

# Agilex A027\_R31C : Manufacturing Advantage Services

**October 2022 (REV 0.5)**



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# Revision History

<b>Revision</b>	<b>Description</b>	<b>Released</b>
<b>0.5</b>	<b>Preliminary Manufacturing Guidance</b>	<b>October-2022</b>

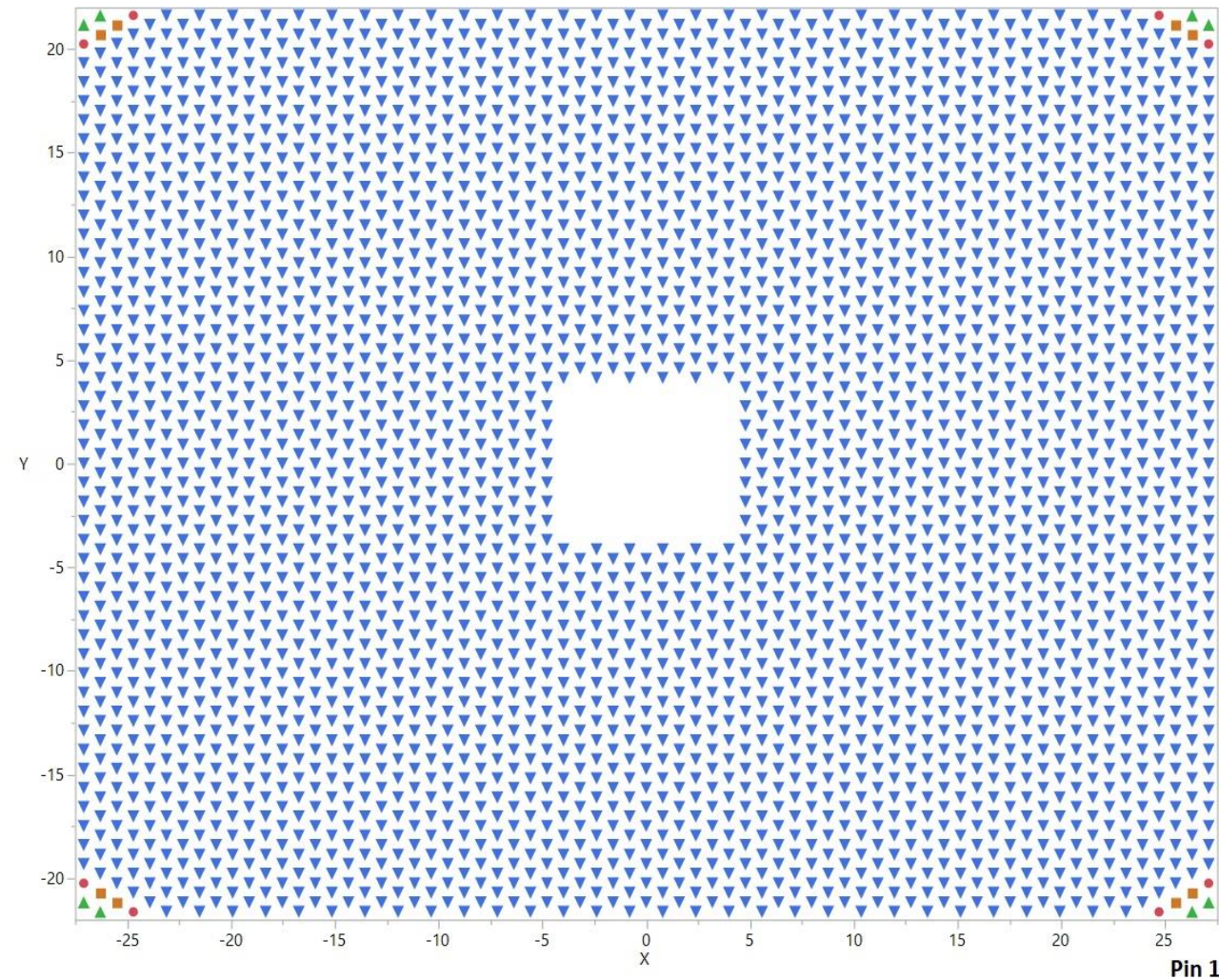
# Agilex A027\_R31C BGA - Package Attributes

<b>Attribute</b>	<b>Agilex A027_R31B</b>
<b>Package Type</b>	<b>FCBGA</b>
<b>MSL Rating/Max Body Temp</b>	<b>3 / 245°C</b>
<b>Solder Ball Material</b>	<b>SAC 405</b>
<b>Package Form Factor</b>	<b>56 mm x 45 mm</b>
<b>Ball Pitch (mm)</b>	<b>0.92</b>
<b>Substrate Thickness (mm)</b>	<b>1.26 ± 0.105</b>
<b>Pre-SMT Ball Thickness (mm)</b>	<b>0.429 ± 0.06</b>
<b>NCTF Corner Balls</b>	<b>Yes</b>

All components are halogen free FCBGAs with a max temp rating of 245°C



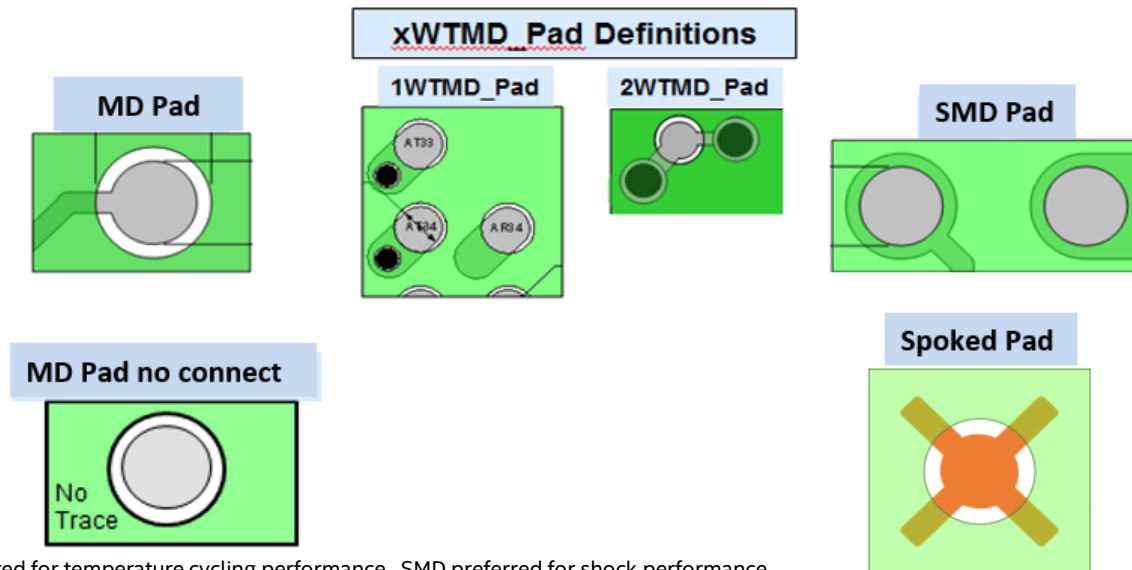
# Agilex A027\_R31C BGA - Board Land Pattern Guidance



Legend	Pad Size (microns/mils) ; SRO Size (microns/mils)	Function	# of Balls
●	MD Round Pad : 475um (19 mil), SRO 575um (23 mil)	NCTF	8
▲	MD Round Pad : 500um (20 mil), SRO 600um (24 mil)	NCTF	8
▼	Spoked or MD Round Pad : 450um (18 mil), SRO 550um (22 mil)	CTF	3160
■	Spoked or MD Round Pad : 475um (19 mil), SRO 575um (23 mil)	CTF	8

# General Information: Land Pad Definitions

- **MD = Metal Defined** (Traditional dog bone Via to BGA-Pad)
  - Pad is defined as MD when 40% - 100% of the pad circumference is defined by metal.
  - I/O Driven, trace width usually determined by Impedance matching.
  - No connect is metal pad with "NO" trace connected (e.g., uvia in pad).
- **Spoked MD**
  - Metal Defined pad with up to 4 traces branching off it such that at least 40% of pad periphery is still defined by metal. Used to improve solder joint reliability where a surface plane is present.
- **WTMD = Wide Trace Metal Defined Pad** (Trace = Pad Diameter or Less)
  - $xWTMD \gg 1WTMD = 1$  Wide Trace,  $2WTMD = 2$  Wide Traces going to BGA Pad.
  - Multiple "Wide Traces", can look/behave as a Spoke design.
- **SMD = Solder mask Defined** (60% - 100% of the pad circumference is defined by Solder mask, pads in flood areas and/or Larger metal pad)



Notes:

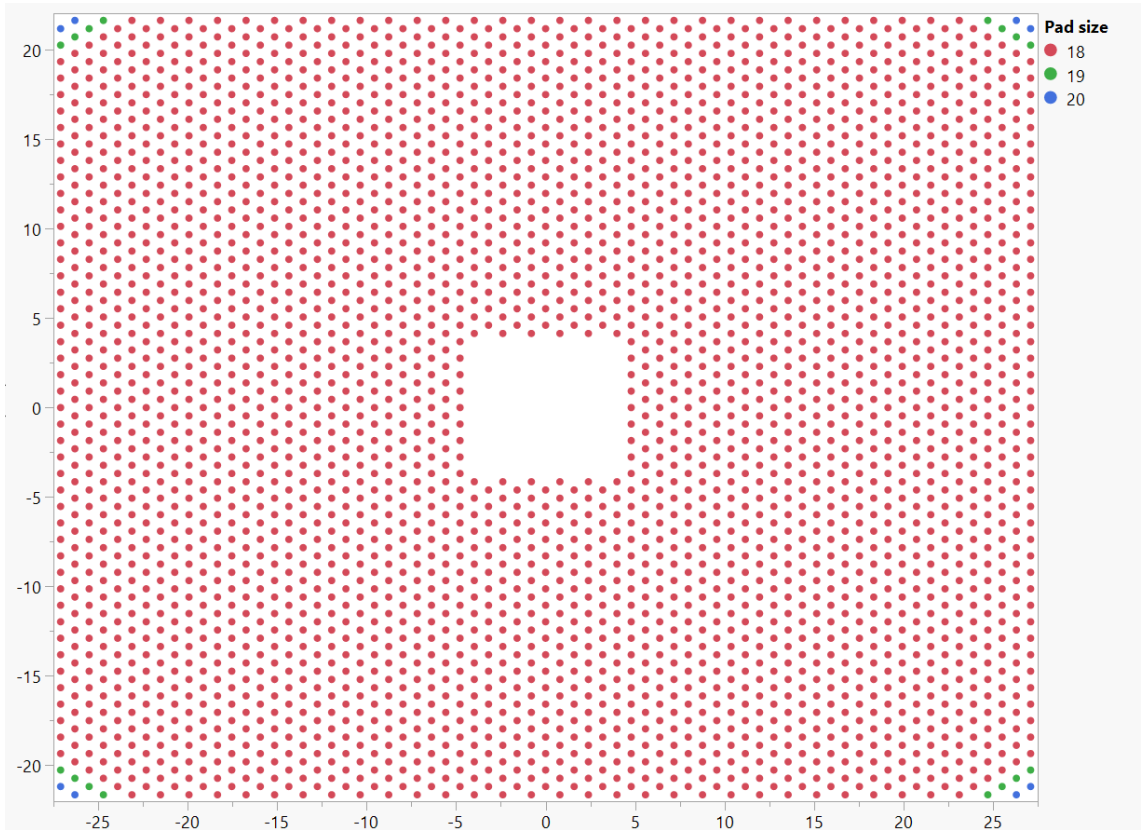
- MD pad type preferred for temperature cycling performance. SMD preferred for shock performance
- Filled uvia in pad is acceptable

# Agilex A027\_R31C BGA - SMT Process Recommendations

## SMT Reflow / Materials

Process Parameter	Reference Guidelines
Reflow Environment	Air, Nitrogen (1500 ppm of O2)
Solder Paste, Powder Type	SAC 305, Type 3 or greater, no-clean SMT paste
Stencil thickness	5 mils (0.127 mm)
Stencil Aperture Design	Design details see next page
Ramp Rate	<3 °C / sec
Soak time (150 °C - 190 °C)	Paste dependent comply with your paste vendor recommendations ( These recommendations are based on work using <b>Shenmao PF606-P</b> solder paste )
Time Above Liquidus (TAL) (> 220 °C)	60 - 120 sec, delta T across package of < 8 °C
Peak Temperature	240 +/-5 °C

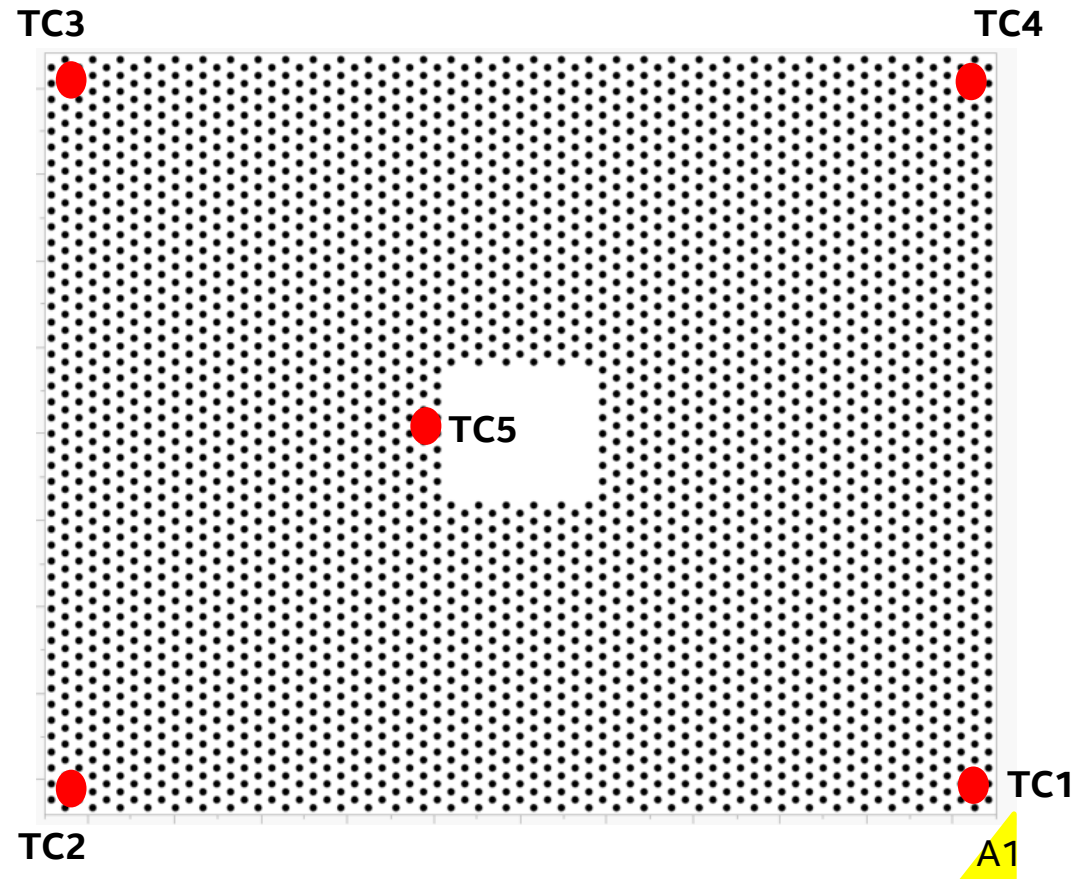
# SMT Stencil Recommendation Agilex A027\_R31C



Pad Color	Pad Description	Paste Volume (cubic mils)	QTY
Red	18 mils	1272	3160
Green	19 mils	1418	16
Blue	20 mils	1571	8
5 mils thick stencil			



# Agilex A027\_R31C - Thermocouple (TC) Locations



Comments: Drill holes at the **RED** PCB pads and mount the TC wire tips at the **RED** PCB pads shown on the image. Label TC connectors per TC # in above table.

Intel recommends the BGA thermocouples be at the specific locations in order to ensure an accurate reflow profile.

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