Marking

Integrated Circuits Marking

In current electronic technology Integrated Circuits (IC) elements are the most important units used to build circuits and systems. Contained in each IC element there is a small semiconductor part which is connected with metal pins. Everything is enclosed in a hard plastic material which provides a very good protection against mechanical stresses and environmental factors.

Marking IC's is a very important application, as many units look very similar and they need to be identified easily. For automatic assembly systems it is important to store more data, for example in QR codes, to provide more details about connections and orientations. Therefore more advanced micro-marking techniques are required.

Laser marking IC's is a very efficient and advantageous process. The process does not require any consumable elements, but relies on changing the surface properties of the covering plastic material. By avoiding physical contact, damage to the components is minimized and clear high contrast white marks can be quickly produced. Using single mode fiber lasers, with a much smaller spot size compared to CO_2 or diode sources, a large amount of data can be very precisely marked. Following the miniaturization trends it can be a critical advantage for the future IC generations.

Our redENERGY G4 20W EP-Z fiber lasers can produce high quality marks on IC's efficiently and without causing damage to the material. By controlling temporal pulse shape and scan speed, burning can be avoided and a good contrast mark can be achieved. The 'SPI Lasers' text shown in the photo opposite (2-4mm) was produced in ~ 0.4 – 0.6 s.

Application Parameters

Type	redENERGY G4 20W EP-Z
Power	4W
M²	1.3
Beam Ø	7.5
Scanner/Lens	10mm aperture / 163mm F – theta
Energy	W39 1mJ @ 20kHz