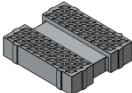
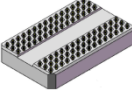
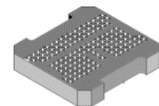
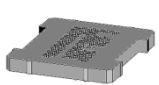
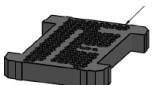
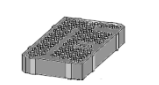
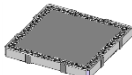
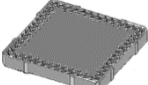
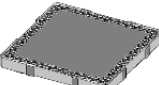
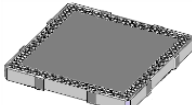
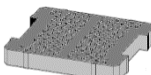
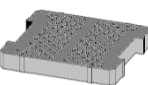


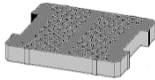
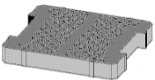
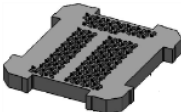
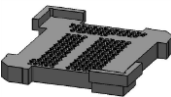
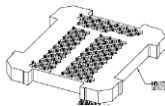
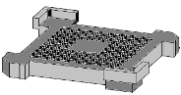
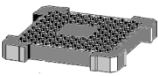
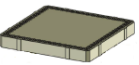
Memory Test Solutions – Grypper and G40

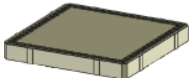
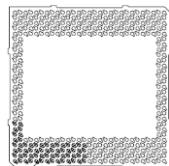
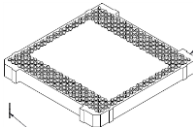
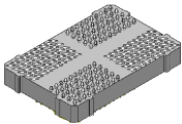
BGA Snaps into Socket – Zero Footprint – No Lid Required – S21 Electrical Performance >40 GHz

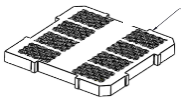
Standard LPDDR - Grypper and G40 Sockets

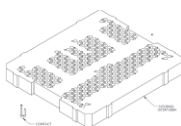
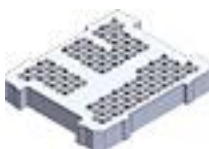
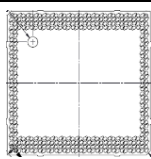
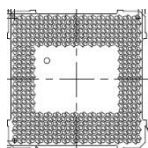
	Ball Count - Socket Size - Pitch - Product - Contact Type (G40, G80 or Standard Grypper)	Device Solder Ball Diameter +/- 0.05mm	SAC 305 Solder Balls *	Eutectic Solder Balls *	No Solder Balls
LPDDR					
	60 - 7.5 x 8.5 - 0.8 - Grypper	0.45	111014-0002	111014-0001	111014-0003
	Device Press - 7.5 x 7.5		103864-0132		
	Stencil - 60 - 10.0 x 11.5		N/R	N/R	104553-0437
	90 - 7.5 x 12.3 - 0.8 - Grypper	0.45	104670-0044	108493-0018	104670-0007
	Device Press - 8.0 x 12.0		103864-0038		
	Stencil - 90 - 8.0 x 12.0		N/R	N/R	104553-0034
LPDDR2					
 many other sizes available – contact Ironwood	134 - 11.0 x 11.5 - 0.65 - Grypper	0.40	106918-0015	106918-0014	106918-0012
	134 - 11.0 x 11.5 - 0.65 - Grypper	0.35	104946-0015	104946-0014	104946-0010
	Device Press - 11.0 x 11.5		103864-0061		
	Stencil - 134 - 11.0 x 11.5		N/R	N/R	104553-0196
	162 - 11.5 x 13.0 - 0.5 - G40	0.30	107250-0023	108387-0080	107248-0023
	Alignment Frame		108639-0003		
	Device Press - 11.5 x 13.0		103864-0128		
	Stencil - 134 - 11.5 x 13.0		N/R	N/R	104553-0206
	162 - 11.5 x 13.0 - 0.5 - G40 w/ built in Alignment Feature	0.30	109023-0002	109023-0001	109023-0003
	Device Press - 11.5 x 13.0		103864-0128		
	Stencil - 134 - 11.5 x 13.0		N/R	N/R	104553-0206
	162 - 8.0 x 10.5 - 0.5 - G40	0.30	109054-0002	109054-0001	109054-0003
	Alignment Frame		108639-0065		
	Device Press - 5.5 x 10.5		103864-0031		
	Stencil - 162 - 5.5 x 10.5		N/R	N/R	104553-0404
	162 - 5.5 x 10.5 - 0.5 - G40	0.30	107250-0071	108387-0024	107250-0024
	Alignment Frame		108639-0013		
	Device Press - 5.5 x 10.5		103864-0170		
	Stencil - 162 - 5.5 x 10.5		N/R	N/R	104553-0210

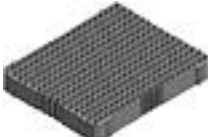
	Ball Count - Socket Size - Pitch - Product - Contact Type (G40, G80 or Standard Grypper)	Device Solder Ball Diameter +/- 0.05mm	SAC 305 Solder Balls *	Eutectic Solder Balls *	No Solder Balls
	216 - 12.0 x 12.0 - 0.4 (PoP relief) - G40	0.25	107140-0059	108388-0004	107022-0043
	216 - 12.0 x 12.0 - 0.4 - G40	0.25	107140-0018	108388-0018	107620-0004
	Alignment Frame		108639-0006		
	Device Press - 12.0 x 12.0		103864-0002		
	Stencil - 216 - 12.0 x 12.0		N/R	N/R	104553-0186
	240 - 14.0 x 14.0 - 0.5 (PoP relief) - G40	0.30	107250-0013	108387-0071	107022-0041
	Alignment Frame		108639-0002		
	Device Press - 14.0 x 14.0		103864-0004		
	Stencil - 240 - 14.0 x 14.0		N/R	N/R	107030-0041
LPDDR2-3					
	168 - 12.0 x 12.0 - 0.5	0.30	107250-0001	108387-0072	107248-0001
	168 - 12.0 x 12.0 - 0.5 (PoP relief) - G40	0.30	107250-0066	108387-0073	107022-0042
	Alignment Frame		108639-0006		
	Device Press - 12.0 x 12.0		103864-0002		
	Stencil - 168 - 12.0 x 12.0		N/R	N/R	107030-0042
	216 - 15.0 x 15.0 - 0.5 (PoP relief) - G40	0.30	107250-0067	108387-0065	107610-0007
	216 - 15.0 x 15.0 - 0.5 (PoP relief) - G40	0.35	107268-0010	108387-0074	107269-0010
	216 - 15.0 x 15.0 - 0.5 - G40	0.30			
	216 - 15.0 x 15.0 - 0.5 - G40	0.35			
	Alignment Frame		108639-0005		
	Device Press - 15.0 x 15.0		103864-0005		
	Stencil - 216 - 15.0 x 15.0		N/R	N/R	104553-0245
LPDDR3					
	178 - 11.0 x 11.5 - 0.65 x 0.8 - Grypper	0.30	104802-0008	104802-0009	104802-0006
	Device Press - 11.0 x 11.5		103864-0061		
	Stencil - 178 - 11.0 x 11.5		N/R	N/R	104553-0262
	178 - 11.5 x 13.0 - 0.65 x 0.8 - Grypper	0.40	107022-0050	107022-0049	107022-0047
	Device Press - 11.5 x 13.0		103864-0128		
	Stencil - 178 - 11.5 x 13.0		N/R	N/R	104553-0244
	178 – 11.0 x 11.5 - 0.65 x 0.8 - G40	0.25	107140-0035		107140-0037
	Alignment Frame		106083-0058		
	Device Press - 11.0 x 11.5		103864-0061		
	Stencil - 178 - 11.0 x 11.5		N/R	N/R	104553-0260
	178 - 11.5 x 13.0 - 0.65 x 0.8 - G40	0.30	107250-0039	108387-0075	107248-0039
	Alignment Frame		108639-0003		
	Device Press - 11.5 x 13.0		103864-0128		
	Stencil - 178 - 11.5 x 13.0		N/R	N/R	104553-0244

	Ball Count - Socket Size - Pitch - Product - Contact Type (G40, G80 or Standard Grypper)	Device Solder Ball Diameter +/- 0.05mm	SAC 305 Solder Balls*	Eutectic Solder Balls*	No Solder Balls
	178 - 11.0 x 11.5 - 0.65 x 0.8 - G40	0.30	109025-0002	109025-0001	109025-0003
	Alignment Frame		108639-0045		
	Device Press - 11.0 x 11.5		103864-0061		
	Stencil - 178 - 11.0 x 11.5		N/R	N/R	104553-0369
 Grypper design that allows use of an alignment frame	178 - 11.0 x 11.5 - 0.65 x 0.8 - Grypper	0.30	111006-0002	111006-0001	111006-0003
	Alignment Frame		108639-0052		
	Device Press - 11.0 x 11.5			103864-0061	
	Stencil - 178 - 11.0 x 11.5		N/R	N/R	104553-0262
	221 - 11.5x 13.0 - 0.5 - G40	0.30	107250-0064	108387-0076	107248-0061
	Alignment Frame		108639-0007		
	Device Press - 11.5 x 13.0		103864-0128		
	Stencil - 221 - 11.5 x 13.0		N/R	N/R	104553-0297
	221 - 11.5 x 13.0 - 0.5 - G40 w/built in Alignment Feature	0.30	107250-0063	108387-0077	108519-0063
	Device Press - 11.5 x 13.0		103864-0128		
	Stencil - 221 - 11.5 x 13.0		N/R	N/R	104553-0297
	221 - 10.0 x 12.0 - 0.5 - G40	0.30	109001-0002	109001-0001	109001-0003
	Alignment Frame		108639-0014		
	Device Press - 10.0 x 11.0		103864-0054		
	Stencil - 221 - 11.0 x 11.5		N/R	N/R	104553-0338
	253 - 12.5 x 12.5-0.5 - G40	0.30	107250-0068	108387-0078	107610-0010
	Alignment Frame		108639-0012		
	253 - 12.5 x 12.5-0.5 - G40 w/built in Alignment Feature	0.30	107250-0069	108387-0079	107610-0009
	Device Press - 12.5 x 12.5		103864-0144		
	Stencil - 253 - 12.5 x 12.5		N/R	N/R	104553-0243
	253 - 10.5 x 10.5-0.5 - G40	0.30	107250-0070	108387-0081	107610-0011
	Alignment Frame		108639-0011		
	Device Press - 10.5 x 10.5			103864-0073	
	Stencil - 253 - 10.5 x 10.5		N/R	N/R	104553-0313
	256 - 14.0 x 14.0 - 0.4 (PoP design w/relief) - G40	0.25	107140-0060	108388-0005	107620-0008
	256 - 14.0 x 14.0 - 0.4	0.25	107140-0061	108388-0006	107620-0012
	Alignment Frame		108639-0002		
	Device Press - 14.0 x 14.0		103864-0004		
	Stencil - 256 - 14.0 x 14.0		N/R	N/R	107030-0047

	Ball Count - Socket Size - Pitch - Product - Contact Type (G40, G80 or Standard Grypper)	Device Solder Ball Diameter +/- 0.05mm	SAC 305 Solder Balls *	Eutectic Solder Balls *	No Solder Balls
LPDDR4					
	272 - 15.0 x 15.0 - 0.4 - G40	0.25	109000-0002	109000-0001	109000-0003
	Alignment Frame		108639-0005		
	Device Press - 15.0 x 15.0		103864-0005		
	Stencil - 272 - 15.0 x 15.0		N/R	N/R	104553-0336
	366 - 15.0 x 15.0 - 0.5 - G40	0.30	109002-0002	109002-0001	109002-0003
	Alignment Frame		108639-0005		
	Device Press - 15.0 x 15.0		103864-0005		
	Stencil - 366 - 15.0 x 15.0		N/R	N/R	104553-0339
	366 - 12.0 x 12.7 - 0.4 - G40 (PoP)	0.25	109077-0002	109077-0001	109077-0003
	Alignment Frame		108639-0079		
	Device Press - 12.0 x 12.0		103864-0002		
	Stencil - 366 - 12.0 x 12.7		N/R	N/R	104553-0438
	200 - 10.0 x 15.0 - 0.65 x 0.80 - Grypper	0.30	GR1141-0002	GR1141-0001	GR1141-0003
	Alignment Frame- 10.0 x 15.0		108639-0048		
	Alignment Frame- 10.0 x 14.5		108639-0089		
	Device Press - 10.0 x 14.4		103864-0059		
	Stencil - 200 - 10.0 x 15.0		N/R	N/R	104553-0380
	200 - 10.0 x 15.0 - 0.65 x 0.80 - Grypper	0.35	111004-0002	111004-0001	111004-0003
	Alignment Frame- 10.0 x 15.0		108639-0048		
	Alignment Frame- 10.0 x 14.5		108639-0089		
	Device Press - 10.0 x 14.4		103864-0059		
	Stencil - 200 - 10.0 x 15.0		N/R	N/R	104553-0380
	200 - 10.0 x 15.0 - 0.65 x 0.80 - Grypper	0.40	111020-0002	111020-0001	111020-0003
	Alignment Frame- 10.0 x 15.0		108639-0048		
	Alignment Frame- 10.0 x 14.5		108639-0089		
	Device Press - 10.0 x 14.4		103864-0059		
	Stencil - 200 - 10.0 x 15.0		NR	N/R	104553-0380
	200 - 10.0 x 15.0 - 0.65 x 0.80 - Grypper	0.45	GR1002-0002	GR1002-0001	GR1002-0003
	Alignment Frame- 10.0 x 15.0		108639-0048		
	Alignment Frame- 10.0 x 14.5		108639-0089		
	Device Press - 10.0 x 14.4		103864-0059		
	Stencil - 200 - 10.0 x 15.0		NR	N/R	104553-0546

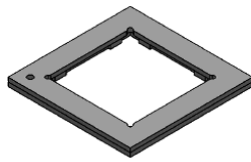
	Ball Count - Socket Size - Pitch - Product - Contact Type (G40, G80 or Standard Grypper)	Device Solder Ball Diameter +/- 0.05mm	SAC 305 Solder Balls *	Eutectic Solder Balls *	No Solder Balls
	432 -15.0 x 15.0 – 0.5 - G40	0.30	109072-0002	109072-0001	109072-0003
	Alignment Frame		108639-0005		
	Device Press - 15.0 x 15.0		103864-0005		
	Stencil - 432 - 15.0 x 15.0				104553-0435

	Ball Count - Socket Size - Pitch - Product - Contact Type (G40, G80 or Standard Grypper)	Device Solder Ball Diameter +/- 0.05mm	SAC 305 Solder Balls *	Eutectic Solder Balls *	No Solder Balls
	254 – 11.5 x 13.0 - 0.5 – G40	0.30	109081-0002	109081-0001	109081-0003
	Alignment Frame		108639-0003		
	Device Press – 11.5 x 13.0		103864-0128		
	Stencil - 254 - 11.5 x 13.0		N/R	N/R	104553-0424
	254 - 11.5 x 13.0 - 0.5 – G40	0.35	109064-0002	109064-0001	109064-0003
	Alignment Frame		108639-0003		
	Device Press - 11.5 x 13.0		103864-0128		
	Stencil - 254 - 11.5 x 13.0		NR	N/R	104553-0424
	149 - 8.0 x 9.5 -0.50 - G40	0.30	109124-0002	109124-0001	109124-0003
	Alignment Frame		108369-0127		
	Device Press – 8.0 x 9.0		103864-0074		
	Stencil - 149 – 8.0 x 9.5		NR	N/R	104553-0522
	LPDDR4X				
	376 – 14.0 x 14.0 - 0.4 – G40 (PoP)	0.25	109071-0002	109071-0001	109071-0003
	Alignment Frame		108639-0075		
	Device Press – 14.0 x 14.0		103864-0004		
	Stencil - 376 – 14.0 x 14.0		NR	N/R	104553-0432
 	556 – 12.4 x 12.4 - 0.4 – G40 (PoP)	0.25	109093-0002	109093-0001	109093-0003
	Alignment Frame		108639-0093		
	Device Press – 12.0 x 12.0		103864-0002		
	Stencil - 556 – 12.4 x 12.4		NR	N/R	104553-0470
	556 -12.4 x 12.4 -0.40 – G40 (PoP) LIF	0.25	109116-0002	109116-0001	109116-0003
	Alignment Frame		108639-0093		
	Device Press – 12.0 x 12.0		103864-0002		
	Stencil - 556 – 12.4 x 12.4		NR	N/R	104553-0470
LPDDR5					
	496 -12.4 x 14.0 -0.40 – G40	0.25	109111-0002	109111-0001	109111-0003
	Alignment Frame		108639-0119		
	Device Press – 14.0 x 12.0		103864-0066		
	Stencil - 496 – 12.4 x 14.0		NR	N/R	104553-0508
	496 -12.4 x 14.0 -0.40 – G40 -PoP	0.25	GR1074-0002	GR1074-0001	GR1074-0003
	Alignment Frame		108639-0119		
	Device Press – 14.0 x 12.0		103864-0066		
	Stencil - 496 – 12.4 x 14.0		NR	N/R	104553-0508

	Ball Count - Socket Size - Pitch - Product - Contact Type (G40, G80 or Standard Grypper)	Device Solder Ball Diameter +/- 0.05mm	SAC 305 Solder Balls *	Eutectic Solder Balls *	No Solder Balls
	436-14.0 x 14.0 -0.40 – G40	0.25	109133-0002	109133-0001	109133-0003
	Alignment Frame		108639-0138		
	Device Press – 14.0 x 14.0		103864-0004		
	Stencil - 436 – 14.0 x 14.0		NR	N/R	104553-0535
	441-14.0 x 14.0 -0.65 – G40	0.30	109086-0002	109086-0001	109086-0003
	Alignment Frame		108639-0002		
	Device Press – 14.0 x 14.0		103864-0004		
	Stencil - 441 – 14.0 x 14.0		N/R	N/R	104553-0446
	441-14.0 x 14.0 -0.65 LIF – G40	0.32	109084-0002	109084-0001	109084-0003
	Alignment Frame		108639-0002		
	Device Press – 14.0 x 43.0		103864-0004		
	Stencil - 441 – 14.0 x 14.0		N/R	N/R	104553-0446
	441-14.0 x 14.0 -0.65, G80LIF	0.435	GR1030-0002	GR1030-0001	GR1030-0003
	Alignment Frame		108639-0002		
	Device Press – 14.0 x 43.0		103864-0004		
	Stencil - 441 – 14.0 x 14.0		N/R	N/R	104553-0558
	297-11.5 x 13.0 -0.50 – G40	0.30	GR1014-0002	GR1014-0001	GR1014-0003
	Alignment Frame		108639-0003		
	Device Press – 11.5 x 13.0		103864-0128		
	Stencil - 297 – 11.5 x 13.0		NR	N/R	104553-0549
	297-11.5 x 13.0 -0.50 – 0.35 solder ball	0.35	GR1121-0002	GR1121-0001	GR1121-0003
	Alignment Frame		108639-0003		
	Device Press – 11.5 x 13.0		103864-0128		
	Stencil - 297 – 11.5 x 13.0		NR	N/R	104553-0549
	315-12.4 x 15.0 -0.80 x 0.70 - Grypper	0.45	GR1032-0002	GR1032-0001	GR1032-0003
	Alignment Frame		108639-0154		
	Device Press – 10 x 15.0		103864-0025		
	Stencil - 315 – 12.4 x 15.0		NR	N/R	104553-0554

**G40 Contact****G80 Contact****Standard Grypper Contact**

* Standard Grypper and G80 Product typically do not have solder balls - stencil used for attachment
Solder balling is an available option



Alignment Frame: Used to ensure proper alignment of the device into the test socket to prevent excessive solder ball damage and socket damage



Device Press: Recommended to ensure even pressure across the back of the device



Extraction Tool: 105900-0004 - used to remove device from socket

Actual device measurements should be reviewed to ensure proper fit with socket contacts

Other configurations / socket outline sizes available upon request

Reference LPDDR JEDEC Specifications; JEDEC 209 for LPDDR1, JEDEC 209-2F for LPDDR2, JEDEC 209-3B for LPDDR3 and JEDEC 209-4A for LPDDR4, which list standard device pin configurations.