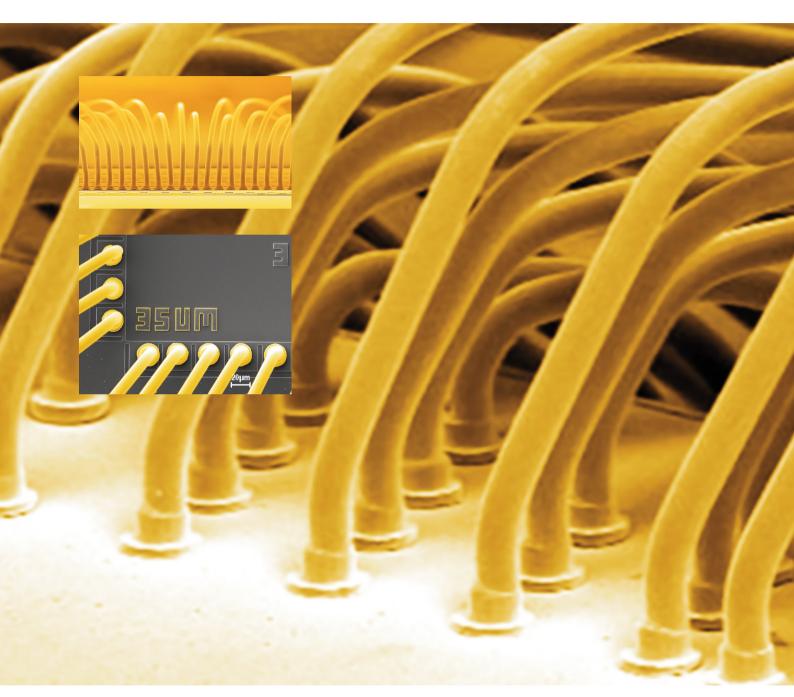
Heraeus



RelMax

Reliability · Bondability · Ultra Fine Pitch

State-of-the-Art 2N Gold Wire with Ultimate Reliability and Bondability

Relime: Features

- Ultimate high reliability of 1st bond
- Significantly improved 2nd bond stitch pull value
- Improved concentricity of FAB for ultrafine wire bonding
- Higher MTBA as compared to other 2N gold wires

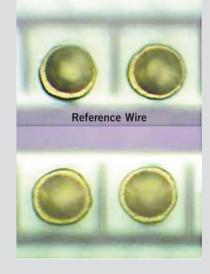
Ultimater High Reliability Performance Ball Strength [gm] 4.0 3.0 RelMax of 15 µm diameter passed HTS 5000 hours at 200°C - significantly 2.0 surpass the most stringent criteria in the 1.0 market, including automotive industry 0.0 100 200 300 500 1000 1500 3500 5000

Isothermal Aging @ 200°C in Air [hrs]

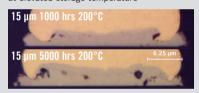
Bonder: K&S Maxum · Capillary: K&S E18CJ-2010-R33 Device: K&S PBGA test device (35 µm PPB) · Bonded ball diameter: 27 µm · Gold wire: 15 µm

Improved Bonded Ball Concentricity





Stable intermetallic growth at elevated storage temperature



80 FAB Hardness [HV0.005/5] 75 70 65 60

RelMax

Soft Free Air Ball

85

55

Wire bonder: K&S Maxum · EFO current: 20 mA FAB size: 25 μm · Gold wire: 15 μm

Reference Wire

Ultra-fine pitch ball bond concentricity

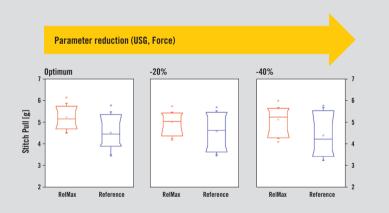
Wire bonder: K&S Maxum Ultra · Capillary: K&S M18CK-2013-R33 (H15 CD20 T40 OR5 FA08 ICA50°) · Device: K&S PBGA 4x4 test device · Bonded ball diameter: 23 µm · Gold wire: 12.2 µm

Recommended Technical Data of Reimes									
Diameter	Microns	15	18	20	23	25	28	30	33
	Mils	0.6	0.7	0.8	0.9	1	1.1	1.2	1.3
Elongation (%)		2 - 6	2 – 7	3 – 7	3 – 7	3 – 7	3 – 8	3 – 8	3 – 8
Breaking Load (g)		3 – 7	4 – 9	5 – 11	8 - 14	10 - 16	13 – 19	15 - 20	18 – 25

Characteristics

	Diameter at 25 µm	Diameter at 15 µm
Elastic Modulus	\sim 90 GPa	\sim 90 GPa
Heat Affected Zone (HAZ) at BSR 1.8	35 — 110 μm	35 — 110 μm
FAB Hardness at BSR 1.8	57 - 67 HV (0.01 N/5 s)	57 - 67 HV (0.01 N/5 s)
Fusing Current, dia 10 mm length (in air)	0.37 A	0.23 A
Non-Gold Elements	< 1%	< 1%
Density	19.3 g/cm ³	19.3 g/cm ³
Heat Conductivity	2.3 W/cm·K	2.3 W/cm·K
Electrical Resistivity	3.3 μΩ-cm	$3.3~\mu\Omega$ -cm
Coeff. of Linear Expansion (20 – 100 °C)	14.2 ppm/K	14.2 ppm/K

Maintaining Stitch Pull at Lower Bonding Parameter Setting

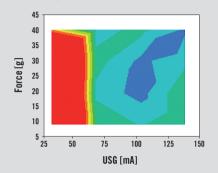


Bonder, K&S Maxum Ultra - Capillary: CIC Duracap 488CG-2156-A33 - (H9.5, CD 12.5, T24, 0R3, F011) - Device: K&S PBGA test device - Gold wire: 20 µm

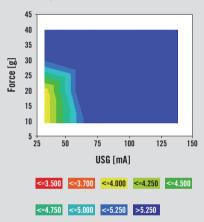
Larger 2nd Bond Window

with Improved Stitch Pull Value

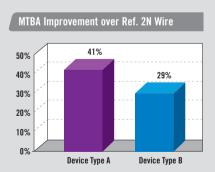
Stitch pull reference 2N wire



Stitch pull reference RelMax



Wire bonder: K&S Maxum · Capillary: K&S 2CA5768L (H9.5 CD12.5 T24 OR3 F011) · Device: K&S PBGA test device · Gold wire: 20 µm



Device: BGA Wire bonder: ASM Eagle 60 AP Capillary: K&S SI-24060-302F Gold wire: 20 µm





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