

C08E 0.8 μ m 5/20V CMOS Process

Full integration of 5V and 20V mixed signal CMOS on the same die serves sophisticated applications such as EL displays, CCD drivers, and motor controls

C08E Overview

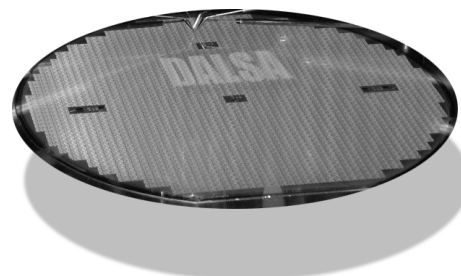
- 0.8 μ m 5/20V CMOS process allowing integration of 5V CMOS with 20V CMOS—can operate with 20V on both gate and drain.
- Quadruple well
- Dual-gate oxide
- Double poly
- Two or three layer metal process
- P-type epitaxy over p+ substrate.

Features

- Full integration of 5V and 20V CMOS on the same die
- Tpd@5V = 200pS; Tpd@20V = 500pS
- CMOS with 20V on gate and drain
- Single and double drain extensions on 20V NMOS and 20V PMOS
- 20V double poly capacitor
- High Value (10k Ω /sq) and Low TCR poly resistor options
- Mixed signal Cadence Foundry Design Kit (FDK) available

Mixed Signal Capabilities

- 20V double poly capacitor (0.84fF/ μ m²)
- High value poly resistor option (10k Ω /sq)
- 5V 0.8 μ m CMOS—1.8k gates/mm²
- 20V CMOS with single and double extensions
- Isolated vertical npn (β =70)



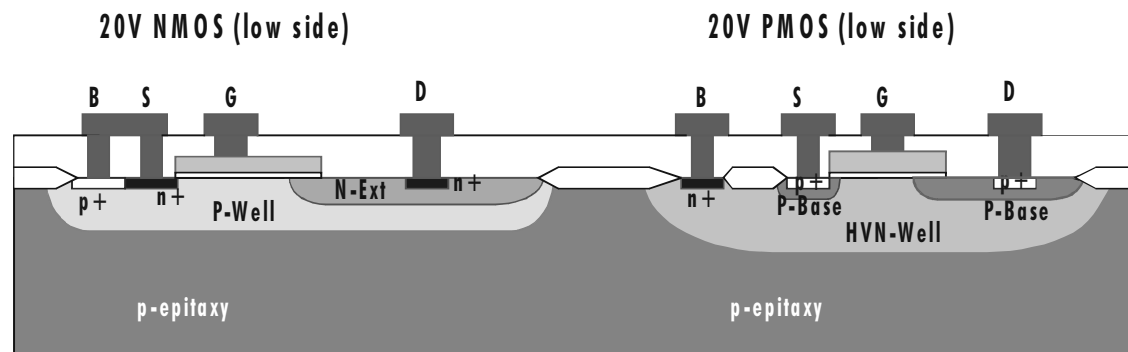
Applications

- EL displays
- CCD Drivers
- Motor Control
- Instrumentation

Layout Rules

Layer	Width (μ m)	Space (μ m)
Poly 1	0.8	0.9
Poly2	1.0	1.2
Contact	0.9x0.9	0.8
Metal 1	1.1	1.0
Via	1.0x1.0	1.0x1.0
Metal 2	1.2	1.1
Via 2	2.0x2.0	2.0
Metal 3	3.0	2.4

Simplified Cross-Section of 20V CMOS



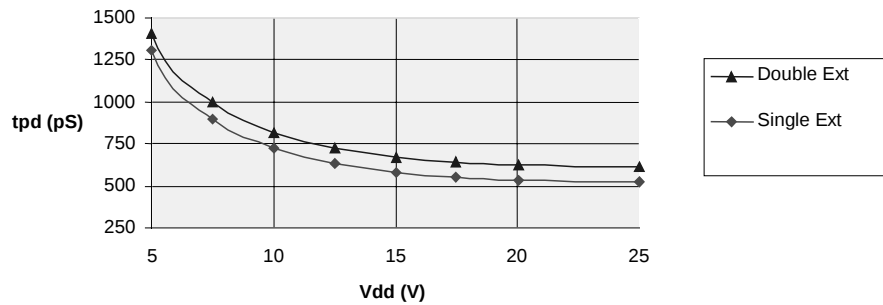
DALSA
SEMICONDUCTOR

26-Sep-02
03-70-00145-00
www.dalsasemi.com

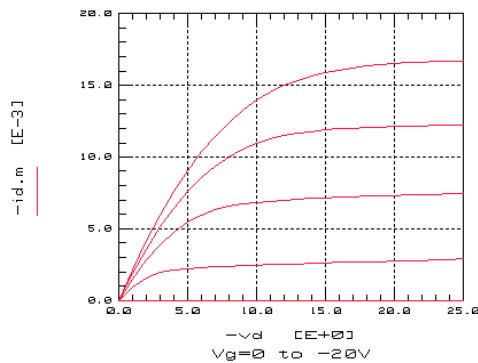
Electrical Parameters of Representative Transistors

Parameter	5V NMOS	5V PMOS	20V NMOS	20V PMOS
W x L (μ m)	50 x 0.8	50 x 0.8	50 x 6	50 x 3
V _T (V)	0.65	-0.65	0.9	-0.9
I _{ds} (mA)	19	9	12	15
B _{vdss} (V)	12	12	33	28
I _{sub} (μ A/ μ m)	0.85	-	1.0	-
R _{ON} (Ω)	86	256	475	505

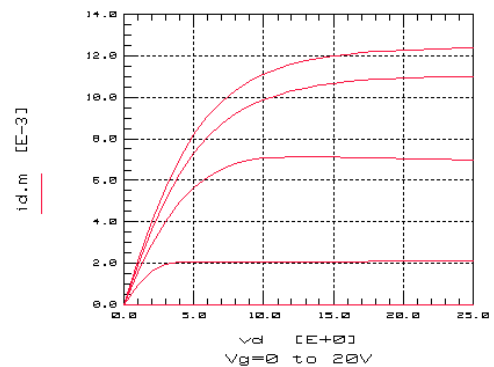
Single and Double Extended 20V Ring Oscillators



Single Extended 20V PMOS (L=3 μ m, W=50 μ m)



Single Extended 20V NMOS (L=6 μ m, W=50 μ m)



For More Information

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