System Specifications

FOCUS™ FE III

Measurement Performance Specifications

Film Thickness Range	Measured Parameter	Precision[1]	Repeatability[2]
Oxide/Si			
0-100Å	t	0.1Å	0.2Å
100-200Å	t	0.1Å	0.25Å
200-1kÅ	t	0.2Å	0.4Å
1kÅ-10μm	t	0.5Å	0.5Å or 0.02%
250-400Å	t	1.0Å	2.0Å
	n	0.004	0.007
400Å-5μm	t^3	1Å or 0.10%	1.5Å or 0.15%
	n^3	0.0008	0.0015
Nitride/Si & Oxynitride/Si			
0-100Å	t	0.1Å	0.2Å
100-200Å	t	0.1Å	0.25Å
200-1kÅ	t	0.2Å	0.4Å
1kÅ-5μm	t	0.5Å	0.5Å or 0.02%
200-350Å	t	0.25Å	0.5Å
	n	0.0035	0.006
350Å-5μm	t^3	0.5Å or 0.07%	1.0Å or 0.15%
	n^3	0.001	0.0015
Photoresist/Si			
100Å -1μm	t	0.5Å	1.0Å
1-5μm	t	2.0Å	0.04%
Polyimide/Si			
0-25μm	t	1.0Å or 0.02%	1.0Å or 0.02%
Nitride/Oxide/Si			
0–2μm /20Å – 1μm	$t_{nitride}$	0.12Å	0.2Å or 0.02%
0–2μm /100–200Å	$t_{nitride}$	2.0Å	3.0Å or 0.04%
	t_{oxide}	3.0Å	4.0Å
0–2μm/200Å–20kÅ	$t_{nitride}$	1.5Å	1.15Å or 0.02%
	t_{oxide}	1.5Å	2.2Å

t_{oxide}, $t_{nitride}$, and $n_{nitride}$ have sample dependent performance.

Film Thickness Range	Measured Parameter	Precision[1]	Repeatability[2]
Poly/Oxide/Si			
200Å-1.5μm/50Å-5kÅ	t_{poly}	0.5Å	1.0Å
500Å-8kÅ/1kÅ	t_{poly}	2.0Å	3.0Å
	t_{oxide}	7.0Å	10.0Å
500Å-8kÅ/100Å	t_{poly}	2.0Å	4.0Å
	t_{oxide}	1.0Å	2.0Å
1.5kÅ-1.5μm/500kÅ	t_{poly}	0.15%	0.3%
	n_{poly}	0.005	0.01
	k_{poly}	0.002	0.004

Amorphous/Oxide/Si has the same specifications as polySi but with a 7500 Å upper thickness limit on the amorphous film.

Film Thickness Range	Measured Parameter	Precision[1]	Repeatability[2]
Oxide/Poly/Oxide			
40Å-1μm/500Å-5kÅ/100Å-5kÅ	t_{oxide}	3.0Å	5.0Å
	t_{poly}	2.0Å	3.0Å

t_{oxide} and t_{poly} have sample dependent performance.

Film Thickness Range	Measured Parameter	Precision[1]	Repeatability[2]
Nitride/Poly/Oxide/Si			
40Å–10μm/500Å–5kÅ/100Å–5kÅ	$t_{nitride}$	3.0Å	5.0Å
	t_{poly}	2.0Å	3.0Å
Oxide/Nitride/Oxide/Si			
0Å–2μm/0Å–2μm/0Å–2μm	t_{oxide}	0.12Å	0.20Å or 0.02%
20Å–2μm/150Å–2μm/20Å–2μm	t_{oxide}	2.5Å	4.0Å
	$t_{nitride}$	2.0Å	3.0Å
Thin O/N/O			

t_{oxide}, $t_{nitride}$, and t_{oxide} have sample dependent performance.

Film Thickness Range	Measured Parameter	Precision[1]	Repeatability[2]
TEOS/TiN/Al			
100Å–5μm	t_{TEOS}	1.0Å	1.0Å or 0.02%
100Å–50kÅ	t_{TEOS}	1.0Å	1.0Å or 0.02%
	n_s		
	k_s		

Specifications for optical constants are sample dependent.

Film Thickness Range	Measured Parameter	Precision[1]	Repeatability[2]
TiN/Si			
0-500Å	t_{tin}	0.50Å	1.0Å
TiN/Al			
0-500Å	t_{tin}	0.50Å	1.0Å
Oxide/Si/Oxide/Si			
2-4kÅ /1.5μm /5Å-1μm	t_{oxide}	3.0Å	5.0Å
	t_{si}	2.0Å	3.0Å
	t_{oxide}	3.0Å	5.0Å

These performance specifications represent many common semiconductor processing applications but should not be regarded as an exhaustive list of the capabilities of the FOCUS FE III. For information concerning the performance of the FOCUS FE III on applications not covered, please contact Rudolph Technologies, Inc.

Throughput (wafers per hour)[4]

	Monitor wafer	Product, Deskew only	Product, Pattern Recognition[5]
5 point, single λ	29/25	21/19	18/16
9 point, single λ	21/18	16/14	12/11
5 point, dual λ	26/23	19/17	16/14
9 point, dual λ	18/16	14/12	11/10

Across the fab and around the world.

RUDOLPH Technologies, Inc.

Due to continuous product improvements, specifications are subject to change without notice.

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