

LPE Libraries

Name	Form Factor	Silicon proven
RGO_GF55_25V33_LPE_50C	Inline	Yes
RGO_GF55_25V33_LPE_30C	Staggered	Yes
RGO_GF55_25V33_LPE_50C_FT	Inline	Yes
RGO_GF55_25V33_LPE_30C_FT	Staggered	Yes

Summary

The 3.3V General Purpose I/O library provides bidirectional I/O, 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. An included rail splitter allows multiple power domains to be isolated in the same pad ring while maintaining continuous VDD/VSS for robust ESD protection.

- Programmable bidirectional GPIO
- Programmable fault tolerant GPIO
- Input-only buffer
- Isolated analog I/O
- Full complement of power, corner, and spacer cells

ESD Protection:

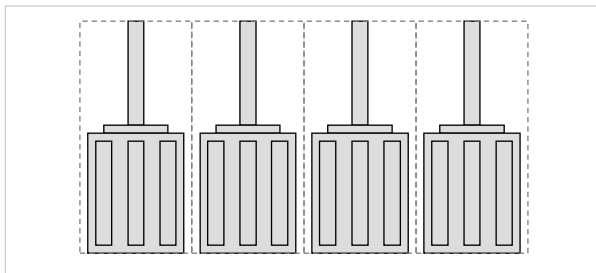
- JEDEC compliant
 - 2KV ESD Human Body Model (HBM)
 - 200V ESD Machine Model (MM)
 - 500V ESD Charge Device Model (CDM)

Latch-up Immunity:

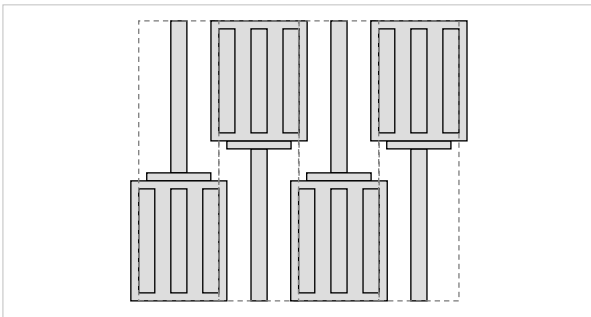
- JEDEC compliant
 - Tested to I-Test criteria of $\pm 100\text{mA}$ @ 125°C

Cell Size & Form factor

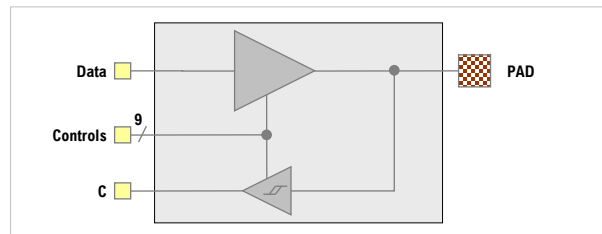
Inline (core-limited) – $50\mu\text{m} \times 120\mu\text{m}$



Staggered (pad-limited) – $30\mu\text{m} \times 180\mu\text{m}$



SRx_BI_SDS_33V_STB / FRx_BI_SDS_33V_STB

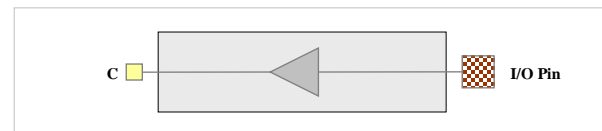


Bidirectional GPIO Driver Features

- Multi-Voltage (1.8V, 2.5V, 2.8V, 3.0V, 3.3V)
- LVCMOS / LVTTTL input with selectable hysteresis
- Programmable drive strength (rated 2mA to 12mA)
- Selectable output slew rate
- Optimized for EMC with SSO factor of 8
- Open-drain output mode
- Programmable input options (pull-up/pull-down/repeater)
- Power-On Start (POS) capable
- Power sequencing independent design with Power-On Control

In full-drive mode, this driver can operate to frequencies in excess of 100MHz with 15pF external load and 125 MHz with 10pF load. Actual frequency limits are load and system dependent.

STx_IN_001_33V_NC



Input-Only GPIO Features

- Multi-voltage (1.8V, 2.5V, 2.8V, 3.0V, 3.3V)
- Wide input slew-rate
- LVCMOS/LVTTL compatible input with no hysteresis
- Minimized skew for optimum performance over frequency
- No power sequence requirements

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
V _{DVDD} I/O supply voltage	2.70	3.0	3.30	V
	2.52	2.8	3.08	V
	2.25	2.5	2.50	V
T _J Junction temperature	-40	25	125	°C
V _{PAD} Voltage at PAD	-0.3		V _{DVDD} + 0.3	V

GF55 LPE: 3.3V GPIO



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 = 1.8, 2.5, 2.8, 3.0 and 3.3V

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