

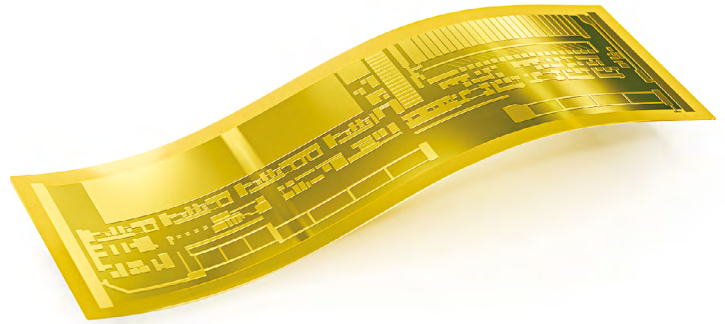
FlexIC Platform Gen 3

Overview

Pragmatic Semiconductor is pioneering flexible semiconductor technology, sustainably delivering edge and item-level intelligence at scale.

The Pragmatic FlexIC Foundry operates a unique and innovative process offering sustainable production and rapid innovation cycle times, coupled with a pathway to supply chain resilience.

Driven by optimised, purpose-led design, our ultra-thin FlexICs – flexible integrated circuits – empower innovators with connect, sense and compute capabilities to bridge our digital and physical worlds.



Introducing Pragmatic FlexIC Platform Gen 3

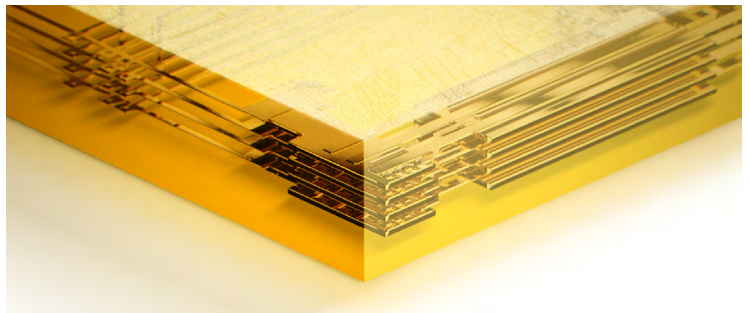
Pragmatic FlexIC Platform Gen 3 provides designers with the tools to efficiently design and rapidly manufacture mixed-signal FlexICs on Pragmatic's third-generation metal-oxide thin-film transistor (TFT) technology.

- Thin, flexible form factor for novel, space-constrained applications
- Process design kit (PDK) compatible with industry standard electronic design automation (EDA) tools
- Standard cell library accelerating design success
- Rapid fabrication on 300 mm wafers, reducing time to market
- Sustainable, low-carbon manufacturing

The technology excels in applications such as radio-frequency identification (RFID), multiplexing, driver and sensor readout circuitry, and basic computation.

Technology overview

Built on a flexible substrate, the technology offers a 600 nm minimum channel dimension n-type FET, a dedicated 200 k Ω /sq resistor layer and 4.5 fF/ μm^2 metal-insulator-metal capacitors. Four metal layers provide efficient routing and interconnects, with a 4 μm routing pitch.



The technology is packaged with passivation for protection and isolation, and a redistribution layer (RDL) with aluminium metallisation for compatible attachment methods.

Technology specifications

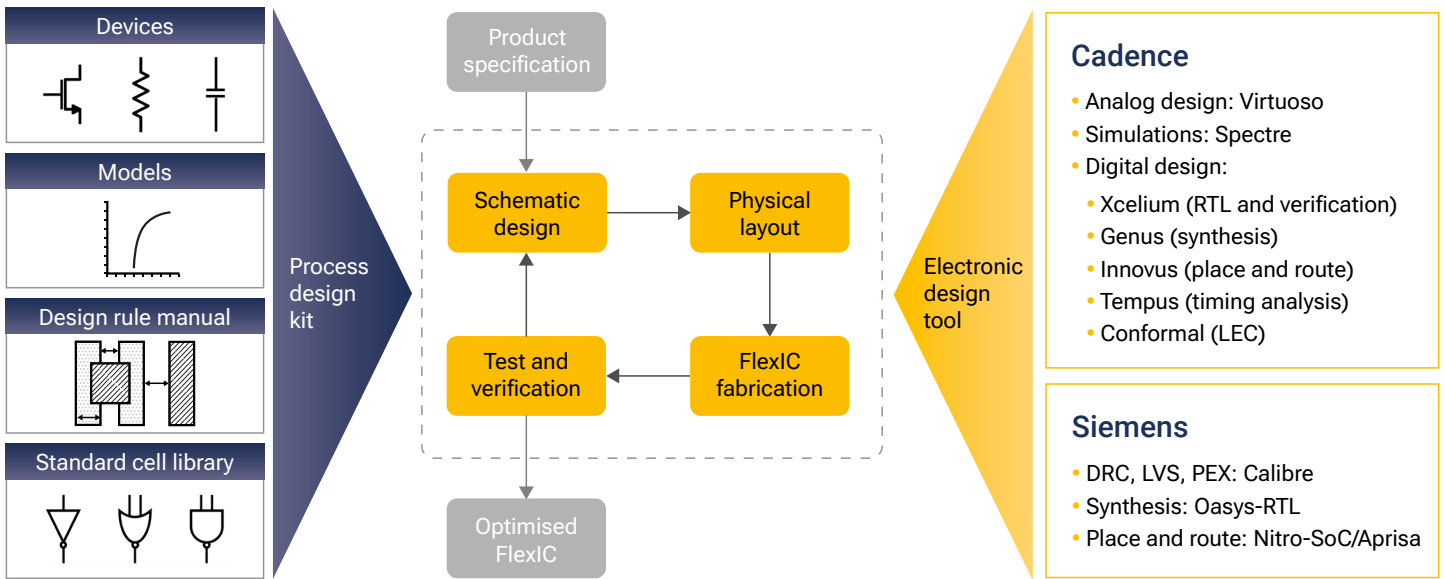
Transistors	Metal oxide thin film transistor	n-type FET
	Minimum channel dimension	L= 0.6 μm , W= 1 μm
	Maximum channel dimension	L= 1.2 μm , W= 20 μm
	Field effect mobility	$\sim 20 \text{ cm}^2/\text{Vs}$
	$I_{\text{D OFF}}$ (L=600nm, $V_{\text{G}} = 0\text{V}$, $V_{\text{D}} = 3\text{V}$)	$\sim 10 \text{ fA}/\mu\text{m}^2$
	$I_{\text{D SAT}}$ (L=600nm, $V_{\text{G}} = 3\text{V}$, $V_{\text{D}} = 3\text{V}$)	$\sim 25\mu\text{A}$
Resistors	Dedicated resistor layer	200 k Ω /sq.
	Minimum line width/space	0.6 μm /1.0 μm
	Temperature performance	Linear -0.8 % per $^{\circ}\text{C}$
MIMCaps	Unit capacitance	4.5 fF/ μm^2
	Leakage at 1.8 V	$1 \times 10^{-16} \text{ A}/\mu\text{m}^2$
Interconnects	Independent metal routing	Four layers (two dedicated)
	Routing pitch	4 μm
Packaging	Top passivation thickness	5.5 μm
	Aluminium RDL	1.5 μm
Physical	Total thickness	$\sim 37 \mu\text{m}$
	Minimum bend radius	5 mm
	Wafer size	300 mm

Process design kit

Platform Gen 3's PDK gives designers the tools to accurately design circuitry for bespoke mixed-signal applications. It is compatible with industry-standard EDA tools and design flows from Cadence and Siemens and contains:

- Primitive device library with simulation models
- Parameterized cells (PCells)
- Verification checks (DRC, LVS)
- Technology data and files
- Design, layout, tape out manuals & guides

A standard cell library is available, providing the building blocks to accelerate design and time to market.

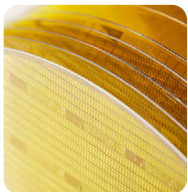


FlexIC Foundry

Pragmatic's FlexIC Foundry provides 300 mm wafer fabrication and back-end services that enable rapid innovation cycles, taking designs to production with weeks. Dedicated engineering support is on hand to support you from initial prototyping and design to high-volume manufacturing.

Delivery formats

Platform Gen 3 is available on 300 mm wafers and delivered in the following formats:



Wafer on glass carrier



Wafer diced on frame



Singulated FlexICs in Gel-Box (prototyping only)

To find out more about Pragmatic's unique flexible semiconductor technology, visit: www.pragmaticsemi.com