

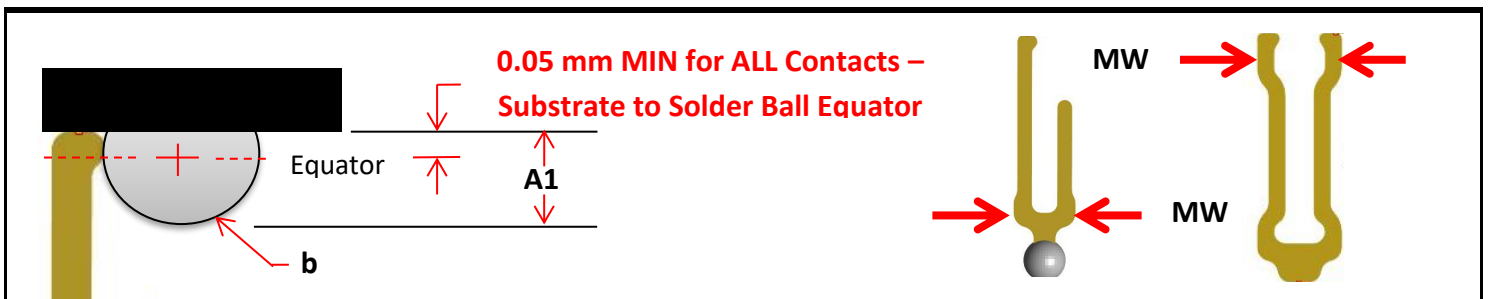
Grypper Contact Matrix

BGA Snaps into Socket – Zero Footprint – No Lid Required – S21 Electrical Performance >40 GHz (Grypper)

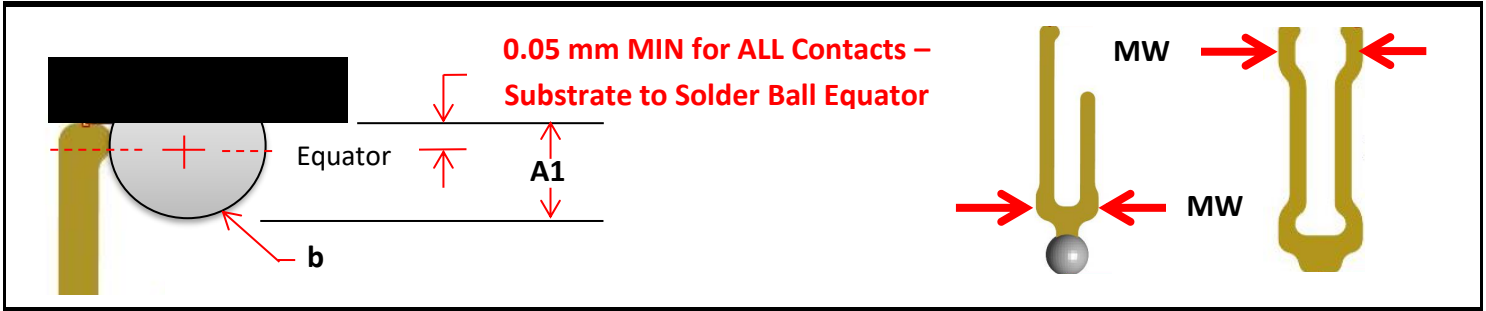
Device Solder Ball Requirements to fit Grypper Sockets

This document describes the minimum solder ball geometry typically required to work with the family of Ironwood Grypper style contacts

The Grypper technology relies on interfacing with the device solder ball that has a minimum exposure and a defined equator, such that the contact can wrap around the equator to ensure the “Grypping” action to the solder ball



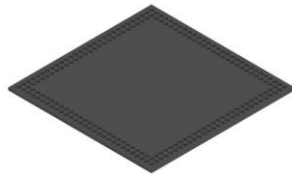
Grypper Product	Solder Ball Diameter* Nominal +/-0.050 mm (b)	Typical* Min Ball Exposure (A1) $=1/2b+0.05$	Minimum Typical Pitch (array)	Maximum Contact Width (MW)	Min spacing diagonal ball to ball based on (MW)	Reference Ironwood Contact P/N
G35 Grypper	G35 Contact is used for Fine Pitch @ 0.35 mm					
	0.20	0.130	0.35	0.355		104468-0028
G40 Grypper	Standard G40 Grypper is used for 0.4 to 0.5 pitch devices					
	0.25	0.175	0.40	0.425		104468-0014
	0.30	0.200	0.50	0.500		104468-0015
	0.35	0.225	0.50	0.500		104468-0025
	0.45	0.275	0.65	0.575		104468-0050



	Solder Ball Diameter* Nominal +/-0.050 mm (b)		Typical* Min Ball Exposure (A1) $=1/2b+0.05$	Min Typical Pitch (array)	Maximum Contact Width (MW)	Min spacing diagonal ball to ball based on (MW)	Reference Ironwood Contact P/N
G80 / G80 LIF Grypper	Standard Application	G80 LIF Applications	LIF is used for Very High ball count devices- typically over 300				
	0.40	0.35	0.225	0.65	0.640		104468-0053
	0.45	0.40	0.250	0.65	0.650		104468-0046
	0.50	0.45	0.275	0.80	0.750		104468-0043
	0.55	0.50	0.300	0.80	0.775		104468-0044
	0.60	0.55	0.325	0.80	0.800		104468-0052
	0.65	0.60	0.350	1.00	0.825		104468-0042
Grypper	Standard Grypper is used for Ball Count up to 200 @ 0.65 – 1.0 pitch						
	0.30		0.200	0.65	0.640		104799-0001
	0.35		0.225	0.65	0.650		104799-0003
	0.40		0.250	0.65	0.650		104799-0002
	0.45		0.275	0.80	0.750		104468-0002
	0.50		0.300	0.80	0.750		104468-0001
	0.60		0.350	1.00	0.850		104653-0001
	0.65		0.375	1.00	0.900		104653-0003

*Actual device solder ball measurements should be reviewed to ensure proper fit with socket contacts – A1 dimension calculated at nominal ball diameter, A1 can be less if the 0.05 MIN Substrate to Solder Ball Equator requirement is met. Contact Ironwood for alternate solutions outside these guidelines
Standard Grypper and G80 Product do not have solder balls - stencil used for socket attachment – solder balling is an available option

Stencil for Grypper and G80 socket attachment or G40 without solder balls

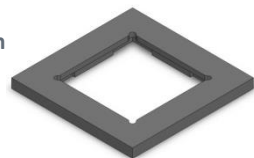


Optional Solder balling on Grypper and G80



G35 and G40 Typically are ordered WITH solder Balls but No solder ball option is also available – Stencils are not required with sockets with solder balls. Socket attaches-reflows similar to a BGA device
Alignment Frames are used with G35 / G40 product and recommended to ensure device alignment to socket, prior to insertion

Optional Extraction Tool: 105900-0004



Optional Device Press to assist in uniform pressure across the top of the device for insertion