

1. Scope :

1.1 Contents

This specification covers the requirements for product performance, test methods and quality assurance provisions of 0.64 Light Sensor Connectors.

Applicable product description and part numbers are as shown in Appendix 1.

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.

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2.1 TE Specifications :

- A.109-5000 Test Specification, General Requirements for Test Methods
- B.114-5250 Crimping of 0.64 Receptacle Contact
- C.501-5313 Qualification test report

2.2 Commercial Standards and Specifications:

- A. JASO D605 Multi-pole Connector for Automobiles
- B. JASO D7101 Test Methods for Plastic Molded Parts
- C. JIS C3406 Low Voltage Wires and Cables for Automobiles
- D. JIS D0203 Method of Moisture, Rain and Spray Test for Automobile Parts
- E. JIS D0204 Method of High and Low Temperature Test for Automobile Parts
- F. JIS D1601 Vibration Testing Method for Automobile Parts
- G. JIS R5210 Portland Cement



3. Requirements :

3.1 Design and Construction :

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

3.2 Materials :

A. Terminals

Description	Material	Finish
Receptacle(Female)	Copper Alloy	Pre-Tinned

Fig.1

B. Housing : PBT

C. Wires: Applicable wires is AVSS 0.3mm²、CAVS 0.22~0.3mm²、CAVUS 0.3~0.5mm²

3.3 Ratings :

A. Temperature Rating : -30°C~100°C

3.4 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.



3.5 Test Requirements and Procedures Summary :

Para.	Test Items	Requirements	Procedures
3.5.1	Examination of Product	Meets requirements of product drawing and TE Specification 114-5250	Visually inspection. No physical damages
Electrical Requirements			
3.5.2	Termination Resistance (Specified Current)	5 mV/A Max. (Initial) 10 mV/A Max. (Final)	Measure mill drop of contact in mated connectors, Fig.4 TE SPEC. 109-5311-2
3.5.3	Termination Resistance (Low Level)	5 m Ω Max. (Initial) 10 m Ω Max. (Final)	Subject mated contacts assembled in housing to 20 mV Max. Open circuit at 10 mA. Fig. 4 TE SPEC. 109-5311-1
3.5.4	Dielectric Withstanding Voltage	No creeping discharge or flashover shall occur.	Impressed voltage 1kVAC for 1 min. Mated connector. Fig.5 TE SPEC. 109-5301
3.5.5	Insulation Resistance	100 M Ω Min. (Initial) 100 M Ω Min. (Final)	Impressed voltage 500VDC Mated connector. Fig.5 TE SPEC. 109-5302
3.5.6	Current Leakage	3mA Max.	12V D.C. for 1 minute, Fig.6 TE SPEC 109-5312
3.5.7	Temperature Rising	Temperature Rising 60°C Max.	Measure temperature rising at wire crimped by applied current to all positions. (1) 7A current applied to one position. (2) 3.85A current applied to all positions.
3.5.8	Over Current Loading	No ignition is allowed during the test.	Apply the current to only one position. Applied Current : Fig. 6
Mechanical Requirements			
3.5.9	Vibration (High Frequency)	No electrical discontinuity greater than 1 μ sec and 7m Ω over.	Vibration Frequency : 20→200→20Hz/3min. Acceleration : 44.1 m / s ² Vibration Direction : X, Y, Z Duration: 2 hours each
3.5.10	Physical Shock	No electrical discontinuity greater than 1 μ sec. and 7m Ω over.	Acceleration : 980m/s ² Waveform : Half sine wave Duration : 6msec. Velocity change : 3.75m/s Number of Drops: 6 drops each directions of X, Y and Z axes, totally 18 drops TE SPEC. 109-5208 Condition D Mounting : Fig. 8

Fig.2 (To be continued)



Para.	Test Items	Requirements		Procedures	
3.5.11	Connector Mating Force	69N Max.		Operation Speed : 100mm/min. Measure the force required to mate connectors. TE SPEC. 109-5206 Condition A	
3.5.12	Connector Unmating Force	69N Max.		Operation Speed : 100mm / min. Measure the force required to unmate connectors. (without housing lock) TE SPEC. 109-5206 Condition A	
3.5.13	Connector Locking Strength	98N Min.		Apply an axial pull-off load to one of the mated housing, measure locking strength. Operation Speed : 100mm/min. TE SPEC. 109-5210	
3.5.14	Crimp Tensile Strength	Wire Size	Tensile Strength (N) Min.	Apply an axial pull-off load to crimped wire of contact secured on the tester. Operation Speed : 100mm/min. TE SPEC 109-5205 Condition B *;included the insulation grip	
		mm ²	(AWG)		unit; N
		0.3	22		70*
3.5.15	Resistance to “Kojiri”			Hold one mated connector on bench, apply repeated torque motions for 10 cycles. TE SPEC, 109-5215	
3.5.16	Contact normal force			Measure contact normal force	
3.5.17	Handling Ergonomics	No abnormalities allowed in manual mating/unmating handling.		Manually operated.	
Environment Requirements					
3.5.18	Thermal Shock			Mated connector -30°C/30min, 80°C/30min. Making this a cycle, repeat 1000 cycles. TE SPEC. 109-5103	
3.5.19	Humidity (Steady State)	Current Leakage : 3mA Max.		Mated connector 90~95%R. H. , 60°C , 96hours TE SPEC:109-5105	

Fig.2 (To be continued)



Para.	Test Items	Requirements	Procedures
3.5.20	Industrial Gas (SO ₂)		Unmated connector SO ₂ Gas : 25ppm, 75% R. H. 20°C, 96 hours TE SPEC. 109-5107
3.5.21	Temperature Life (Heat Aging)		Mated connector 100°C, 120hours TE SPEC. 109-5104
3.5.22	Resistance to Cold		Mated connector -30°C±5°C, 120hours TE SPEC. 109-5108
3.5.23	Dust Bombardment		Mated connector Subject JIS R 5210 cement blow of 1.5kg per 10 sec. in 15 minutes intervals of 8 cycles, with Unmating/Re-mating per 2 cycles TE SPEC 109-5110
3.5.24	Humidity- Temperature Cycling		Mated connector Fig.8 10 cycles
3.5.25	Dew Formation Test		Conduct 48 cycles of dew formation test of the connector at separate test tanks with different atmosphere (low temperature, high temperature and high humidity) with the pattern shown in Fig.10 as 1 cycle. Apply the 14V to the circuit shown in Fig.6 and measure the peak value of leak current for each cycle. Leaving the connector in the thermostatic oven 0°C for 10 min. then immediately after that left in the thermostatic oven of 80±3°C and 90 to 95% RH for 30 min shall be one cycle.
3.5.26	Compound Environment Resistance	No electrical discontinuity greater than 1μsec and 7m Ω over.	Mounting ; See Fig.11 Test Current : 2.2A, 300 cycles Temperature : 80°C Duration 45minutes ON, 15minutes OFF Vibration Condition; See 3.5.9 Temperature; 80°C Duration; 300 hours Vibration Direction; X,Y and Z

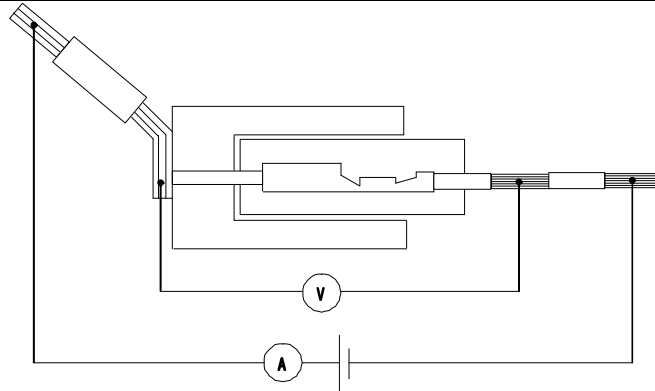
Fig. 2 (End)



3.6 Product Qualification Test Sequence

Para.	Test Examination	Test Group (a)										
		1	2	3	4	5	6	7	8	9	10	11
		Test Sequence (b)										
3.5.1	Examination of Produce	1	1	1	1	1	1	1	1	1	1	1
3.5.2	Termination Resistance (Rated Current)		4									
3.5.3	Termination Resistance (Low Level)		3		2,4,6,9	2,4,7	2,4,6	2,6	2,4	2	2,4,8	2,4
3.5.4	Dielectric Withstanding Voltage			3				5			7	
3.5.5	Insulation Resistance			2				4		4	6	
3.5.6	Current Leakage			4								
3.5.7	Temperature Rising		5		7							
3.5.8	Over Current Loading										3	
3.5.9	Vibration (High Frequency)					6						
3.5.10	Physical Shock					5						
3.5.11	Connector Mating Force		2									
3.5.12	Connector Unmating Force		6									
3.5.13	Connector Locking Strength				10							
3.5.14	Crimp Tensile Strength	2										
3.5.15	Resistance to "Kojiri"				3							
3.5.16	Contact Normal Force											5
3.5.17	Handling Ergonomics		7									
3.5.18	Thermal Shock						5					
3.5.19	Humidity(Steady State)										5	
3.5.20	Industrial SO ₂ Gas								3			
3.5.21	Temperature Life (Heat Aging)				5	3						
3.5.22	Resistance to Cold						3					
3.5.23	Dust Bombardment				8							
3.5.24	Humidity Temperature Cycling							3				
3.5.25	Dew Formation Test									3		
3.5.26	Compound Environment Resistance											3

Fig.3



Soldering wire on stripped area.

Remove the bulk resistance from the measured value

Fig.4

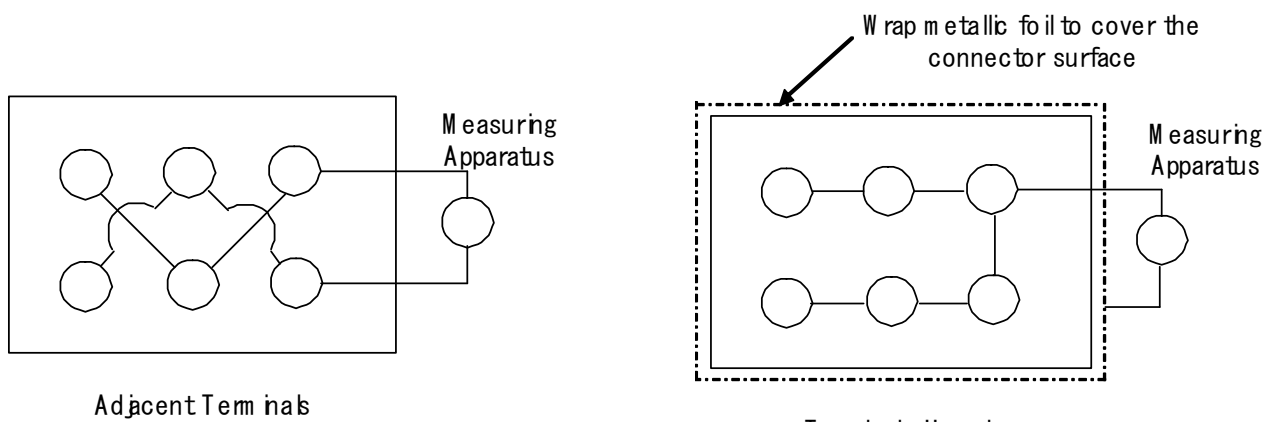


Fig.5

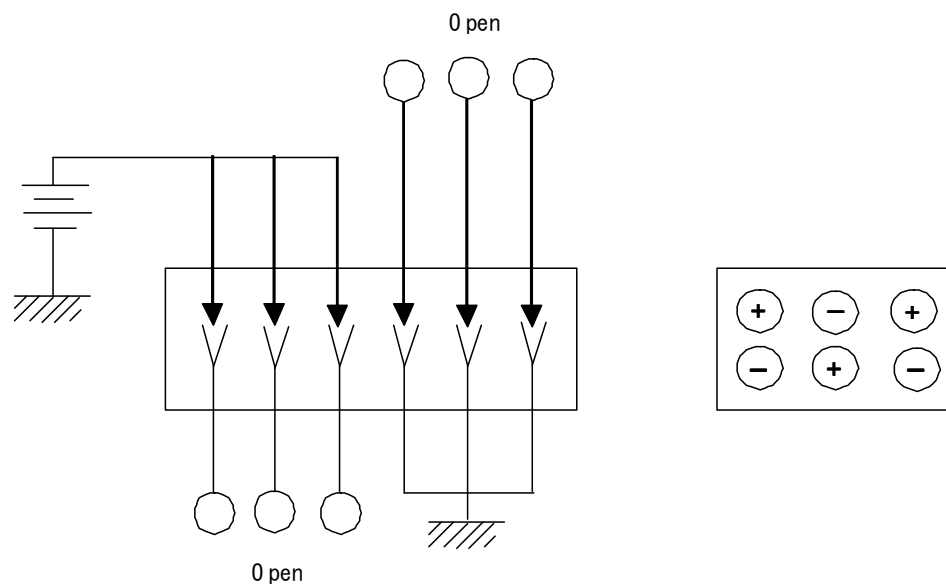


Fig.6

Wire Size (mm ²)	Test Current (A)	Duration
0.3	11	60 minutes
	13.5	10 sec.
	15	5 sec.
	20	1 sec.

Fig.7

Para	Test Condition
Peak Acceleration	980 m/s ²
Duration	6msec • Velocity
Waveform (Half sine wave)	<p> ----- : Ideal Wave _____ : Permissible Limit D : Ideal Wave Duration A : Peak acceleration of ideal wave T1 : In case of Shock Machine The minimum time to watch shock </p>
Direction	X,Y and Z axis (6 Directions)
Number of Drops	3 Drops Each

Fig.8

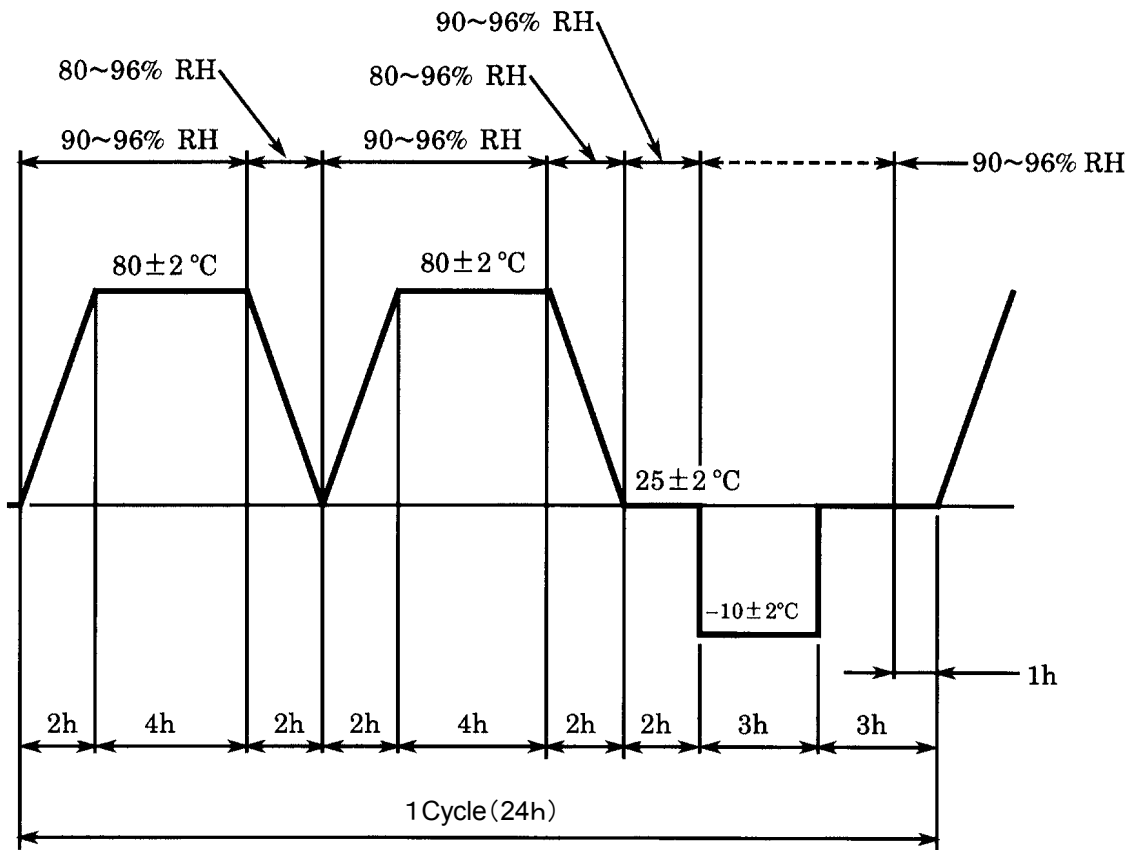


Fig.9

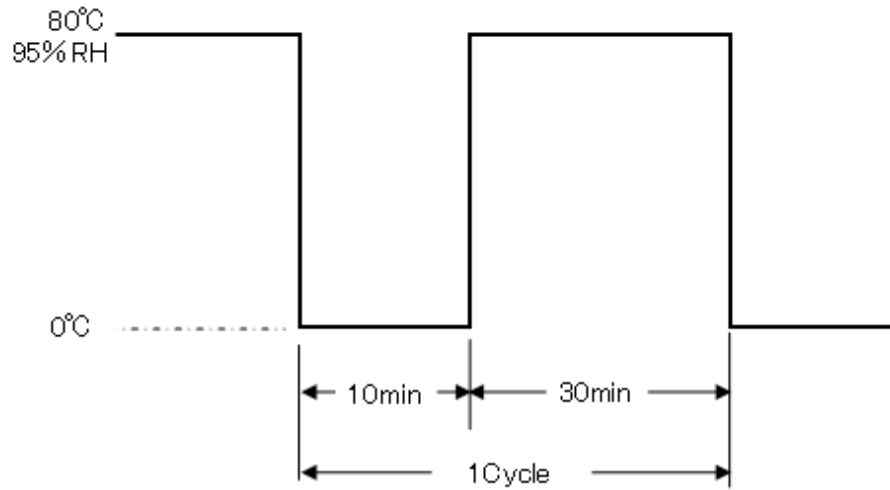


Fig.10

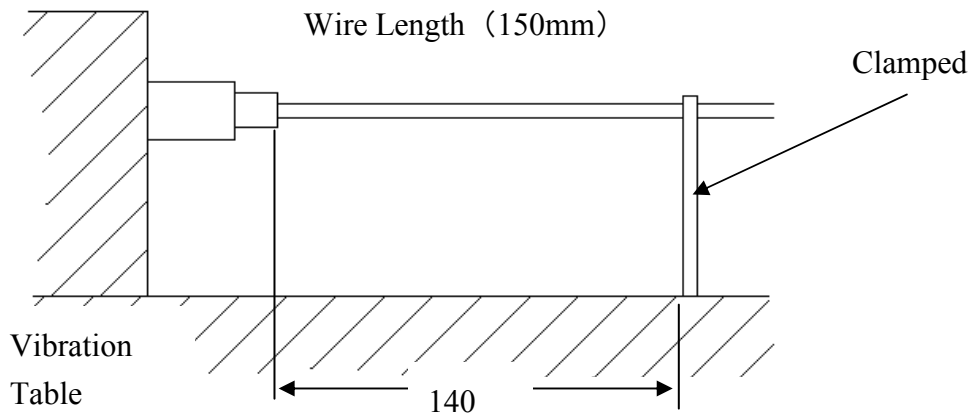


Fig.11

Product Part No.*	Description
1981468	0.64 LIGHT SENSOR 5Pos. Plug Housing
1318305	0.64 LIGHT SENSOR 6Pos. Plug Housing
1123343-1	0.64 Receptacle Contact

Appendix.1

*Note : Part number is consisted from listed base number and 1 digit numeric prefix and suffix with dash. Refer to catalog or customer drawing for specific part numbers for each base number. When prefix is zero, zero and dash are omitted.