

# CLR-1A

## High Performance Cu Bonding Wire

高性能Cuボンディングワイヤ



### Characteristics

- High and stable bondability
- Excellent reliability
- Wide bonding window

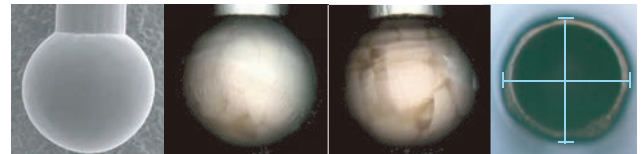
### 特徴

- 高く安定したステッチ接合性
- 優れた接合信頼性
- 広いボンディングウインドウ

### Characteristics of CLR-1A

	Wire cost	Squashed ball roundness	2nd bondability	Capillary life
CLR-1A	★★★	★★★★★	★★★★★	★★★★
Bare Cu	★★★★★	★★★	★	★★★★
4NAuWire	★	★★★★★	★★★★★	★★★★★

### FAB Shape and Roundness



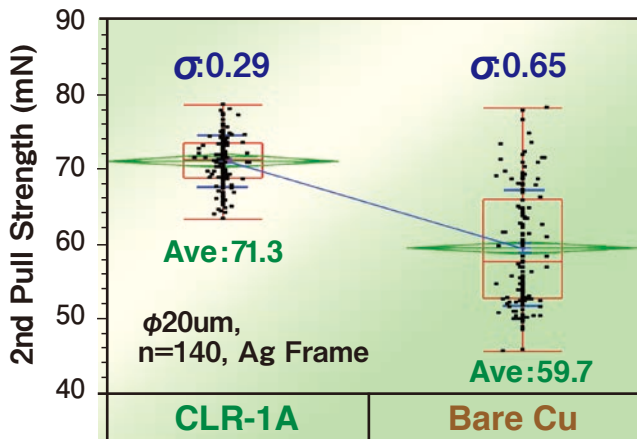
Wire  $\phi$ 0.78mil  
FAB  $\phi$ 1.5mil

45mA  
337ms

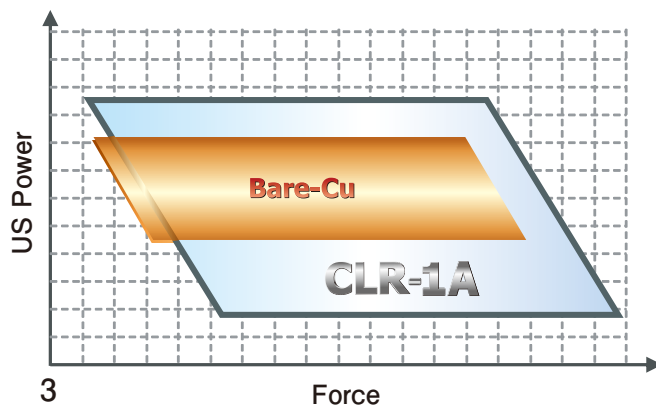
90mA  
136ms

$\sigma_{x-y}=0.9$

### 2nd Bondability

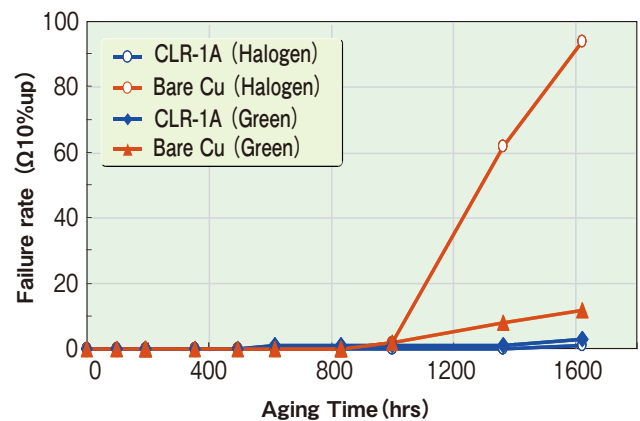


### 2nd Bond Parameter Window



### Reliability

#### Electrical resistance on uHAST



Storage Condition: 130°C 85%  
Failure =  $\Delta R/R_0 > 10\%$   
Wire Diameter: 25  $\mu\text{m}$   
BGA Substrate (FR-4)  
Mold resin: Conventional type

# CLR-1A Data Sheet

## General Properties

Wire Diameter (um)	15	18	20	23	25	28	30	32	35	38
Tolerance (um)	+/- 1.0									
Weight (mg/200mm)	0.276-0.361	0.407-0.509	0.509-0.621	0.682-0.812	0.812-0.952	1.027-1.185	1.185-1.354	1.354-1.534	1.629-1.826	1.929-2.143
Breaking Load (gf)	2.2 - 5.0	3.2 - 7.2	4.0 - 8.9	5.4 - 11.9	6.3 - 14.0	7.9 - 17.6	9.1 - 20.2	10.3 - 22.9	12.3 - 27.4	14.4 - 32.2
Elongation (%)	3.0 - 13.0	5.0 - 15.0					7.0 - 20.0			

## Physical Property

Hardness (HV)	Free Air Ball	60 - 80									
	HAZ	70 - 80									
	Wire	70 - 90									
Density (g/cm <sup>3</sup> )	8.97										
Resistivity (u Ω cm) @ 20°C	1.9										
Fusing Current (A, Length=3mm,10sec)	0.4	0.6	0.7	0.9	1.1	1.4	1.6	1.9	2.3	2.7	
Electrical resistance (Ω, Length 10mm, Room Temp.)	0.94 - 1.23	0.67 - 0.84	0.55 - 0.67	0.42 - 0.50	0.36 - 0.42	0.29 - 0.33	0.25 - 0.29	0.22 - 0.25	0.19 - 0.21	0.16 - 0.18	
Thermal Conductivity @ 20°C (W/m/K)	385										
Linear Expansion Coefficient (0-100°C) (ppm/K)	17.0										
Elastic Modulus (GPa)	60 - 85										
Melting Point (°C)	1,083										