



256Jet-S Printhead

Features:

Industry-Leading Durability

Etch Precise, Narrow Features

Enhanced Cell Efficiency

Reduced Wafer Scrap

Expanding Applications

For more information on Trident Solar, visit www.tridentsolarcell.com

In North and South America contact:
Steve Liker, Business Manager, Trident
Email: sliker@trident-itw.com
Phone: +1.203.740.9333 ext. 3037

In Europe contact Des O'Neill,
European Sales Manager at Trident Europe
Email: doneill@trident-itw.com
Phone: +353.1.8014004

In Asia contact Kay Chino,
Asia Sales Manager at Trident Asia
Email: kchino@trident-itw.com
Phone: +81.297.61.5860

256Jet-S Printhead

Inkjet Technology for PV Cell Manufacturing Enables Increased Efficiency & Decreased Cost

The Trident 256Jet-S industrial printhead can be used as part of a hybrid solution combining inkjet with either screen printing or electroplating. The 256Jet-S was specifically designed for solar applications and features stainless steel construction to provide the required chemical inertness to jet the typically aggressive solar materials. The printhead has a unique repairable design that sets it apart from disposable inkjet technologies and graphic print-heads that have been adapted to solar applications. The 256Jet-S was been specifically designed to deliver consistent performance in the deposition of aggressive solar process fluids such as acidic dopants and alkaline etchants.

Industry-Leading Durability

The Trident 256Jet-S industrial printhead features stainless steel construction for chemical inertness and a unique repairable design – that allows the nozzle plate to be disassembled, ultrasonically cleaned and reassembled. These features allow the 256Jet-S printhead to last up to 5 times longer than alternative inkjet printheads.

Etch Precise, Narrow 50 Micron Features

Together, the 256Jet-S printhead and VersaEtch Etchant/n-Dopant have demonstrated capability to etch precise 50 micron features.

Enhanced Cell Efficiency

Used with the VersaEtch™ Etchant/n-Dopant, the 256Jet-S can match the enhanced cell efficiency (0.5%-1.0%) of other selective emitter approaches.

Reduced Wafer Scrap

As a non-contact process, use of the 256Jet-S can result in up to a 10x reduction in costly wafer scrap compared to the use of contact selective emitter processes such as screen etching or laser etching. Scrap rates currently range from 0.5 -1.0% and can be reduced to as low as 0.1%.

Expanding Applications

While the use of the Trident 256Jet-S printhead to deposit the VersaEtch Etchant/n-Dopant for front solar contacts has been demonstrated, additional applications are also in development in order to maximize the value of your ink jet tool investment. These include crystalline silicon applications such as jetting palladium as a seed layer and thin film applications like the jetting of alkaline etch. Trident is also developing an application for inkjet deposition of a diffusion barrier for either crystalline silicon or thin film applications.

See specifications on back »

TRIDENT 256Jet-S™

256Jet-S Specification

Number of channels	256 channels
Jet Spacing	0.397 mm (1/64 inch)
Channel Pattern	Choice of dual row of 128 or single in-line of 256
Drop Volume Options (picoliters)	7 pl; 30 pl; 50 pl; 80 pl +/-2% with individual voltage control
Drop Velocity (Nominal)	5 - 8 m/sec
Drive Voltage	<90 volts
Crosstalk	Less than 10%
Operating Temperature Range	Room temperature to 70 C (on-board heater control circuit)
Drop Straightness Variation	<0.5 degrees
Channel Position Accuracy	+2 microns
Drop Position Accuracy (excluding print system error)	+7.5 microns at 1 mm standoff
Fluid Viscosity Range (at operating temperature)	5 - 30 cps
Surface Tension	25-35 dynes/cm
Compatible Jetting Fluids	Aqueous, solvents, oil, UV curable
pH Values	2 - 14
Operating Jetting Frequency (all jets firing continuously)	Up to 10 kHz
Operating Jetting Frequency (individual channels)	10 - 20 kHz
Size	43 mm x 114 mm x 134 mm
Weight	800 grams
Life	>100 billion firings per channel
Filter	On-board stainless steel 30 micron nominal filter
Mean Power Consumption	15 watts

