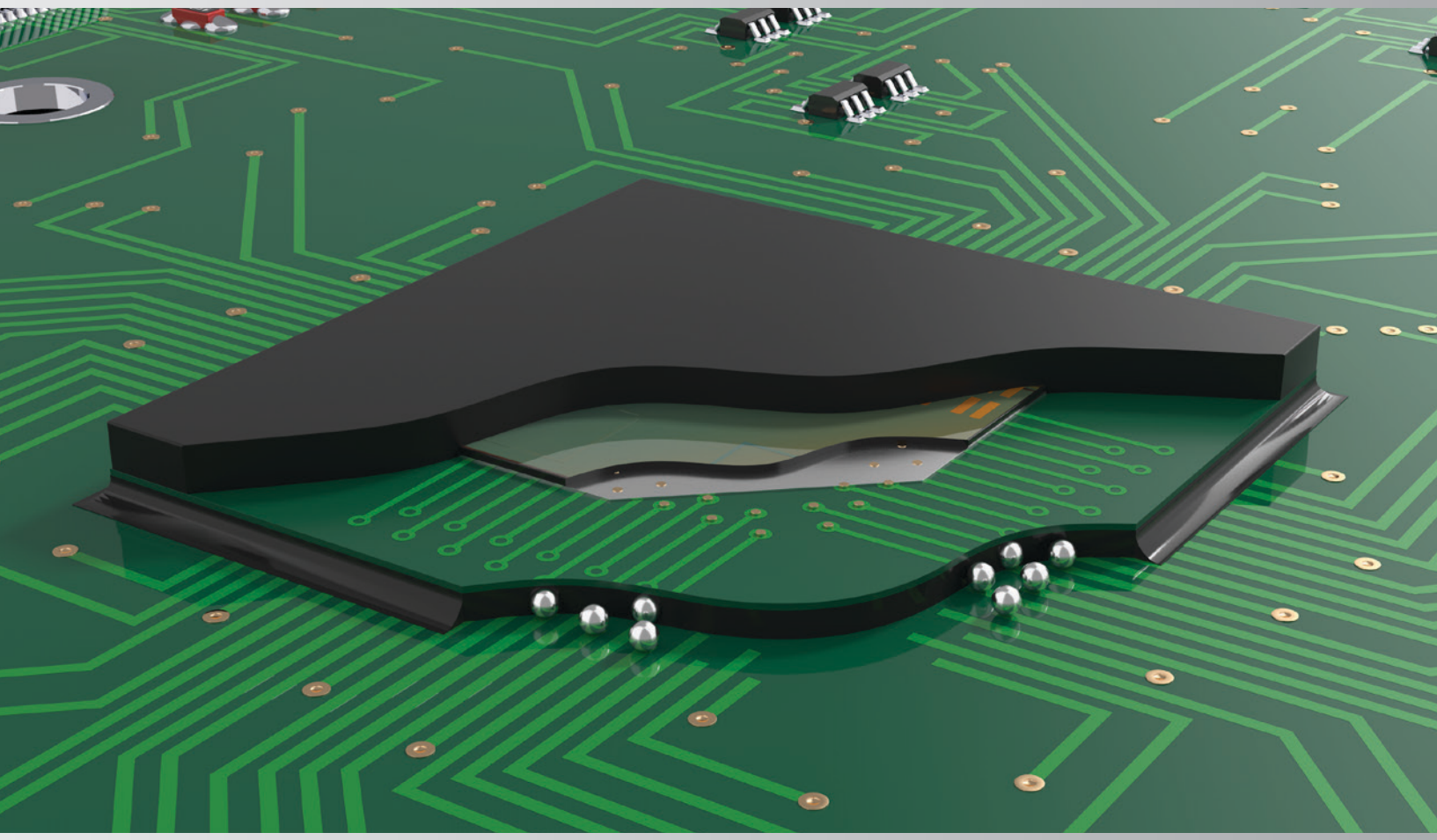
LOCTITE®

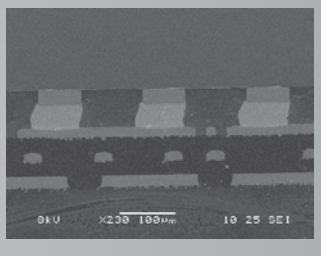


LOCTITE® *ECCOBOND* UF 8830S

SEMICONDUCTOR-LEVEL UNDERFILL FOR FINE-PITCH FLIP-CHIP DEVICES

With unyielding consumer demand for higher functioning products in ever-smaller footprints, the electronics packaging industry is witnessing an accelerated shift from traditional wirebonded devices to flip-chip technology.

Designing a high-performance capillary underfill (CUF) system that provides all the flip-chip processability benefits required while delivering on the increasingly demanding performance needs is no small feat. LOCTITE® *ECCOBON*D UF 8830S is the improved version of well-known *LOCTITE ECCOBOND* UF 8830. It is a fast-flow material with a brand new resin system and filler package formulated to accommodate the challenging dimensions of today's flip-chip designs.



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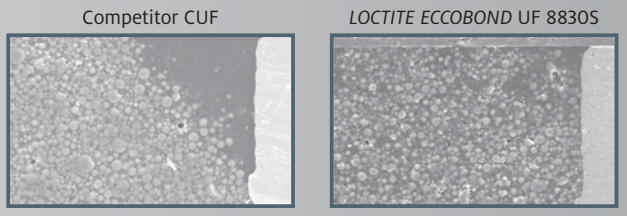
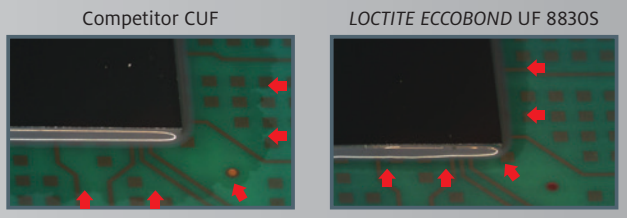
Key Benefits:

- Stable performance for applications with high operating temperature
  - Passed MSL2AA
  - Passed TCB 5,000 cycles (-55°C to 125°C)
  - Passed TCB 3,000 cycles (-55°C to 150°C)
- Homogeneous filler distribution helps mitigate stress concerns
- Wide process window and robust reliability
- Passed reliability with and without plasma



***LOCTITE ECCOBOND* UF 8830S has much less resin filler separation on a fine-pitch, narrow-gap (25 µm – 30 µm) device**



***LOCTITE ECCOBOND* UF 8830S shows shorter dispensing tongue and better resin bleed-out**

LOCTITE ECCOBOND UF 8830S vs. Competitor

Material Properties	Units	Competitor CUF	*LOCTITE ECCOBOND* UF 8830S
Initial Viscosity at 0.5 rpm	cP	> 15,000	18,802
Initial Viscosity at 5.0 rpm	cP	< 60,000	22,120
Thixotropic Index (0.1 rpm / 1 rpm)	-	> 0.5	0.85
DSC Actual Onset	°C	< 165	148
DSC Peak Uncured	°C	< 200	178
TGA (RT -150°C)	%	> 0.6	0.5
TGA (RT -250°C)	%	> 1.7	1.6
% Increase	%	40 – 50	18

Thermal Properties	Conditions	Units	Competitor CUF	*LOCTITE ECCOBOND* UF 8830S
Glass Transition Temperature (T_g) by TMA	After cure	°C	< 120	118
Coefficient of Thermal Expansion (CTE) 1	Below T_g	ppm	< 30	25
Coefficient of Thermal Expansion (CTE) 2	Above T_g	ppm	> 90	100
DMA: 3 – Point Bent	25°C	MPa	< 12,000	11,496
	250°C	MPa	> 100	352
	Tan delta	°C	> 100	127

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