RCA Jack W/ SPDIF Connector

1. SCOPE

1.1. CONTENTS

This specification covers the performance, tests and quality requirements for the RCA Jack W/ SPDIF Connector.

1.2. QUALIFICATION

When tests are performed on the subject product line, the procedures specified in TE 109 series specifications shall be used. All inspections shall be performed using the applicable inspection plan and product drawing.

2. APPLICABLE DOCUMENT

The following TE documents form a part of this specification to the extent specified herein. Unless otherwise specified, the latest edition of the document applies. 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. TE SPECIFICATIONS

A. 109-1: General Requirements for Test Specifications

B. 109-197：TE Specification vs EIA and IEC Test Methods

C. 501-57740：Test Report

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. Housing：Thermoplastic or Thermoplastic High Temp., UL94V-0

B. Contact：Copper Alloy, Tin or Tin-Lead Plating on over Nickel under-plated overall.

C. Shield：Steel, Nickel or Tin or Tin-Lead Plating over Nickel under-plated overall.

3.3. RATINGS

A. Current Rating：1A （For RCA Jack connector）

B. Voltage Rating：DC 34V（For RCA Jack connector）

C. Supply Voltage：0.5~+7V（For SPDIF connector）

D. Input Voltage：-0.5~Vcc+0.5 V（For SPDIF connector）

E. Operating Voltage：2.7~5.5 V（For SPDIF connector）

F. Transmission Rate：16Mbps（For SPDIF connector）

G. Operating temperature：-25℃ to 70℃.

H. Storage temperature：-40℃ to 70℃.

3.4. TEST CONDITION

The product is designed to meet the electrical, mechanical and environmental performance requirements specified in figure 1.

3.5. TEST REQUIREMENTS AND PROCEDURES SUMMARY

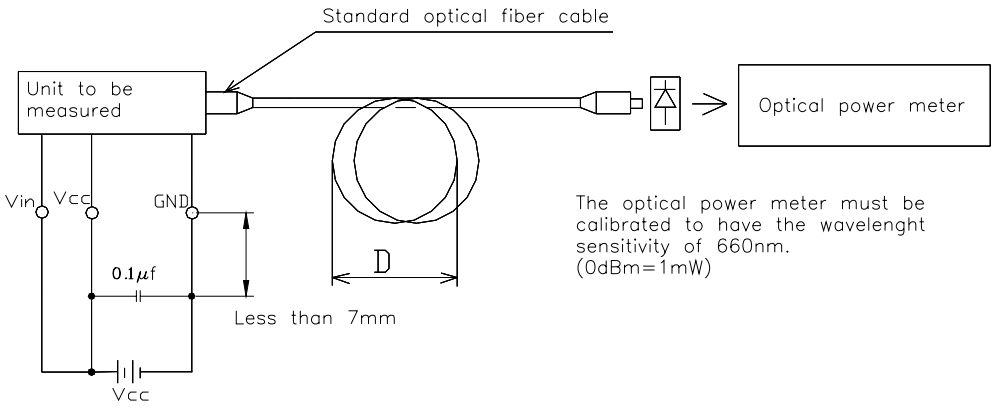
TEST DESCRIPTION		REQUIREMENT	PROCEDURED
Examination of product		Meets requirements of product drawing and TE Specification.	Visual inspection No physical damage
ELECTRICAL（RCA CONN.）			
Contact Resistance		30mΩ Max.	Mate connectors, 100 VDC 1 min. EIA-364-23A
Insulation Resistance		1000MΩ Min.	Impressed voltage 500 VDC. Test between adjacent circuits of unmated connector. EIA-364-21C.
Dielectric Withstanding Resistance		No creeping discharge or flashover shall occur. Current leakage: 0.5 mA MAX	500V AC rms., for 1 min. Test between adjacent circuits of unmated connector. EIA-364-20B
ELECTRICAL（SPDIF CONN.）			
Optical Power Output Coupling With Fiber		-15~-21 dBm	Refer to Fig.2
Dissipation Current		10 mA MAX.	Refer to Fig.3
High Level Input Voltage		2.0 V or more	Refer to Fig.3
Low Level Input Voltage		0.8 V or less	Refer to Fig.3
Low To High Delay Time		120 ns MAX.	Refer to Fig.4
High To Low Delay Time		120 ns MAX.	Refer to Fig.4
Pulse Width Distortion		-25~25 ns	Refer to Fig.4
Jitter		20 ns MAX.	Refer to Fig.4
MECHANICAL			
Durability		See Note	Operation Speed：500 Cycles/per hour. Durability Cycles：500 Cycles (EIA-364-9C)
Mating Force	RCA	0.3~4.0 Kg .	Operation Speed： 25 mm/min. Measure the force required to mate connector. EIA-364-13B
	SPDIF	4.0 Kg MAX.	
Un-mating Force	RCA	0.3~4.0 Kg .	Operation Speed： 25 mm/min. Measure the force required to mate connector. (EIA-364-13B)
	SPDIF	0.6~4.0 Kg .	
Chape Test (For optical connector)		Mated without mechanical abnormality	5 times of either upper or lower side gain 1N-m for 5 sec.
ENVIRONMENTAL			
Humidity-Temperature Cycle		See Note	Mated Connector （EIA-364-31B ） 40℃±2℃, 90~95% RH, 10 Cycles
Temperature Life		See Note	Temperature 70℃for 96 hours, EIA-364-17B.
Thermal Shock		See Note	Subject mated connectors to 10 cycles between –20℃ and 85℃ (EIA-364-32C)

Figure 1（Cont.）

TEST DESCRIPTION	REQUIREMENT	PROCEDURED
PHYSICAL		
Salt Spray	No detrimental corrosion allowed in contact area and base metal exposed.	Unmated connectors to 5% salt concentration for 48 hours. Temperature: 35℃ EIA-364-26B.
Solder ability	The inspected area of each lead must have 95% solder coverage minimum.	Test temperature: 245±5℃. Dip tails into flux for 5 second, drain, and then dip into the solder pot and keep for 5 seconds.
Resistance to Wave Soldering Heat	No physical damage shall occur.（Lead-Free）	Solder Temp.：265±5℃, 10±0.5sec. TE spec. 109-202, Condition B

Figure 1（End）

NOTE: Shall meet visual requirements, show no physical damage

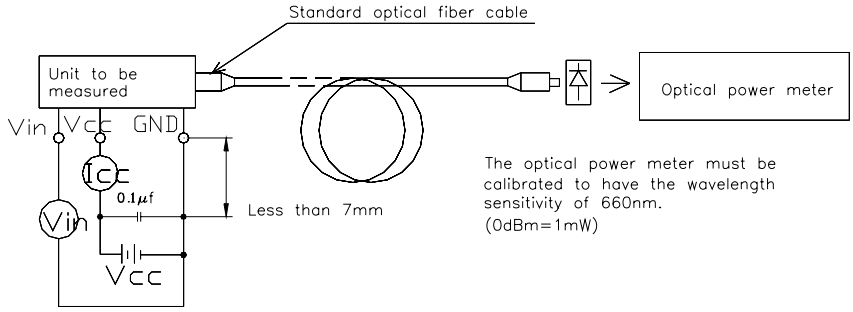


Measuring Method of Optical Output Coupling with Fiber.

Notes: (1) OC-08 Vcc=3.0V (State of operating).

(2) To bundle up the standard fiber optic cable, make it into a loop with the diameter D=10cm or more. (The standard fiber optic cable will be specified elsewhere

Figure 2



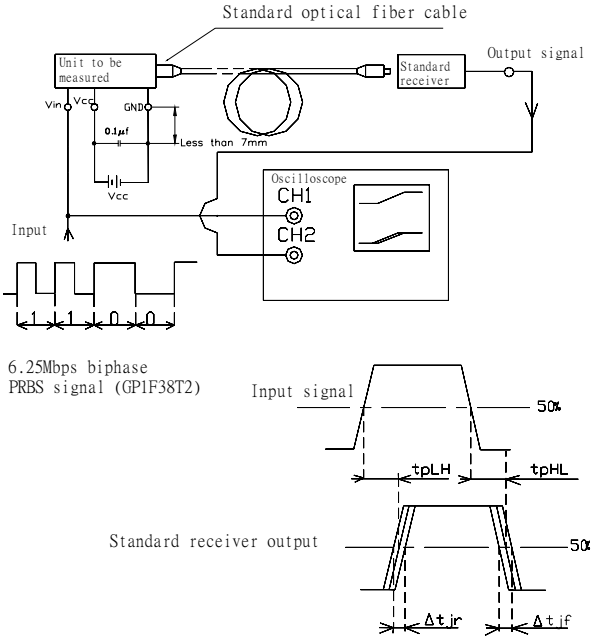
Measuring Method of Optical Output Coupling with Fiber.

Input conditions and judgment method.

Condition	Judgment method
V_{in}=2.0V or more.	-21≦Pc≦-15dBm, Icc=10mA or less.
V_{in}=0.8V or less.	Pc≦-36dBm, Icc=10mA or less.

Note) Vcc=3.0V (State of operating).

Figure 3



Measuring Method of Pulse Response and Jitter.

Test item

Test item	Symbol	Test condition
Low → High pulse delay time	t_{PLH}	Refer to the above prescriptions
High → Low pulse delay time	t_{PHL}	Refer to the above prescriptions
Pulse width distortion	△tw	$\Delta tw=t_{PHL}-t_{PLH}$
Low → High Jitter	△tjr	Set the trigger on the rise of input signal to measure the jitter of the rise of output
High → Low Jitter	△tjf	Set the trigger on the fall of input signal to measure the jitter of the rise of output

Notes (1) The waveform write time shall be 4 seconds. But do not allow the waveform to be distorted by increasing the brightness too much.
(2) Vcc=3.0V (State of operating)
(3) The probe for the oscilloscope must be more than 1MΩ and less than 10pF.

Figure 4

3.6. PRODUCT Qualification and Requalification Test Sequence

Test or Examination	Test Group							
	A	B	C	D	E	F	G	H
	Test Sequence (a)							
Examination of Product	1,13	1,6	1,9	1,9	1,9	1,6	1,6	1,9
Contact Resistance	2,9	2,4	2,5	2,5	2,5	2,4	2,4	2,5
Insulation Resistance	3							
Dielectric Withstanding Resistance	4,8		4	4	4			4
SPDIF Conn. Electrical Characteristics	12	5	8	8	8	5	5	8
Durability	7							
Mating Force	5,10		6	6	6			6
Un-mating Force	6,11		7	7	7			7
Chape Test (For optical connector)		3						
Humidity-Cycling Test			3					
Temperature Life				3				
Thermal Shock					3			
Salt Spray						3		
Solder-ability							3	
Resistance to soldering heat								3

Figure 5

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