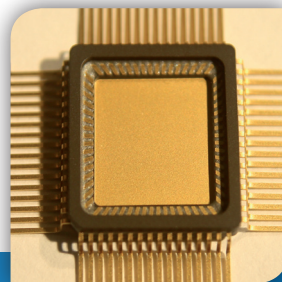
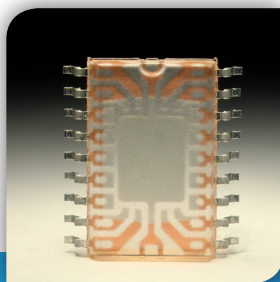




Microelectronic
Assembly
Frankfurt (Oder) GmbH

Packaging of electronic components „Made in Germany“



Individual. Adequate. Reliable.
The appropriate package for every chip

MAF GmbH – the specialist for packaging and assembly of semiconductors in Germany

The production site in
Frankfurt (Oder) enables
**short lead times and great
customer proximity!**

As one of the few specialists for packaging and assembly of microelectronic circuits in Europe, MAF GmbH offers a wide range of extensive products and services „Made in Germany“, from wafer sawing up to the finally packaged component.

Services around the packaging process:

Preparation



Electronic wafer map



**Back grinding
(thinning of the wafer)**

Dicing of chips



**Wafer lamination
(mounting of the
wafer on foil)**



**Wafer sawing
Sorting of fails**



**Pick&Place of the chips in
waffle-pack**

Assembly of the chips



**Chip bonding
on lead frame**



**Fully automatic
wire bonding
Chips – lead frame**



**Quality control:
visual inspection/
pull- & shear test**

Encapsulation of the chips

Standard packages
(i.a. SOP, SSOP, PQFP, QFN, DFN)



**Molding process/
insert moulding of lead
frame with epoxy resin**



**customer-specific marking
of the components e.g.
with laser**



**Tin coating of the lead
frame**



**Trim- & form process:
prozess: forming and
separating of pins**



**Packing
(tray, tube, reel)**

customer-specific packages



e.g. transparent package

Assembly for samples (ceramic or premold)



Marking



**Encapsulation
(lid, glob top)**

Chip on Board (COB)



**Bonding of dies directly
on the PCB
(printed circuit board)**

Other services



**Electrical component
testing and 3D-lead
inspection**



**Analysis and qualification
of components (e.g. micro-
section, EDX, x-Ray)**



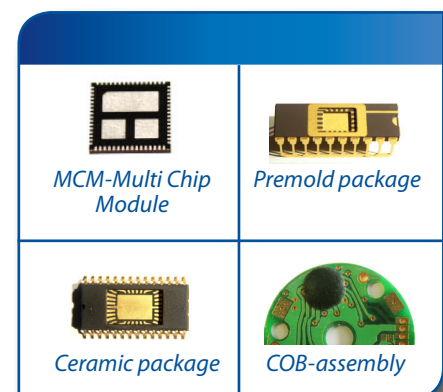
**Long-term conservation of
electronic components**

Packaging in plastic standard packages

Standard	Package		Sample	Outline Dimension Body Dimension (mm)	Lead Pitch (mm)
	Outline	Pin			
JEDEC-MS-012	SOP	8		4.90 x 6.00 x 1.55 (4.90 x 3.90 x 1.40)	1.27
		14		8.65 x 6.00 x 1.55 (8.65 x 3.90 x 1.40)	1.27
		16		9.90 x 6.00 x 1.55 (9.90 x 3.90 x 1.40)	1.27
JEDEC-MS-013	SOP	18		11.55 x 10.35 x 2.50 (11.55 x 7.50 x 2.30)	1.27
		20		12.80 x 10.35 x 2.50 (12.80 x 7.50 x 2.30)	1.27
		28		17.90 x 10.35 x 2.50 (17.90 x 7.50 x 2.30)	1.27
JEDEC-MO-137	SSOP	16		4.90 x 6.00 x 1.55 (4.90 x 3.90 x 1.40)	0.64
		20		8.65 x 6.00 x 1.55 (8.65 x 3.90 x 1.40)	0.64
JEDEC-MO-220	QFN	24		4.0 x 4.0 x 0.9	0.5
		32		5.0 x 5.0 x 0.9	0.5
		48		7.0 x 7.0 x 0.9	0.5
		64		9.0 x 9.0 x 0.9	0.5
JEDEC-MO-229	DFN	10		3.0 x 3.0 x 0.9	0.5

Individual packages according to customer requirements

Additionally to the packaging in **standard packages** (i.a. PQFP, SOP, SSOP, QFN, DFN) also **customer-specific packages for special applications**, e.g. with multiple dies or in transparent housing, can be developed and produced. Furthermore, the assembly of samples in **premold** respectively **ceramic packages** (open cavity) or a **Chip-On-Board assembly** (COB) for saving space on the PCB can be performed as well.



Together we develop the optimal package „Made in Germany“ for your special application!

Comprehensive quality assurance

Various quality tests, such as visual inspection or pull and shear test for chip and wire bonding, ensure the **perfect quality and functionality** of the electronic components.

In addition, further **tests and qualifications** can be carried out within the HTV Group of Companies according to accepted standards, e.g. MIL-STD-883 and MIL-STD-750.

- Electrical wafer test
- 3D-lead inspection
- Electrical component test
- Microsections and X-rays
- Environmental testing
- Lifetime tests

Dynamic company network: services for electronic components from one source

MAF GmbH, as a member of the **HTV Group of Companies**, offers numerous additional services around electronic components if required: from **testing, programming** and **analysis** to the **worldwide unique long-term conservation and storage** for up to 50 years.



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