



Electronic contract assembly

Material converting

Laser modules

SMT stencils

Distribution

Innovative products
Innovative technologies

About us

Semicon Sp. z o.o. has been operating on the electronics market for three decades: we started with a team of five in the late 1980s in a 27 square meters studio apartment. Today, our team consists of more than 120 people working in four locations with a total area of about 5000 square meters.

In our manufacturing department, we provide services of SMT and THT electronic boards assembly. We have modern JUKI, ERSA, EKRA, ASYS devices enabling assembly of components from 01005. We take care of quality by testing all products on AOI visual inspection devices. BGA and QFN systems are checked using X-Ray device. We offer lead free assembly, we have Nitrogen wave soldering machines. At our disposal we have machines for selective PCB coating by a varnish layer as well as for automatic PCB cleaning with ion purity control. We have equipment for selective soldering and laser depaneling (green laser). We carry out the most complex projects, among others, for experimental purposes. We also provide repair services for boards with BGA systems – the reballing technology.

SMT steel stencils laser cut using LPKF equipment constitute a service valued by customers in our portfolio. We are a licensee of ASM-DEK company offering stencils in VectorGuard™ standard. We also make stencils for BGA circuits (for paste application or balls application) for reballing technology.

Our offer also includes the conversion of industrial single-sided and double-sided adhesive tapes. We manufacture Die-Cut and Kiss-Cut blanks, we also offer cutting tapes to size from a large roll (a log roll). We are a licensed converter for 3M, Saint Gobain, IPG, Tesa companies.

Semicon Sp. z o.o. is the largest Polish manufacturer of laser modules. They are used in many industries, including the medical sector – the infrared laser designed and constructed by our optoelectronics department has been used in SOCT (Spectral Optical Coherent Tomography) device produced by the Japanese Canon company of which we are a certified supplier (Green Procurement Standard).

We are an importer and an authorized distributor of electronic components, wires, cables, protection sleeveings, materials, tools for electronics, test accessories of renowned brands. We are a supplier of materials for aviation industry and maintenance services.

PB Technik Sp. z o.o., a leading supplier of materials, technologies and devices for the electronics industry, remains in close capital relationship with Semicon Sp. z o.o.

The company Semicon Sp. z o.o. provides the highest quality of products and supplies, which is confirmed by external certification bodies: DEKRA, Quality Certification Center and TÜV Rheinland. Our certificates: **ISO 9001:2015, AQAP 2110:2016, EN 9120:2018, ISO 14001:2015, EN ISO 13485:2016**. Our NATO NCAGE code: **NATO-NCAGE 2082H**.



Table of contents

Electronic boards assembly services (EMS)	4
Our manufacturing capabilities	4
Technology of mounting components on FLEX flexible substrates	6
Our equipment – PCB assembly	7
Services for the electronics sector	12
Laser stencils cutting	12
Precision metal foil details manufacturing	14
SMD component counting – X Ray counter	14
T&R service – SMD component tape packaging	14
SMD component preheating, packaging in nitrogen shield/atmosphere	14
Semiconductor structure bonding (wire bonding)	14
Precision cutting of hard materials	14
Thermal bonding with anisotropic tapes	15
Services for industry	16
Cutting industrial tape and velcro rolls	16
Cutting blanks	17
Lamination	17
Die-Cut and Kiss-Cut blanks	18
Our equipment – material converting	19
Optoelectronics	20
Laser modules – in-house manufacturing	20
Optoelectronic components	22
Distribution	24
Electronic components	24
Chemicals for electronics	30
Chemicals for industry	33
Materials for electronics and industry	35
Measuring instruments and accessories	37
Tools for electronics	38
Special materials	40

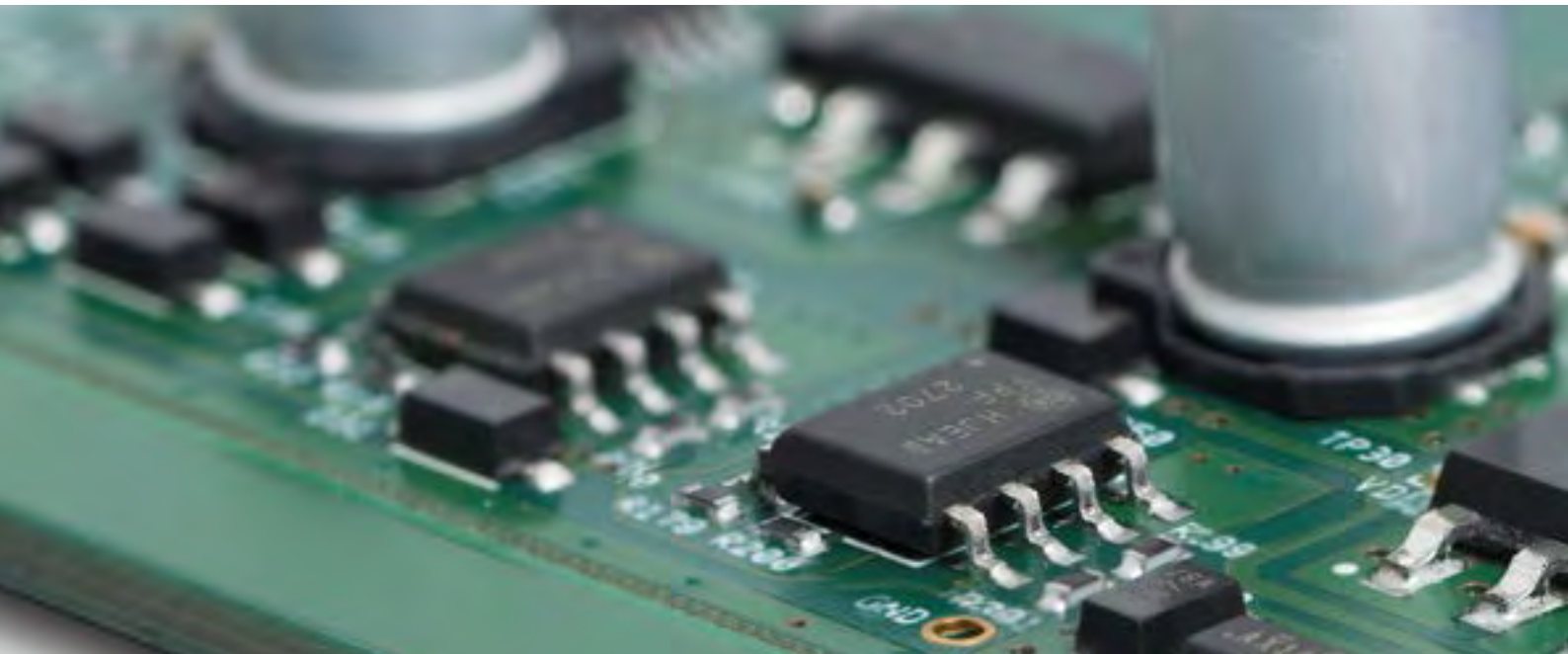
Electronic boards assembly services (EMS)

Our production capabilities

What we offer:

Professional assembly of electronic boards in SMT and THT technologies based on the guidelines of the IPC-A-610 Class 2 and 3 standard for building electronic assemblies, including:

- PoP assembly
- Flex PCB assembly
- Assembly in Flex on Glass, Flex on Board technologies
- Hot Bar Soldering
- Assembly of long PCBs: 915 mm x 500 mm printing area
- Complete picking: printed circuit boards, components, materials: pastes, adhesives, varnishes, thermally conductive materials
- Laser cut stainless steel stencils, step-up/step-down stencils
- Ion purity control
- Application of protective coatings
- Design of boards, complete equipment and software
- Storage and heating of SMD components
- AOI inspection, X-Ray inspection
- Electrical testing using needle fixture
- Board separation by mechanical and laser method (green laser)
- Assembly of Press-Fit connectors
- PCB repair, including BGA and μ BGA reballing
- Optional activation, including programming and functional testing
- Professional engineering consultancy





Production specification:

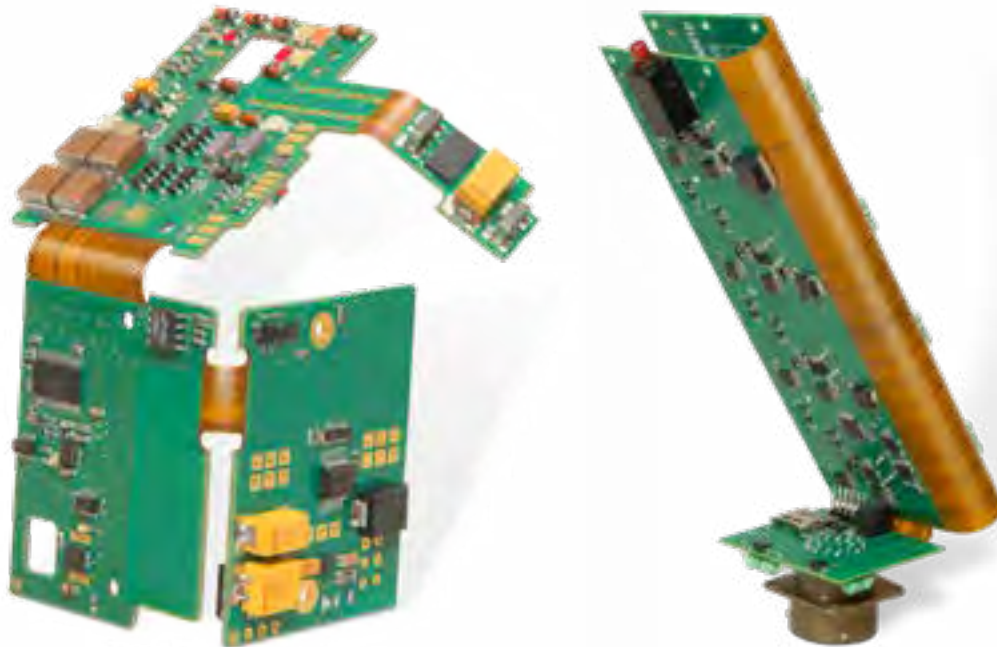
- Lead or lead-free, thermosetting electronics assembly
- Minimum size of an assembled component: 01005 (0,4 mm x 0,2 mm)
- Minimum component height: 0,2 mm
- Minimum exit raster (fine pitch): 0,2 mm
- Minimum raster for BGA: 0,25 mm
- Minimum ball diameter for BGA: \varnothing 0,1 mm
- Minimum thickness of rigid PCBs: 0,4 mm (can be mounted from 0,2 mm using special base plates)
- Minimum PCB size: (X) 50 mm x (Y) 30 mm (not applicable to boards in forms)
- Maximum PCB size: (X) 800 mm x (Y) 500 mm (larger sizes available for assembly on request)
- ESD protection of components and finished products according to PN-EN IEC 6340 standards
- Protection of moisture-sensitive components according to IPC JEDEC JSTD-033 standard



Technology for mounting components on FLEX flexible substrates

Innovative technologies for mounting components on FLEX flexible substrates for critical applications, Internet of Things and Industry 4.0

The aim of the project is to develop innovative technologies for mounting components on FLEX flexible substrates which are already used or can be used in new projects. We develop design solutions for FLEX, RIGID-FLEX and SEMI-FLEX PCBs, as well as guidelines for the manufacture technology of electronic components based on these substrates. The use of these technologies will ensure the reliability and safety of the mounted electronic assemblies used in the various areas listed below.



Applications:

- Critical applications used in the defence and medical sectors
- Electronic applications developed for the Internet of Things (IoT)
- Electronic equipment used for Industry 4.0
- Equipment used in the automotive industry
- In automation, robotics
- Control, diagnosis and monitoring of devices and processes

FLEX-PLUS technology enables:

- Further miniaturisation
- Creating electronic assemblies of unusual shapes
- Designing new products for personal electronics and intelligent textiles, lighting technology or sensors

Our equipment – PCB assembly

Automatic assembly machines

- **JUKI RS-1R**
 - Efficiency 31 000 components per hour
- **JUKI KE3020VAL***
 - Efficiency 17 100 components per hour
- **JUKI KE3020VE – XL Size**
 - Efficiency 17 100 components per hour
- **JUKi KE2060 LITE**
 - Efficiency 12 500 components per hour



Screen and stencil printers

- **ERSA VERSAPRINT S1**
 - Board print area: max. 550 mm x 500 mm
 - Accuracy: $\pm 12,5 \mu\text{m}$ (for 6 Sigma)
 - Automatic control of the quantity of the printing paste
 - SPC analysis
 - AOI inspection of paste/adhesive application with patented LIST scanning system
 - Inspection of stencil holes
 - Automated cleaning of the stencil after the printing process of each board
- **EKRA X5–36**
 - Board print area: max. 915 x 610 mm
 - Accuracy: $\pm 12,5 \mu\text{m}$ (for 6 Sigma)
 - 2.5D Plus inspection of paste/adhesive application
 - Inspection of stencil holes
 - Additional IPAG paste/adhesive dispenser
 - Patented EVA™ system for PCB positioning
 - Automated stencil cleaning after the printing process of each board
 - Independent air conditioning system – fixed printing parameters
 - Capable of printing boards weighing up to 10 kg – e.g. glue on glass



Wave soldering equipment

- **ERSA SMARTFLOW 2020**
 - Selective soldering system with a lead-free alloy (Sn95,5Ag3,8Cu0,7) or a lead alloy (Sn63Pb37) in nitrogen shield
 - Equipped with a vision control system for the soldering process, an innovative bonding agent feeding system – an electromagnetic pump and a precise flux dosing system
- **ERSA EWS330**
 - Soldering process carried out in a nitrogen shield on a double wave with a lead-free alloy (Sn96,5Ag3Cu0,5) or a lead alloy (Sn64Pb36)
 - Crucible capacity with solder: 330 kg



* The purchase is co-financed by the European Regional Development Fund under the Project: "Innovative technologies of mounting components on flexible FLEX substrates for critical applications, Internet of Things and Industry 4.0" with the number POIR.01.01.01–00–1083/17–00

Laser separation device with green laser source

- **LPKF – CuttingMaster 2232P***
 - Separation of FLEX and RIGID boards
 - No risk of delamination, deformation or damage to the PCB edges
 - No edge carbonisation
 - Separation accuracy: up to 10 µm
 - Laser source: 32 W, 532 nm (green)
 - Maximum PCB dimensions: 350 mm x 350 mm
 - PCB thickness: up to 2.0 mm
 - Compensation of PCB elongation



ray inspection device

- **GE – Microme | x***
 - X-ray inspection system with 180 kV voltage lamp, which allows real-time control of soldered connections and electronic components
 - Work area: 450 mm x 350 mm
 - Magnification up to 22150 times
 - Detection of details up to 0,5 µm
 - Observation angle up to 70°



Reflow soldering equipment

- **ERSA – Hotflow reflow furnace 4/14 with class 6.0 nitrogen generator***
 - Air or nitrogen operation – for better quality soldered joints
 - Length of the work zone: 4,4 m
 - Number of process zones: 2 x 7
- **ERSA – Hotflow reflow furnace 2/14**
 - Length of the work zone: 3,5 m
 - Number of process zones: 2 x 7



Optical inspection equipment

- **AOI Marantz MEK 22X**
 - High resolution automatic detection of electronic components (presence, displacement, type, polarisation) and soldering paste (homogeneity, displacement, short circuit, solder bridges)
- **Vision Engineering – Mantis Elite**
- **Vision Engineering – Mantis Elite-Cam**
 - Built-in camera allows for documentation of inspected soldering connections
- **Optilia Instruments AB – Flexia C1 Zoom**



* The purchase is co-financed by the European Regional Development Fund under the Project: "Innovative technologies of mounting components on flexible FLEX substrates for critical applications, Internet of Things and Industry 4.0" with the number POIR.01.01.01–00–1083/17–00

Pulse heating device (Hot Bar Soldering)

■ System C-FLOW firmy DIMA

- Heads with pressure control BH (5N – 700N)
- Measurement of the head pressure and the depth of the connecting process
- Thermodes
- Interposer providing constant thermode pressure during the connecting process along the entire length of the joint. Reduces the impact of uneven thickness of the thermode – ensures uniform temperature distribution, protects the thermode from contamination by, for example, an excessive flow of resin from ACF tapes during the connecting process



The device enables, among other things:

- Connecting Flex boards with glass (ITO switches)
 - FOG technology – Flex on Glass
- Connecting Flex boards with rigid PCBs –
 - FOB Technology – Flex on Board
- Connecting Flex boards with rigid PCBs
 - COG technology – Chip on Glass
- Soldering wires, wire harnesses
- Soldering optical modules: e.g. Molex – ParaLink-P™ (Parallel Optic Module), Infineon – PAROLI® (Parallel Optical Link Module)
- Soldering Heat Seal Connectors
- Soldering edge connectors

Cabinets and warehouses with automatic temperature and humidity control

■ JUKI/ESSEGI – ISM2000 Storage System*

■ JUKI/ESSEGI – ISM500 Storage System*

- Storage and heating of electronic components and boards (particularly moisture sensitive)
- Automatic control of temperature and humidity inside the device
- Temperature control up to 60°C
- Moisture control: 1 to 50% Rh
- Communication with assembling/mounting devices and ERP system



■ EMT Electronics – X Treme Series

- Storage and heating of electronic components (particularly moisture sensitive)
- Automatic control of temperature and humidity inside the device
- Two humidity absorbing units (humidity control range 1 to 50% Rh)
- Temperature control up to 60°C



* The purchase is co-financed by the European Regional Development Fund under the Project: "Innovative technologies of mounting components on flexible FLEX substrates for critical applications, Internet of Things and Industry 4.0" with the number POIR.01.01.01–00–1083/17–00

Climate chamber

- **ANGELANTONI INDUSTRIE – CH250TC**
 - Basic climate tests over a wide temperature range
 - Stabilization of climatic conditions during testing of equipment parameters
 - Simulation of ageing of products placed in the chamber
 - Basic parameters:
 - Internal chamber dimensions: 600 mm x 50 mm x 700 mm (width, depth, height)
 - Temperature control range: -75°C to +180°C
 - Temperature accuracy: $\pm 0,3^{\circ}\text{C}$



Dosing, varnishing and selective board flooding equipment

- **DIMA – DD500**
 - Dosing of glue, soldering paste: 11 000 points per hour.
 - Selective flooding and varnishing of boards and electronic components with single-component materials: up to 80 mm/sec.
 - Large dosing area 320 mm x 420 mm
- **PVA – DELTA 8***
 - Selective flooding and varnishing of boards and electronic components with single-component materials
 - XYZ repeatability: $\pm 25 \mu\text{m}$
 - Resolution: $5 \mu\text{m}$
 - Valves can be operated at an angle
 - Heating of the substrate for flooding with Underfill-type materials
 - Work mode: In-Line
 - Large working area 446 mm x 490 mm



Spray cleaning device

- **PBT Works – Super SWASH Twingo**
 - Electrical conductivity control
 - Continuous control of detergent concentration with built-in Zestron EYE* device
 - Removes flux and resin residues
 - Enables following the cleaning process
 - Special nozzle system enables the detergent to reach any place on the board
 - Unique 4-step double rinse washing cycle
 - Hot air knife drying
 - Advanced HEPA filter system



* The purchase is co-financed by the European Regional Development Fund under the Project: "Innovative technologies of mounting components on flexible FLEX substrates for critical applications, Internet of Things and Industry 4.0" with the number POIR.01.01.01–00–1083/17–00

Board ion purity testing device

- **Gen3 Systems – CM33+***
 - Measurement of surface ionic pollutants on PCBs at any stage of their manufacturing (both before and after assembly)
 - Measurement of surface ionic pollutants on components
 - Measurement for IPA:DI mixtures in ratios of 75:25 or 50:50
 - Maximum PCB dimensions: 480 mm x 325 mm x 33 mm
 - Measurement range 0.01–30 µg NaCl/cm²
 - CO₂ compensation function to remove the influence of air pollution on measurement results
 - Automatic temperature compensation
 - Measurements made in accordance with IPC and MIL standards



Repair equipment

- **ERSA HR600/2**
 - Working area 500 x 300 mm
 - A system that enables even and dynamic heat distribution depending on the SMD components used (no temperature deformation of the PCBs)
 - Temperature measurement directly at the component
 - Integrated soldering station
 - Camera system for positioning, recognition and recording of the process
 - Semi-automated vacuum pipette system for desoldering



Component packaging device

- **KOMET – PlusVac 24**
 - Vacuum and nitrogen sheathed packaging of components on rolls, trays and slats
 - Increases electronic components storage security



Design & assembling of test adapters

- **Designing and machining of ICT & FCT adapters**
- **Wiring of the adapters**
- **Customization of specific parts for adapters**



* The purchase is co-financed by the European Regional Development Fund under the Project: "Innovative technologies of mounting components on flexible FLEX substrates for critical applications, Internet of Things and Industry 4.0" with the number POIR.01.01.01–00–1083/17–00

Services for the electronics sector

Laser stencil cutting

Laser-cut SMT stencils (in-house manufacturing)

Stencils are cut out using laser machine tools produced by the German company LPKF – the latest generation of equipment. The YAG fiber optic laser powered with a switched-mode power supply allows the laser spot focus of up to 20 μm , which together with the precise laser head sliding system ensures accuracy and repeatability of $\pm 2 \mu\text{m}$.

Maximum dimensions of steel foil: 600 mm x 850 mm
Aluminium frame with foil – max. length 1800 mm

Laser-cut stencils

- SS304 steel foil stencils 50 to 1000 μm thick
- Nickel stencils 100 to 150 μm thick
- SS301 Fine Grain steel foil stencils 80 to 180 μm thick

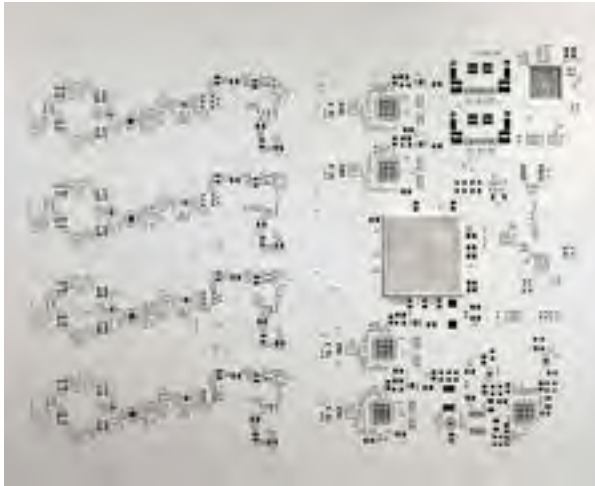
Licensed supplier of VectorGuard™ stencils

- VectorGuard™ stencils available with steel foils, fine grain steel foils or nickel foils
- Master Frame frames for VectorGuard™ stencils

Aluminium stencil frames

- 29" x 29" frames
- 23" x 23" frames
- 650 mm x 550 mm frames
- 737 mm x 1800 mm frames
- Other frame dimensions on request





Fine grain stencils, nickel stencils

One way to improve the release of solder paste from critically small holes is to use fine grain steel foil of $<2\ \mu\text{m}$ (the grain size in standard material is $16\text{--}25\ \mu\text{m}$). The fine grain size results in less laser erosion and, at the same time, a smoother surface of the edges of the cut-out holes, resulting in a better release of paste. A similar effect is achieved with nickel foil. Nickel foils are characterized by high hardness. Both nickel and fine grain materials are now available in a wide selection and in many various dimensions, both on aluminium frames and VectorGuard™ stencils.

STEP stencils with variable thickness

STEP stencils with variable foil thickness are the solution to the problem of choosing the right stencil thickness for projects with a large variety of components. We offer stencils made with the milling method, which enables us to maintain the accuracy of $5\ \mu\text{m}$ stencil thickness and a smooth surface. The use of STEP stencils ensures appropriate deposit of soldering paste in one printing process.

Stencils with nano-coatings

A thin layer ($2\text{--}4\ \mu\text{m}$) of fluoro-polymer applied to the stencil allows the Area Ratio to be reduced to 0.5, resulting in a better paste transfer to the soldering pad compared to conventional stencils. The use of nano-coating also helps to stabilize the printing process and reduce the frequency of stencil cleaning.

SMT stencil storage cabinets



Precision metal foil details manufacturing

Laser cutting enables you to make precise details from 50–600 μm thick metal foils from the following materials:

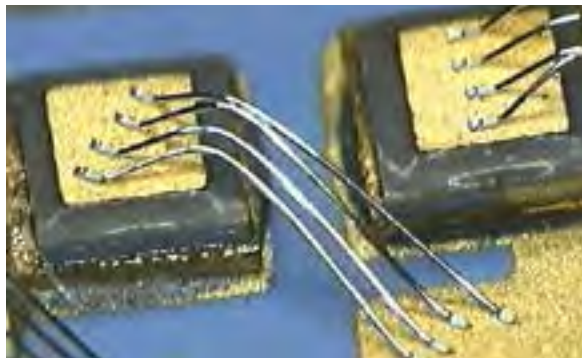
- Hardened stainless steel
- Nickel
- Molibdenum
- Tantalum
- Inconel 600 and others

Selective double-sided chemical etching of metal foils enables you to make details using:

- Brass
- Silver
- Bronze
- Beryllium bronze
- Stainless steel
- Thickness: 50–1000 μm

Semiconductor structure bonding (wire bonding)

- Semiconductor structure bonding with contact fields on a ceramic substrate or PCB laminate



Precision cutting of hard materials

- Precision cutting with a diamond circular saw of hard materials such as silicon, germanium, sapphire, ceramics

SMD component counting – X Ray counter

T&R service – SMD component tape packaging

SMD component preheating, packaging in nitrogen shield/atmosphere

Thermal bonding with anisotropic tapes



Pulse heating device (Hot Bar Soldering) – DIMA C-FLOW system (the Netherlands):

- Programmable temperature and time control module, equipped with temperature profile recorder and graphical interface for real-time imaging of soldering profiles
- Heads with pressure control BH (5N – 700N)
- Measurement of the head pressure
- Interposer providing constant thermode pressure during the connecting process along the entire length of the joint. Reduces the impact of uneven thickness of the thermode – ensures uniform temperature distribution, protects the thermode from contamination by, for example, an excessive flow of resin from ACF tapes during the connecting process

The device enables, among other things:

- Connecting Flex boards with glass (ITO switches) – FOG technology (Flex on Glass)
- Connecting Flex boards with rigid PCBs – FOB Technology (Flex on Board)
- Connecting Flex boards with rigid PCBs – COG technology (Chip on Glass)
- Soldering wires, wire harnesses
- Soldering optical modules: e.g. Molex – ParaLink- Soldering optical modules: e.g. Molex – ParaLink TM (Parallel Optic Module), Infineon – PAROLI® (Parallel Optical Link Module)
- Soldering Heat Seal Connectors
- Soldering edge connectors



Services for industry

Cutting industrial tape and velcro rolls

Most of the materials used in industry in the form of thin foils, often with an adhesive layer, are produced in the form of a large roll, or a log roll. Cutting such materials into smaller rolls is done on a specialized saw equipped with the Siemens PLC controller which ensures precise width measurement and programmable cutting disc speed. The device has a built-in system for sharpening the blade, cooling it and humidifying during cutting.

It guarantees:

- Accurate, precise cutting of all kinds of tapes, including those with aggressive, strong adhesive
- High cutting repeatability
- Smooth cut line surface

Processed materials:

- Industrial tapes with or without adhesive
- PVC tapes
- Polyester
- Epoxy
- Glass-reinforced materials
- Copper, aluminium and masking foils
- Polyimide tapes (Kapton tapes)
- Foam tapes
- Adhesive films
- VHB double-sided adhesive tapes





Cutting blanks, lamination

Cutting blanks:

- Clockwork press with knife blanking dies
- Laser plotter
- Plotter with oscillating knife

Laminowanie:

- Gluing foils and foams with adhesive films



Die-Cut and Kiss-Cut blanks

Die-Cut is a blank made with a blanking die in the tape cutting the liner (the material protecting the sticky part of the tape), while the Kiss-Cut blank allows the liner to remain intact. Additionally, the machine can be programmed to cut a fingerlift, which is an additional leaf that makes it easier to remove the liner from the sticky part of the blank.

The purchased device enables packing orders in different configurations:

- Die-Cut + Kiss-Cut
- Die-Cut and Kiss-Cut

Die Cut and Kiss Cut blanks are used in many industries: automotive, medical, industrial, military and other.

The blanks made of thermally conductive tapes find many applications in LED lighting.

The cut components are supplied:

- In rolls
- In sheets
- Loose



Our equipment – material converting

Tape rolls cutter

- Maximum length of the log roll to be cut 1700 mm
- Minimum width of the tape to be cut: 6 mm
- Cutting accuracy: 0.1 mm
- Maximum diameter of the log roll: 430 mm with the core diameter of 74–76 mm



Laser plotter CO₂

Cutting head with oscillating knife

- The work surface: 1330 mm x 830 mm
- Cutting difficult materials (e.g. VHB adhesive tapes from as little as 3 mm thick)
- Cutting adhesive films
- Cutting foams and other materials
- BOFA filter extractor



Device for laminating and coating materials with single-sided and double-sided adhesive films and tapes

- Working width 1600 mm



The flat-bed die-cutting machine

- Materials from 0.05 mm x 10 mm thick
- Working area 300 mm x 300 mm



Optoelectronics



Laser modules – in-house manufacturing

Semicon Sp. z o.o. is the largest manufacturer of laser modules in Poland. We design and manufacture lasers with various wavelengths and optical powers, various dimensions and mechanical constructions. Our devices are used in industry, science, army and medicine.

Thanks to many years of experience in the field of optoelectronics, we offer professional maintenance and repair service of laser equipment and laser modules – both of our own make or made by other manufacturers. We also have a full range of components for laser modules (laser diodes, power supplies, optical components, integrated circuits, controllers, etc.) and highly qualified engineering staff.

Line lasers

Laser line generators are compact devices that produce a clearly visible laser line on any surface. The line generators are ideal for marking cutting lines in industrial machines, wood and stone saws or vision systems. The most popular modules generate a red or green line but there are many more colour versions available, including the near infrared range.

- Available wavelengths: 405–980 nm
- Optical power range: up to several watts
- Stabilization of optical power at the output
- Soft start system
- Reverse polarity protection
- Acrylic and glass optical components, with anti-reflective coatings
- Continuous or modulated operation



Cross lasers

Laser cross generators are compact devices producing two laser lines, clearly visible on any plane, intersecting and forming a right angle. Cross generators are used in industrial positioning systems, in the textile and clothing industries, in screen printers and in vision system.





Spot lasers

Spot lasers are used as indicators, viewfinders, alarm system components, transmitters in laser barriers, sensors, etc. As a manufacturer, we are able to adjust most of the device parameters to individual requirements:

- Beam colour selection out of the entire visible and infrared spectrum
- Optical power precisely matched to lighting conditions and work safety requirements
- Cable length and power supply parameters
- Dimensions of the device and the degree of airtightness of the housing

Laser measuring devices

Devices for measuring the concentricity and straightness of objects, as well as the position and displacement of objects. Our offer includes devices of our own design:

- LZP-1 – used for simple visual measurements of the concentricity and straightness of objects. It consists of a laser and a measuring screen
- LZP-2 – used to measure displacement, straightness and concentricity of objects. The device consists of a laser transmitter and a position detector



Optoelectronic components

WAVE SPECTRUM LASER diodes

www.wavespectrum-laser.com

- SM and MM laser diodes with fibre optic connectors
- SM high power fiber optic laser modules
- Photodiodes with a fibre optic connector



LED diodes

- Standard LED power diodes
- Lighting modules and LED strips
- Flexible LED strips (standard and waterproof)
- Controllers for LED modules



Laser Accessories

- Mechanical holders for Semicon laser modules
- Power supplies dedicated to work with Semicon laser modules
 - Plug-in power supplies with LEMO connector
 - Plug-in power supplies with M12x1 connector
 - DIN rail power supplies



Laser diodes

Due to their small size, wide range of available optical powers and ease of modulation, semiconductor laser diodes are very practical and economical laser light sources

- Wide range of CW laser diodes in standard 5.6 mm and 9.0 mm enclosures
- Available wavelengths: 405 nm, 450 nm, 520 nm, 635 nm, 650 nm, 780 nm, 808 nm, 850 nm i 980 nm



YAMAMOTO safety goggles



www.yamamoto-kogaku.co.jp



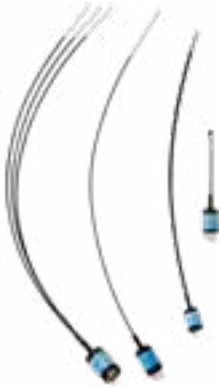
Protective goggles, ensuring comfortable and safe work with lasers, including safety glasses used in medicine (medical lasers, IPL lamps) – both for the patient and the operator.

- Lightweight and comfortable to wear, with the possibility to put on corrective glasses
- Compliance with the standards and requirements of the European Directive, full documentation and safety certificates, CE marking
- Ideal for medical and industrial applications

LED testing sensors



www.optomisticproducts.com, www.feasa.ie



- LED testing sensors in the patented Universal LightProbe® technology. The small size sensors enable testing the colour and light intensity of white, green, red, UV, IR diodes (also flashing ones).
- Different sensor configurations: narrow-slot, wide-slot, one or three wires
- Suitable for many test applications under almost any conditions, can be used at any stage of product assembly
- Accurate and ergonomic

IC-HAUS laser drivers



www.ichaus.de



We are a representative of the renowned German chip manufacturer iC-Haus. We offer a full range of integrated circuits for laser drivers produced by this company and also ready-made, universal drivers of our own production, equipped with sockets for laser diodes.

- Encoders, opto-encoders, photodiode strips
- Optical sensors, DC/DC converters

Optical components

We offer a wide range of optical components dedicated to work with laser light: spherical and aspherical acrylic lenses, glass, single-element and multi-element lenses, cylindrical lenses, windows and glass filters. Through our network of subcontractors, we also offer customized components made to your request.

Distribution

Electronic components

SCHURTER



www.schurter.com



- Resettable polymer fuses, SMD, THT
- Fuse holders
- Varistors
- IEC 10A – 20A/250 VAC power sockets and plugs
- Power supply modules with anti-interference filter
- Surge suppression filters
- Single- phase and three-phase anti-interference filters
- Voltage selectors
- Audio signal sockets and plugs, DIN, DC
- LED diodes and controls
- Touch screens 3,85” – 21,1”
- Buttons
- Piezo switches with LED backlight, sensory switches
- Mechanical switches
- Thermobimetallic protection
 - Thermal switches
 - Thermal-magnetic switches
- Pulse transformers
- Chokes
- Power supply cables

LEMO



www.lemo.com



- Connectors:
 - Snap-on push-pull type, multi-pin up to 114 contacts
 - High voltage up to 50 kV, single-pin up to 230 kV, concentric
 - Hybrid:
 - Electric + pneumatic
 - High and low voltage
 - Concentric + low voltage
 - Fibre optic + low voltage
 - Single-mode and multi-mode fibre optic
 - Plastic Redel
 - Waterproof, dustproof, vacuum-proof (IP66, IP68)
 - “Patch panels” for audio-video
 - Transitions to BNC, C, UHF, N, SMA
 - Northwire cables – concentric, triaxial, audio-video, high voltage computer, fiber optic, hybrid, medical
- Audio-video signal converters
- Examples of applications: medical, audio-video, measuring, robotics, motorsport, military, aerospace

EPT



www.ept.de



- Press-fit flexlink board to board connectors- parallel PCB connection (PCB distance 5–25 mm)
- Press-fit flexlink jumper connectors – serial connection of PCBs
- DIN 41612 connectors in press-fit technology, THT
- Colibri connectors – board to board connector with 0.5 mm raster
- SMT connectors in 1.27 mm raster (male, female, straight, angled, tape clamped)
- VPX Backplane connectors
- Male and female connectors for stacked PCB mounting: PC/104, PC/104 plus
- THT power connectors in press-fit technology
- Press-fit pin bars – straight, angular

SANYO DENKI



www.sanyodenki.eu



- Fans with a service life of up to 200,000 hours
- Splash-proof and oil-resistant fans
- PWM-controlled fans
- 2, 3, 5-phase stepper motors
- Stepper motors with integrated controllers
- DC servomotors up to 500 W with amplifiers
- AC 30 W – 30 kW servo motors with amplifiers

RTA



www.rta.it



- Stepper motor controllers:
 - Universal DC 39–140 V/AC 28–100 V, 8 A/ current control
 - Open frame, PCB mounted, Eurocard format, in metal enclosures
 - “Ministep” – built-in programmable motion controller

JAUCH



www.jauch.de



- Quartz resonators
- Quartz generators



SUNON



www.sunon.com

- DC fans:
 - Voltage: 5 V, 12 V, 24 V, 48 V
 - Dimensions from 25 x 25 mm to 120 x 120 mm
 - Radial and axial, with an increased service life of up to 200,000 hours
 - Splash-proof
- AC fans:
 - Voltage: 115 V, 230 V
 - Dimensions from 60 x 60 mm to 280 x 280 mm



STÄUBLI EC



ec.staubli.com

- Photovoltaic connectors
 - Plugs, sockets: MC4, MC4 EVO2
 - Tools for assembly
- Connectors and cables for photovoltaic systems:
 - Certified in accordance with DIN VDE V 0126–3:2006 (first in the world)
- Boxes for photovoltaic panels
- Medical connectors:
 - For equipotential bonding systems according to DIN VDE 0100–410, medical equipment – crocodile clips, electrodes
- Industrial connectors:
 - Single-pin, non-insulated max 6000 A
 - Single-pin, insulated, 600 V/125 A, with protection against disconnection



GETELEC



www.getelec.com

- Electro-conductive gaskets
- Electro-conductive materials
- Thermally conductive materials
- Microwave absorbers
- Compressible seals made of beryllium bronze
- Aeronautical standard screening materials
- Conductive and insulating silicones
- Thermoplastic forming



MICROPRECISION ELECTRONICS



www.microprecision.ch

- Dedicated solutions for lifting equipment manufacturers
- New series of economical switches with IP40 protection class
- Top quality LED lights for medical, automotive, aviation and military applications

VPT

www.vptpower.com



- DC-DC converters
- EMI filters
- Mounting accessories
- Engineering services – designing power supply systems in critical applications
- Complete magnetic feedback without optical coupling
- Controlled low-voltage protection system to eliminate slow start-up of the module
- High power modules
- Low-noise high-frequency modules

VPT Components

www.vptcomponents.com



- Semiconductors for critical applications and the harshest environments
- High reliability bipolar transistors, including radiation-resistant versions, qualified for MIL-PRF-19500
- MOSFETs offered in JANS and JANSR options
- High reliability diodes qualified for MIL-PRF-19500 cut sheet and offered in JAN, JANTX, JANTXV and JANS quality levels

3M

www.mmm.com



- Ribbon cables, shielded, for high-speed data transmission
- IDC, MDR, SDR, MINI-CLAMP, D-SUB connectors
- DIP, SOIC, PLCC holders and measurement test clips

PRECI-DIP

www.precidip.com



- DIP, PLCC, SOIC, PGA, BGA chip holders
- Precision strips with 1,0–2,54 mm raster
- Spring pins and strips
- Connectors for medical, military, aerospace technologies and LED lighting applications
- Connectors for chip cards and PCBs
- Pins and sockets for military connectors (MIL Contact)



- Cables according to customer's layout (waiting time: 4 weeks, minimum order: 305 m):
 - Multi-wire, super-elastic, shielded (with shared shield or multiple shields)
 - Hybrid
 - Concentric, super miniature
 - Low noise cables
 - Audio-video cables, including low noise cables in NEWtral® unique design
 - Round or profiled Litz wires, insulated Litz wires
 - Winding cables
 - Copper braids
 - Spiral cables
 - High current cables
- Jackets and insulating materials for internal wires to be chosen from the following options: silicone rubber, PVC (various types), polyolefins (polyethylene + polypropylene), fluorine-like materials (PFA, FEP, ETFE, MFA), polyurethanes, TPE (various types), polyester, nylon, Kapton
- Plastic pipes according to customer's design (any number of holes, diameter, material, etc.)
- Flat and round insulated copper braids

ELMA



- Rotary components:
 - Code switches, mechanical and optical encoders, multi-position switches, audio switches
 - Enclosures for electronic devices:
 - 19-inch cassettes for VME and Compact PCI systems
 - 19-inch cassettes with increased EMC protection
 - Powder-coated aluminium enclosures
 - Desktop enclosures
 - IP67 aluminium enclosures
 - Telescopic guides
 - Front panels
 - Card guides, mechanical encoders in accordance with MIL-STD-202G standard

CYNERGY3



- Liquid flow sensors
- Reed switches with HV
- Reed switches for high frequency applications



MICROTHERM



www.microtherm.de

- Thermal switches
- Thermal fuses
- Adjustable thermostats



ZIERICK



www.zierick.com

- Mechanical components for mounting electronic boards, also in SMD version (pins, eyelets, fuse holders, connectors, etc.)
- Fasteners for quick mounting of cables into PCBs



OMNETICS



www.omnetics.com

- Miniature round connectors
- D-SUB miniature connectors
- Raster: 1,27 mm or 0,64 mm
- Load capacity: 1 A or 3 A per single switch
- Mounting: soldering or crimping
- MIL military standards
- Operating temperature up to 200°C



WECO



www.wecogroup.com

- Screw connections and terminal blocks
- SMarTconn® terminal block connectors with 3.5 mm and 5.0 mm raster for SMT assembly
- The connectors are offered in various configurations:
 - With lateral, angular or perpendicular to the board surface cable entry
 - Male split connectors with perpendicular or lateral entry (with plastic cap for SMT suction plate)
 - SMD dowel strips (with plastic mounting cap for SMT suction plate)



TEAM MAGNETICS



www.teammagnetics.de

- Transformers
- Low-profile transformers 20 to 300 kHz
- Chokes
- Current transformers

Chemicals for electronics

KONTAKT CHEMIE

www.crcind.com



- Cleaning preparations:
 - Kontakt 60
 - Kontakt WL
 - Video 90
 - Kontakt PPC
 - Label Off
 - Degreaser 65
 - Sreet TFT, Antistatic 100
- Lubrication preparations:
 - LubOil 88
 - Kontakflon 85
 - Silicone 72
- Protection preparations:
 - Kontakt 61
 - Kontakt Gold 2000
 - Vaseline 701
 - Kontakt 40
 - Fluid 101
- Protection varnishes for PCBs:
 - Plastik 70
 - Urethan 71
- Compressed air:
 - Dust Off 67
 - Dust Off 360
 - Jet Clean 360
- Electro-conductive coatings:
 - Emi 35
 - Grafit 35

ELECTROLUBE

www.electrolube.com



- PCB and stencil cleaning agents:
 - Safewash 2000 series – water-based
 - Fluxclean series – solvent-based agents
- PCM – camouflage latex flooding
- Thermally conductive adhesives and pastes
- Greases for electrical contacts, including high voltage ones
- Nickel-based conductive coatings
- Resins:
 - Epoxy
 - Polyurethane
 - Colourless for LEDs and electronics
 - Silicone

www.semicon.com.pl



HUNTSMAN



www.huntsman.com

- Polyurethane and epoxy resins for the flooding of electronic circuits
- Adhesives



PERMACOL



www.permacol.nl

- Electro-conductive adhesives
- Transparent resins for LED
- SMD adhesives
- Epoxy and polyurethane flooding agents



WACKER CHEMIE AG



www.wacker.com

- Silicone masses for electronics and electrical engineering
- Thin layer silicone coatings
- Adhesives and silicone sealants
- Pastes and lubricants: Elastosil N10, Elastosil E41, Elastosil E43, Elastosil N199, Silikonepaste



MOMENTIVE, ACC SILICONES, DOW



www.dow.com, www.acc-silicones.com,
www.momentive.com

- Single-component and two-component flooding agents
- Silicone adhesives
- Thermally conductive pastes
- Thin-film conformal coating



COTRONICS



www.cotronics.com

- Adhesives:
 - Thermally conductive, electro-conductive, optical, UV, high temperature
- Ceramic protective coatings

POLYTEC-PT

www.polytec-pt.com



- Adhesives:
 - Electro-conductive
 - Thermally conductive
 - For fibre optic connectors
 - For optical components
 - UV

MG CHEMICALS

www.mgchemicals.com



- Electro-conductive resins and greases
- Thermally conductive resins
- Pens:
 - Silver electro-conductive varnishes
 - Nickel electro-conductive pens
 - Solder green mask
 - "No clean" flux in the form of a pen
- Gel removers for removing varnishes and adhesives
- Soldering wires with "no clean" flux

FUJIPOLY

www.fujipoly.com



- SARCON gel thermally conductive materials (up to 18 W/m*k)
- Thermally conductive pads
- Thermally conductive pastes
- Elastomer connectors (small raster) for LCD
- EMC sealants
- Tapes

KOKI

www.ko-ki.co.jp



- Surface mount pastes and adhesives

XURON CORP.

www.xuron.com



- Pouring Latex Rover Mask to secure the separated areas on the printed circuit board before soldering, completely removable

ASM

www.asm-smt.com



- SMT cleaning rollers
- SMT cleaning sticks
- Dust-free cloths
- SMT spatulas
- Grid Lock – mounting supports for SMT boards

ANTISTATIC MATERIALS



- Antistatic wristbands and shoes
- ESD wristbands
- ESD table mats: burn-proof, double-layered
- Floor mats
- Wristband cables, earthing, plugs, adapters
- Antistatic tools:
 - Tweezers
 - Brushes
 - Pliers
- Protective clothing
- ESD testers, wristband and earthing testers
- Antistatic chemicals
- Antistatic gloves made of elastic knitted nylon fabric doped with carbon fibre, polyurethane fingers, dotted
- ESD packaging, JEDEC trays

Chemicals for industry

CRC – INDUSTRIES



www.crcind.com



- Cleaning preparations: CRC Dust Free, CRC Contact Cleaner
- Industrial removers: Industrial Degreaser, Complex Blue, Foam Cleaner, Lectra Clean
- Corrosion protection coating products: CRC Zinc, CRC Galva Brite, Inox 200
- Machining oils, lubricating oils
- Greases, pastes, dry lubricants
- Corrosion protection products: CRC 3–36, CRC SP 400, CRC SP 350
- Welding products
- Sealers

3M



www.mmm.com



- Technical aerosols: Scotch series, Novec series
- Protective, insulating and cleaning preparations
- Gels to facilitate the dragging of cables and cable harnesses
- Preparations for cable insulation cleaning
- Scotch-Weld EPX two-component structural adhesives
- Scotch-Weld cyanoacrylate and anaerobic adhesives (Rite-Lok)
- DUAL-Lock industrial velcro
- Powder, polyurethane, epoxy resins

LPS



www.lpslabs.com



- Lubricants/Penetrants: LPS1, LST, TKX, Force842, KB-88, Nikiel Anti-Seize
- Corrosion inhibitors: LPS3, LPS2, Cold Galvanize
- Electronics cleaning agents: CFC Free
- Industrial degreasers: Precision Clean, A-151, PreSolve, Zero Tri
- Lubricants: ThermaPlex, LPS2
- Coolants for machining: Tapmatic TriCut, Tapmatic GOLD, Tapmatic DualAction
- Preparations with aerospace, military, food, industrial and automotive approvals

DYKEM



- Color industrial markers:
- Fixed inscriptions and washable inscriptions
 - For the food industry
 - Increased purity (aerospace)
 - High temperature resistance
 - UV marker
- Contrast fluids for steel scribing
- Cross Check Torque
 - Colour fluorescent quick-drying pastes
 - Breaking the seal means loosening the screw connection or unauthorised interference
 - Aerospace approvals

www.semicon.com.pl

Materials for electronics and industry

3M

www.mmm.com



- Ribbon cables, shielded, for high-speed data transmission
- IDC, MDR, SDR, Mini-Clamp, D-SUB connectors
- Test pads and clips DIP, SOIC, PLCC
- Electrotechnical tapes:
 - Thermally conductive
 - Electro-insulating and PVC
 - Anti-corrosion
 - Self-amalgamating (self-vulcanizing)
 - High temperature and fire resistant
 - Mounting, repair and masking
 - Shielding and earthing
- Adhesive tapes and films:
 - Single sided adhesive, double sided adhesive, DC, VHB
 - Foam and large surface laminating films and membranes
 - Sealants
- Scotch-Weld, structural, acrylic, epoxy, polyurethane adhesives
- Adhesives in cylinders for coating substrates and large areas
- Automotive and industrial sealants
- Aerosol adhesives and preparations
- Preservatives
- Specialized liquids
- Specialized materials for the aviation and military sectors:
 - PPT anti-erosion tapes
 - Adhesives and sealants for aviation
 - Membrane glue – structural adhesives for composites
 - PPT radar shields
- 3M Occupational Health and Safety Department:
 - Respiratory protection: respirators, filtering masks, absorbers
 - Hearing protection: PELTOR, E-A-Rfit protectors
 - Head and face protection: helmets, protective masks
 - Body protection: overalls and aprons

TESA

www.tesa.com



- Industrial tapes for automotive industry, electronics, household appliances, special vehicles:
 - Double-sided adhesive tapes and adhesive films
 - Acrylic tapes (ACX PLUS)
 - High-temperature polyester tapes
 - Shielding tapes, insulating tapes
 - Single-sided non-woven PET adhesive tapes
 - Protective foils
 - Masking tapes



IPG – INTER TAPE POLYMER GROUP

www.itape.com



- Tapes for the military, aviation and automotive sectors:
- Masking tapes, electrotechnical tapes
- Auxiliary materials, masking and protective tapes
- Chemical-resistant aluminium tapes with aerospace certification
- Packing tapes and feeders, tape applicators
- MOOP polyester tapes

SAINT-GOBAIN

www.saint-gobain.com



- Double-sided acrylic adhesive tapes series A7200, A7300, A7500, A7600
 - NORBOND, NORSEAL
- Specialized polyurethane foams and tapes, PTFE, silicone, thermally conductive
 - CHEMSTIK®, NORSIL®, Thermalbond®, ThermaCool®
- Shielding and insulation tapes, electrotechnical tapes
 - H-OLD, CHR



BERRY

www.berryglobal.com



- Specialized tapes for aviation, automotive and other industries
- POLYKEN – double-sided adhesive tapes
- DUCT TAPE tapes for bundling cables, pipes and material transportation
- Protective foils
- Tapes for the aerospace and military industries
- CARGO sealing tapes for aircraft luggage compartments



HEAT SHRINK TUBING – DSG CANUSA



COVERING AND SHIELDING TUBING – ZIPPER

KAPTON TAPES



- Thickness 50 and 100 μm
- Silicone adhesive
- Rollers, wheels, blanks
- Temperature resistance: -70°C to $+200^{\circ}\text{C}$
- Temporary exposure up to 300°C (wave soldering)
- UL-94 V-0

Measuring instruments and accessories



PTR-MESSTECHNIK, QA, LEENO

www.gatech.com, www.ptr.eu, leeno.com



- Test needles for PCB inspection after assembly in SMT and THT technologies
- Switching needles with internal microswitch for pin or casing presence tests
- Test needles for cable harness inspection
- Test needles for concentric connectors
- "Push-back" needles with high spring force
- Spring pins for connecting boards, for chargers
- Tools for test needles
- Casings for test needles

CAMI

www.camiresearch.com



- CableEye® cable harness testers:
 - Low and high voltage testers
 - Basic version – 128 test points
- Modular structure with the possibility of expansion:
 - Low-voltage testers – up to 2560 test points
 - High voltage testers – up to 1024 test points
- Measurement of the transition resistance:
 - Low-voltage – $0,02 \Omega$ to $10\text{M} \Omega$
 - High voltage – $0,1 \Omega$ to $5\text{G} \Omega$
- 4-wire measurement option
- Possibility to connect PCBs or test harnesses
- Possibility to produce a dedicated PCB or cable harness with custom connectors

SENSATA, 3M, POMONA

www.sensata.com, www.mmm.com,
www.pomonaelectronics.com



- Bases and measuring clips for integrated circuits in the following enclosures: DIL, PLCC, SOP, TSOP, QFP, BGA, SOIC

ELECTRO PJP



www.electro-pjp.com



- Measuring accessories: $\varnothing 2$ mm, $\varnothing 4$ mm
 - Measuring cables, probes, crocodile clips
 - Grippers, adapters
- Measuring accessories with increased safety class (1000 V, CAT III)
 - Measuring cables
 - Plugs, sockets, adapters
 - Probes, grippers, crocodile clips
- Safe high frequency measuring accessories (1000 V, CAT II/600 V, CAT III)
 - Oscilloscopic probes, probe tips
 - BNC cables, BNC adapters



TECHNOWILL



www.technowill.com

- High-current (up to 800 A) connection accessories
 - M8, M12, M16
- Flexible power supply cables 1,5–300 mm with connectors



STÄUBLI EC



ec.staubli.com

- Measuring accessories with an increased safety class (1000 V, CAT III and 1000 V, CAT IV)
 - Measuring cables
 - Plugs, sockets, adapters
 - Probes, grippers, crocodile clips
- Safe high frequency measuring accessories (1000 V, CAT II; 600V, CAT III)
 - Oscilloscopic probes
 - Probe tips
 - BNC cables
 - BNC adapters

Tools for electronics

ERSA



www.ersa.de



- Soldering irons, soldering stations
- PCB repair and BGA reballing stations
- Reballing



PANA VISE



www.panavise.com

- Ball joint vices
- Electronic board holders



XURON CORP.



www.xuron.com

- Precision side cutters, also with cut-off material grab
- Crimping pliers
- Cable insulation jacket stripping tool
- Scissors, pliers, cutters for very hard material



WEIDMÜLLER



www.weidmuller.de

- STRIPAX professional tools for processing wires, cables, crimping connectors and clips



JDV



www.jdvproducts.com

- Tools for wire-wrapping
- Kynar wire 24AWG-30AWG



3M



www.mmm.com

- Tools for cable processing
- CHG, MDR connector crimping tools
- Precision micro-abrasive materials: manually operated tools, abrasive papers, fabrics



TWEEZERS

- Precise
- Mounting
- Antistatic
- Straight and curved

CIRCUITMEDIC

www.circuitmedic.com



- PCB repair kits
 - Repairing damaged pads
 - Repairing damaged vias
 - PCB reconstruction
 - Metallisation of vias

SPIRIG

www.spirig.com



- WICK copper braided line – soaked in “no clean” flux allowing for quick desoldering by tin extraction from solder points
- Heat sensitive temperature markers: CelsiStrip, CelsiPoint (40°C – 260°C)

Special materials



- Semiconductor materials: Si, Ge, GaAs
- Optical materials: Si, Ge, ZnSe, quartz, sapphire
- Pure metals
- Magnetron spray targets
- Semiconductor device housings
- Ceramic materials
- Materials for solar cell and panel technology, OLED technology
- Bonding wires

We adapt our rich offer to the needs and requirements of our customers. To meet a variety of expectations, we:

- Carry out special orders, outside the standard offer
- Provide technical support of trained specialists
- Pack and label products according to the wishes of our customers
- Organize deliveries according to individual requirements
- Offer deliveries all over the world

Certificates

Semicon has implemented and maintains an Integrated Quality Management System as confirmed by the certificates below:

AQAP 2110:2016



ISO 9001:2015



EN 9120:2018



ISO 14001:2015



EN ISO 13485:2016



Notes

A series of horizontal dotted lines for taking notes, spanning the width of the page.

Semicon Departments:



Headquarters

Zwoleńska 43/43A str.
04-761 Warsaw
Tel: 22 615-73-71
Fax: 22 615-73-75
info@semicon.com.pl

Main Warehouse

Radomszczańska 19 str.
04-764 Warsaw
Tel: 22 615-83-46
magazyn@semicon.com.pl

SMT Stencils Department

Zakrętowa 4 str.
05-077 Warsaw
Tel: 22 615-27-05
szablony@semicon.com.pl

EMS Department

Ezopa 71A str.
04-805 Warsaw
Tel: 22 825-24-64
EMSinfo@semicon.com.pl

