

GF22: 1.8V 100MHz Oscillators



Libraries

Name	Process	Form Factor
RGO_GF22_18V18_FDX_20C_OSC	FDX	Staggered CUP

Summary

The 1.8V 100MHz Oscillators library includes a programmable oscillator macro I/O cell.

- 100 MHz programmable oscillator

This 22nm library is available in a staggered CUP wire bond implementation with a flip chip option.

To utilize these cells in the pad ring, an additional library is required – 1.8V Support: Power. That library contains the DVDD/DVSS power cells necessary for ESD protection, the POC cell, and a rail splitter to isolate the oscillator in its own power domain as recommended. It also contains an input-only buffer, isolated analog I/O, and a full complement of power cells along with corner and spacer cells to assemble a complete pad ring by abutment. The rail splitter allows multiple power domains to be isolated in the same pad ring while maintaining continuous VDD/VSS for robust ESD protection.

ESD Protection:

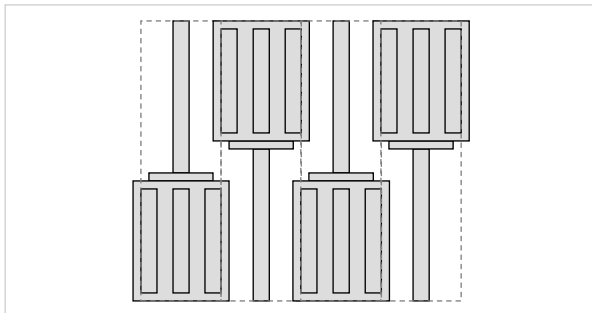
- JEDEC compliant
 - 2KV ESD Human Body Model (HBM)
 - 500 V ESD Charge Device Model (CDM)

Latch-up Immunity:

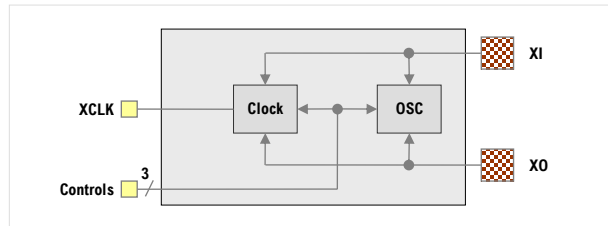
- JEDEC compliant
 - Tested to I-Test criteria of $\pm 100\text{mA}$ @ 125°C

Cell Size & Form Factor

Staggered (pad-limited) – TBD μm x TBD μm



OSP_BI_100_18V



100 MHz Programmable Oscillator Features

- Programmable drive strength for wider frequency range – 1 MHz to 100 MHz using industry standard external crystals.
- Optimized for stability and minimum jitter
- Power-down mode
- Operates on core power only (VDD/VSS cells embedded)
- In a forced bypass mode, the XI port can be driven by an I/O-level (V_{DVDD}) clock signal.

Vertical-only ($_V$) and horizontal-only ($_H$) variants provided.

Recommended operating conditions

Description	Min	Nom	Max	Units
V_{VDD} Core supply voltage	0.72	0.80	0.88	V
V_{DVDD} I/O supply voltage	1.62	1.8	1.98	V
T_J Junction temperature	-40	25	125	$^\circ\text{C}$
V_{PAD} Voltage at XI ^[1]	0	-	V_{DVDD}	V

[1] XI can be driven by an external clock for bypass operation. XO should never be driven or loaded by anything other than the oscillator crystal.

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Characterization Corners

Nominal VDD	Model	VDD	DVDD ^[1]	Temperature
0.8V	FF	+10%	+10%	-40°C
	FF	+10%	+10%	125°C
	TT	nominal	nominal	25°C
	TT	nominal	nominal	85°C
	SS	-10%	-10%	-40°C
	SS	-10%	-10%	125°C

[1] DVDD = 1.8V

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