

Process C3025

CMOS 3 μ m

10 Volt Analog

Electrical Characteristics

T=25°C Unless otherwise noted

N-Channel Transistor	Symbol	Minimum	Typical	Maximum	Unit	Comments
Threshold Voltage	V_{TN}	0.65	0.85	1.05	V	100x4 μ m
Body Factor	γ_N		0.87		V ^{1/2}	100x4 μ m
Conduction Factor	β_N	40	48	56	μ A/V ²	100x100 μ m
Effective Channel Length	L_{effN}	3.05	3.40	3.75	μ m	100x4 μ m
Width Encroachment	ΔW_N		0.550		μ m	Per side
Punch Through Voltage	$BVDSS_N$	16.5			V	
Poly Field Threshold Voltage	$VTF_{P(N)}$	12			V	

P-Channel Transistor	Symbol	Minimum	Typical	Maximum	Unit	Comments
Threshold Voltage	V_{TP}	-0.7	-0.9	-1.1	V	100x4 μ m
Body Factor	γ_P		0.75		V ^{1/2}	100x4 μ m
Conduction Factor	β_P	13	16	19	μ A/V ²	100x100 μ m
Effective Channel Length	L_{effP}	3.00	3.35	3.70	μ m	100x4 μ m
Width Encroachment	ΔW_P		0.8		μ m	Per side
Punch Through Voltage	$BVDSS_P$	-16.5			V	
Poly Field Threshold Voltage	$VTF_{P(P)}$	-12			V	

Diffusion & Thin Films	Symbol	Minimum	Typical	Maximum	Unit	Comments
Well (field) Sheet Resistance	$\rho_{P-well(f)}$	3.25	5.25	7.25	K Ω/\square	P-well
N+ Sheet Resistance	ρ_{N+}	13	20	27	Ω/\square	
N+ Junction Depth	x_{jN+}		0.8		μ m	
P+ Sheet Resistance	ρ_{P+}	50	80	100	Ω/\square	
P+ Junction Depth	x_{jP+}		0.7		μ m	
Gate Oxide Thickness	T_{GOX}	45	48	51	nm	
Interpoly Oxide Thickness	T_{P1P2}	56	66	76	nm	
Gate Poly Sheet Resistance	ρ_{POLY1}	15	22	30	Ω/\square	
Bottom Poly Sheet Res.	ρ_{POLY2}	15	22	30	Ω/\square	
Metal-1 Sheet Resistance	ρ_{M1}		50		m Ω/\square	
Passivation Thickness	T_{PASS}		200+900		nm	oxide+nit.

Capacitance	Symbol	Minimum	Typical	Maximum	Unit	Comments
Gate Oxide	C_{OX}	0.68	0.72	0.78	fF/ μ m ²	
Metal-1 to Poly-1	C_{M1P}	0.047	0.0523	0.0575	fF/ μ m ²	
Metal-1 to Silicon	C_{M1S}	0.027	0.30	0.034	fF/ μ m ²	
Poly-1 to Poly-2	C_{P1P2}	0.453	0.523	0.617	fF/ μ m ²	

Process C3025

Physical Characteristics

Starting Material	P <100>	N+/P+ Width/Space	3.0 / 3.0 μ m
Starting Mat. Resistivity	15 - 25 Ω -cm	N+ To P+ Space	12 μ m
Typ. Operating Voltage	10V	Contact To Poly Space	2.5 μ m
Well Type	P-well	Contact Overlap Of Active	1.5 μ m
Metal Layers	1	Contact Overlap Of Poly	1.0 μ m
Poly Layers	2	Metal-1 Overlap Of Contact	1.0 μ m
Contact Size	2.0x2.0 μ m	Minimum Pad Opening	100x100 μ m
Metal-1 Width/Space	3.5 / 2.5 μ m	Minimum Pad-to-Pad Spacing	5.0 μ m
Gate Poly Width/Space	3.0 / 3 μ m	Minimum Pad Pitch	80.0 μ m

Special Feature of C3025 Process: 10 Volt P-well single metal analog process.