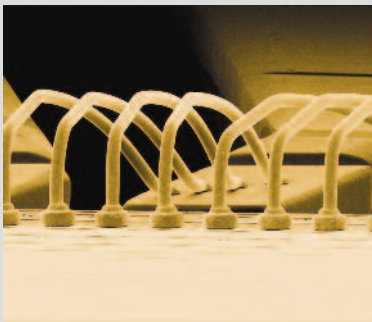


AW-23

Gold Bonding Wire for Power, COB & Hybrid Applications



AW-23 Benefits

- Versatility – caters for both high and short loop
- Top of the range in electrical and thermal performance
- Delivers superior reliability even at high temperatures, thereby making it excellent for high reliability applications
- Suitable for use across all range of ball bonders
- Suitable for soft substrate metallization – electroplated and screen printed thick film
- Compatible ball hardness for all types of Al based metallization
- Gives consistent and reliable pull and shear strength
- Permits easy control of loop profile for high loop application

Application Data*

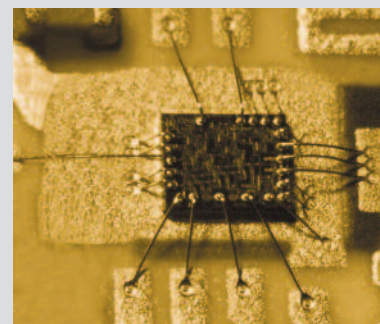
First bond results on optimum setting

	Ball Diameter (μm)	Squash Height (μm)	Shear Force (g)	Shear Strength (g/mil)
Mean	75.6	21.1	49.4	7.10
Std Dev	0.8	1.1	1.7	0.2
Min	74.0	19.0	46.7	6.67
Max	77.5	22.0	52.7	7.70

*Results may vary with package and die configuration, as well as bond process.

AW-23 (99.99% pure) is engineered specifically for power devices that typically has diameters greater than 30 μm (1.2 mils). It is an excellent choice for automotive and power

applications such as Chip-On-Board (COB), Hybrid and thick film devices. This wire delivers high thermal stability and has excellent carrying capability and heat dissipation.



Bonding Conditions: Wire diameter: 30 μm (1.2 mils)
Wire bonder: K&S 8020 · Package type: COB
Die metallization: AlSi (1%) Cu (0.5%) · Wire span:
2 – 2.5 mm · Loop height range: 200 – 250 μm
Bonding temperature: 170°C · Capillary: MS 414FA-
0313-R33 L=5.5 mil, FA 8°

AW-23 Mechanical Properties

Diameter	Microns	25	28	30	32	33	35	38	50
	Mils	1.0	1.1	1.2	1.25	1.3	1.4	1.5	2.0
Recommended Specs for Ball Bonding									
Elongation (%)		2 – 6	2 – 6	2 – 7	2 – 7	2 – 7	2 – 7	2 – 7	4 – 12
Breaking Load (g)		6 – 11	8 – 13	9 – 15	11 – 17	13 – 19	14 – 22	18 – 25	28 – 45
Typical Breaking Load (g)									
Room Temp @ 4% EL		8.9	11.0	13.3	14.6	15.9	17.9	21.2	35
High Temp (250°C/20s)		8.1	10.1	12.2	13.4	14.6	16.4	19.4	32.2

AW-23 Characteristics (for 30 µm diameter wire)

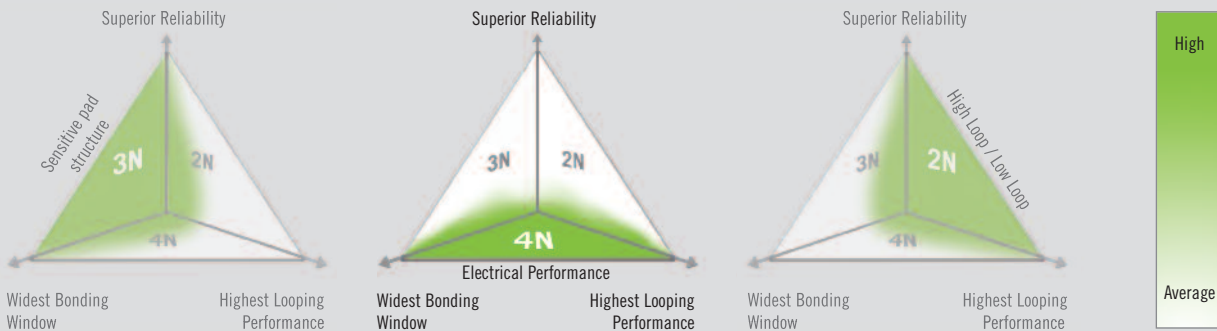
Non-Gold Elements	< 100 ppm
Breaking Load @ Room Temperature	> 13 g at 4% EL
Breaking Load @ 250°C / 20 sec.	> 12 g
Elastic Modulus	> 60 GPa
Heat Affected Zone (HAZ)	~ 220 µm (for 70 µm ball diameter)
Neck Strength	~ 11 g (at 70 µm ball diameter)
Melting Point	1063°C
Density	19.32 g/cm ³
Heat Conductivity	3.17 W/cm-K
Electrical Resistivity	2.3 µOhm-cm
Coeff. of Linear Expansion (0 – 100°C)	14.2 ppm / K
Fusing Current for 25 µm, dia 100 mm length (in air)	0.6 A

AW-23 2nd Bond Pull Strength

	Average	X-Axis	Y-Axis
Mean	9.87	9.58	10.17
Std Dev	0.56	0.30	0.61
Min	9.17	9.17	9.43
Max	11.41	0.11	11.41

30 µm wire, COB device, 2 – 2.5 mm wire span with 200-250 µm loop height on K&S8020

Gold Wire Segmentation by Properties



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