



JAPANESE
INDUSTRIAL
STANDARD

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JIS Z 3198-6 : 2003
(JWES)

**Test methods for lead-free solders—
Part 6 : Methods for 45° pull test of
solder joints on QFP lead**

ICS 25.160.50

Reference number : JIS Z 3198-6 : 2003 (E)

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Foreword

This translation has been made based on the original Japanese Industrial Standard established by the Minister of Economy, Trade and Industry through deliberations at the Japanese Industrial Standards Committee according to the proposal of establishing a Japanese Industrial Standard from The Japan Welding Engineering Society (JWES), with a draft of Industrial Standard based on the provision of Article 12 Clause 1 of the Industrial Standardization Law.

Soldering is called HANDAZUKE (Japanese), a technique to be used for mounting electronic and electrical machinery and apparatus, communication equipment and the like and its use field is wide and expectation for high reliability of the connection is large.

Though there are standards inside and outside Japan as well as International Standards like IEC or ISO, this Standard uses results of "standardization of test methods and the like necessary for solder connection corresponding to the reduction of an environmental load" based on the research and development by contract of New Energy and Industrial Technology Development Organization.

This Standard concerns the methods for 45° pull test of solder joints on QFP lead of lead-free solders which are environmentally friendly and is positioned as a standard for considering environment.

Attention is drawn to the possibility that some parts of this Standard may conflict with a patent right, application for a patent after opening to the public, utility model right or application for registration of utility model after opening to the public which have technical properties. The relevant Minister and the Japanese Industrial Standards Committee are not responsible for identifying the patent right, application for a patent after opening to the public, utility model right or application for registration of utility model after opening to the public which have the said technical properties.

JIS Z 3198 includes the following 7 parts with the general title *Test methods for lead-free solders*

Part 1 : Methods for measuring of melting temperature ranges

Part 2 : Methods for testing of mechanical characteristics—tensile test

Part 3 : Methods for spread test

Part 4 : Methods for solderability test by a wetting balance method and a contact angle method

Part 5 : Methods for tensile tests and shear tests on solder joints

Part 6 : Methods for 45° pull test of solder joints on QFP lead

Part 7 : Methods for shear strength of solder joints on chip components

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In the event of any doubts arising as to the contents,
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