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JAPANESE INDUSTRIAL STANDARD

Standard qualification procedure for micro soldering technique

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1. Scope This Japanese Industrial Standard specifies the testing method and its acceptance criteria in the micro soldering technique qualification for the electrical appliances, the electronic equipment, the communication equipment, assembly of their components, or the like where tin-lead soldering is employed, with the exception of the micro soldering by means of the automatic soldering machine.

Remarks: The standards cited in this Standard are shown in Attached Table 1.

2. Definitions For the purpose of this Standard, the following definitions shall apply.

- (1) micro soldering Generic terms of the technology to achieve soldering of a micro electronic part (whose size is below several millimeters) to general printed circuit boards, terminals, wires or the like.
- (2) preflux Coating forming agent to prevent oxidization of copper surfaces of printed circuit boards where soldering may be achieved as it is without removal of the coating.
- (3) overhang The condition where solder hangs down over the section of a circuit pattern, or the condition where solder hangs down over the undesired part on the side of terminals and the like.
- (4) protrusion Generic terms of protrusions of a lump, a horn or an icicle shape on the surface of the part jointed by soldering.
- (5) pinhole A small hole in the surface of the part jointed by soldering, which is through to the inner cavities.
- (6) pit A small hole or a deep cavity on the surface of the part jointed by soldering.
- (7) bridge Solder bonded over the conductors to constitute an electrically conductive passage.
- (8) through hole A hole provided on the printed circuit board to make through-connection.

3. Types of tests The classifications of tests and types of tests shall conform to Table 1, and the symbols to be used shall also conform to the Table 1.

Table 1. Classification and kinds of tests

Classification of tests	Kinds of tests	Symbol	Test specimen
Micro soldering of printed circuit board	Micro soldering test of printed circuit board	PS	Plated through hole type or non-plated through hole type both sides copper laminated plate fitted with electronic parts.
Micro soldering of terminal	Micro soldering test of turret terminal	TT-S ⁽¹⁾ TT-W ⁽¹⁾	Turret terminal fitted with wire.
	Micro soldering test of hook terminal	FT-S ⁽¹⁾ FT-W ⁽¹⁾	Hook terminal fitted with wire.
	Micro soldering test of forked terminal	BT-S ⁽¹⁾ BT-W ⁽¹⁾	Forked terminal fitted with wire.
	Micro soldering test of cup terminal	CT	Cup terminal fitted with wire.
	Micro soldering test of perforated terminal	PT	Perforated terminal fitted with wire.
Micro soldering of printed circuit board for surface mounting	Micro soldering test of printed circuit board for surface mounting	SM	One side copper laminated plate fitted with electronic parts.

Note ⁽¹⁾ -S means one wire to be fitted.
-W means two wires to be fitted.

4. Test specimens

4.1 Materials to be used for the test specimens

4.1.1 Components to be used for the test specimens Components to be used for test specimens such as printed circuit boards, electronic parts, terminals, wires, etc. are as shown in Table 2.

Table 2. Components of test specimens

Classification of tests	Kinds of components	Name of components	Symbol of components	Quantity	Summary	Appearance
Micro soldering of printed circuit board	Printed circuit board	Double side copper laminated plate	—	1	Double side copper laminated plate as specified in JIS C 6482 to 6485 which is 1.6 mm thick, and of which copper foil shall be 18 μ m thick. For copper plating, preflux processing shall apply, and the film shall be 0.3 μ m to 3 μ m thick. For gold plating, the plating shall be not less than 1 μ m to 2 μ m thick, and for solder plating, the plating shall be not less than 5 μ m respectively.	As shown in Fig. 1.
		Electronic parts				—
	Electronic parts	Dual inline IC	IC	1	16 pin plastic DIP (7.62)	
		Resistor (1 W)	R ₁ , R ₂	2	It shall comply with RC05G3A type as specified in JIS C 6406.	
		Resistor (0.5 W)	R ₃ to R ₆	4	It shall comply with RC05G2H type as specified in JIS C 6406.	
		Resistor (0.25 W)	R ₇ , R ₈	2	It shall comply with RC05G2E type as specified in JIS C 6406.	
		Transistor	Tr ₁	1	A metal case or a plastic mold with 3 leads shall be used.	
		Diode	D ₁ , D ₂	2	An axial lead type shall be used.	
		Ceramic condensor	C ₁ , C ₂	2	CC or CK type as specified in JIS C 5130 shall be used.	

Table 2. (Continued)

Classification of tests	Kinds of components	Name of components	Symbol of components	Quantity	Summary	Appearance
Micro soldering of terminal	Terminal	Turret terminal	—	4	A free-cutting brass rod as specified in JIS H 3250 shall be used, and silver plating shall be applied. The silver plating shall be 0.6 μm to 9 μm thick.	As shown in Fig. 2.
		Hook terminal	—	4	A free-cutting brass rod as specified in JIS H 3250 shall be used, and silver plating shall be applied. The silver plating shall be 0.6 μm to 9 μm thick.	As shown in Fig. 3.
		Forked terminal	—	4	A free-cutting brass rod as specified in JIS H 3250 shall be used, and silver plating shall be applied. The silver plating shall be 0.6 μm to 9 μm thick.	As shown in Fig. 4.
		Cup terminal	—	2	A free-cutting brass rod as specified in JIS H 3250 shall be used, and gold plating shall be applied. The gold plating shall be 0.1 μm to 1.9 μm thick.	As shown in Fig. 5.
		Perforated terminal	—	2	A phosphor bronze plate for spring as specified in JIS H 3130 shall be used, and gold plating shall be applied. The gold plating shall be 0.1 μm to 1.3 μm thick.	As shown in Fig. 6.
	Wire	Teflon coated stranded wire	—	2 m	A stranded wire which comprises 19 silver-plated strands of 0.203 mm diameter (19/0.203 mm) shall be used.	—
		Teflon coated stranded wire	—	4 m	A stranded wire which comprises 19 silver-plated strands of 0.16 mm diameter (19/0.16 mm) shall be used.	