SHIPLEY

MEGAPOSIT® SPR®950 SERIES PHOTO RESIST

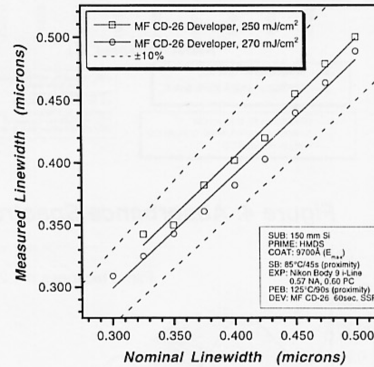
MEGAPOSIT® SPR®950 SERIES PHOTO RESIST meets the needs of critical layer i-Line resist applications, such as microprocessor, memory and custom or ASIC fabrication. SPR950 is an advanced resist capable of 0.35–0.30 µm production design rules. SPR950 performs well in 0.26N and 0.24N developers, both with and without surfactant. SPR950 is formulated to be compatible with BARC (bottom anti-reflective coating). As with all Shipley i-Line photoresists, SPR950 has been formulated with safer solvent alternatives. Key features of this resist are:

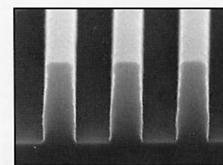
- Ultimate resolution of 0.28 µm dense lines/spaces and <0.25 µm isolated lines
- Depth-of-focus for 0.30 µm lines/spaces of 1.0 µm and 0.35 µm contact holes up to 1.3 µm
- Energy to size for 0.35 µm Lines/Spaces ranging from 180–250 mJ/cm², depending on process and equipment used
- Thermal stability ≤125°C for 10 µm pad

Recommended Process Conditions on Silicon	
Substrate	100 mm Silicon
Resist	SPR950-1.0
Thickness	8,600 Å or 9,700 Å (E max)
Softbake	85°C for 45 sec. Proximity Hotplate
Exposure	i-Line Stepper (0.48–0.60 NA)
PEB	125°C for 90 sec. Proximity Hotplate
Developer	LDD-26W (0.26N), MF CD-26 (0.26N) or MF-701 (0.24N) 60 sec. SSP @ 21°C

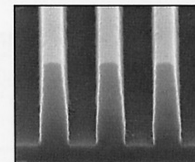
Recommended Process Conditions on BARC	
Substrate	Bottom Anti-Reflective Coating (BARC)
Resist	SPR950-1.0
Thickness	8,600 Å or 9,700 Å (E max)
Softbake	100°C for 60 sec. Proximity Hotplate
Exposure	i-Line Stepper (0.48–0.60 NA)
PEB	115°C for 90 sec. Proximity Hotplate
Developer	LDD-26W (0.26N), MF CD-26 (0.26N) or MF-701 (0.24N) 60 sec. SSP @ 21°C

Figure 1. SPR950 Linearity



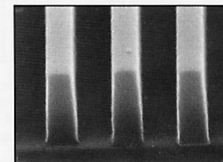


0.35 µm L/S (250 mJ/cm²)



0.30 µm L/S (270 mJ/cm²)

Figure 2. SPR950 on Brewer XHRi® BARC



0.35 µm L/S

Figure 3. Bulk E_0 & CD Swing Curve

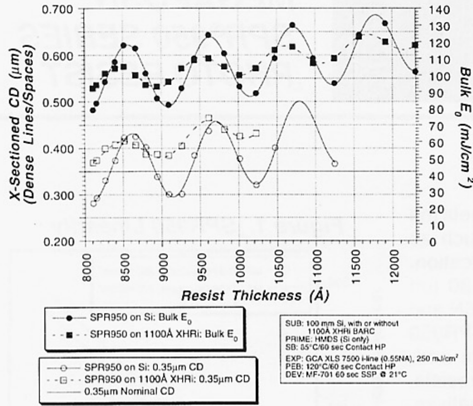


Figure 4. Absorbance Spectrum

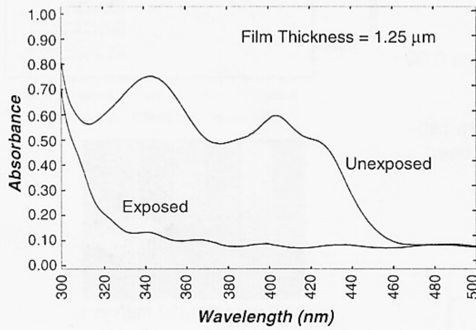


Table 1. Dill Parameters

	λ = 365 nm
Dill A	0.87 µm^{-1}
Dill B	0.04 µm^{-1}

Table 2. Cauchy Coefficients and Refractive Index

n_1	n_2	n_3	Refractive Index @ 365 nm
1.601	1.10e+6	6.3e+12	1.70

Figure 5. Spin Speed Curve

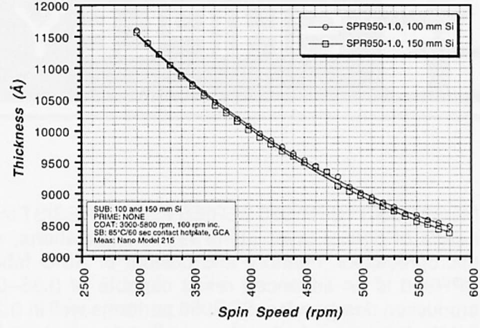
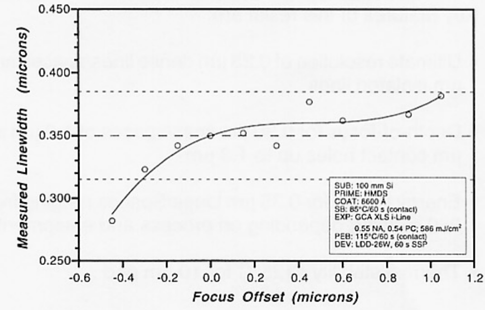
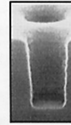


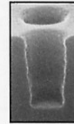
Figure 6. Focus Latitude 0.35 µm Contact Holes

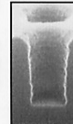


+0.30



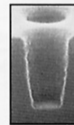
0.00

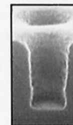




+0.60

-0.30





+0.90

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