AMP (Japan), Ltd.

108-5011-2

PRODUCT SPECIFICATION

NON-INSULATED SOLDERLESS TERMINALS "SOLISTRAND TERMINAL" FOR COPPER WIRES

1. Scope:

This specification describes and defines the requirements for the non-insulated solderless "SOLISTRAND" terminals to be crimped with applicable crimping tools to the ends of the stranded or solid soft-annealed copper wires used for wiring on the various types of power equipment and electrical devices.

2. Type, Appearance, Dimensions and Applicable Wire Range:

This specification shall apply to Type "R" ring terminals having a single stud hole. There shall be no evidence of scratch, crack, rust, or defect that may impair the normal performance of the terminal. The dimensions and applicable wire range shall be in conformity with the Table shown in last page.

3. Materials, Method of Fabrication & Corrosion Protective Treatment:

3.1 Materials:

3.1.1 Copper Strip:

The copper strip used as the terminal material shall be either electrolytic tough pitch copper or oxygen-free copper which is pre-conditioned to 0.015-0.05mm crystal grain size and contains little copper oxide providing electric conductivity greater than 100 percent.

Nominal Cross Sectional Area (mm^2)	Material	Purity (%)
1.25-100	Electrolytic Oxygen-Free Copper	99.96 Minimum
150-325	Electrolytic Tough Pitch Copper	99.90 Minimum

3.1.2 Silver Brazing Filler and Copper Phosphorus Brazing Filler:

The silver brazing filler used to seal terminal barrel seam shall comply with the requirements of Types "BAg-1" and "BAg-2" of JIS Z 3261 (Silver Brazing Filler), and the copper phosphorus brazing filler shall comply with the requirements of Type "B Cup-5" of JIS Z 3264 (Copper Phosphorus Brazing Filler).

3.1.2 Tin Anode:

The tin anode used as a plating electrode for applying corrosion protective surface treatment to the terminals shall be in conformity with the components of "Class 1,B" specified in JIS H 2108 (Tin Metal).

3.2 Method of Fabrication:

The terminal material shall be punched and formed. The barrel portion shall have an adequate shape suitable for wire insertion and crimping, whose seam shall be brazed with silver brazing filler metal or copper phosphorus brazing filler metal. The brazed seam shall be sufficiently strong enough to satisfy the crimp connection test described in Paragraph 4.2 without causing separation or any other defect.

3.3 Corrosion Protective Surface Treatment:

All surfaces of the terminals shall be uniformly plated with electro-tin. However, other type of plate may be substituted if so specified in the applicable product drawing.

4. Performance:

The terminal shall have no evidence of scratch, rust, crack, break, or any other defect that may impair the normal performance. The performance of the terminal after the plating shall conform to the requirements of the following paragraphs.

4.1 Plating:

4.1.1 When tested in accordance with uniformity test described in JIS H 0402 (Testing Methods for Tin Plating), there shall be neither evidence of exfoliation of plating nor presence of black copper sulfide on the surfaces of tongue or inner barrel.

4.1.2 When tested in accordance with JIS Z 2371 (Method of Salt Spray Testing), the test results shall conform to the requirements of Paragraph 4.3 (Electrical Resistance) of this specification and there shall be no evidence of base metal exposure, blister, pin-hole, scab, or any other defect of the terminal that may impair normal performance of the terminal.

4.2 Mechanical Stability of Crimping:

When tested in accordance with JIS Z 2343 (Method of Fluorescent Penetrant Testing) by cutting the terminal barrel after crimping the terminal to an applicable wire with an AMP's crimping tool having a size appropriate for the sample terminal, there shall be no evidence of crack, break or exfoliation of brazed metal that may impair the normal performance of the terminal, and the terminal shall be tightly secured to the wire crimped.

4.3 Electrical Resistance:

When tested in accordance with the requirements of Paragraph 5.7 (Testing of Electrical Resistance) of JIS C 2805 by using the applicable test current shown in Table 1, the electrical resistance of the crimped connection between the terminal and wire shall be less than 100 percent of the electrical resistance for the applicable wire. In addition, the electrical resistance of the crimped connection between the terminal and wire after conducting the tests described in Paragraph 4.1.2 (Salt Spray Test), Paragraph 4.4 (Overcurrent) and Paragraph 4.7 (Vibration Fatigue) of this specification shall not exceed 120 percent of the electrical resistance value measured before these tests.

4.4 Overcurrent:

When tested in accordance with the requirements of Paragraph 5.9 (Overcurrent Test) of JIS C 2805 (Non-Insulated Solderless Terminals for Copper Wires) with the applicable test current shown in Table 1, the test result shall conform to the requirements of Paragraph 4.3 (Electrical Resistance) and Paragraph 4.6 (Tensile Strength) of this specification, and there shall be no evidence of melting of terminal, pull-out of wire, deformation, or any other defect that impairs the normal performance of the terminal.

4.5 Limit of Temperature Rise:

When tested in accordance with the requirements of Paragraph 5.8 (Temperature Test) of JIS C 2805 (Non-Insulated Solderless Terminals for Copper Wires) with the applicable test current shown in Table 1, the terminal temperature shall not be higher than that measured at a point approximately 1000 mm away from the terminal on the applicable wire.

TABLE I

1. Wire Size

2. Sectional Area of Soft-Annealed Non-Insulated Copper Stranded Wire or P.V.C. Insulated Wire (mm^2)

3. DC Current for Resistance Measurement (Amperes)

4. Temperature Test Current; 50 Hz (Amperes)

5. Tensile Load (kg)

6. Overcurrent Test Current (Amperes)

7. Heat Cycling

8. Test Current; 50 Hz (Amperes)

9. Testing Time (Minutes)

10. Minimum Distance between Terminal and Mean for Even Current Distribution; L (cm)

4.6 Tensile Strength:

When tested in accordance with the requirements of Paragraph 5.10 (Tensile Strength Test) of JIS C 2805 (Non-Insulated Solderless Terminals for Copper Wires) with the applicable tensile load shown in Table 1, there shall be no evidence of slip, pull-out of wire or deformation that may impair the normal performance of the terminal, at the crimped portion between the terminal and wire.

4.7 Vibration Fatigue:

When tested in accordance with the requirements of Paragraph 5.11 (Vibration Fatigue Test) of JIS C 2805 (Non-Insulated Solderless Terminals for Copper Wires), the test results shall comply with the requirements of Paragraph 4.3 (Electrical Resistance) and Paragraph 4.6 (Tensile Strength) of this specification and there shall be no evidence of wire cut, wire pull-out, tongue break, or crack that impairs the normal performance of the terminal.

4.8 Heat Cycling:

When tested in accordance with the requirements of Paragraph 5.12 (Heat Cycling Test) of JIS C 2805 (Non-Insulated Solderless Terminals for Copper Wires) with the applicable test current shown in Table 1, the terminal temperature at the 25th cycle shall not exceed the temperature of the wire connected, and the value of the temperature rise at the 125th cycle shall not be greater than 8°C above the temperature measured at the 25th cycle.

5. Type Test and Delivery Test:

5.1 Type Test:

In order to verify the performance, the tests for appearance, dimensions, and the performance specified in Paragraph 4 (Performance) shall be conducted.

5.2 Delivery Test:

The following tests shall be conducted for delivery.

(1) Appearance
(2) Dimensions
(3) Crimp Connection

6. Marking and Product Identification:

6.1 Marking:

The following items shall be marked on a readily visible surface of the product.

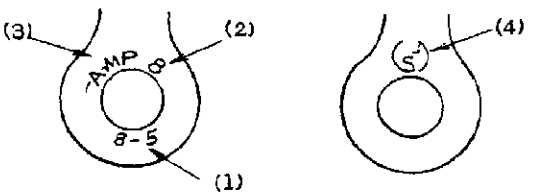
(1) Nominal Size
(JIS applied terminals shall be marked in JIS nominal size)

(2) AWG Wire Range

(3) Trademark

(4) JIS Mark
(Terminals above #8 shall be marked with JIS mark)

Example:



6.2 Product Identification:

The product shall be identified by the name, type (Code) and nominal size.

Example: Non-Insulated Solderless Terminal for Copper Wire ("SOLISTRAND" Terminal),R, 2-4

7. Packing:

Proper terminal cartons shall be selected for each terminal Product Number (Catalog Number). The quantity of the terminals to be packed in a single carton shall be determined in accordance with Packing Specifications: 107-5015 for JIS approved SOLISTRAND Terminals and 107-5040 for packaging small quantity of SOLISTRAND terminals.

(1) Product Number (Catalog Number)

(2) Quantity

(3) Manufacturing Number (Year, Week, and Day of the Week when the products are packed)

AMP SECURITY CLASSIFICATION Customer Release

NUMBER 108-5011-2

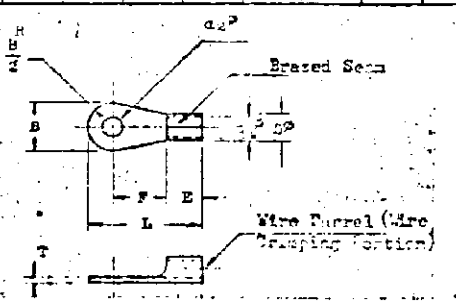
8. Applicable Documents:

1. JIS C 2805 Non-Insulated Solderless Terminals for Copper Wires
2. JIS B 7502 External Micrometers
3. JIS B 7507 Vernier Calipers
4. JIS C 3307 600V Grade Polyvinylchloride Insulated Wires
5. JIS C 3316 600V Grade Polyvinylchloride Insulated Wires for Electrical Apparatus
6. JIS Z 2371 Method Salt Spray Testing
7. JIS Z 8703 Standard Atmospheric Conditions for Testing
8. JIS Z 8704 Method for Electrical Measurement of Temperature
9. JIS H 0402 Testing Methods for Tin Plating
10. JIS Z 2343 Method of Fluorescent Penetrant Testing
11. JIS Z 3261 Silver Brazing Filler Metal
12. JIS Z 3264 Copper Phosphorus Brazing Filler Metal
13. JIS H 2108 Tin Metal

Nominal Size	Catalog Number	Cross Sectional Area: Nominal (mm²)	Screw Diameter	"B" Basic Dim.	"B" Tolerance	"D" & "D1" Maximum	"D" & "D1" Minimum	"D" & "D1" Basic Dim.	"D" & "D1" Tolerance	"C" Basic Dim.	"C" Tolerance	"A" Maximum	"A" Basic Dim.	"A" Tolerance	"A2" Basic Dim.	"A2" Tolerance	Wire Range: mm²	Wire Range: AWG
* L25—3	170720—1	1.25	3	5.5	±0.2	3.6	1.5	4.2	±0.1	4.4	±0.2	12.0	3.3	±0.1	0.78	±0.03	0.25~1.65	22—16
* L25—4	170721—1		4	8.0								16.0	4.4					
* L25—5	170721—2		5										5.4					
* 2—4	170722—1	2	4	8.5		4.2	2.1			7.2		16.5	4.4				0.34~2.63	22—14
* 2—5	170723—1		5	9.5								16.7	5.4					
* 2—6	170724—1		6	12.0						11.2		21.5	6.6	±0.2				
* 2—8	170724—2		8										8.6					
* 5.5—4	170725—1	5.5	4	9.5		5.8	3.2	6.4		7.8		19.5	4.4	±0.1	1.00		2.63~5.64	14—10
* 5.5—5	170725—2		5										5.4					
* 5.5—6	170726—1		6	12.0						12.0		24.7	6.6	±0.2				
* 5.5—8	170727—1		8	15.0						17.7		28.0	8.6					
* 5.5—10	170727—2		10										10.7					
* 8—5	170728—1	8	5	12.0		7.6	4.5	8.1		8.9	±0.2	24.0	5.4	±0.1	1.20	±0.04	5.64~10.52	8
* 8—6	170728—2		6										6.6	±0.2				
* 8—8	170729—1		8	15.0						13.7		30.0	8.6					
* 8—10	170729—2		10										10.7					
* 14—5	170730—1	14	5	12.0		9.4	5.8	11.7		13.5		32.0	5.4	±0.1	1.78	±0.04	10.52~14.78	8
* 14—6	170730—2		6										6.6					
* 14—8	170731—1		8	16.0						14.7		32.0	8.6					
* 14—10	170732—1		10										10.7					
* 22—6	170733—1	22	6	16.6		11.8	7.5	11.3		13.2		32.4	6.6		1.78	±0.04	14.78~26.66	6
* 22—8	170733—2		8										8.6					
* 38—8	170737—1	38	8	22.0	±0.3	12.7	9.4	12.9	±0.7	14.7	±0.6	42.4	8.6	±0.2	1.78	±0.04	26.66~33.62	4
* 38—10	170737—2		10										10.7					
* 38—12	170737—3		12										13.2					
* 60—8	170738—1	60	8			15.6	11.2	18.5		19.4		49.7	8.6		1.85	±0.05	33.62~50.67	1/0
* 60—10	170738—2		10										10.7					
* 60—12	170738—3		12										13.2					
* 80—10	170739—1	80	10	27.0		19.7	14.3	18.2		21.4		54.5	10.7		2.30		50.67~76.24	3/0
* 80—12	170739—2		12										13.2					
*100—10	170740—1	100	10	28.4		22.1	16.1	19.5		21.6		56	10.7		2.60		76.24~98.3	4/0
*100—12	170740—2		12										13.2					
100—16	170741—1		16	32.0						25.4		69.5	17.2			±0.06		
100—18	170741—2		18										19.2					
150—10	170748—1	150	10	36.0		26.8	19.1	24.1	±0.9	27.2	±0.8	69.2	10.7		3.20	±0.06	98.3~117.8	250~300
150—12	170748—2		12										13.2					
150—16	170748—4		16							34.3		93.0	17.2					
150—20	170748—1		20										21.2					
200—12	170750—4	200	12	44.0		32.7	23.5	31.8	±1.0	34.7	±1.0	92.8	13.2		3.30		117.8~192.27	400
200—16	170750—1		16										21.2					
200—20	170750—2		20										28.2					
325—16	170[illegible]	325	16	50.5	±0.5	37.7	27.4	36.4	±1.1	24.5	±1.1	81.0	17.2		4.52	±0.09	192.27~325	500~600
										14.4		105.2	21.2					
335—20	170[illegible]		20															

Note: Two or more wires can be crimped if total cross sectional area of wires falls within the specified wire range.

* JIS Marking Authorized.



AMP SECURITY CLASSIFICATION: Customer — Rev. B 5-27-72

SHEET 7 OF 7

AMP (Japan) Ltd TOKYO, JAPAN

LOC J A — 170[illegible]-2 — REV F

DRAWN: Non-Insulated Solderless OPEN BARREL Terminal for Copper Wire