

# TSMC 05: 1.8V Support: Power



## Libraries

Name	Process	Form Factor
RGO_TSMC05_15V18_N5_45C_SPT	N5	Inline

## Summary

The 1.8V 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 5nm library is in an inline 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:

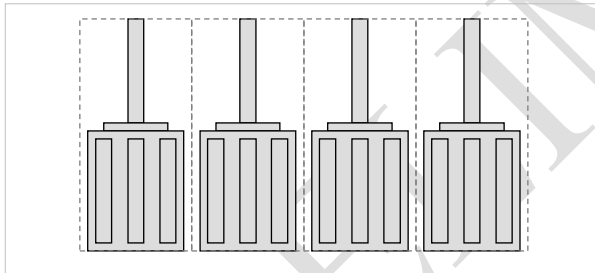
- JEDEC compliant
  - 2KV ESD Human Body Model (HBM)
  - 500 V ESD Charge Device Model (CDM)

### Latch-up Immunity:

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

## Cell Size & Form Factor

Inline (core-limited) –  $66.5\mu\text{m} \times 100.1\mu\text{m}$



Orientation-limited cells are only provided in the vertical-only (\_V) orientation.

## Cell List

Name	Description
<b>I/O Power / Ground Pads</b>	
PWC_VD_RDO_1218V	I/O power (DVDD)
PWC_VS_RDO_1218V	I/O ground (DVSS)
<b>Core Power / Ground Pads</b>	
PWC_VD_RCD_1018V	Core power (VDD)
PWC_VS_RCD_1018V	Core ground (VSS)
<b>Analog Pads *</b>	
ANC_BI_DWR_1218V	1.8V Analog Input cell
<b>Analog Power / Ground Pads</b>	
PWC_VD_ANA_1018V	Analog power (AVDD) 1.0V
PWC_VS_ANA_1018V	Analog ground (AVSS)
PWC_VD_ANA_1218V	Analog power (ADVDD) 1.8V
PWC_VS_ANA_1218V	Analog ground (ADVSS)
<b>Support Pads</b>	
SPC_SP_001_1218V	1 $\mu\text{m}$ spacer
SPC_SP_002_1218V	2 $\mu\text{m}$ spacer
SPC_SP_005_1218V	5 $\mu\text{m}$ spacer
SPC_SP_010_1218V	10 $\mu\text{m}$ spacer
SPC_RS_005_1218V	Rail splitter
SPC_RE_SVR_1218V	VREF / HVPS generation
SPC_SP_POC_1218V	POC generation

Cell names / descriptions abbreviated

## Recommended operating conditions

Description	Min	Nom	Max	Units
V <sub>VDD</sub> Core supply voltage	0.675	0.75	0.825	V
	0.765	0.85	0.935	V
	1.62	1.8	1.98	V
V <sub>DVDD</sub> I/O supply voltage	1.35	1.5	1.65	V
	1.08	1.2	1.32	V
	T <sub>J</sub> Junction temperature	-40	25	125
V <sub>PAD</sub> Voltage at PAD	V <sub>DVSS</sub> -0.3	-	V <sub>DVDD</sub> +0.3	V

## Characterization Corners

Model	LPE Type	VDD [1]	DVDD [2]	Temp
FFGNP	Cbest_CCbest	+10%	+10%	-40°C
FFGNP	Cbest_CCbest	+10%	+10%	0°C
FFGNP	Cbest_CCbest	+10%	+10%	125°C
TT	Ctypical	nominal	nominal	25°C
TT	Ctypical	nominal	nominal	85°C
SSGNP	Cworst_CCworst	-10%	-10%	-40°C
SSGNP	Cworst_CCworst	-10%	-10%	0°C
SSGNP	Cworst_CCworst	-10%	-10%	125°C

[1] VDD = 0.75V & 0.85V

[2] DVDD = 1.2V, 1.5V & 1.8V

PRELIMINARY

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**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/>**

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