5 Micron CMOS Process Family

February 1996

Features

- Double Poly / Double Metal
- 10 µm Poly and Metal Pitch

Description

The 5µm process is a double poly/double metal CMOS process with an operating voltage range from 5 to 12 volts.

(13 Volts Maximum Operating Voltage.)

Capacitances (fF/µm²)

	min.	typ.	max.
Inter-poly	0.35	0.50	0.65
Gate oxide	0.41	0.43	0.46
N+ Junction		0.34	
P+ Junction		0.14	

Bipolar gain

	min.	typ.	max	Condition
NPN vertical		275		Vce = 5 volts

Process Parameters

Process Parameters	5µm 12 volts	Units
Metal I pitch (width/space)	5 / 5	µm
Poly pitch (width/space)	5 / 5	µm
Contact	5 x 5	µm
Via	5 x 5	µm
Gate geometry	5	µm
P-well junction depth	6.3	µm
N+ junction depth	2.0	µm
P+ junction depth	1.4	µm
Gate oxide thickness	800	Å
Inter poly oxide thick.	700	Å

Resistances (Ω/sq.)

	min.	typ.	max.
Pwell		2700	
Pfield in Pwell	1000	2000	3000
N+	6	10	14
P+	70	90	110
Poly gate	14	20	26
Poly capacitor	30	55	80
Metal I		0.032	

MOSFET Electrical Parameters

Electrical Parameters	5 MICRON - 12 volts						Units	Conditions
	N Channel			P Channel				
	min.	typ.	max.	min.	typ.	max.		
Vt (50x5µm)	0.40	0.65	0.90	0.40	0.65	0.90	V	saturation
Ids (50x5µm)		20			6		µA/µm	Vds=Vgs=3v
Body Factor (50x50µm)		1.2			0.5		$\sqrt{V}$	
Bvdss	18	24		18	24		V	Ids=1µA
Field Threshold	18	>30		18	25		V	Ids = 14µA
L Effective		1.8			2.8		µm	L drawn = 5µm

Notes: