

3M™ OneFilm WSS Semiconductor Temporary Bonding Film Series

Product Description

3M™ OneFilm WSS Semiconductor Temporary Bonding Film Series is a multi-layer Pressure Sensitive Adhesive (PSA) film designed for the temporary bonding solutions of wafers/panels to transparent carriers.

3M OneFilm WSS (wafer support system) film series has excellent heat resistance, high adhesion and chemical resistance. These properties help provide a rigid, uniform support surface that helps minimize stress on the wafer during the subsequent processing steps, resulting in less warpage and higher yields in semiconductor fan-out wafer level packaging (fan-out WLP), fan-out panel level packaging (fan-out PLP) and through silicon via (TSV) process.

The unique multi-layer film doesn't require any additional cross-linking or polymerization steps such as heat-baking or ultraviolet curing. With the laser active elastomeric film, a laser is used to de-bond the glass carrier, allowing easy, low force, chemical free separation of the support carrier from the adhesive surface. The adhesive is then peeled from the wafer using a simple peeling operation.

Key Features

- Provides excellent thermal stability for customer build-up processes
- Offers clean-dry & simple process (non-curing) steps
- Provides good lamination properties with excellent wettability

Product Construction/Material Description

Note: The following technical information and data should be considered representative or typical only and should not be used for specification purposes.

Liner 1 (Easy Release), 50µm
Laser Active Elastomeric Film
Interlayer Adhesive
Polyimide Film
Pressure Sensitive Adhesive
Liner 2 (Tight Release), 50µm

3M™ OneFilm WSS Semiconductor Temporary Bonding Film		
Layer description	Thickness (µm)	
	14001-H1	14001-H4
Laser Active Elastomeric Film (LAEF)	10	10
Interlayer Adhesive	30	30
Polyimide Film	25	25
Pressure Sensitive Adhesive	50	30
Total	115	95

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Applications

- Fan-out IC packaging temporary bonding support - reconstitution/mold/redistribution/solder reflow
- IC packaging wafer process temporary bonding support
- LED/PMIC wafer backside metallization process support
- Silicone interposer thinning/metallization/passivation process
- 3D TSV temporary wafer support
- Large PCB/glass handling process

Application Techniques

- Heating (70°C) lamination on glass carrier
- Low level vacuum assist wafer/panel bonding to glass carrier
 - Temperature: > 50°C
 - Vacuum: 0.1~0.5 Torr
 - Force: 10~50 kg
- Carrier lift-off by IR or UV wavelength laser scanning
 - Wavelength: UV-308, 355 nm/IR-1064 nm
 - Spot size: ~1.5 mm, dot-linear scanning technique
- Laser scanning speed: 1.0~5.0 m/sec
- 3M™ Wafer De-Taping Tape 3305 is used to peel the PSA from the wafer or panel

Typical Physical Properties and Performance Characteristics

Note: The following technical information and data should be considered representative or typical only and should not be used for specification purposes. Final product specifications and testing methods will be outlined in the products Certificate of Analysis (COA) that is shipped with the commercialized product.

3M™ OneFilm WSS Semiconductor Temporary Bonding Film Series			
Property	Method	Value	
		14001-H1	14001-H4
Appearance	Naked eye	Dark brown / black	Dark brown / black
PSA Adhesion to Steel (gf/inch)	ASTM D-3330	185	415
Adhesion to Glass (gf/inch)	ASTM D-3330	>1,000	>1,000
Elongation at Break (%)	ASTM D-3579	80	80
Film Total Thickness	ASTM D-3652	115	95

Storage and Shelf Life

The shelf life of 3M™ OneFilm WSS Semiconductor Temporary Bonding Film Series is 6 months from the date of manufacture when stored in the original packaging materials and stored at 21°C (70°F) and 50% relative humidity.

Certificate of Analysis (COA)

The 3M Certificate of Analysis (COA) for this product is established when the product is manufactured and deemed commercially available from 3M. The COA contains the 3M test methods, specifications limits and test results for the product's performance attributes that the product will be supplied against. Contact your local 3M representative for this product's COA.

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Regulatory: For regulatory information about this product, contact your 3M representative.

Technical Information: The technical information, recommendations and other statements contained in this document are based upon tests or experience that 3M believes are reliable, but the accuracy or completeness of such information is not guaranteed.

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