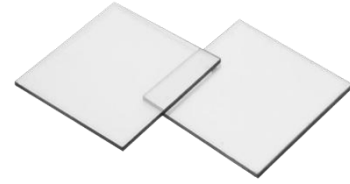


Preliminary Product Sheet:

DFP30-2016-L2-N0000



Product name	DF Single Crystal Diamond Chiplets
Description	Summary: With its extremely high as well as isotropic (all-directional) thermal conductivity and a precision surface finish suitable for bonding and epitaxy, our SCD Chiplets are the ultimate solution for keeping hotspots from building — in direct proximity right near the semiconductor junction of high-power chips. Make high-power chips hotspot free and achieve maximal power scaling and energy efficiency.

SCD Material Property	UOM	Test Method	
Material	n/a	n/a	Single Crystal Diamond
Crystallographic Orientation	°	XRD	[100]±6
Thermal Conductivity at RT	W/mK	ASTM E1461-13	>2000*
Thermal expansion coefficient	-50°C to 15°C	TMA	0.58*
	5°C to 35°C		1.04*
	65°C to 120°C		1.53*
Young's Modulus	GPa	ASTM E2309, 2658 and E4-21	>1000*
Heat Capacity at RT	J/gK	DSC	0.520*
Mass Density	g/cm ³	Gravimetric	3.52*
Bandgap (optical)	eV	UV-Vis	5.2 +/- 0.1*

*typical value

Specifications	UOM	Test Method	Result		
Length tolerance (+/-)	µm	non-contact	50		
Width tolerance (+/-)	µm	non-contact	50		
Thickness tolerance (+/-)	µm	SEMI 1530 ^a	25		
			Min	Typical	Max
Total thickness variation (TTV)	µm	SEMI 1530 ^a	3.4	4.1	5
Bow	µm	SEMI MF1390 ^b	-1.50	0.60	1.39
Warp	µm	SEMI MF1390 ^b	1.7	2.5	4.3
Frontside flatness	µm	ISO 1101 ^b	2.2	4.2	6.3
Backside flatness	µm	ISO 1101 ^b	2.9	4.3	6.3
Frontside roughness (Sa)	µm	ISO 25178	0.00015	0.00035	0.00050
Backside roughness (Sa)	µm	ISO 25178	0.044	0.048	0.081

^aEdge exclusion of 500 µm was applied.

^bEdge exclusion of 190 µm was applied.