TSMC 06/07: 3.3V Support: Power

Libraries

Name	Process	Form Factor
RGO_TSMC06_18V33_6FF_20F_SPT	6FF	Staggered Flip Chip
RGO_TSMC07_18V33_7FF_20C_SPT	7FF	Staggered Flip Chip

Summary

The 3.3V Support: Power library provides a full complement of cells to support the assembly of a functional 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 library is offered at both 6nm and 7nm. It is available in a staggered flip chip 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 ± 100mA @ 125°C

Cell Size & Form Factor

- Staggered (pad-limited) – 34.08µm x 214.68µm
- Flip chip implementation with CUP structure built in

Cell List

Name	Description
Digital Pads	
STP_IN_001_1833V_NC	Input-only buffer
I/O Power / Ground Pads	
PWP_VD_RDO_1833V	I/O power (DVDD)
PWP_VS_RDO_1833V	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_1833V	Isolated 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_1833V	Analog power (ADVDD) 3.3V
PWP_VS_ANA_1833V	Analog ground (ADVSS)
Support Pads	
SPP_CO_000_1833V	Corner cell (rail splitter)
SPP_CO_001_1833V	Corner cell (continuous)
SPP_SP_000_1833V	0.1µm spacer
SPP_SP_001_1833V	1µm spacer
SPP_SP_002_1833V	2µm spacer
SPP_SP_005_1833V	5µm spacer
SPP_SP_010_1833V	10µm spacer
SPP_RS_005_1833V	Rail splitter
SPP_RE_SVR_1833V	VREF / HVPS generation
SPP_SP_POC_1833V	POC generation

Recommended Operating Conditions

	Description	Min	Nom	Max	Units
V_{VDD}	Core supply voltage	0.675	0.75	0.825	V
V_{DVDD}	I/O supply voltage	2.97	3.3	3.63	V
		2.25	2.5	2.75	V
		1.62	1.8	1.98	V
		1.08	1.2	1.32	V
T_J	Junction temperature	-40	25	125	°C
V_{PAD}	Voltage at PAD	V_{DVSS} -0.3	-	V_{DVDD} +0.3	V

Characterization Corners

Model [1]	LPE Type	VDD=0.75V	DVDD [2]	Temp
FF	Cbest_CCbest	+10%	+10%	-40°C
FF	Cbest_CCbest	+10%	+10%	0°C
FF	Cbest_CCbest	+10%	+10%	125°C
FFG	Ctypical	+10%	+10%	125°C
TT	Ctypical	nominal	nominal	25°C
TT	Ctypical	nominal	nominal	85°C
SS	Cworst_CCworst	-10%	-10%	-40°C
SS	Cworst_CCworst	-10%	-10%	0°C
SS	Cworst_CCworst	-10%	-10%	125°C

[1] Listed models are for 7FF. 6FF models are FFGNP / TT / SSGNP.
[2] DVDD = 3.3V. 2.5V, 1.8V & 1.2V

Published by:

Aragio Solutions
2201 K Avenue
Section B Suite 200
Plano, TX 75074-5918
Phone: **(972) 516-0999**
Fax: **(972) 516-0998**
Web: http://www.aragio.com/