1.15H Lower Profile Spring Finger

1.0 Scope:

1.1 Contents

This specification covers the requirements for product performance test methods and quality assurance provisions of spring finger.

Applicable product descriptions and part numbers are as shown in Fig 3.

2. Applicable Documents:

The following documents form a part of this specification to the extent specified herein. In the event of conflict between the requirements of this specification and the product drawing, the product drawing shall take precedence. In the event of conflict between the requirements of this specification and the referenced documents, this specification shall take precedence.

2.1 AMP Specifications:

A. 109-5000: Test Specification, General
Requirements for Test Methods

B. 501-115160: Test Report

2.2 Commercial Standards and Specifications:

A. MIL-STD-202: Test Methods for Electronic and Electrical Component Parts.

B. Electronic Industries' Association STD.

3. Requirements

3.1 Design and Construction

Product shall be of the design, construction and physical dimensions specified on the applicable product drawing.

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3.2 Material:

Ti-Cu, Nickel 2.0~7.6 μm under plating all over,

Gold plating 0.25 μm at contact area, 0.075~0.6 μm at soldering area.

3.3 Ratings:

A. Temperature Rating; −40 °C to +85 °C

B. Voltage Rating; 10VDC

C. Current Rating; 1.5A

3.4 Storage conditions

Storage conditions apply to original packaging only, void if opened.

The storage temperature is the ambient temperature range between which the component can be stored without load.

Storage Temperature Range = -40°C to +85°C, 0 to 90 % RH (Relative humidity)

Warranty period : Refer to below Table

Type	Part	Warranty period	Max storage period
Spring finger	No Ag plating	12	18

3.5 Performance Requirements and Test Descriptions:

The product shall be designed to meet the electrical, mechanical and environmental performance requirements specified in Fig. 1. All tests shall be performed in the room temperature, unless otherwise specified.

3.6 Test Requirements and Procedures Summary

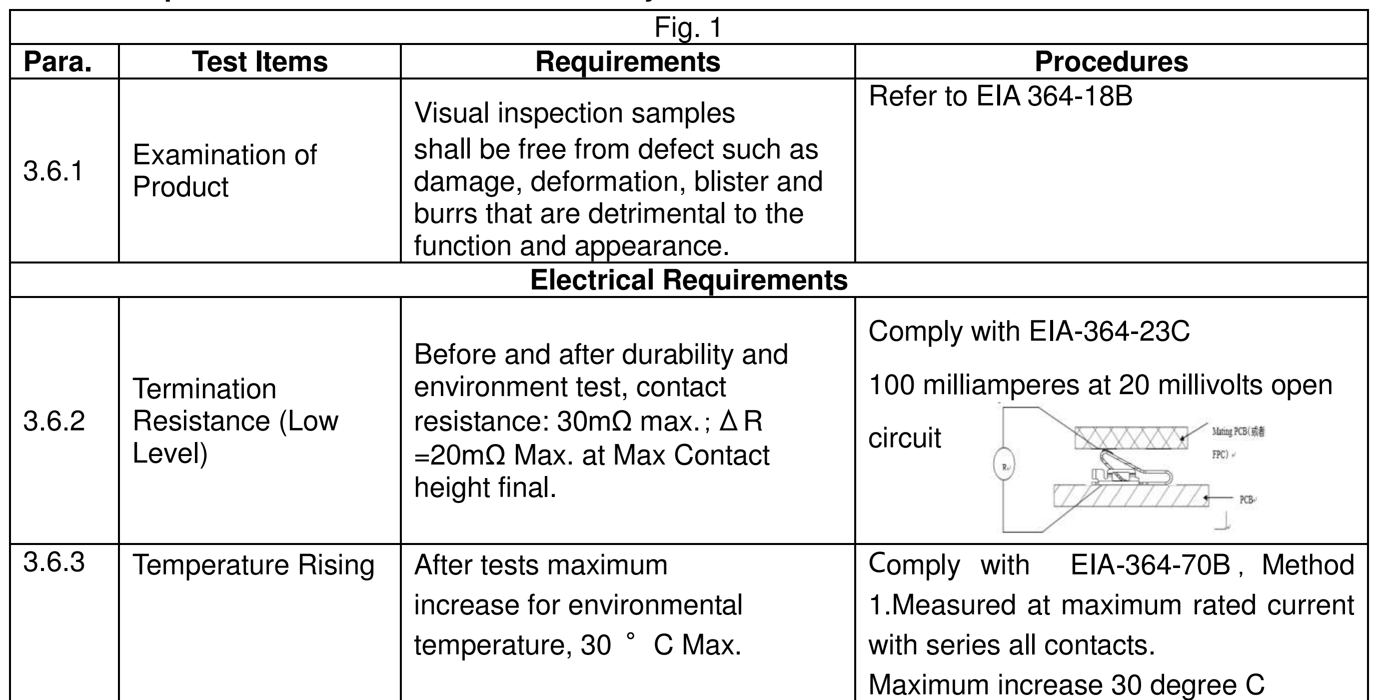
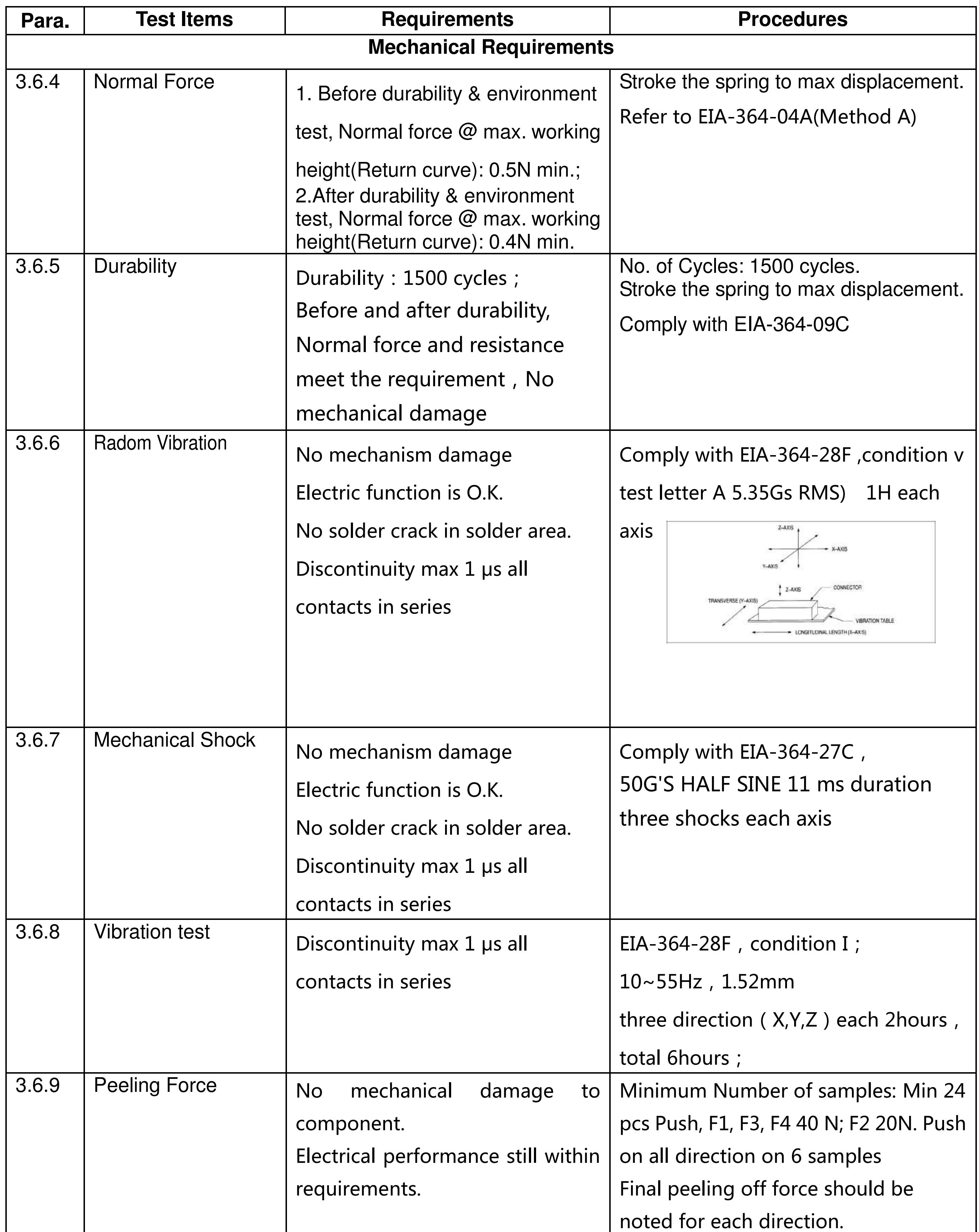
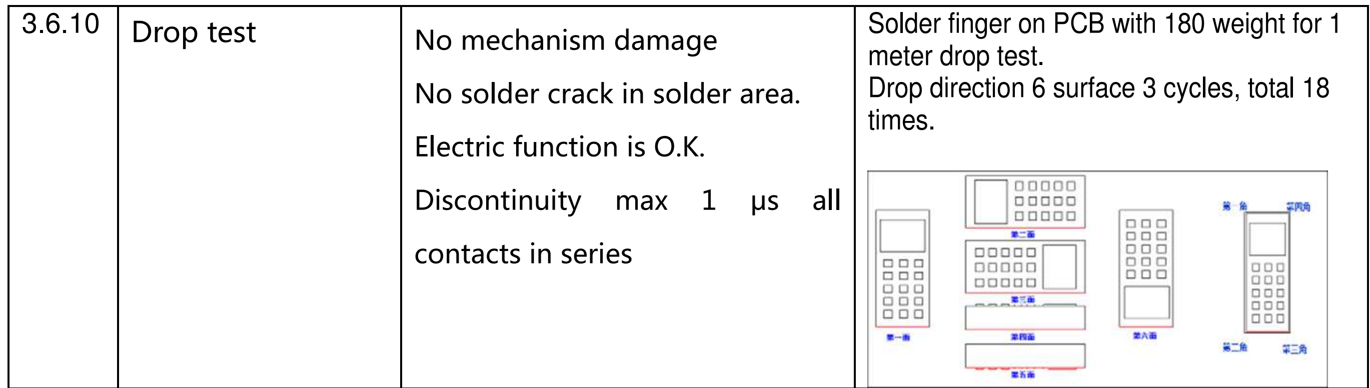


Fig. 1

Para.	Test Items	Requirements	Procedures
3.6.1	Examination of Product	Visual inspection samples shall be free from defect such as damage, deformation, blister and burrs that are detrimental to the function and appearance.	Refer to EIA 364-18B
Electrical Requirements			
3.6.2	Termination Resistance (Low Level)	Before and after durability and environment test, contact resistance: 30mΩ max.; ΔR =20mΩ Max. at Max Contact height final.	Comply with EIA-364-23C 100 milliamperes at 20 millivolts open circuit
3.6.3	Temperature Rising	After tests maximum increase for environmental temperature, 30 ° C Max.	Comply with EIA-364-70B, Method 1.Measured at maximum rated current with series all contacts. Maximum increase 30 degree C



Para.	Test Items	Requirements	Procedures
Mechanical Requirements			
3.6.4	Normal Force	1. Before durability & environment test, Normal force @ max. working height(Return curve): 0.5N min.; 2.After durability & environment test, Normal force @ max. working height(Return curve): 0.4N min.	Stroke the spring to max displacement. Refer to EIA-364-04A(Method A)
3.6.5	Durability	Durability：1500 cycles； Before and after durability, Normal force and resistance meet the requirement，No mechanical damage	No. of Cycles: 1500 cycles. Stroke the spring to max displacement. Comply with EIA-364-09C
3.6.6	Radom Vibration	No mechanism damage Electric function is O.K. No solder crack in solder area. Discontinuity max 1 μs all contacts in series	Comply with EIA-364-28F ,condition v test letter A 5.35Gs RMS) 1H each axis Z-AXIS X-AXIS Y-AXIS Z-AXIS CONNECTOR TRANSVERSE (Y-AXIS) VIBRATION TABLE LONGITUDINAL LENGTH (X-AXIS)
3.6.7	Mechanical Shock	No mechanism damage Electric function is O.K. No solder crack in solder area. Discontinuity max 1 μs all contacts in series	Comply with EIA-364-27C， 50G'S HALF SINE 11 ms duration three shocks each axis
3.6.8	Vibration test	Discontinuity max 1 μs all contacts in series	EIA-364-28F，condition I； 10~55Hz，1.52mm three direction（X,Y,Z）each 2hours，total 6hours；
3.6.9	Peeling Force	No mechanical damage to component. Electrical performance still within requirements.	Minimum Number of samples: Min 24 pcs Push, F1, F3, F4 40 N; F2 20N. Push on all direction on 6 samples Final peeling off force should be noted for each direction.



3.6.10	Drop test	No mechanism damage No solder crack in solder area. Electric function is O.K. Discontinuity max 1 μs all contacts in series	Solder finger on PCB with 180 weight for 1 meter drop test. Drop direction 6 surface 3 cycles, total 18 times.

Environmental Requirements			
3.6.11	Solder ability Test	Wet Solder Coverage : 95 % Min.	Solder Temperature: 235 ± 5 ° C Immersion Duration:5 ± 0.5 seconds AMP Spec. 109-5203
3.6.12	Temperature Life	No mechanical damage No change to performance Contact resistance meet requirement	Comply with EIA-364-17 Method B test condition 3 ,96h with electrical load for connectors Chamber temperature is 85+/-2°C (temperature rise + chamber temperature = specified test temperature) Compress spring to min. working height to test
3.6.13	Salt Spray	Contact area has no corrosion, discoloring, and other defect ; No wear in the plating layer; Resistance meet the requirement before and after test	EIA-364-26B Test condition B 48 hour spray, At temp.35° ±2° c R/H 95-98% Salt NaCl mist 5% After test wash parts and return to room ambient for 1-2 hours
3.6.14	Thermal Shock	No mechanical damage No change to performance Resistance meet the requirement before and after test	Comply with EIA-364-32F method A, test condition I, test duration A-1 25 cycles at Ta = - 55 ° C (+0/-5℃) for 0.5 hours; then change of temp=25° C (+/-10 ℃) Maximum 5 min; then Tb=+85 ° C(+3/-0 ℃) for 0.5 hours; then cool to ambient. Recovery: 2 hours at ambient atmosphere. Compress spring to min. working height to test

3.6.15	Temperature-Humidity Cycling	No mechanical damage No change to performance Resistance meet the requirement before and after test	Comply with EIA-364-31C Method IV, Test condition B, 25℃~65℃; 95% RH 10 cycles (240Hr) Compress spring to min. working height to test
3.6.16	Low Temperature	No mechanical damage No change to performance Resistance meet the requirement before and after test	Comply with EIA-364-59A test condition 3 ,duration D Temperature -40+/-3° C 96h Compress spring to min. working height to test
3.6.17	High-temperature and humidity	No mechanical damage No change to performance Resistance meet the requirement before and after test	EIA-364-31C High-temperature 85° C , 95%RH Duration : 120h Compress spring to min. working height to test
3.6.18	Resistance to Reflow Soldering Heat	The functional and electrical requirements still fulfilled. No deformation of component after reflow on any side of the component	Temperature profile : as shown in Fig.5, 2Times Peak 250(+5/-0)℃, 10(+5/-0) sec. Soldering zone 200℃or higher, 80 ±10sec.
3.6.19	Flux resistance / penetration	No flux or solder ingression into contact area. The functional and electrical requirements fulfilled	IPC-J-STD-002C 0.1mm thickness mask. The component should withstand three immediately followed reflow requirements.
3.6.20	Co-planarity measurement during reflow cycle	Co-planarity max 0.08 mm After IR 0.10mm	Refer to IPC-J-STD-002C The co-planarity of the soldering terminals should be measured during the whole reflow cycle which meet the maximum limits stated by IPC-J-STD-002C, latest revision.
3.6.21	Resistance to Soldering Heat (Hand Soldering)	No physical damage shall occur.	Soldering Iron Temperature; 350℃ Time; 5 sec.

Fig. 1 (End.)

3.7 Product Qualification Test Sequence

Items	Test /Group	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1	4.1 Visual inspection	1,6	1,3	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,4	1,5	1,5	1,5	1,4	1	1
2	Plating Thickness	2													2			
3	4.2 Normal force	4,7		3,6	3,6	3,6	3,6	3,6	3,6	3,6	3,6	3,5	3,6	3,6				
4	4.3 Durability	5																

5	4.4 Radom Vibration			4														
6	4.5 Mechanical Shock				4													
6	4.6Vibration test					4												
7	4.7 Drop test						4											
8	4.8 LLCR	3,8		2,7	2,7	2,7	2,7	2,7	2,7	2,7	2,7	2,6	2,7	2,7	3,6			
9	4.9 Temperature rise							4										
10	4.10 Temperature life								4									
11	4.11 low temperature									4								
12	4.12Humidity-Temperature Cycling										4							
13	4.13 High-temperature and humidity												4					
14	4.14 Thermal shock													4				
15	4.15 Salt spray														4			
16	4.16 Solder-ability Test															3		
17	4.17 Resistance to Reflow Soldering Heat:															2		
18	4.18 Flux resistance / penetration																2	
19	4.20 Solder peeling off strength		2															
20	Hand Soldering																	2
	Sample size (pcs)	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15

(a) Numbers indicate sequence in which the tests are performed.

Fig. 2

4. Quality Assurance Provisions

4.1 Qualification Testing

A. Sample Selection

Connector and contact shall be prepared in accordance with applicable Instruction Sheets. They shall be selected at random from current production.

Product Part No.	Product Description
-2329497-	1.15H Lower Profile Spring Finger

Fig. 3 Part No.

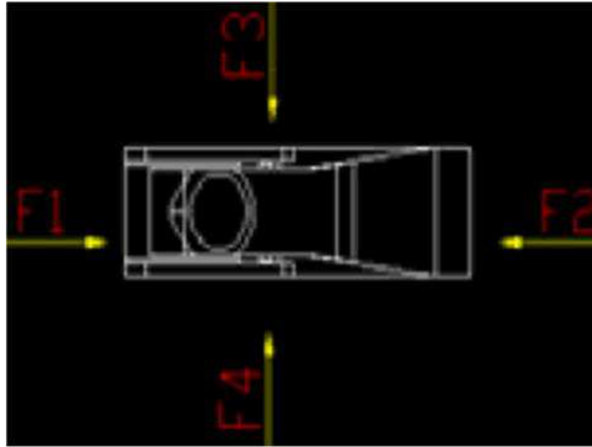


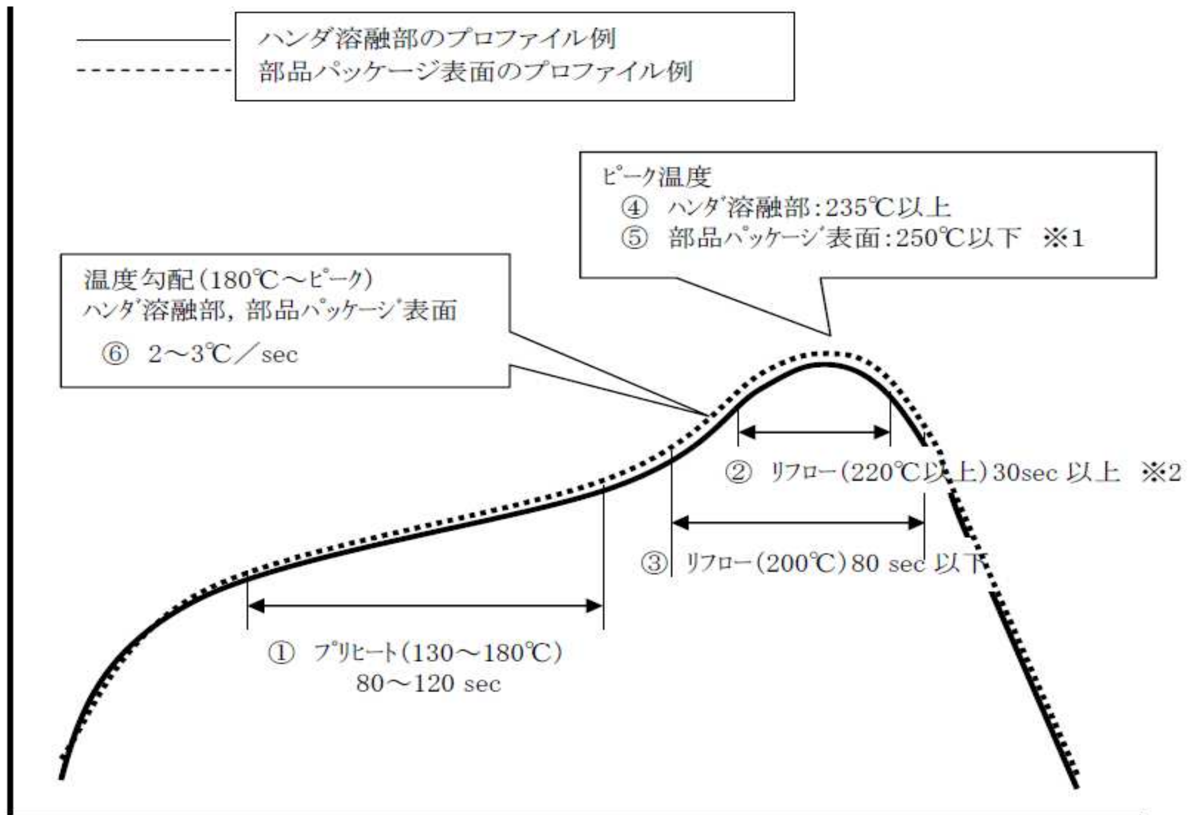
Fig. 4

Peeling Force Sketch Map

Temperature profile of reflow soldering:

鉛フリーハンダのリフロー実装における推奨温度プロファイルを下記に示します。

(図1:基本プロファイル図)



(表1:温度プロファイル条件)

規 定 項 目		推 奨 条 件
プリヒート温度	①ハンダ溶融部(130℃～180℃)	80sec～120sec
リフロー領域温度	②ハンダ溶融部(220℃以上) ③部品パッケージ表面(200℃以上)	30sec 以上 ※2 80sec 以下
ピーク温度	④ハンダ溶融部 ⑤部品パッケージ表面	235℃以上 250℃以下 ※1
温度勾配	⑥ハンダ溶融部, 部品パッケージ表面 (180℃～ピーク)	2～3℃／sec

※1:ピーク温度(250℃)の継続時間は最長10sec とする。

※2:目標値は 40sec 程度とする。

Fig. 5