

Features

- Double Poly / Double Metal
- 10 μm Poly and Metal Pitch
- Low TCR Resistor Module

Description

The Mitel 5 μm process is a double poly/double metal CMOS process with an operating voltage range from 5 to 13 volts. A process module can be integrated to provide high precision and very low TCR polysilicon resistors. 13 Volts Maximum Operating Voltage.

Capacitances (fF/ μm^2)

	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		V _{ce} = 5 volts

Process Parameters

Process Parameters	5 μm 12 volts	Units
Metal I pitch (width/space)	5 / 5	μm
Metal II 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 ($\Omega/\text{sq.}$)

	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	
Metal II		0.032	

MOSFET Electrical Parameters

Electrical Parameters	5 MICRON - 12 volts						Units	Conditions
	min.	N Channel typ.	max.	min.	P Channel typ.	max.		
V _t (50x5 μm)	0.40	0.65	0.90	0.40	0.65	0.90	V	saturation
I _{ds} (50x5 μm)		20			6		$\mu\text{A}/\mu\text{m}$	V _{ds} =V _{gs} =3v
Body Factor (50x50 μm)		1.2			0.5		$\sqrt{V}$	
Bvdss	18	24		18	24		V	I _{ds} =1 μA
Field Threshold	18	>30		18	25		V	I _{ds} = 14 μA
L Effective		1.8			2.8		μm	L drawn = 5 μm

5 Micron CMOS Process Family

Notes: