

## **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 the 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 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<sup>1)</sup>.
- Quality tools such as FMEA<sup>2)</sup>, DoE<sup>3)</sup>, SPC<sup>4)</sup> minimize risks and ensure continuous improvements in conjunction with regular internal audits and QM reviews.

#### **1.3 Certification**

The EPCOS quality management system forms the basis for the certification to ISO 9001 and ISO/TS 16949 that includes all EPCOS plants and sales organizations. The certificates are posted on the EPCOS Internet ([www.epcos.com](http://www.epcos.com) > Company > About EPCOS > Quality > ISO, ISO/TS and CSR Certificates).

#### **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 examples show the quality assurance process in the production of power filters of the SIFI series and of converter filters.

1) APQP = Advanced Product Quality Planning

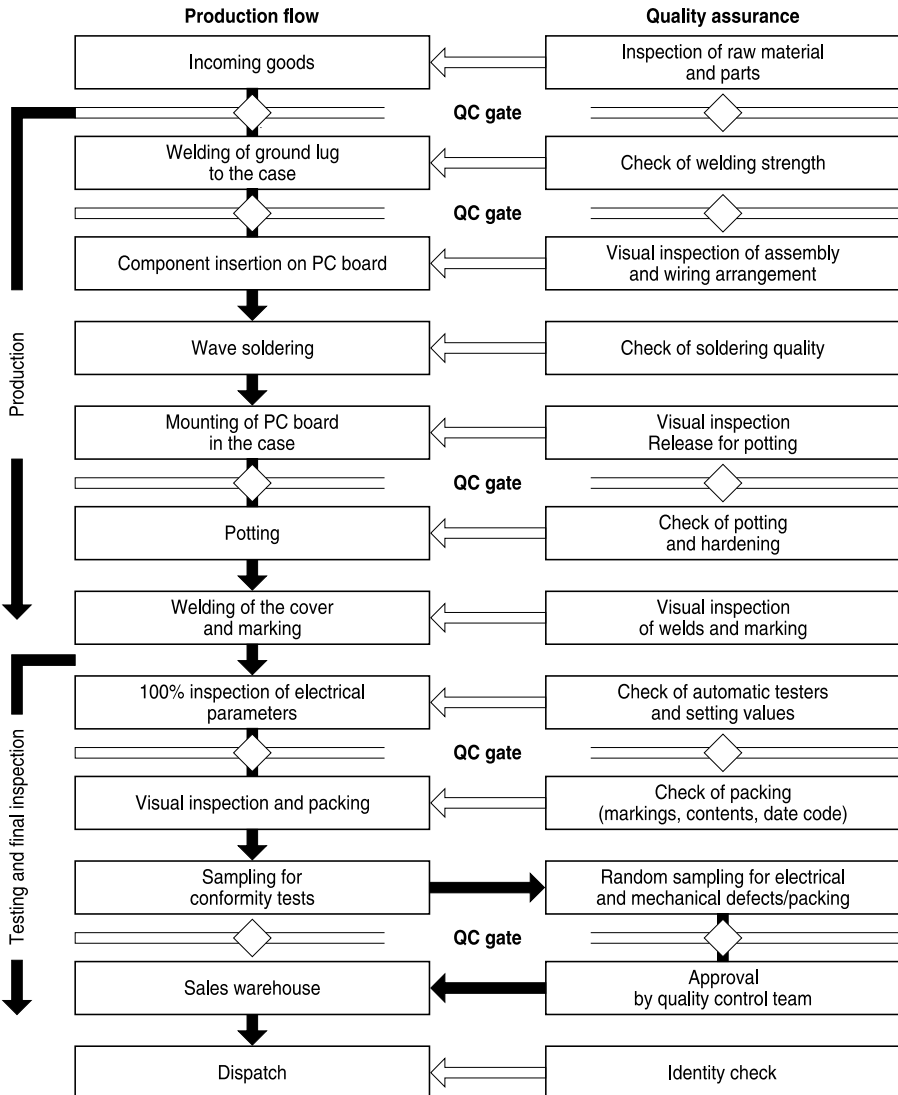
2) FMEA = Failure Modes and Effects Analysis

3) DoE = Design of Experiments

4) SPC = Statistical Process Control

## Quality and environment

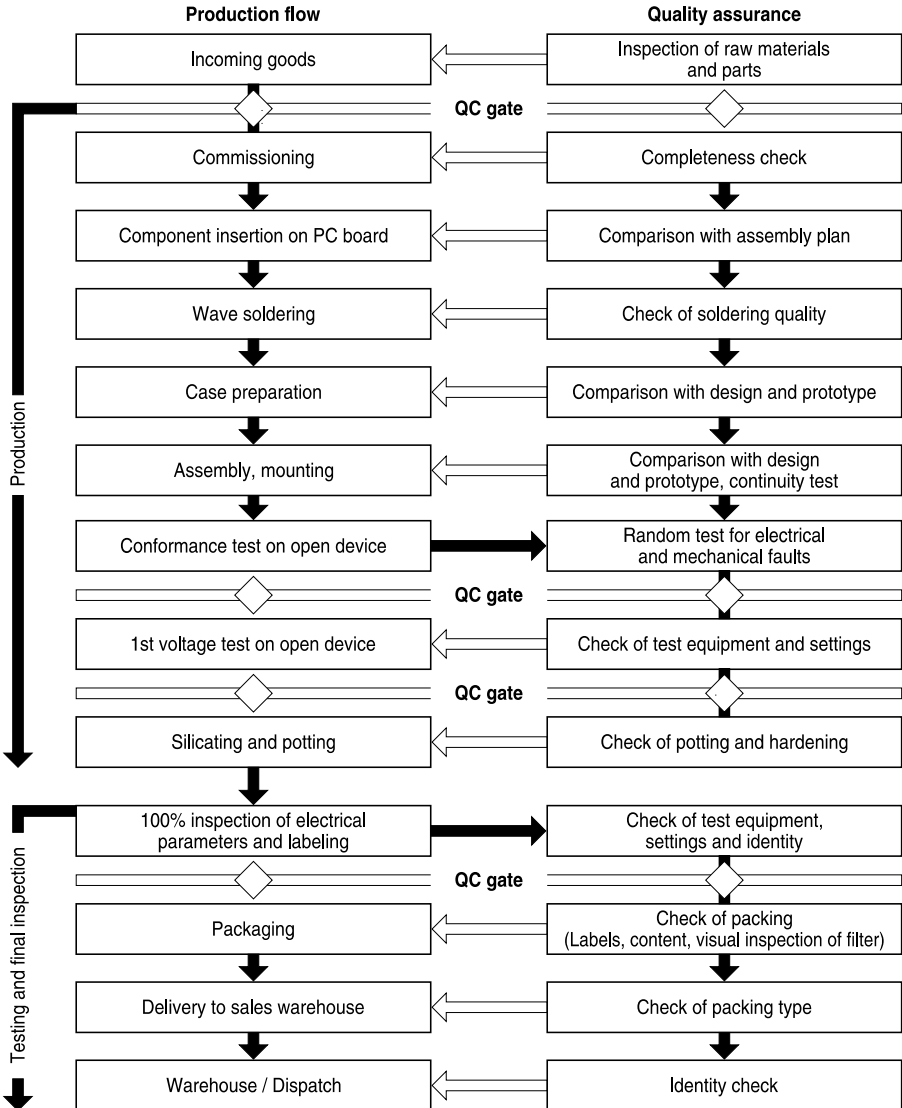
### Production and quality assurance for the SIFI series A, B, C, D and E: B84111A\*, B84112B\*, B84113C\*, B84114D\*, B84115E\*



QC = Quality control

## Quality and environment

### Production and quality assurance for converter filters B84142\*, B84143\*, B84144\*



QC = Quality control

### **1.5 Delivery quality**

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

### **1.6 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.

### **1.7 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 60410).

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

### **1.8 Final inspection/approval for shipment**

Final inspection verifies the major properties of the end products batch by batch, usually by means of fully automated selection tests. Approval for shipment helps certify that products shipped comply with specifications. It includes:

- Testing of principal parameters
- Identification check and visual assessment
- Examination of papers accompanying the batch

### **1.9 Service life**

The service life in the sense of reliability is the time occurring between random failures, i.e. the product life during which the failure rate remains essentially constant (excluding early failures and the end of service life). Its value depends greatly on the conditions of use.

### **1.10 Reliability**

A variety of endurance tests and environmental tests are conducted to confirm the product reliability. These tests are derived from the extremes of expected application conditions, with test conditions intensified to obtain authoritative results within a reasonable period.

The reliability testing programs of EPCOS are based on the test plans of international standards and customer requirements.

EPCOS performs reliability tests to qualify new component families and for periodic requalification.

### 1.11 Conditions of use

Filters and chokes may be used only as long as the technical specifications and assembly instructions are observed and in accordance with the state of the art. Non-observance of limits, operating conditions or handling guidelines can lead to interference in the circuit and additional undesired consequences, or to a higher failure rate.

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.

### 1.12 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 (Return of Material Authorization) process and forward it to the relevant technical departments for rapid handling.

EPCOS treats 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 case of obvious transport damage, please document the delivery condition, send a complaint to the forwarder immediately or refuse to accept the goods. Please inform your EPCOS sales partner without delay.

When packing goods, please note that the capacitors in the filters can contain dangerous residual charges. So never touch the terminals! Be sure to short-circuit them reliably before packing!

## **2 Environmental management system**

### **2.1 Environmental protection principles**

Our fundamental undertakings with respect to environmental protection are laid down in the EPCOS environmental protection principles:

1. We work continuously toward reducing the burden on the environment, toward minimizing associated risks and toward lowering the use of energy and resources, above and beyond the legal requirements.
2. We take appropriate precautions to avoid environmental hazards and to prevent damage to the environment.
3. Potential impact on the environment is assessed and incorporated in process and product planning at the earliest possible stage.
4. By applying appropriate management, we ensure that our environmental policy is implemented effectively. The technical and organizational procedures required to do this are monitored regularly and constantly further developed.
5. Each employee is required to act in an environmentally conscious manner. It is the constant duty of management to increase and encourage awareness of responsibility at all levels.
6. We work with our business partners to promote conformity with similar objectives. We supply our customers with information on ways to minimize any potentially adverse environmental impacts of our products.
7. We work in a spirit of cooperation with the relevant authorities.
8. We inform the public of the impact on the environment caused by the company and our activities related to the environment.
9. To regard the rules of labour safety is the task for each employee.
10. We take preventive measures to avoid work-related accidents.

### **2.2 Environmental management system**

The EPCOS ISO 14001 based environmental management system is applied company wide for implementing the EPCOS environmental policy. It is posted on the EPCOS Intranet and is thus accessible to all employees.

### **2.3 Certification**

The EPCOS Group operates an environmental management system that conforms to the requirements of ISO 14001 and is mandatory for all plants.

The corporate certificate is posted on the EPCOS internet:

[www.epcos.com](http://www.epcos.com) > Company > Environmental Protection > Further Information

## 2.4 Legally regulated substances in components

### 2.4.1 RoHS

The term "RoHS-compatible" shall mean the following:

Components defined as "RoHS-compatible" are compatible with the requirements of Art. 4 of Directive 2011/65/EU ("RoHS II") of the European Parliament and of the Council on the restriction of the use of certain hazardous substances in electrical and electronic equipment of 8 June 2011 and with the requirements of the provisions which will result from transposition of RoHS II into national law to the extent such provisions reflect the directive.

"RoHS-compatible" components do not contain any of the following substances at a content exceeding the maximum concentration limits of 0.1 % for lead, mercury, hexavalent chromium, PBB, PBDE, and 0.01 % for cadmium at a homogeneous material level, except the application is exempted by Annex III of "RoHS II".

### 2.4.2 REACH

According to Art. 33 we are obliged to inform our customers immediately or on request a consumer within 45 days if we get knowledge that a Substance of Very High Concern (SVHC) is contained in a product or its packaging with more than 0,1 % w/w. Provided this substance is published by the European Chemical Agency via the candidates list. Respective information is provided via [www.epcos.com/reach](http://www.epcos.com/reach) (link: REACH Candidates List and Information according REACH Art. 33, concerning EPCOS Products).

## 2.5 Banned and hazardous substances in components

As a manufacturer of passive components, we develop our products on the basis of sustainability.

In order to establish a standardized procedure for EPCOS worldwide, a material compliance management and a mandatory list of banned and declarable substances and substances of special interest (EPCOS BAD-SL) are part of our quality 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.

The inclusion of environmental aspects is monitored and recorded at regular design reviews.

## **2.6 Material data sheets for product families**

EPCOS posts material data sheets on the Internet ([www.epcos.com/material](http://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 per IEC/PAS 61906, all materials with a weight percentage exceeding 0.1 % are listed. All specifications are typical data and may vary slightly within a product group or production lot. The material data sheets do not represent guaranteed properties, but are merely given for purposes of information.

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

## **2.7 Waste disposal**

All filters and chokes can be disposed of, reused or recycled depending on their type. On this point, the specifications of the country concerned must be observed.