

## 250 (16.2mm) 2P for LOW-HEIGHT PCFL

### 1. Scope :

This specification covers general requirements for performance characteristics and test methods of 2 Pos. "250" Series Positive Lock Connectors of the part numbers shown in Para. 2

### 2. Product Part Numbers and Descriptions :

Product Part Number	Descriptions
1743221 - <input type="checkbox"/>	"250" Series Flag Positive Lock-EX Receptacle
1743643 - <input type="checkbox"/>	"250" 2P PLUG HSG for LOW-HEIGHT PCFL
1743644 - <input type="checkbox"/>	REAR SEAL for LOW-HEIGHT PCFL PLUG HSG

Fig 1

### 3. Definitions of the Terms :

The terms used in this specification shall be defined as follows:

#### 3.1 Contact

An electrically conductive metallic member, used independently or as a component of a connector assembly to form circuit connection by contacting.

#### 3.2 Housing :

A dielectric component member of a connector and an insulating material that forms encapsulation for contact(s).

#### 3.3 Connector :

An assembly consisting of housing and wire-crimped contacts formed to make circuit connection.

## 4. Used Materials:

### 4.1 Contacts :

Contacts shall be fabricated of pre-tinned brass.

### 4.2 Housing :

Housing shall be molded 6/6 NYLON resin, conforming to UL Flame Retardant Grade of 94V-O

## 5. Product Design Feature, Construction and Dimensions :

### 5.1 Contact :

Product design feature, construction and dimensions of contacts shall be conform to Applicable customer product drawing(s). Receptacle contact is formed to accept tab contact when mated in housing, having a function to lock the tab in place when contact is pulled by crimped wire.

### 5.2 Housing :

Product design feature, construction and dimensions of contacts shall be conforming to applicable customer product drawing(s). A pair of locking detents that lower in housing cavity, hook on rolling arches to secure

## 6. Applicable Wires and Temperature Rating :

### 6.1 The wires of the sizes, conforming to Fig 2, shall be used for terminating contacts.

Contact P/N Wires	(AWG) #18~#16
Wire Size (mm <sup>2</sup> )	0.75 ~ 1.35
Insulation Diameter (mm)	2.8 ~ 3.2

Fig 2

### 6.2 Temperature Rating :

Temperature rating shall be within the range of -40°C and +105°C, including environmental temperature where the connector is used, and the temperature rising resulted from the energized current load.

\* Voltage Rating : 250VAC

\* Current Rating(MAX) : AWG#18 : 7A, AWG#16 : 12A.

### 6.3 Performance Requirements and Test Descriptions :

The product shall be designed to meet the electrical, mechanical and environmental performance requirements specified in Fig.3. All tests shall be performed in the room temperature unless otherwise specified.

## 6.4 Test Requirements and Procedures Summary

NO.	6.4.1
Test Items	<b>Confirmation of Product</b>
Requirements	Meets requirements of product drawing and AMP Specification(114-61005) After test, no corrosion influence performance.
Procedures	Visual inspection No physical damage
<b>Electrical Requirements</b>	
NO.	6.4.2
Test Items	<b>Termination Resistance(Specified Current)</b>
Requirements	3mΩ Max.(Initial) 6mΩ Max.(Final)
Procedures	Subject mated contacts assembled in housing. Opening circuit at 1A, 12V. Take the measurement AMP Spec. 109-5311-2
NO.	6.4.3
Test Items	<b>Insulation Resistance</b>
Requirements	1000 MΩ Min. (Initial) 500 MΩ Min. (Final)
Procedures	Impressed voltage 500V DC. Test between adjacent circuits and between the surface of housing and contact of mated connectors. AMP Spec. 109-5302
NO.	6.4.4
Test Items	<b>Temperature Rising</b>
Requirements	30°C Max. under loaded specified current.
Procedures	Measure temperature rising by energized current. Subject measurement must do at the place no influence from convection of air. And contacts thermocouple attach to the contact of center circuit number.  AMP Spec. 109-5310
NO.	6.4.5
Test Items	<b>Dielectric withstanding Voltage</b>
Requirements	No creeping discharge nor flashover shall occur. Current Leakage : 5mA MAX.
Procedures	2.2 KV AC for 1 minute. Test between adjacent circuits and between the surface of housing and contact of mated connectors.

Fig 3 to be continued

Mechanical Requirements				
NO.	6.4.6			
Test Items	Vibration(Low Frequency)			
Requirements	No electrical discontinuity greater than 1μsec. Shall occur. 6 mΩ Max.(Final)			
Procedures	Subject mated connectors to 10-55-10Hz traversed in 1 minute at 1.5mm amplitude 2hours each of 3 mutually perpendicular planes. AMP Spec. 109-5201			
NO.	6.4.7			
Test Items	Physical Shock			
Requirements	No electrical discontinuity greater than 1μ sec. shall occur. 6mΩ Max. (Final)			
Procedures	Mated Conn.(50G) Waveform : Half sine Curve Duration : 11m sec. Number of Drops : 3 drops each to normal and reversed directions of X, Y and Z axes, totally 18 drops AMP Spec. 109-5208			
NO.	6.4.8			
Test Items	Connector Mating/ Unmating Force			
Requirement	Performance Requirements(2-Pos)			
	Insertion Force	C2600(Tab)	8.0 kgf	Max.
		C1100(Tab)	11.0 kgf	
	Extraction Force	C2600(Tab)	3.0 kgf	Min.
		C1100(Tab)	3.0 kgf	
Procedures	Operation Speed : 100 mm/min. Measure the force required to mate/unmate connectors. However, no being in effect when extraction. (See No. 8 mating tab shape.)			
NO.	6.4.9			
Test Items	Contact Insertion Force			
Requirements	1.5kgf Max. per contact			
Procedures	Measure the force required to insert contact into housing. AMP Spec. 109-5211			

Fig 3 to be continued

NO.	6.4.10		
Test Items	Contact Retention Force		
Requirements	6.0 kg (13.23 lbs.) Min.		
Procedures	Apply an axial pull-off load to crimped wire. Use the wire of 0.75 mm <sup>2</sup> (AWG #18) or greater Operation Speed : 100 mm/min. AMP Spec. 109-5210		
NO.	6.4.11		
Test Items	Mated/ Locked Contact Retention Force		
Requirements	8.0 kg (17.64 lbs.) Min.	Initially	
	7.0 kg (15.43 lbs.)	Finally	
	* Measure only 1P among 2P.		
Procedures	Measured by gage tab and operation speed 100 mm/min Contact crimped on an approx. 100mm-long, 1.25 mm <sup>2</sup> (#16) or greater wire AMP Spec. 109-5210		
NO.	6.4.12		
Test Items	Crimp Tensile Strength		
Requirements	Wire Size		Tensile Strength
	mm <sup>2</sup>	(AWG)	N(kgf)
	0.75	18	68.6(7.0)
	1.27	16	78.4(8.0)
Procedures	Apply an axial pull-off load to crimped wire of contact secured on the tester, Operation Speed : 100mm/min. Subjects take insulation barrel away. AMP Spec. 109-5205		
NO.	6.4.13		
Test Items	Durability (Repeated Mating/Unmating)		
Requirements	6mΩ		
		Normal type	C1100 TAB (tin_plating)
	Mating	8 kgf Max.	11kgf Max.
	Unmating	2 kgf Min.	2kgf Min.
Procedures	No. of Cycles : 25 cycles. (See No. 8 mating tab shape.)		
NO.	6.4.14		
Test Items	Housing Locking Strength/ Mating Force		
Requirements	Locking Strength: Min 8kgf. / Mating Force: MAX 2kgf.		
Procedures	Measure connector Locking Strength/ Mating Force without receptacle contact. Operation Speed : 100 mm/min. AMP Spec. 109-5210		

Fig 3 to be continued

Environmental Requirements	
NO.	6.4.15
Test Items	<b>Thermal Shock</b>
Requirements	6 mΩ Max.(Final)
Procedures	Mated connector -55℃/30 min., 85℃/30 min. Making this a cycle repeat 25 cycles. AMP Spec. 109-5103 Condition A The measurement is held after being left indoor for 3hours.
NO.	6.4.16
Test Items	<b>Humidity-Temperature Cycling</b>
Requirements	Dielectric withstanding voltage 2.2 kV AC 1Min. Insulation resistance (final) 500MΩ Min. Termination resistance 20MΩ Max.(Final)
Procedures	Mated connector, 30~50℃,85~95% Duration : 96hours AMP Spec. 109-5106 The measurement is held after being left indoor for 3 hours.
NO.	6.4.17
Test Items	<b>Salt Spray</b>
Requirements	6mΩ Max. (Final) No corrosion influence performance
Procedures	Subject mated connectors to 5±1% salt concentration for 48hours. 30℃~40℃. The measurement is held after remove the salt and dry up at indoor.
NO.	6.4.18
Test Items	<b>Heat Aging</b>
Requirements	6mΩ Max. (Final)
Procedures	Mated Conn. 105±2℃ Duration: 96hr AMP Spec. 109-5104-3 Condition A The Measurement is held after being left indoor for 3 hours.
NO.	6.4.19
Test Items	<b>Resistance to Cold</b>
Requirements	6mΩ Max. (Final)
Procedures	Mated Conn. -30℃±3℃, 96 hours AMP Spec. 109-5108-3 Condition D

Fig 3 the end

\* Product must be without rust, corrosion transformation, crack and discoloration.

## .6.5 Product Qualification and Test Sequence

Test of Examination	Test Group (a)								
	1	2	3	4	5	6	7	8	9
	Test Sequence (a)								
Confirmation of Product	1,3	1,3	1	1	1,3	1,4	1,7	1,7	1,4
Termination Resistance (Low Level)							2,4,6	3,6	2,5
Dielectric withstanding voltage						3			
Insulation Resistance						2			
Temperature rising					2				
Vibration(Low Frequency)							5		
Physical Shock							3		
Connector Mating Force								2	
Connector Unmating Force								4	
Contact Insertion Force				2					
Mated/Locked Contact Retention Force		2							
Crimp Tensile strength	2								
Durability (Repeated Mating/Unmating)								5	
Housing Locking Strength / Mating Force			2						
Humidity-Temperature Cycling									
Thermal Shock									3
Salt Spray									
Resistance to Cold									
Contact Retention Force						5			
Heat Aging									

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

Fig. 4

## 6.6 Product Qualification Test Sequence

Test of Examination	Test Group								
	10	11	12	13					
	Test Sequence (a)								
Confirmation of Product	1,4	1,4	1,4	1,4					
Termination Resistance (Low Level)	2,5	2,5	2,5	2,5					
Dielectric withstanding voltage	7								
Insulation Resistance	6								
Temperature rising									
Vibration(Low Frequency)									
Physical Shock									
Connector Mating Force									
Connector Unmating Force									
Contact Insertion Force									
Mated/Locked Contact Retention									
Crimp Tensile strength									
Durability (Repeated Mating/Unmating)									
Housing Locking Strength									
Humidity-Temperature Cycling	3								
Thermal Shock									
Salt Spray		3							
Resistance to Cold				3					
Contact Retention Force									
Heat Aging			3						

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

Fig. 5

## 7. Quality Assurance Provisions :

### 7.1 Test Conditions :

Unless otherwise specified, all the test shall be performed in any combination of the following test conditions.

Temperature :	15 ~ 35℃
Relative Humidity :	45 ~ 75℃
Atmospheric Pressure	86.6 ~ 106.6 Kpa

Fig. 6



## 7.2 Tests :

### 7.2.1 Test Specimens :

The test specimens to be employed for the tests shall be conforming to the requirements specified in the applicable product drawings. The crimped contacts shall be prepared in accordance with the requirements of applicable application Specification, 114-61005, Positive Lock Receptacle Contact.

### 8. Mating Tab(Relay) shape :

Tab contact used for mating with "250" Series Positive Lock Receptacle Contact must be of the shape specified in Fig. 7

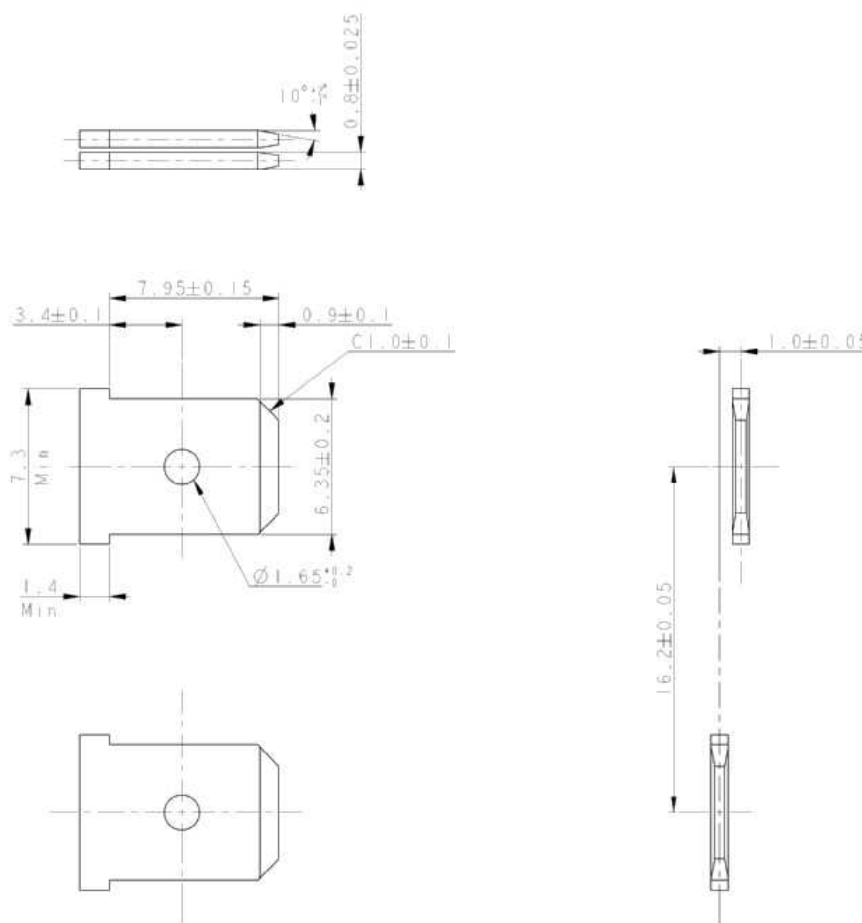


Fig. 7

### (Notes.)

1. Use 70/30 brass. Conforming to C2600P- 1/2 hard of JIS H3100 for tab fabrication. Using 99.9% copper (C11000, H0, tin plating), mating force is Max 11.0kgf.
2. Plain metal must be used.



## Product Specification

108-61077

Rev A

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3. This tab design is applicable to the purpose of performance testing of tab. For the practical production purpose, refer to the following customer drawings prepared for recommendable tab design.