

SMG28: 3.3V Support: Power



Libraries

Name	Process	Form Factor
RGO_SMG28_18V33_FDS_20C_SPT	FD-SOI	Staggered CUP

Summary

The 3.3V Support: Power library provides a full complement of cells to support the assembly of a complete pad ring by abutment. It is supplied as a standard addition to the GPIO libraries and other I/O library offerings from Aragio Solutions that use a compatible pad ring bus structure.

This 28nm library is available in a staggered CUP wire bond implementation.

The included 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:

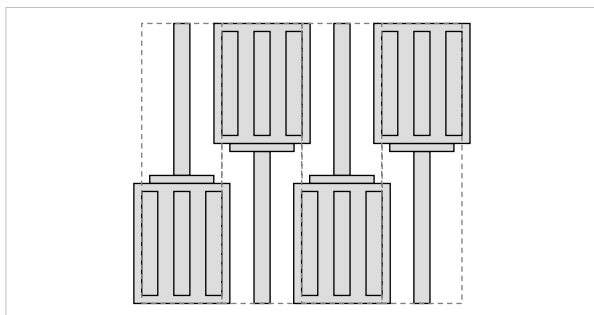
- JEDEC compliant
 - 2KV ESD Human Body Model (HBM)
 - 500 V ESD Charge Device Model (CDM)

Latch-up Immunity:

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

Cell Size & Form Factor

Staggered (pad-limited) – $20\mu\text{m} \times 117\mu\text{m}$



Cell List

Name	Description
Digital Pads	
STP_IN_001_25V_NC	Input-only buffer
I/O Power / Ground Pads	
PWP_VD_RDO_33V	I/O power (DVDD)
PWP_VS_RDO_33V	I/O ground (DVSS)
Core Power / Ground Pads	
PWP_VD_RCD_1033V	Core power (VDD)
PWP_VS_RCD_1033V	Core ground (VSS)
Analog Pads	
ANP_BI_DWR_33V	Analog Input cell
Analog Power / Ground Pads	
PWP_VD_ANA_1033V	Analog power (AVDD) 1.0V
PWP_VS_ANA_1033V	Analog ground (AVSS)
PWP_VD_ANA_33V	Analog power (ADVDD) 3.3V
PWP_VS_ANA_33V	Analog ground (ADVSS)
Support Pads	
SPP_CO_000_33V	Corner cell (rail splitter)
SPP_CO_001_33V	Corner cell (continuous)
SPP_SP_000_33V	0.1 μm spacer
SPP_SP_001_33V	1 μm spacer
SPP_SP_002_33V	2 μm spacer
SPP_SP_005_33V	5 μm spacer
SPP_SP_010_33V	10 μm spacer
SPP_RS_005_33V	Rail splitter
SPP_RE_SVR_182533V	VREF generation
SPP_SP_POC_1833V	POC generation

Staggered CUP Cells

CUP_SMG28_85X55_IN	85 μm X 55 μm Inner
CUP_SMG28_85X55_OUT	85 μm X 55 μm Outer

Recommended operating conditions

Description	Min	Nom	Max	Units
V _{VDD} Core supply voltage	0.9	1.0	1.1	V
	0.99	1.1	1.155	V
V _{DVDD} I/O supply voltage	2.97	3.3	3.63	V
	2.25	2.5	2.75	V
T _J Junction temperature	1.62	1.8	1.98	V
	-40	25	125	°C
V _{PAD} Voltage at PAD	V _{DVSS} -0.3	-	V _{DVDD} +0.3	V

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Characterization Corners

Nominal VDD	Model	VDD	DVDD ^[1]	Temperature
1.0V	FF	+10%	+10%	-40°C
	FF	+10%	+10%	125°C
	FF	+10%	+10%	85°C
	FF	+10%	+10%	0°C
	TT	nominal	nominal	25°C
	SS	-10%	-10%	0°C
	SS	-10%	-10%	85°C
	SS	-10%	-10%	-40°C
	SS	-10%	-10%	125°C
1.1V Overdrive	FF	+5%	+10%	-40°C
	FF	+5%	+10%	125°C
	FF	+5%	+10%	85°C
	FF	+5%	+10%	0°C
	TT	nominal	nominal	25°C
	SS	-10%	-10%	0°C
	SS	-10%	-10%	85°C
	SS	-10%	-10%	-40°C
	SS	-10%	-10%	125°C

[1] DVDD = 1.8V, 2.5V & 3.3V

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