

# Cutting

## Silicon

Silicon is used across a number of industries including; solar cells, microelectronics, micromachining and semiconductor manufacturing. There is also growing potential in other sectors including entertainment goods. In the vast majority of applications, silicon is used in the form of wafers which can be coated with compounds such as Silicon Nitride or Silicon Oxide to enhance the materials useful properties.

Silicon is conventionally cut by mechanical methods such as saw cutting and diamond wire cutting. These methods are often slow, expensive and due to silicon having hard and brittle properties, the process suffers from edge chipping meaning post processing is essential. These techniques also limit the ability to cut various shapes as only straight lines can be cut.

SPI's G4 30W RM-Z eliminates many of these problems and is able to produce high quality cutting within a short process time. Using fiber lasers with a multi pass scanner based cutting technique enables the cutting of shapes and the processing of many types of silicon due to the flexibility of the G4 platform.

The processing of silicon can be affected by the type or form of material. Monocrystalline and Polycrystalline are two forms of Silicon, Monocrystalline silicon is pictured in this postcard. This variation of the material benefits from being processed with high peak power to achieve the highest possible finish quality. On the other hand, with Polycrystalline silicon it can be recommended to use longer pulse durations with our G4 lasers to cut, drill and engrave to the highest quality. Using longer pulse durations greatly increase the process speed which reduces cracking to improve quality.

### Related Product



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## Application Parameters

Type	G4 30W RM-Z
Power	30W
M <sup>2</sup>	<1.6
Beam Ø	>10mm
Scanner/Lens	>8mm/163mm F-Theta
Energy	WF0 30kHz @ 400mm/s

### Postcard Archive



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