

LPE Libraries

Name	Form Factor	Silicon proven
RGO_GF55_25V33_LPE_30C_OSC	Staggered	Yes
RGO_GF55_25V33_LPE_50C_OSC	Inline	Yes

Summary

The Oscillators library includes three oscillator macro I/O cells:

- 32 kHz RTC oscillator
- 50 MHz oscillator
- 100 MHz programmable oscillator

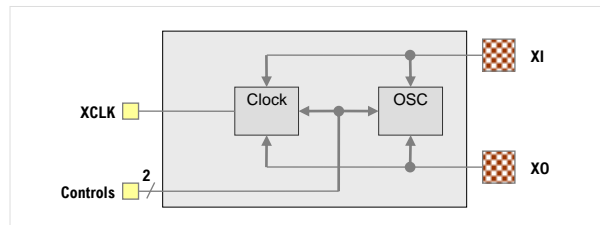
ESD Protection:

- JEDEC compliant
 - 2KV ESD Human Body Model (HBM)
 - 200V ESD Machine Model (MM)
 - 500V ESD Charge Device Model (CDM)

Latch-up Immunity:

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

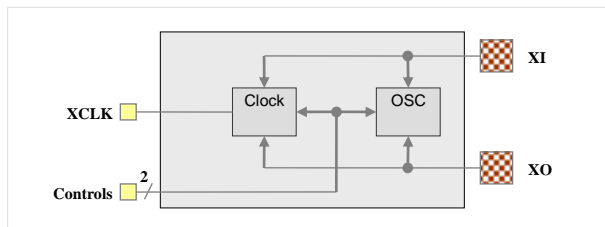
OSx_BI_032_12V



32 kHz RTC Oscillator Features

- Designed to use a 32.786 kHz external crystal for Real Time Clock applications.
- Optimized for low power, stability and minimum jitter
- Characterized with crystal loading capacitors ranging from 4 pF to 25 pF.
- Oscillator enable (EN) and bypass (BYPASS) modes
- Speed-up circuitry for fast startup
- Low power ($1.5 \mu\text{W}$ typ)
- Operates on core power only (VDD/VSS cells embedded)

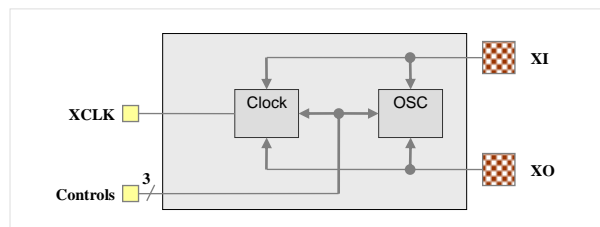
OSx_BI_050_12V



50 MHz Oscillator Features

- Wide frequency range oscillator (<1 MHz to 50 MHz) using industry standard crystals
- Low power
- Fixed drive strength
- Oscillator Enable (EN)
- Bypass Mode (BYPASS)
- Operates on core power only (VDD/VSS cells embedded)

OSx_BI_10R_33V



100 MHz Programmable Oscillator Features

- Programmable drive strength supports a wide range of operating frequencies range while minimizing power
- Frequency range of <1 MHz to 200 MHz using industry standard external crystals.
- Optimized for stability and minimum jitter
- Oscillator Enable (EN)
- Operates on I/O and core power (DVDD/DVSS cells embedded)

GF55 LPE: Oscillators



Recommended operating conditions

Description	Min	Nom	Max	Units
V _{VDD} Core supply voltage	0.9	1.0	1.1	V
	1.08	1.2	1.32	V
	2.97	3.3	3.63	V
	2.70	3.0	3.30	V
V _{DVDD} I/O supply voltage	2.52	2.8	3.08	V
	2.25	2.5	2.50	V
	1.62	1.8	1.98	V
	1.35	1.5	1.65	V
T _J Junction temperature	-40	25	125	°C
V _{PAD} ^[1] Voltage at XI	0		Note 2	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.

[2] The voltage applied to the XI pad should never exceed the operating voltage of the oscillator.

Characterization Corners

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

[1] DVDD = 1.5, 1.8, 2.5, 2.8, 3.0 and 3.3V

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