Process C0810
CMOS 0.8µm
High-Resistance Poly for Analog

Electrical Characteristics

T=25°C Unless otherwise noted

N-Channel Transistor	Symbol	Minimum	Typical	Maximum	Unit	Comments
Threshold Voltage	VT_N	0.6	0.8	1.0	V	100x0.8µm
Body Factor	γ_N		0.74		$V^{1/2}$	100x0.8µm
Conduction Factor	β_N	75	94	115	µA/V²	100x100µm
Effective Channel Length	$Leff_N$		0.8		µm	100x0.8µm
Width Encroachment	ΔW_N		0.3		µm	Per side
Punch Through Voltage	$BVDSS_N$	7	13		V	
Poly Field Threshold	$VTF_{P(N)}$	10	17		V	

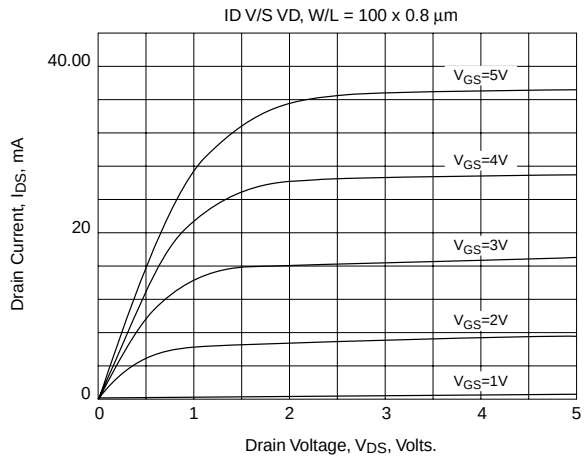
P-Channel Transistor	Symbol	Minimum	Typical	Maximum	Unit	Comments
Threshold Voltage	VT_P	–0.7	–0.9	–1.1	V	100x0.8µm
Body Factor	γ_P		0.57		$V^{1/2}$	100x0.8µm
Conduction Factor	β_P	25	31	37	µA/V²	100x100µm
Effective Channel Length	$Leff_P$		0.85		µm	100x0.8µm
Width Encroachment	ΔW_P		0.4		µm	Per side
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	$\rho_{N\text{-well(f)}}$	0.50	0.65	0.80	KΩ/□	n-well
N+ Sheet Resistance	ρ_{N+}	45	60	75	Ω/□	
N+ Junction Depth	x_{jN+}		0.25		µm	
P+ Sheet Resistance	ρ_{P+}	68	90	112	Ω/□	
P+ Junction Depth	x_{jP+}		0.4		µm	
Gate Oxide Thickness	T_{GOX}		17.5		nm	
Field Oxide Thickness	T_{FIELD}		700		nm	
Bottom Poly Sheet Res.	ρ_{POLY1}	15	23	32	Ω/□	
Gate Poly Sheet Resistance	ρ_{POLY2}	15	23	32	Ω/□	
Metal-1 Sheet Resistance	ρ_{M1}	40	60	80	mΩ/□	
Metal-2 Sheet Resistance	ρ_{M2}	20	30	40	mΩ/□	
Passivation Thickness	T_{PASS}		200+900		nm	oxide+nit.
High Resistance Poly	$\rho_{HI\text{-}POLY}$	1.5	2.0	2.5	KΩ/□	

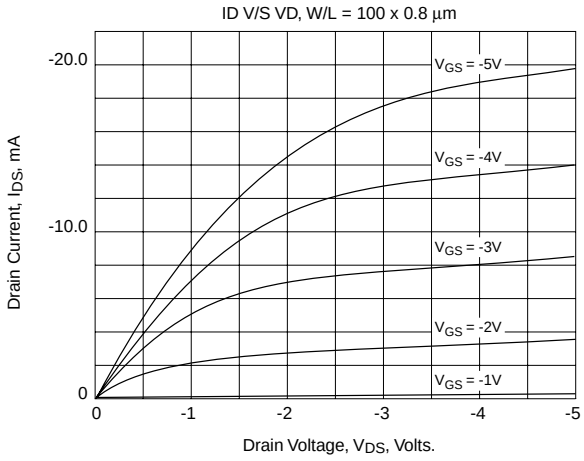
Capacitance	Symbol	Minimum	Typical	Maximum	Unit	Comments
Gate Oxide	C_{OX}		1.97		fF/µm²	
Metal-1 to Poly1	C_{M1P}		0.046		fF/µm²	
Metal-1 to Silicon	C_{M1S}		0.028		fF/µm²	
Metal-2 to Metal-1	C_{MM}		0.038		fF/µm²	
Poly-1 to Poly-2	C_{PP}	0.69	0.822	1.015	fF/µm²	

Physical Characteristics

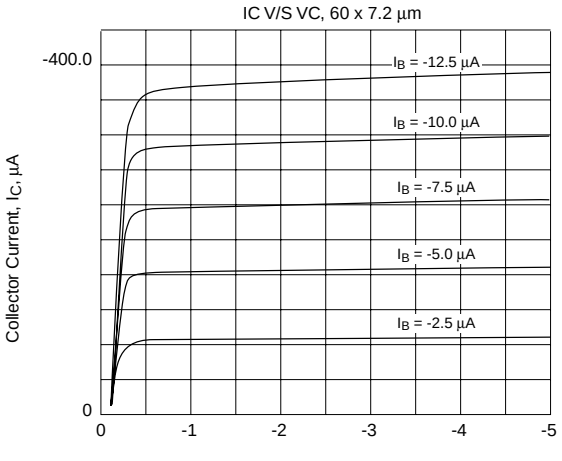
Starting Material	P <100>	N+/P+ Width/Space	1.4 / 1.6µm
Starting Mat. Resistivity	25 - 50 Ω-cm	N+ To P+ Space	5.9µm
Typ. Operating Voltage	5V	Contact To Poly Space	0.8µm
Well Type	N-well	Contact Overlap Of Diffusion	0.7µm
Metal Layers	2	Contact Overlap Of Poly	0.7µm
Poly Layers	2	Metal-1 Overlap Of Contact	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



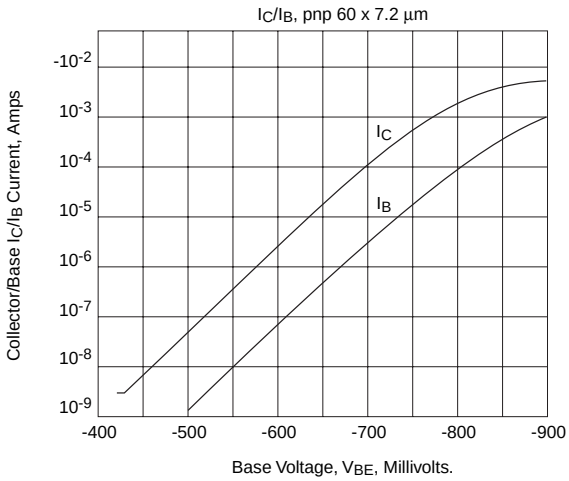
C0810 - n - Channel Transistor Characteristics



C0810 - P - Channel Transistor Characteristics



C0810 Vertical pnp Transistor Characteristics



C0810 Vertical pnp Transistor Characteristics