

# 0.6 $\mu\text{m}$ CMOS Process Family

## > XC06

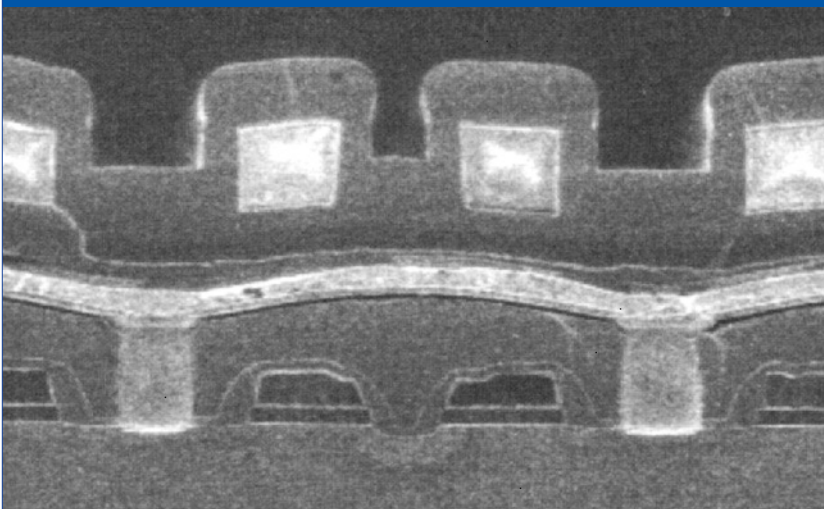
*With Embedded EEPROM, Flash and High Voltage Options*

- > Modular 0.6  $\mu\text{m}$  CMOS process with the possibility to add a wide variety of medium and high voltage MOS transistors, passive elements and embedded EEPROM and Flash

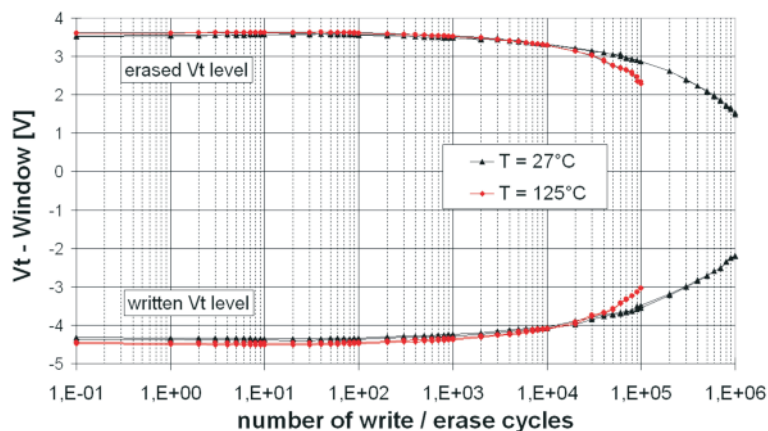
### > Main Process Features

- p-substrate, bulk or epi
- Self aligned twin-well
- Dedicated HV wells
- LOCOS field oxide
- Dual gate oxide  
12.5 / 40 nm
- Flash / EEPROM  
Tunneloxide
- Double poly stack
- LDD for 5V
- Low doped drain  
for MV
- Drain extension for HV
- W-plugs for contacts  
and vias
- 2 or 3 layer metal
- UV transparent  
passivation

### > XC06 - Flash Cell



### > XC06 - EEPROM Endurance



# 0.6 μm CMOS Process Family

## > XC06

### with Embedded Non Volatile Memories and High Voltage Options

- Compatible with state of the art 0.6 μm - 5 V - CMOS
- Different kinds of medium- and high-voltage MOS transistors
- Suitable for 14 V and 42 V automotive board net
- Embedded EEPROM with high endurance
- Embedded Flash Memory up to 512 kbit
- Passive elements for analog applications

Transistor Parameters				
Device	Vt [V]	BVDSS [V]	IDS [μA/μm]	RDSon [kΩ x μm]
NMOS 5V	0.83	13	470	
PMOS 5V	- 0.90	- 12	220	
NMOS MV	0.90	21	450	4.5
PMOS MV	- 0.90	- 18	150	22
NMOS HV	0.82	62	230	19
PMOS HV	- 0.86	70	155	55
NMOS HVE	0.80	110	205	26
PMOS HVE	- 0.93	100	105	83

Resistors	
Device	Sheet Resistance [Ω/□]
n-diff	55
p-diff	110
n-well	900
poly0	580
poly1	17
polyh	3500

Capacitors		
Device	Area Cap [fF/μm <sup>2</sup> ]	Apl. Voltage [V]
poly0-poly1	1.92	5.5
poly1-met1-met2	0.065	40
tunnelimpl-poly1	0.84	18
tunnelimpl-poly0-poly1	2.61	5.5

Design Rules	
Parameter	Pitch [μm]
Gate	1.4
Active Area	1.8
N-Well	8.8
Metal 1	1.7
Metal 2	1.7
Metal 3	2.2
Contact	1.2
Via 1	1.3
Via 2	1.4

### Non Volatile Memories

EEPROM	
Ready-to-use EEPROM blocks up to 32 kbit with internal charge pumps for programming	
Power supply range:	1.8 to 6.0 V
Number of erase write cycles:	> 1E5 @ 25°C > 1E4 @ 125°C
Data retention:	10 years @ 125°C

Flash	
Ready-to-use Flash blocks up to 32k x 16 bit (512 kbit) with ECC for enhanced reliability	
Power supply range:	4.5 to 5.5 V
External programming voltages:	VPG/VPS = 12 ± 0.5 V VPD = 7 ± 0.5 V
Number of erase write cycles:	> 1E3 (- 40 to + 125°C)
Data retention:	10 years @ 85°C



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