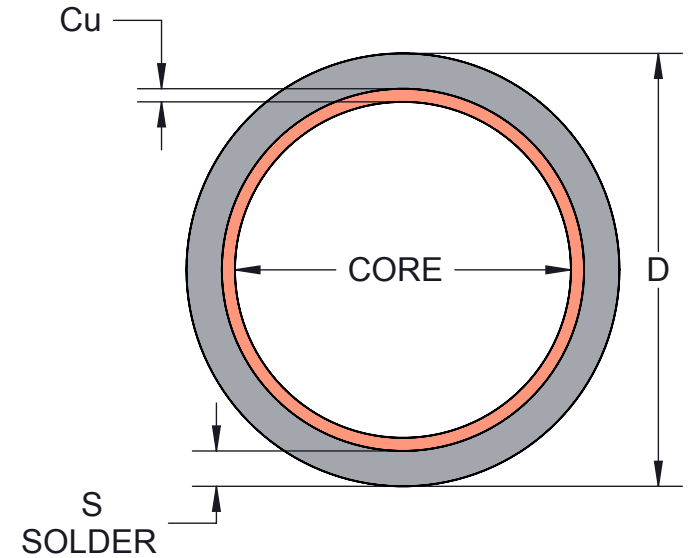


NN2-SOL ELASTOMER CORE SOLDERBALL

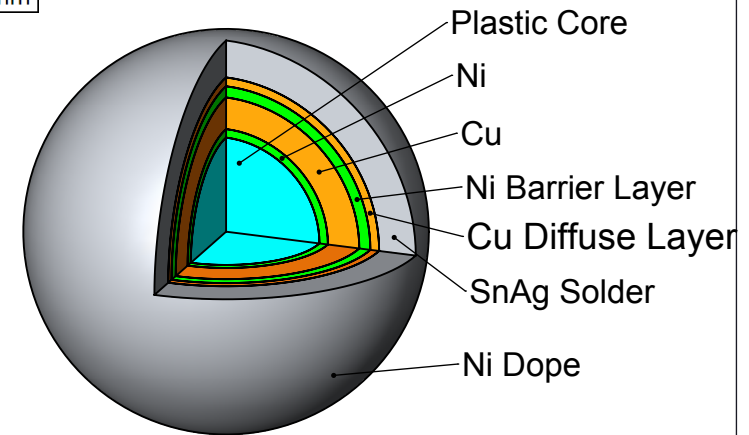
Package	PART NUMBER	Dimension = μm (Nominal)				SOLDER LAYER Composition Sn / Ag / Cu	Rework without solder paste	BGA Pitch
		Diameter "D"	Core	Cu	Solder "S"			
Jar	NN2-SOL80-3C7SA	80	60	3	7	Sn96.5/Ag3.5 + Cu	-	0.15mm
Jar	NN2-SOL90-3C7SA	90	60	2	13	Sn96.5/Ag3.5 + Cu	-	0.15mm
Jar	NN2-SOL110-5C10SA	110	80	5	10	Sn96.5/Ag3.5 + Cu	-	0.20mm
Jar	NN2-SOL200-5C20SA	200	150	5	20	Sn96.5/Ag3.5 + Cu	-	0.30mm
Jar	NN2-SOL200-5C30SA	200	130	5	20	Sn96.5/Ag3.5 + Cu	Yes	0.30mm
Jar	NN2-SOL200-5C30SAL	200	130	5	20	Sn98.8/Ag1.2 + Cu	Yes	0.30mm
Jar	NN2-SOL250-10C40SA	250	150	10	40	Sn96.5/Ag3.5 + Cu	Yes	0.40mm
Jar	NN2-SOL262-7C25SA	262	198	7	25	Sn96.5/Ag3.5 + Cu	-	0.40mm
Jar	NN2-SOL262-7C34SA	262	180	7	34	Sn96.5/Ag3.5 + Cu	Yes	0.40mm
Jar	NN2-SOL262-7C34SAL	262	180	7	34	Sn98.8/Ag1.2 + Cu	Yes	0.40mm
Jar	NN2-SOL310-10C40SA	310	210	10	40	Sn96.5/Ag3.5 + Cu	Yes	0.50mm
Jar	NN2-SOL330-10C40SA	330	230	10	40	Sn96.5/Ag3.5 + Cu	Yes	0.50mm
Jar	NN2-SOL350-10C33SA	350	264	10	33	Sn96.5/Ag3.5 + Cu	-	0.65mm
Jar	NN2-SOL410-10C40SA	410	310	10	40	Sn96.5/Ag3.5 + Cu	-	0.65mm
Jar	NN2-SOL500-15C35SA	500	400	15	35	Sn96.5/Ag3.5 + Cu	-	0.8mm
Jar	NN2-SOL670-20C40SAH	670	550	20	40	Sn95/Ag5 + Cu	-	1.0mm
Jar	NN2-SOL910-20C40SAH	910	850	20	40	Sn95/Ag5.0 + Cu	-	1.27mm
T&R	NN2-SOL910E20C40SAH	910	850	20	40	Sn95/Ag5.0 + Cu	-	1.27mm



TEMPERATURE:
 STORAGE: -40 °C to +125 °C
 OPERATING: -40 °C to +125 °C
 PEAK REFLOW: + 250 °C @ 5 Seconds

- BENEFITS:**
- 1) NON COLLAPSE DURING REFLOW.
 - 2) MAINTAINS SPHERICAL SHAPE DURING LEAD-FREE REFLOW TEMPERATURE.
 - 3) OPERATING FREQUENCY RANGE (MHz) RANGE IS DIMENSIONALLY CONSTANT.
 - 4) MULTIPLE REFLOW CYCLES 5X.

- APPLICATIONS:**
- 1) CSP PACKAGE ON PACKAGE (PoP).
 - 2) SOLDERABLE STAND-OFF ON MODULES.
 - 3) SUBSTRATES: BT, FR4, GLASS, CERAMIC, ETC.



APPROVALS	DATE	TopLine®			
DRAWN T. Au	10/25/13	TITLE NN2-SOL SOLDERBALL ELASTOMER CORE			
ENG M. Hart	10/25/13				
MFG		SCALE	SIZE	DRAWING NO.	REV
QA		35:1	A	730000	A
CUST		DO NOT SCALE DRAWING			SHEET 1 OF 7
REVISED					

ASSEMBLY PROCESS NOTES

Ball Diameter "D"	PART NUMBER	Tack Flux or Solder Paste		Reflow Oven		Maximum Reflow Cycles	Rework without Solder Paste	Ball Packing
		BGA Balling	Assembly to PCB	BGA Balling	Assembly to PCB			
80	NN2-SOL80-3C7SA	Flux	Paste	N ₂	Air or N ₂	3	-	Jar
90	NN2-SOL90-3C7SA	Flux	Flux or Paste	N ₂	Air or N ₂	3	-	Jar
110	NN2-SOL110-5C10SA	Flux	Paste	N ₂	Air or N ₂	3	-	Jar
200	NN2-SOL200-5C20SA	Flux	Paste	N ₂	Air or N ₂	3	-	Jar
200	NN2-SOL200-5C30SA	Flux	Flux or Paste	N ₂	Air or N ₂	3	Yes	Jar
200	NN2-SOL200-5C30SAL	Flux	Flux or Paste	N ₂	Air or N ₂	3	Yes	Jar
250	NN2-SOL250-10C40SA	Flux	Flux or Paste	N ₂	Air or N ₂	3	Yes	Jar
262	NN2-SOL262-7C25SA	Flux	Paste	N ₂	Air or N ₂	3	-	Jar
262	NN2-SOL262-7C34SA	Flux	Flux or Paste	N ₂	Air or N ₂	3	Yes	Jar
262	NN2-SOL262-7C34SAL	Flux	Flux or Paste	N ₂	Air or N ₂	3	Yes	Jar
310	NN2-SOL310-10C40SA	Flux	Flux or Paste	N ₂	Air or N ₂	3	Yes	Jar
330	NN2-SOL330-10C40SA	Flux	Flux or Paste	N ₂	Air or N ₂	3	Yes	Jar
350	NN2-SOL350-10C33SA	Flux	Paste	N ₂	Air or N ₂	3	-	Jar
410	NN2-SOL410-10C40SA	Flux	Paste	N ₂	Air or N ₂	3	-	Jar
500	NN2-SOL500-15C35SA	Paste	Paste	N ₂	Air or N ₂	3	-	Jar
670	NN2-SOL670-20C40SAH	Paste	Paste	N ₂	Air or N ₂	3	-	Jar
910	NN2-SOL910-20C40SAH	Paste	Paste	N ₂	Air or N ₂	3	-	Jar
910	NN2-SOL910E20C40SAH	Paste	Paste	N ₂	Air or N ₂	3	-	Reel

Notes:

1. N₂ = Nitrogen Gas is recommended during reflow to minimize oxidation.
2. For best results peak reflow temperature must exceed 250°C.

TopLine[®]

TITLE NN2-SOL SOLDERBALL
ELASTOMER CORE

SCALE NONE	SIZE A	DRAWING NO. 730000	REV A
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DO NOT SCALE DRAWING

SHEET 2 OF 7

BGA AND PCB DESIGN GUIDELINES

Ball Pad Diameter "D"	BGA (Module)							PCB (Board/Card)				
	Solder Mask Opening "C" Diameter		Paste or Flux Stencil "A" Round Aperture			Ball Drop Stencil "B" Square Aperture		Solder Mask Opening "E" Diameter		Solder Paste Stencil "F" Round Aperture		
	um	Mils	Min µm	Max µm	Foil Thick µm	µm	Foil Thick mil	µm	mil	µm	mil	Foil Thickness
80	68	2.7	55	61	50	100	1	90	3.5	80	3.1	60 ~ 80
90	76	3.0	60	68	50	117	1.2	100	4	90	3.5	50 ~ 60
110	94	3.7	75	85	50	140	1.5	125	5	110	4.3	60 ~ 80
200	170	6.7	136	153	50 ~ 60	240	3	230	9	200	7.8	60 ~ 80
200	170	6.7	136	153	50 ~ 60	240	3	230	9	200	7.8	60 ~ 80
200	170	6.7	136	153	50 ~ 60	240	3	230	9	200	7.8	60 ~ 80
250	210	8.3	168	189	60 ~ 80	290	3.5	280	11	250	9.8	80 ~ 90
262	220	8.7	176	198	60 ~ 80	305	3.5	305	12	262	10.3	80 ~ 90
262	220	8.7	176	198	60 ~ 80	305	4	305	12	262	10.3	80 ~ 90
262	220	8.7	176	198	60 ~ 80	305	4	305	12	262	10.3	80 ~ 90
310	254	10	200	230	80 ~ 100	356	4	360	14.2	310	12.2	80 ~ 100
330	280	11	224	252	80 ~ 100	380	5	380	15	330	13	80 ~ 100
350	300	12	240	270	80 ~ 100	400	5	405	16	350	13.7	100 ~ 120
410	350	14	280	315	80 ~ 100	457	6	482	19	410	16	100 ~ 120
500	400	16	320	360	120 ~ 150	550	7	585	23	500	19.6	120 ~ 150
670	540	21	432	486	120 ~ 150	725	10	760	30	670	26.3	150 ~ 180
910	736	29	590	660	180 ~ 200	965	12	1020	40	910	35.8	200
910	736	29	590	660	180 ~ 200	965	12	1020	40	910	35.8	200

Notes:

1. Dimensions are presented only as a guideline. Actual results will vary.
2. Designers should use their own experience when designing substrates, boards and stencils.
3. Dimension "C" BGA/Module Pad is SMD (Solder Mask Defined).
4. PCB Board/Card Pad is NSMD (Non-Solder Mask Defined).

TopLine®

TITLE NN2-SOL SOLDERBALL
ELASTOMER CORE

SCALE NONE	SIZE A	DRAWING NO. 730000	REV A
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SHEET 3 OF 7

ELECTRICAL RATING

DWG NBR	PARTNBR	Electrical Rating	
		Milli Ohm	Maximum CURRENT (A)
730003	NN2-SOL-80-3C7SA	<1.5	<1.0A
730090	NN2-SOL-90-2C13SA	<1.5	<1.0A
730004	NN2-SOL-110-5C10SA	<1.0	<1.5A
730008	NN2-SOL-200-5C20SA	<0.8	<2.0A
731008	NN2-SOL-200-5C30SA	<0.8	<2.0A
730010	NN2-SOL-250-10C40SA	<0.5	<2.0A
730011	NN2-SOL-262-7C25SA	<0.5	<2.0A
731012	NN2-SOL-310-10C40SA	<0.5	<2.0A
730012	NN2-SOL-311-8C30SA	<0.5	<2.0A
730014	NN2-SOL-350-10C33SA	<0.4	<2.0A
730016	NN2-SOL-410-10C40SA	<0.4	<2.0A
730020	NN2-SOL-500-15C35SA	<0.3	<2.0A
730026	NN2-SOL-650-20C30SA	<0.3	<2.0A
733036	NN2-SOL910-20C40SAH	<0.3	<2.0A

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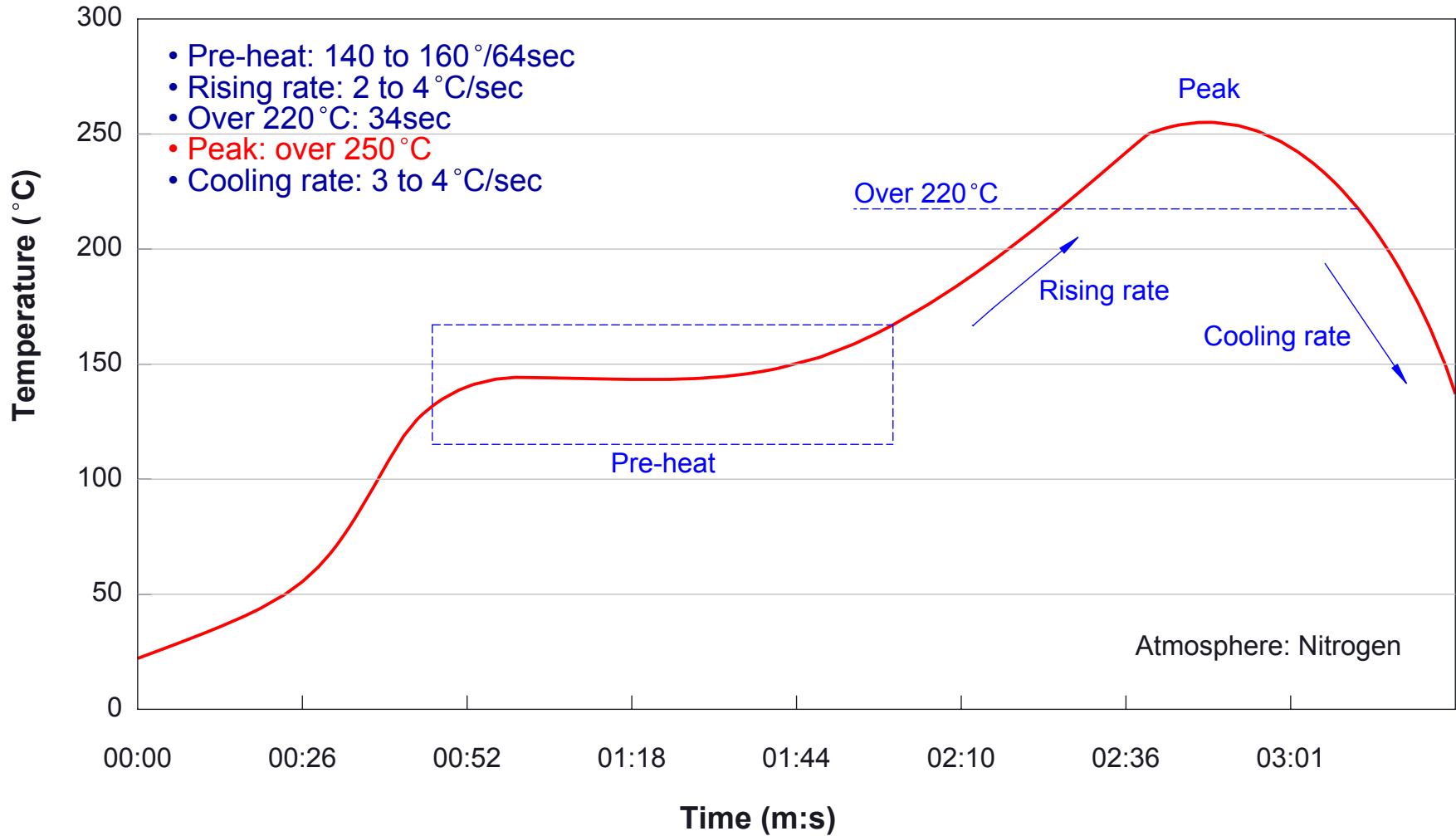
TITLE NN2-SOL SOLDERBALL
ELASTOMER CORE

SCALE NONE	SIZE A	DRAWING NO. 730000	REV A
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DO NOT SCALE DRAWING

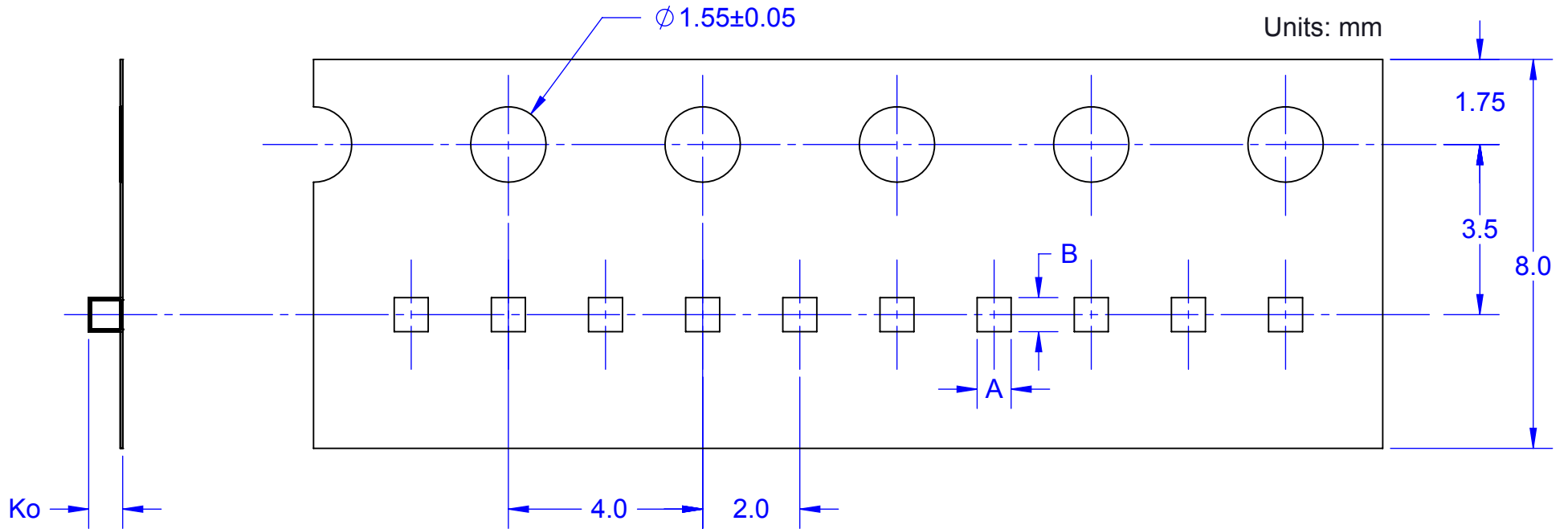
SHEET 4 OF 7

RECOMMENDED REFLOW PROFILE



TopLine®			
TITLE NN2-SOL SOLDERBALL ELASTOMER CORE			
SCALE NONE	SIZE A	DRAWING NO. 730000	REV A
DO NOT SCALE DRAWING			SHEET 5 OF 7

TAPE AND REEL
BALL DIAMETER 500 ~ 650 μ m

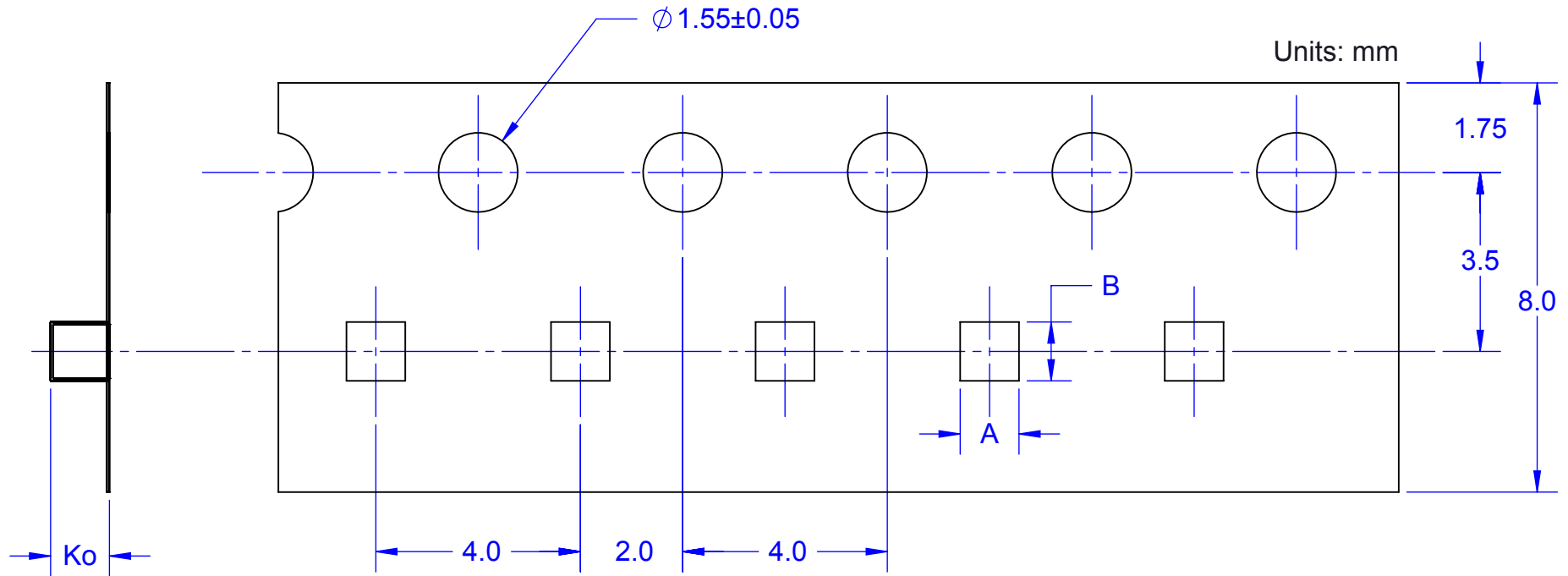


SIZE			
Ball size (μ m)	A (mm)	B (mm)	Ko (mm)
500	0.55	0.55	0.55
650	0.7	0.7	0.7

QUANTITY		
Ball size (μ m)	Spec. reel (mm)	
	ϕ 180	ϕ 330
500	10,000	40,000
650	8,000	35,000

TopLine®			
TITLE NN2-SOL SOLDERBALL ELASTOMER CORE			
SCALE 8:1	SIZE A	DRAWING NO. 730000	REV A
DO NOT SCALE DRAWING			SHEET 6 OF 7

**TAPE AND REEL
BALL DIAMETER 910 ~ 1100 μ m**



SIZE			
Ball size (μ m)	A (mm)	B (mm)	Ko (mm)
910	0.96	0.96	0.96
1000	1.05	1.05	1.05
1100	1.15	1.15	1.15

QUANTITY		
Ball size (μ m)	Spec. reel (mm)	
	ϕ 180	ϕ 330
910	3,000	10,000
1000	3,000	10,000
1100	3,000	10,000

TopLine®			
TITLE NN2-SOL SOLDERBALL ELASTOMER CORE			
SCALE 8:1	SIZE A	DRAWING NO. 730000	REV A
DO NOT SCALE DRAWING			SHEET 7 OF 7