2000 hrs	130	130/0
Q03007-1A	PI6C2510-133EL	L24	BY0323OC	DHTOL	150°C, 3.6 v	3000 hrs	130	116/0*
Q03007-1B	PI6C2510-133EL	L24	BY0323OC	HTSL	150°C	168 hrs	100	100/0
Q03007-1B	PI6C2510-133EL	L24	BY0323OC	HTSL	150°C	500 hrs	100	100/0
Q03007-1B	PI6C2510-133EL	L24	BY0323OC	HTSL	150°C	1000 hrs	100	100/0
Q03007-1C	PI6C2510-133EL	L24	BY0323OC	UHAST	130°C	96 hrs	80	80/0
Q03007-1D	PI6C2510-133EL	L24	BY0323OC	TMCL	-65, +150 °C	500 cycles	76	76/0

* Note: 14 units were electrically damaged during the long-term Operating Life testing; there were no device issues found, this was a malfunction of the board/power supply interface that electrically overstressed these devices.

If there are any questions about this qualification, please contact me for further information.

Regards,



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