

Product	Diode
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1. Product : Diodes with leadfree plating

2. Compliance standards : JEDEC STANDARD

3. Method : JEDEC, JESD201A, JESD22A121 standard.

(1) Sample size

A minimum of 96 terminations from a minimum quantity of 3 plating lots, 2 samples from each lot per each described precondition treatments per stress test.

\* In case of big terminal component, it can be reduced a number of socket,

(2) Class level

Class 2: Business critical applications such as Telecom Infrastructure equipment, High-end Servers, Automotive, etc.

Class 1: Industrial / consumer products

Class 1A: Consumer products

(3) Test procedures

Stress Type		Precondition Treatment	Total Duration	
			Class 1 and 2 Products	Class 1A Products
Temperature Cycling	-55 +0/-10 °C 85 +10/-0 °C	Depend on Components	1500cyc	1000cyc
Temperature / Humidity Storage	30 ±2°C 60 ±3% RH		4000hr	1000hr
High Temperature Humidity Storage	55 ±3°C 85 ±3% RH		4000hr	1000hr

(4) Criteria

Component Type	Class 2	Class 1	Class 1A
2 Lead SMD Components	40 μm for Temperature/Humidity Storage and High Temperature/Humidity Storage	67 μm	50 μm for Temperature Cycling and High Temperature/Humidity Storage 20 μm for Temperature/Humidity Storage
Multi-Leaded Components		67 μm	
High Frequency Components		50 μm	
Components with a minimum lead-to-lead gap >320 μm	45 μm for Temperature Cycling	100 μm	75 μm

4. Whisker Test result

(1) Samples : Leadfree plating products were selected as samples.

The samples are selected for each kind of frame base material, frame base, and terminal process method and composition.

(2) Criteria : It could be verified anti whisker or not, which is satisfied with criteria of JESD201A Class 2, 1, 1A.

(3) Result : In existing all product diodes with leadfree plating, it can be confirmed anti whisker which is satisfied by Class 2, 1, 1A as in the following next page.

## Test result (DIODE)

Frame material		External lead treatment		Judgement
Base material	Internal lead plating	Method	Composition ratio	
FeNi42Alloy	Cu plating	Electricity plating	Sn-2Cu	Pass
FeNi42Alloy	Cu plating	Electricity plating	Sn	Pass
FeNi42Alloy	Cu plating	Dip	Sn-3Ag-0.5Cu	Pass
Cu Alloy	—	Electricity plating	Sn-2Cu	Pass
Cu Alloy	Ag plating	Electricity plating	Sn-2Cu	Pass
Cu Alloy	Ag plating	Electricity plating	Sn	Pass
Cu Alloy	Ag plating	Dip	Sn-3Ag-0.5Cu	Pass
Cu Alloy	—	Electricity plating	Sn	Pass
Cu Alloy	Ni plating	Electricity plating	Sn	Pass
Cu Alloy	—	Dip	Sn-3Ag-0.5Cu	Pass

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