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**Process design standard for microwave integrated component
production plant**

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1 General

1.0.1 This standard is formulated for the purpose of standardizing the process design of microwave integrated component production plants, achieving advanced technology, safety and applicability, economical rationality, energy saving and environmental protection.

1.0.2 This standard applies to the process design of newly built, rebuilt and expanded microwave integrated component production plants.

1.0.3 In addition to conforming to this standard, the process design of the microwave integrated component production plant shall comply with the current relevant national standards.

2.0.1 microwave integrated module

Composed of shells, substrates, components, micro-modules, and interfaces, components with specific functions in the 0.3GHz to 300GHz frequency band.

2.0.2 Process layout process layout

Space arrangement to meet product production process and output requirements.

2.0.3 Chip die

Unpackaged substrate division unit, the surface is a semiconductor integrated circuit.

2.0.4 Micro-module stage assemblies

There are tiny components with independent functions and no complete package in microwave integrated components.

2.0.5 Partial package partial package

Hermetic protection of special areas of microwave integrated components.

2.0.6 Debug adjustment

The adjustment of material, structure and size makes the product meet the specified functions and indicators.

3 overall design

3.0.1 For the overall design of the factory, various disciplines should be organized to carry out design review and design verification, and the design output should meet the requirements of the overall design outline or overall design guidance.

3.0.2 The general design outline of the factory shall include requirements for electrostatic protection, environmental protection, energy conservation, safe production, automation, and informatization.

3.0.3 The overall design of the factory should review the design of each specialty, and the professional design should meet the requirements of the overall design, and actively coordinate and optimize among the specialties.

3.0.4 The overall design of the factory should conform to the manufacturing process, and should match the expected production capacity of the factory, and meet the design requirements of single shift and weekly (monthly) production capacity.

3.0.5 The overall design of the factory should make the production, testing, and turnover links meet the requirements of product qualification rate.

3.0.6 The overall design of the factory should reasonably set the clean room area and cleanliness level according to the process requirements.

3.0.7 The overall design of the factory should adopt new technology, new technology, new equipment and new materials according to the characteristics of the production process, and create conditions for construction, commissioning and overhaul, maintenance management and safe operation, and the functional areas should be set flexibly.

3.0.8 The capacity and resource allocation of each process in the factory should meet the production needs of the product, and the workstations should be set up reasonably.

3.0.9 Elevators should be installed inside the multi-storey factory building. The flow of logistics, people and information should be reasonable and concise, and the flow should be smooth. The rhythm of semi-automatic and automatic production should match.

4.1 Site selection and layout

4.1.1 Site selection should be based on national and local overall planning, comprehensively considering factors such as water supply and drainage, power supply, electricity, communication facilities, traffic conditions and the environment.

4.1.2 The general layout of the factory area shall be determined according to the requirements of functional areas such as process production, power auxiliary, storage, office and management.

4.1.3 The entrances and exits for the flow of people and goods in the factory area should be set up separately.

4.1.4 The vehicle parking site in the factory area should be reasonably determined according to the number of employees, composition characteristics, and surrounding public transportation conditions, and should meet local planning requirements.

4.1.5 The production plant should be equipped with a circular fire exit, which should comply with the relevant provisions of the current national standard "Code for Fire Protection Design of Buildings" GB 50016.

4.1.6 The pavement of roads in the factory area should adopt materials with good overall performance and low dust generation.

4.2 Architecture

4.2.1 The fire hazard classification of the production plant shall be Class D, and the fire resistance rating shall not be lower than Class II.

4.2.2 The division of fire protection zones of production workshops shall be determined according to the characteristics of the process and production, and the area of fire protection zones shall comply with the relevant provisions of the current national standard "Code for Fire Protection Design of Buildings" GB 50016.

4.2.3 When the intermediate warehouse is set up in the production plant, it shall comply with the following regulations.

1 Type A and Type B intermediate warehouses should be arranged against the outer wall, and the storage capacity should not exceed the required amount for 24 hours;

2 When setting up Category A, B, and C intermediate warehouses, firewalls and non-combustible floors with a fire resistance rating of not less than 1.5h should be used to separate them from the production and operation parts;

3 The intermediate warehouses of Category D and E in the production plant shall be separated from the production operation parts by the fire partition wall with a fire resistance rating of not less than 2h and the floor slab of 1h;

4 The fire resistance grade and area of the intermediate warehouse shall comply with the provisions of the current national standard "Code for Fire Protection Design of Buildings" GB 50016.

4.2.4 For each fire compartment in the production plant or each floor within a fire compartment, the number of safety exits shall be calculated and determined, and shall not be less than 2. When the building area of each floor in the fire compartment is not greater than 250m², and the number of people working at the same time in the fire compartment is not more than 20, one safety exit can be set.

4.3 Structure

4.3.1 The types and standards of anti-seismic fortification of buildings shall be determined in accordance with the current national standard GB 50223 "Standards for Classification of Seismic Fortification of Construction Engineering".

5.1 General requirements

5.1.1 The process production area of the microwave integrated component production factory shall include the production workshop and production auxiliary area.

5.1.2 The equipment and facilities in the process production area of the factory should match the production scale and process.

5.1.3 The flow of people and logistics in the process production area of the factory should be reasonably planned according to the production process to avoid crossing.

5.1.4 The area of the process production area of the factory should meet the requirements of equipment, machine positions, operating positions and turntables required for product production, and the space should be fully and rationally used.

5.1.5 The layout of the production workshop should be determined according to the type and quantity of equipment, operating space, flow of people, logistics and safety production requirements.

5.1.6 The layout of adjacent processes in the production workshop should be adjacent to each other. The assembly, testing, packaging and other processes involving chips in the production workshop should be carried out in a clean area, and other processes can be carried out in a non-clean area.