Joint Endurance Test Method Standardization Group

◆ Purpose & Scope

- Standardize test methods related to the reliability and durability of joints using "Solder", which is a basic technology in JISSO technology.
- Promote standardization based on R&D results of joint reliability test methods in the past standardization R&D projects "Standardization of reliability evaluation method of new joining technology in high-density packaging" and "Establishment and standardization of basic technology for low-temperature lead-free soldering".

◆ Activities Overview

- Joint endurance test methods for lead-free solder joints proposed to IEC from Japan, and five IEC standards had been established by 2009.
  - [IEC 62137-1-1 (Pull Test), -1-2 (Shear Test), -1-3 (Drop Test), -1-4 (Bending Test) and -1-5 (Shear Fatigue Test)]
- Selection guidance of the above test methods for each electronic component was published in November 2011 as IEC 62137-3 standard.
- "Endurance test methods for solder joint of area array type package surface mount devices" was published in October 2014 as IEC 62137-4, based on JEITA ET-7407B revised in 2012. These IEC standards have also been issued in JIS.

◆ Affiliated Project Group

Reflow solderability & heat resistance test method for printed wiring board joints PG

Standards in charge

IEC	JIS	JEITA	Standard document name
IEC 62137-1-1 pub. in 2007-07	JIS C 62137-1-1 pub. in 2010-05	ET-7409/101A	SURFACE MOUNTING TECHNOLOGY – ENVIRONMENTAL AND ENDURANCE TEST METHODS FOR SURFACE MOUNT SOLDER JOINT – Part 1-1: Pull strength test
IEC 62137-1-2 pub. in 2007-07	JIS C 62137-1-2 pub. in 2010-05	ET-7409/102A	SURFACE MOUNTING TECHNOLOGY – ENVIRONMENTAL AND ENDURANCE TEST METHODS FOR SURFACE MOUNT SOLDER JOINT – Part 1-2: Shear strength test
-	-	ET-7409/103A	SURFACE MOUNTING TECHNOLOGY – ENVIRONMENTAL AND ENDURANCE TEST METHODS FOR SURFACE MOUNT SOLDER JOINT – Part 103A: Torque shear strength test
-	-	ET-7409/104A	SURFACE MOUNTING TECHNOLOGY – ENVIRONMENTAL AND ENDURANCE TEST METHODS FOR SURFACE MOUNT SOLDER JOINT – Part 104A: Bending limit test
IEC 62137-1-4 pub. in 2009-01	JIS C 62137-1-4 pub. in 2011-12	ET-7409/105A	SURFACE MOUNTING TECHNOLOGY – ENVIRONMENTAL AND ENDURANCE TEST METHODS FOR SURFACE MOUNT SOLDER JOINT – Part 1-4: Cyclic bending test
IEC 62137-1-3 pub. in 2008-11	JIS C 62137-1-3 pub. in 2011-12	ET-7409/106A	SURFACE MOUNTING TECHNOLOGY – ENVIRONMENTAL AND ENDURANCE TEST METHODS FOR SURFACE MOUNT SOLDER JOINT – Part 1-3: Cyclic drop test
IEC 62137-1-5 pub. in 2009-02	JIS C 62137-1-5 pub. in 2011-12	—	SURFACE MOUNTING TECHNOLOGY – ENVIRONMENTAL AND ENDURANCE TEST METHODS FOR SURFACE MOUNT SOLDER JOINTS – Part 1-5: Mechanical shear fatigue test

* Refer to JEITA standards for differences between regulations not included in IEC and JIS standards (low-temperature soldering, etc.)

* In the future, the general title of the IEC 62137 standard series name will be “Electronic Assembly Technology”.

IEC	JIS	JEITA	Standard document name
-	-	ET-7409/107	SURFACE MOUNTING TECHNOLOGY – ENVIRONMENTAL AND ENDURANCE TEST METHODS FOR SURFACE MOUNT SOLDER JOINT – Part 107: Cyclic steel ball drop shock strength test
-	-	ET-7409/201	SURFACE MOUNTING TECHNOLOGY – ENVIRONMENTAL AND ENDURANCE TEST METHODS FOR SURFACE MOUNT SOLDER JOINT – Part 201: Pull strength test for solder joint of through-hole mount leaded component
-	-	ET-7409/202	SURFACE MOUNTING TECHNOLOGY – ENVIRONMENTAL AND ENDURANCE TEST METHODS FOR SURFACE MOUNT SOLDER JOINT – Part 202: Creep strength test for solder joint of through-hole mount leaded component
IEC 62137-3 pub. in 2011-11	JIS C 62137-3 pub. in 2014-09	ET-7409A	ELECTRONICS ASSEMBLY TECHNOLOGY – Part 3: Selection guidance of environmental and endurance test methods for solder joints
IEC 62137 (withdrawn) IEC 62137-4 pub. in 2014-10	JIS C 62137-4 pub. in 2016-03	ET-7407B pub. in 2012-12	ELECTRONICS ASSEMBLY TECHNOLOGY – Part 4: Endurance test methods for solder joint of area array type package surface mount devices
IEC 61189-5-601 (Under preparation)	-	-	Test methods for electrical materials, printed boards and other interconnection structures and assemblies – Part 5-601: General test methods for materials and assemblies – Reflow soldering ability test for solder joint, and reflow heat resistance test for printed boards

* Reflow solderability & heat resistance test method for printed wiring board joints PG has been proposed in a separated standard series number as IEC 61189-5-601.