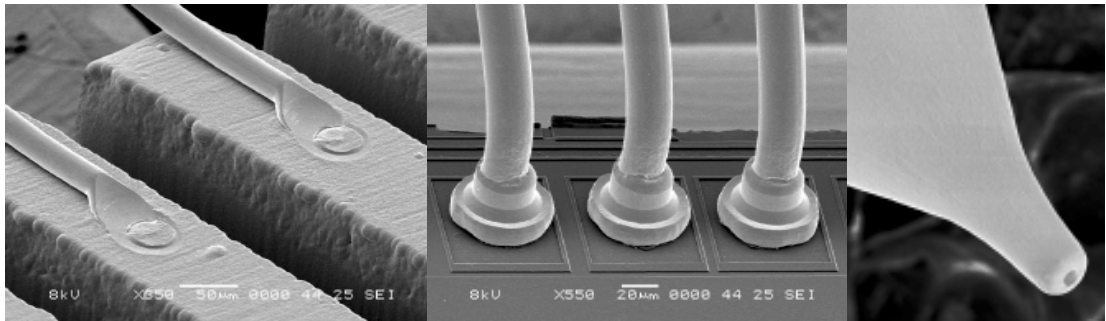


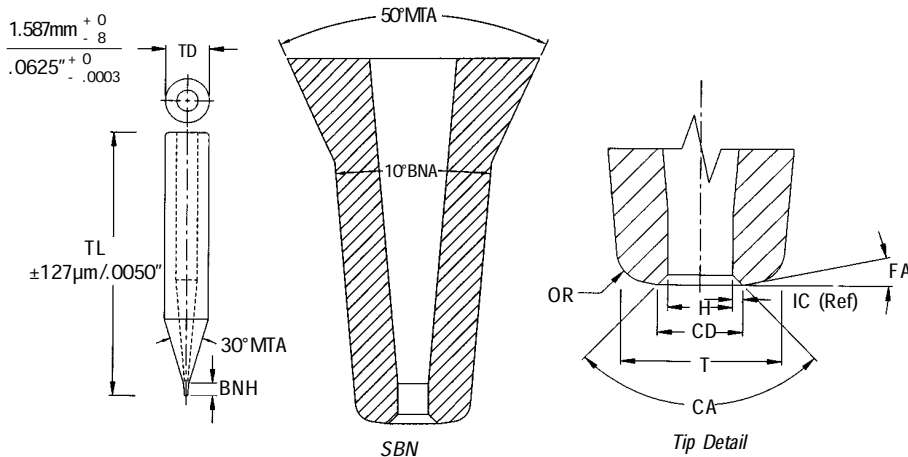
## FINE PITCH: SBN SERIES



70µm BPP using 25µm wire

The Molded Slimline Bottle capillaries (SBN) series is intended for fine pitch application for Bond Pad Pitch (BPP) 125µm up to as fine as 70µm. The results of various product qualifications have demonstrated the optimum face angle selection for most fine pitch bonding is the “E” or 11°face. When the “T” is larger than 150µm, then the “S” or 8°face angle is popular choice. The “Z” or 0°face angle has found value for some specialized metallization. It also comes with a standard 30°main taper angle (MTA) with an option of 50°MTA- for wire bonder with higher frequency ( $\geq 100\text{KHz}$ ) transducer. For BPP > 90µm, the standard material is typically high density ceramic material.

The integration of the new AZ composite material into Slimline Bottleneck (SBN) capillary has set a new milestone in the micro-packaging technology for application of ultra-fine pitch bonding. The higher strength SBN-AZ configuration is offered with  $T \leq 110\mu\text{m}$ . Actual bonding results have demonstrated the versatility of this new AZ composite material for both leaded and substrate packaging platforms. The recommended capillary part numbers are listed in the Selection Guide.



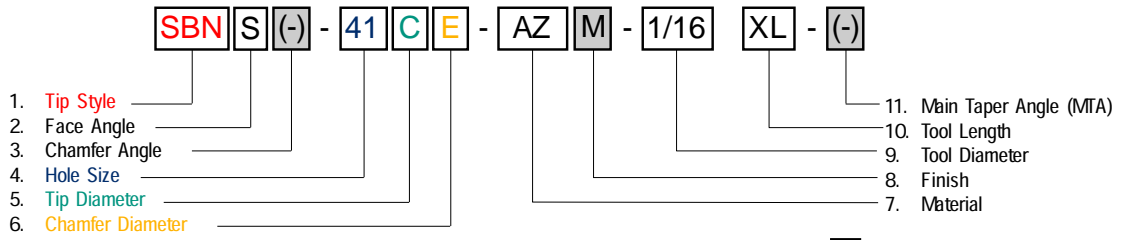
Material + Finish	Tool Diameter (TD)	Tool Length (TL)
<b>C</b> = High density, Fine Grain Ceramic "Polish"	<b>1/16</b> = 1.587 mm / .0625"	<b>L</b> = 9.53 mm / .375"
<b>CM</b> = High density, Fine Grain Ceramic "Matte"		<b>XL</b> = 11.10 mm / .437"
<b>AZ</b> = Zirconia Composite Material "Polish"		<b>XXL</b> = 12.00 mm / .470"
<b>AZM</b> = Zirconia Composite Material "Matte"		<b>16mm</b> = .630"
		<b>19mm</b> = .750"

### How To Order

SPECIFY: **Tip Style - Material+Finish - Tool Diameter - Tool Length**  
(Specify any special modifications required such as Main Taper Angle, MTA)

EXAMPLE: SBNE - 33AR - AZM - 1/16 XL

## FINE PITCH SERIES (SBN) - HOW TO ORDER



**Note :** (-) Specify if non-standard

1. **Tip Style :** SBN - Fine Pitch with 10 deg Slimline Bottleneck (for  $T \leq 165 \mu\text{m}$ )
2. **Face Angle :** Z - 0°    F - 4°    S - 8°    E - 11°
3. **Chamfer Angle :** Standard - 90° (no need to specify)

#### 4. Hole Size

25 $\mu\text{m}$ (.0010")
28 $\mu\text{m}$ (.0011")
30 $\mu\text{m}$ (.0012")
33 $\mu\text{m}$ (.0013")
35 $\mu\text{m}$ (.0014")
38 $\mu\text{m}$ (.0015")
41 $\mu\text{m}$ (.0016")
43 $\mu\text{m}$ (.0017")
46 $\mu\text{m}$ (.0018")

#### 5. Tip Diameter

W = 70 $\mu\text{m}$ (.0028")
Y = 75 $\mu\text{m}$ (.0030")
Z = 80 $\mu\text{m}$ (.0032")
A = 90 $\mu\text{m}$ (.0035")
B = 100 $\mu\text{m}$ (.0039")
C = 110 $\mu\text{m}$ (.0043")
D = 120 $\mu\text{m}$ (.0047")
E = 130 $\mu\text{m}$ (.0051")
F = 140 $\mu\text{m}$ (.0055")
G = 150 $\mu\text{m}$ (.0059")
H = 165 $\mu\text{m}$ (.0065")

#### 6. Chamfer Diameter

A = 35 $\mu\text{m}$ (.0014")
B = 41 $\mu\text{m}$ (.0016")
C = 46 $\mu\text{m}$ (.0018")
D = 51 $\mu\text{m}$ (.0020")
E = 58 $\mu\text{m}$ (.0023")
F = 64 $\mu\text{m}$ (.0025")
G = 68 $\mu\text{m}$ (.0027")
H = 74 $\mu\text{m}$ (.0029")
I = 78 $\mu\text{m}$ (.0031")
J = 86 $\mu\text{m}$ (.0034")
K = 92 $\mu\text{m}$ (.0036")
L = 100 $\mu\text{m}$ (.0039")
M = 114 $\mu\text{m}$ (.0045")
N = 127 $\mu\text{m}$ (.0050")
P = 53 $\mu\text{m}$ (.0021")
Q = 38 $\mu\text{m}$ (.0015")
R = 43 $\mu\text{m}$ (.0017")
S = 48 $\mu\text{m}$ (.0019")

7. **Material :** AZ = Zirconia Composite (For SBN only,  $T \leq 110\mu\text{m}$ )  
C = High Density Fine Grain Ceramic 99.99%  $\text{Al}_2\text{O}_3$
8. **Finish :** Polish - No need to specify  
Matte (M) - Must be specified
9. **Tool Diameter :** Standard - 1.587mm (.0625")
10. **Tool Length :** L = 9.53 mm (.375")    16mm = .630"  
XL = 11.10 mm (.437")    19mm = .750"  
XXL = 12.0 mm (.470")
11. **Main Taper Angle (MTA)**  
SBN Series - Standard 10 deg BNA with 30°MTA (Specify MTA if different than above)

Bond Pad Pitch BPP μm / in	Useable Wire Diameter μm / in	Min. Mashed Ball Diameter MBD μm / in	Tip Style			Hole Diameter H μm / in	Inside Chamfer IC μm / in	Chamfer Diameter CD μm / in	Outside Radius OR μm / in	Bottleneck Height BNH μm / in	Tip Diameter T μm / in
			SBNF 4° Face Angle	SBNS 8° Face Angle	SBNE 11° Face Angle						
70 / .0028	23 / .0009	46 / .0018	SBNF-30AB	SBNS-30AB	SBNE-30AB	30 / .0012	5 / .0002	41 / .0016	12 / .0005	250 / .0098	90 / .0035
70 / .0028	25 / .0010	48 / .0019	SBNF-33AR	SBNS-33AR	SBNE-33AR	33 / .0013	5 / .0002	43 / .0017	12 / .0005	250 / .0098	90 / .0035
70 / .0028	25 / .0010	51 / .0020	SBNF-33AC	SBNS-33AC	SBNE-33AC	33 / .0013	8 / .0003	46 / .0018	12 / .0005	250 / .0098	90 / .0035
70 / .0028	30 / .0012	53 / .0021	SBNF-38AS	SBNS-38AS	SBNE-38AS	38 / .0015	5 / .0002	48 / .0019	12 / .0005	250 / .0098	90 / .0035
80 / .0031	25 / .0010	53 / .0021	SBNF-33BC	SBNS-33BC	SBNE-33BC	33 / .0013	8 / .0003	46 / .0018	12 / .0005	275 / .0108	100 / .0039
80 / .0031	25 / .0010	48 / .0019	SBNF-33BR	SBNS-33BR	SBNE-33BR	33 / .0013	5 / .0002	43 / .0017	12 / .0005	275 / .0108	100 / .0039
80 / .0031	25 / .0010	51 / .0020	SBNF-35BC	SBNS-35BC	SBNE-35BC	35 / .0014	5 / .0002	46 / .0018	12 / .0005	275 / .0108	100 / .0039
80 / .0031	30 / .0012	56 / .0022	SBNF-38BD	SBNS-38BD	SBNE-38BD	38 / .0015	5 / .0002	51 / .0020	12 / .0005	275 / .0108	100 / .0039
80 / .0031	33 / .0013	58 / .0023	SBNF-41BP	SBNS-41BP	SBNE-41BP	41 / .0016	5 / .0002	53 / .0021	12 / .0005	275 / .0108	100 / .0039
90 / .0035	25 / .0010	59 / .0023	SBNF-33CD	SBNS-33CD	SBNE-33CD	33 / .0013	10 / .0004	51 / .0020	20 / .0008	275 / .0108	110 / .0043
90 / .0035	25 / .0010	61 / .0024	SBNF-33CP	SBNS-33CP	SBNE-33CP	33 / .0013	10 / .0004	53 / .0021	20 / .0008	275 / .0108	110 / .0043
90 / .0035	25 / .0010	61 / .0024	SBNF-35CP	SBNS-35CP	SBNE-35CP	35 / .0014	10 / .0004	53 / .0021	20 / .0008	275 / .0108	110 / .0043
90 / .0035	30 / .0012	61 / .0024	SBNF-38CP	SBNS-38CP	SBNE-38CP	38 / .0015	8 / .0003	53 / .0021	20 / .0008	275 / .0108	110 / .0043
90 / .0035	33 / .0013	66 / .0026	SBNF-41CE	SBNS-41CE	SBNE-41CE	41 / .0016	10 / .0004	58 / .0023	20 / .0008	275 / .0108	110 / .0043
100 / .0039	25 / .0010	59 / .0023	SBNF-35ED	SBNS-35ED	SBNE-35ED	35 / .0014	8 / .0003	51 / .0020	30 / .0012	275 / .0108	130 / .0051
100 / .0039	30 / .0012	59 / .0023	SBNF-38ED	SBNS-38ED	SBNE-38ED	38 / .0015	5 / .0002	51 / .0020	30 / .0012	275 / .0108	130 / .0051
100 / .0039	33 / .0013	66 / .0026	SBNF-41EE	SBNS-41EE	SBNE-41EE	41 / .0016	10 / .0004	58 / .0023	30 / .0012	275 / .0108	130 / .0051
100 / .0039	33 / .0013	72 / .0028	SBNF-41EF	SBNS-41EF	SBNE-41EF	41 / .0016	12 / .0005	64 / .0025	30 / .0012	275 / .0108	130 / .0051
115 / .0045	25 / .0010	68 / .0027	SBNF-35GE	SBNS-35GE	SBNE-35GE	35 / .0014	12 / .0005	58 / .0023	30 / .0012	275 / .0108	150 / .0059
115 / .0045	30 / .0012	74 / .0029	SBNF-41GF	SBNS-41GF	SBNE-41GF	41 / .0016	12 / .0005	64 / .0025	30 / .0012	275 / .0108	150 / .0059
115 / .0045	33 / .0013	78 / .0031	SBNF-46GG	SBNS-46GG	SBNE-46GG	46 / .0018	10 / .0004	68 / .0027	30 / .0012	275 / .0108	150 / .0059
125 / .0049	25 / .0010	68 / .0027	SBNF-35HE	SBNS-35HE	SBNE-35HE	35 / .0014	12 / .0005	58 / .0023	38 / .0015	275 / .0108	165 / .0065
125 / .0049	30 / .0012	78 / .0031	SBNF-41HG	SBNS-41HG	SBNE-41HG	41 / .0016	15 / .0006	68 / .0027	38 / .0015	275 / .0108	165 / .0065
125 / .0049	33 / .0013	84 / .0033	SBNF-46HH	SBNS-46HH	SBNE-46HH	46 / .0018	15 / .0006	74 / .0029	38 / .0015	275 / .0108	165 / .0065

Dimensional Features	BPP > 90μm	BPP ≤ 90μm BPP > 70μm	BPP ≤ 70μm
Tip Diameter (T)	T > 110μm	T ≤ 110μm T > 90μm	T ≤ 90μm
Hole Diameter (H)	+2/-1μm	+2/-1μm	± 1μm
Chamfer Diameter (CD)			
CD ≤ 46μm	± 2μm	± 2μm	+2/-1μm
64μm ≥ CD > 46μm	± 3μm	± 2μm	+2/-1μm
CD > 64μm	± 4μm	NA	NA
Outside Radius (OR)	± 5μm	± 5μm	± 3μm
Tip Diameter (T)	± 5μm	± 5μm	± 3μm

Note:

1. Standard Main Taper Angle (MTA) is 30° for AZ and C materials.
2. Standard Bottleneck Angle (BNA) is 10°.
3. Standard Finishing is polished. Matte finish option is also available for AZ and / or C materials.
4. Recommended Face Angle is 11° for both Substrate and Leaded package application.
5. For 'T' > 165μm, standard UTF/UTS/UTE tolerances will be applied.