

Process C0810

CMOS 0.8 μ m

High-Resistance Poly for Analog

Electrical Characteristics

T=25°C Unless otherwise noted

N-Channel Transistor	Symbol	Minimum	Typical	Maximum	Unit	Comments
Threshold Voltage	V_{T_N}	0.6	0.8	1.0	V	100x0.8 μ m
Body Factor	γ_N		0.74		$V^{1/2}$	100x0.8 μ m
Conduction Factor	β_N	75	94	115	$\mu A/V^2$	100x100 μ m
Effective Channel Length	L_{eff_N}		0.8		μ m	100x0.8 μ m
Width Encroachment	ΔW_N		0.3		μ m	Per side
Punch Through Voltage	$BVDSS_N$	7	13		V	
Poly Field Threshold	$VTF_{P(N)}$	10	17		V	

P-Channel Transistor	Symbol	Minimum	Typical	Maximum	Unit	Comments
Threshold Voltage	V_{T_P}	-0.7	-0.9	-1.1	V	100x0.8 μ m
Body Factor	γ_P		0.57		$V^{1/2}$	100x0.8 μ m
Conduction Factor	β_P	25	31	37	$\mu A/V^2$	100x100 μ m
Effective Channel Length	L_{eff_P}		0.85		μ m	100x0.8 μ m
Width Encroachment	ΔW_P		0.4		μ m	Per side
Punch Through Voltage	$BVDSS_P$	-7	-12		V	
Poly Field Threshold Voltage	$VTF_{P(P)}$	-10	-17		V	

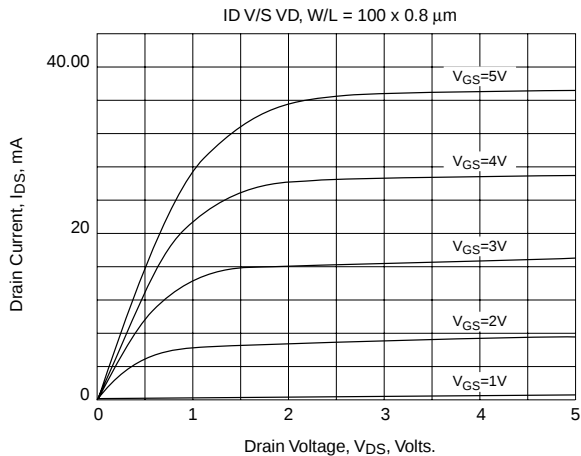
Diffusion & Thin Films	Symbol	Minimum	Typical	Maximum	Unit	Comments
Well (field) Sheet Resistance	$\rho_{N-well(f)}$	0.50	0.65	0.80	K $\Omega/\square$	n-well
N+ Sheet Resistance	ρ_{N+}	45	60	75	$\Omega/\square$	
N+ Junction Depth	X_{jN+}		0.25		μ m	
P+ Sheet Resistance	ρ_{P+}	68	90	112	$\Omega/\square$	
P+ Junction Depth	X_{jP+}		0.4		μ m	
Gate Oxide Thickness	T_{GOX}		17.5		nm	
Field Oxide Thickness	T_{FIELD}		700		nm	
Bottom Poly Sheet Res.	ρ_{POLY1}	15	23	32	$\Omega/\square$	
Gate Poly Sheet Resistance	ρ_{POLY2}	15	23	32	$\Omega/\square$	
Metal-1 Sheet Resistance	ρ_{M1}	40	60	80	m $\Omega/\square$	
Metal-2 Sheet Resistance	ρ_{M2}	20	30	40	m $\Omega/\square$	
Passivation Thickness	T_{PASS}		200+900		nm	oxide+nit.
High Resistance Poly	$\rho_{HI-POLY}$	1.5	2.0	2.5	K $\Omega/\square$	

Capacitance	Symbol	Minimum	Typical	Maximum	Unit	Comments
Gate Oxide	C_{OX}		1.97		fF/ μ m ²	
Metal-1 to Poly1	C_{M1P}		0.046		fF/ μ m ²	
Metal-1 to Silicon	C_{M1S}		0.028		fF/ μ m ²	
Metal-2 to Metal-1	C_{MM}		0.038		fF/ μ m ²	
Poly-1 to Poly-2	C_{PP}	0.69	0.822	1.015	fF/ μ m ²	

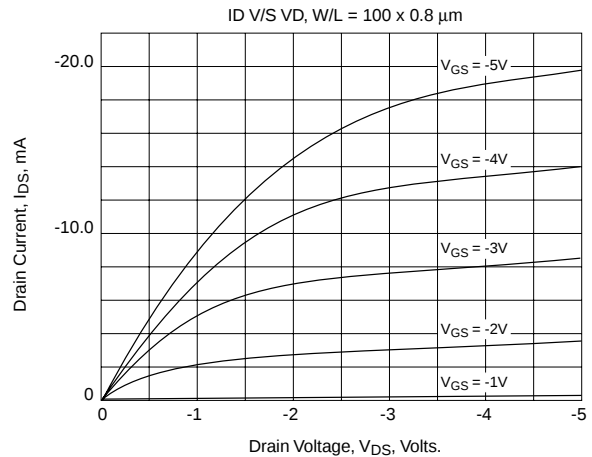
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Physical Characteristics

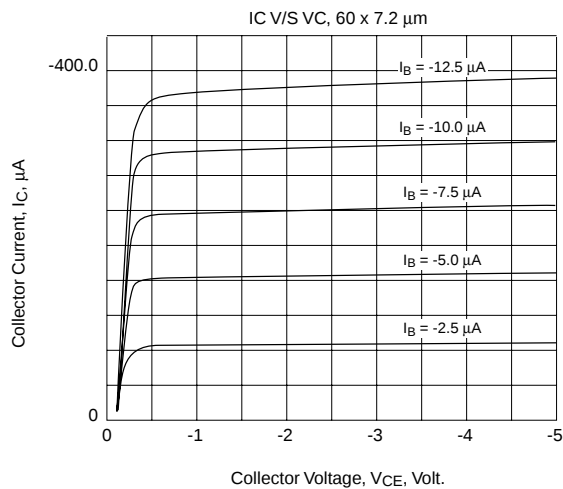
Starting Material	P <100>	N+/P+ Width/Space	1.4 / 1.6μm
Starting Mat. Resistivity	25 - 50 Ω-cm	N+ To P+ Space	5.9μm
Typ. Operating Voltage	5V	Contact To Poly Space	0.8μm
Well Type	N-well	Contact Overlap Of Diffusion	0.7μm
Metal Layers	2	Contact Overlap Of Poly	0.7μm
Poly Layers	2	Metal-1 Overlap Of Contact	0.7μm
Contact Size	0.8x0.8μm	Metal-1 Overlap Of Via	0.7μm
Via Size	0.8x0.8μm	Metal-2 Overlap Of Via	0.7μm
Metal-1 Width/Space	1.4 / 1.0μm	Minimum Pad Opening	65x65μm
Metal-2 Width/Space	1.4 / 1.1μm	Minimum Pad-to-Pad Spacing	5.0μm
Gate Poly Width/Space	0.8 / 1.0μm	Minimum Pad Pitch	80.0μm



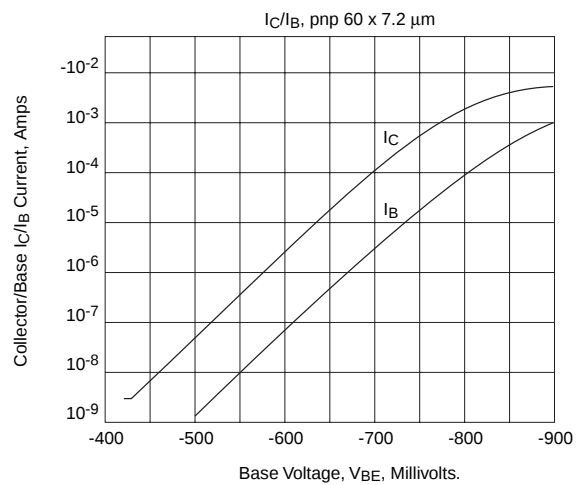
C0810 - n - Channel Transistor Characteristics



C0810 - P - Channel Transistor Characteristics



C0810 Vertical pnp Transistor Characteristics



C0810 Vertical pnp Transistor Characteristics