



EMC filters

Quality and environment

Date: January 2006

Corporate goals

Our aim is to play a leading role among the world's most competitive companies in the sector of electronic components. This aim is shared by the EPCOS quality and environment management system:

1 EPCOS quality system

1.1 Extract from EPCOS quality policy

- The quality of our products and services represents a key constituent of our corporate strategy, whose principal aim is customer satisfaction.
- Our quality management system is continuously oriented to the international standards that stipulate the highest requirements.

1.2 Quality management system

The quality management system to ISO/TS 16949:2002 is applied throughout the company and is used to implement the EPCOS quality policy. The implications include:

- As a rule, product and process developments follow the rules of APQP,
- Quality tools such as FMEA, DoE and SPC minimize risks and ensure continuous improvements in conjunction with regular internal audits and QM reviews.

The documents of the quality management systems are posted on the EPCOS Intranet and are available to all employees.

1.3 Certification

The EPCOS quality management system forms the basis for the company certification to ISO 9001:2000 and ISO/TS 16949:2002 that includes all EPCOS plants and sales organizations. The company certificates are posted on the EPCOS Internet (www.epcos.com/quality).

1.4 Production sequence and quality assurance

The business units implement the corporate specifications for quality management in procedural and work instructions referred to products and processes.

The following two examples show quality assurance applied to the production sequence of power line filters of the SIFI series and converter filters.

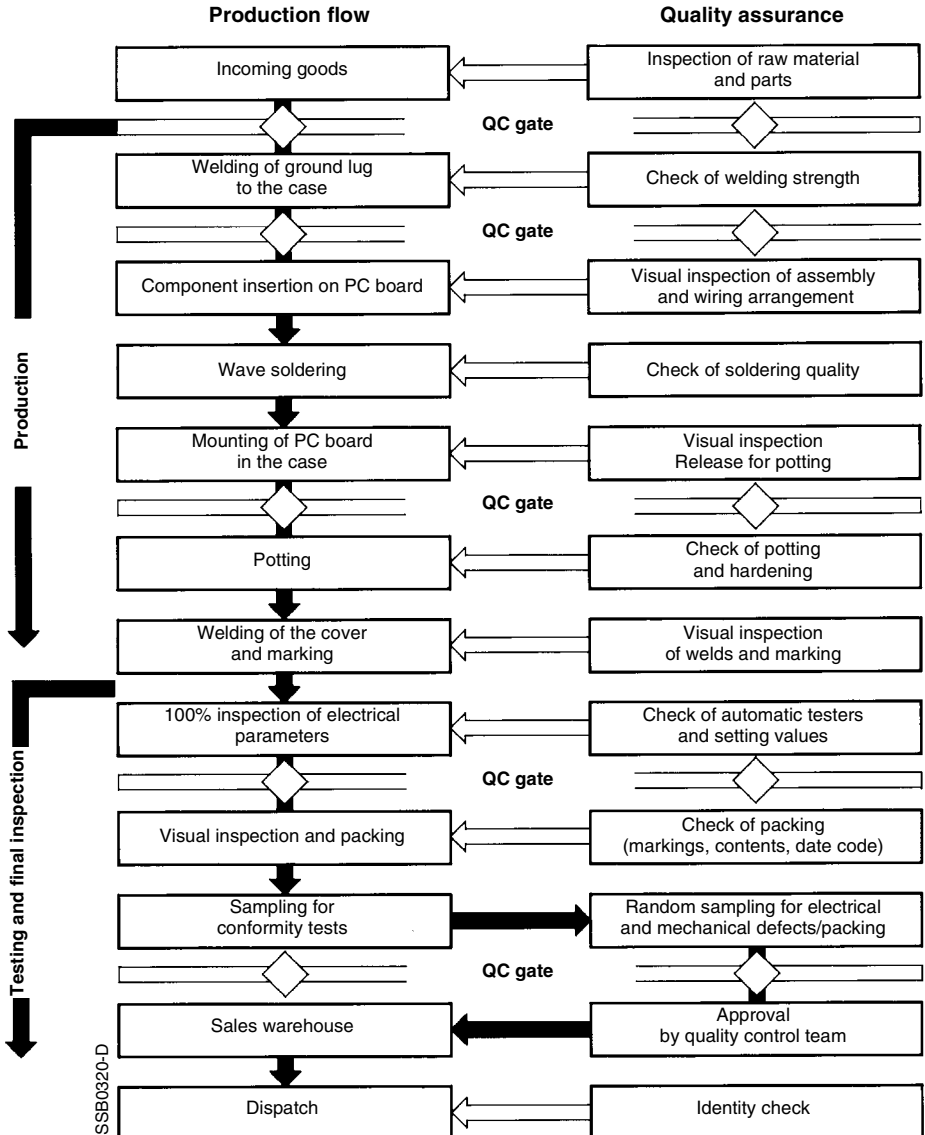
APQP= Advanced Product Quality Planning
DoE= Design of Experience
FMEA= Failure Modes and Effects Analysis
SPC= Statistic Process Control

EMC filters

Quality and environment

Manufacturing and quality

Example: Power line filters, SIFI series (A, B, C, D, E)



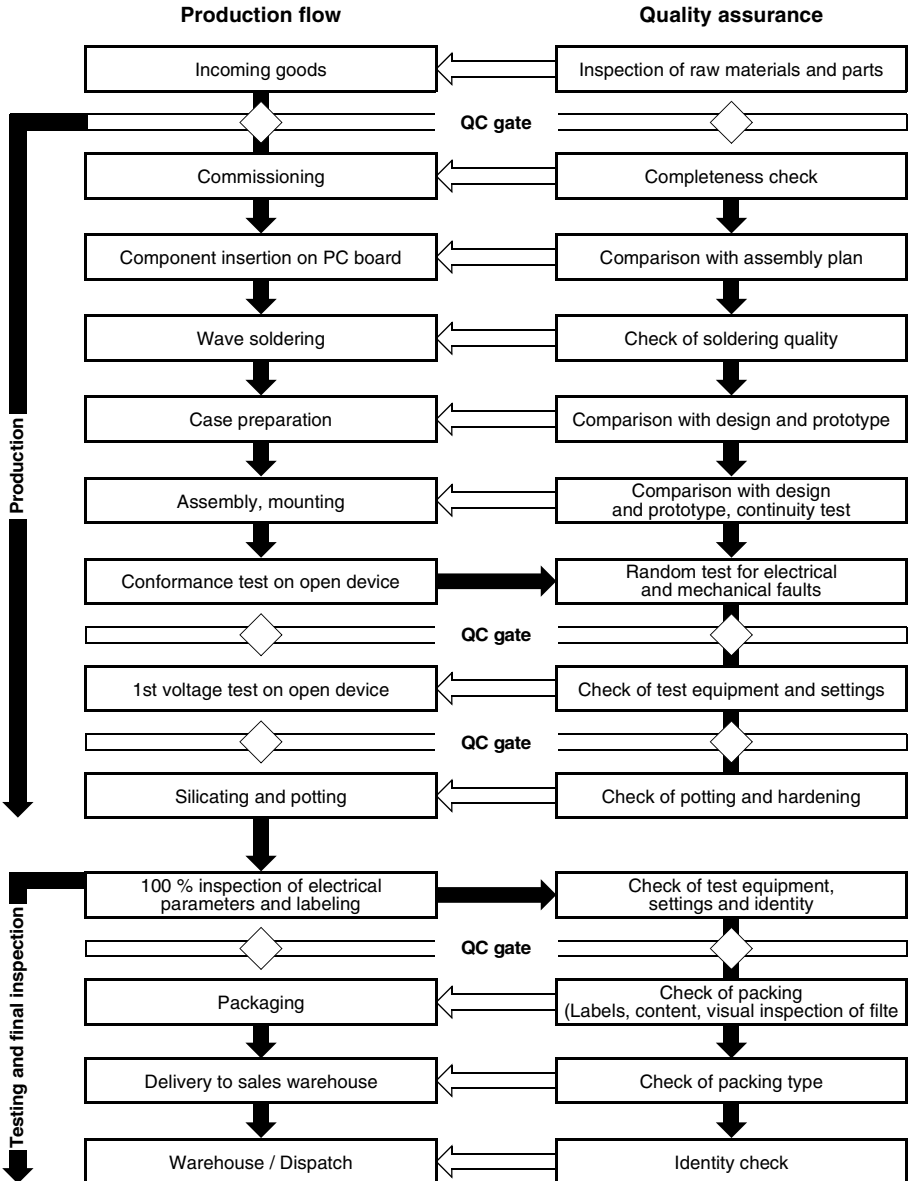
QC = Quality control

Please read *Important notes* and *Cautions and warnings*.

EMC filters

Quality and environment

Example: Converter filters



QC = Quality control

Please read *Important notes* and *Cautions and warnings*.

1.5 Delivery quality

“Delivery quality“ means compliance with the agreed data at the time of delivery.

1.5.1 Defect criteria/failure criteria

A component is defective if one of its features does not correspond to the specification of the data sheet or an agreed delivery specification. It's to differentiate between total defects and other defects.

Total defects:

- Open contact, short-circuit or incorrect terminal assignment
- Damaged components, packages, terminals or encapsulation
- Incorrect or missing marking on components
- Mixing of a delivery lot with incorrect types

Other defects:

- Defects in the electrical properties (electrical characteristic limits exceeded)
- Defects in the mechanical properties, e.g. incorrect dimensions, minor damage, illegible marking, bent terminals.

In general, the limits stipulated in the applicable standard or specification apply.

1.5.2 Incoming goods inspection at the customer

For the incoming inspection, we recommend the use of a random sampling plan to DIN ISO 2859 Part 1 (contents compliant with MIL STD 105 D or IEC 410).

The test methods used and the AQL must be agreed between the customer and supplier.

1.6 Service life/reliability

The service life in terms of reliability is the time period during which random failures occur, i.e. the range in the product operating life in which the failure rate remains largely constant (early failures and end of operating life excepted). The value depends strongly on conditions of use.

1.7 Conditions of use

EPCOS products may only be used in line with the technical specifications and installation instructions and must comply with the state of the art. Non-observance of limits, operating conditions or handling guidelines can lead to disturbances in the circuit and other undesirable consequences such as a higher failure rate.

In this connection, please note the “Important notes” on page 2.

Should you have any application-referred questions, please contact our experts, who will be pleased to advise you.

1.8 Customer complaints

If a fault occurs in a product despite careful manufacture and testing, please contact your local sales organization. They will register your complaint as an RMA process and forward it to the relevant technical departments for rapid handling.

EPCOS treats technical complaints according to the 8D methodology; i.e. with the use of interdisciplinary teams who aim to implement rapid countermeasures and sustained corrections and answer all complaints with an 8D report (8D = 8 disciplines).

In order to be able to deal quickly and smoothly with complaints, the following data are helpful:

- Number of components subject to complaint or returned
- Fault description
- How and when was the fault detected?
- Logistics data (date code, delivery note no.)
- Operating conditions
- Operating duration up to occurrence of the fault
- Measurement parameters in the case of divergent technical data

In the event of transport damage, we would ask you to describe this in more detail and if required to mark it so that it can be distinguished from any further damage sustained during the return shipment. The original package should also be checked and any damage to be described. In order to avoid further damage, the original packaging should also be used for the return shipment.

When packing filters, please note:

Capacitors in the filters may still contain dangerous remnant charges. To avoid injury, never touch the terminals! Before packing filters, terminals shall be short-circuited permanently.

2 Environmental management system

2.1 Environmental policy

Our fundamental commitment to protection of the environment is laid down in the EPCOS environmental policy.

EPCOS defines the following guidelines for environmental protection:

- We work continuously to lighten the burden on the environment and to reduce consumption of energy and natural resources.
- We take all necessary precautions to avoid environmental hazards and damage.
- Environmental impacts are assessed and flow into product and process planning at the earliest possible stage.
- Our environmental management systems ensures that our environmental policy is effectively implemented. The technical and organizational procedures required are regularly monitored and constantly upgraded.
- Every employee is required to act in an environmentally aware manner. To promote awareness of responsibility for the environment at all levels is a continuous management task.
- We seek to influence our business associates to follow environmental guidelines similar to ours. We supply our customers with information on environmentally compliant use of our products. We work in a spirit of cooperation with the relevant authorities.
- We inform the public about of the environmental impact of our activities and the environmental achievements of our company.

2.2 Environmental management system

The EPCOS environmental management system to ISO 14001 that is applied across the company is used to implement the EPCOS environmental policy. It is posted on the EPCOS Intranet and is thus accessible to all employees.

2.3 Certification

The EPCOS environmental management system forms the basis for the ISO 14001 company certification in which all the plants are being successively integrated.

The company certificate is posted on the EPCOS Internet:
(www.epcos.com/environmental_management).

2.4 Hazardous substances in components

As a manufacturer of passive components, we develop our products on the basis of the relevant standards and laws and thus ensure that they remain free of materials and substances defined as hazardous by the relevant legislation.

In order to guarantee a standardized procedure for EPCOS worldwide, a binding list of materials and substances is defined in our environmental management system. The planning and development instructions include regulations and guidelines that aim to identify environmental aspects and to optimize products and processes with respect to material use and environmental compliance, to design them with sparing use of resources and to substitute hazardous substances as far as possible.

Consideration of the environmental aspects is checked and recorded in the design reviews: the environmental officer provides support in the assessment of the environmental impacts of a development project.

2.5 Material data sheets for product families

EPCOS posts material data sheets on the Internet (www.epcos.com/material) that show typical compositions of product groups by selected representatives. The materials are listed with their percentage weight distribution referred to the respective component.

As usual, all materials with a weight percentage exceeding 0.1 are listed. All specifications are typical data and may vary within a product group or production lot.

The material data sheets do not represent assured properties within the scope of the relevant legislation, but are merely given for purposes of information.

Please note in this connection the “Important notes“ on page 2.

2.6 Disposal

The specifications given under the header of hazardous substances imply that all the components presented here can be easily disposed of. Most of our components are used as material or energy by the relevant electronic waste recycling operators. They are required to abide by the applicable specifications.