
FAX MODEM SOCKET

1. SCOPE

1.1. CONTENTS

This specification covers performance, tests and quality requirements for the Fax Modem Socket.

2. APPLICABLE DOCUMENT

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.

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 : 30% Glass Reinforced LCP or Other High Performance Reins,
Rated 94V-0 in accordance with UL-94.
- B. Contact : JIS C5210R-SH or Other Equivalent Copper Alloy. Gold Plating
0.20μm Min. on Contact Area, Tin-Lead (90/10) Plating 2.54μm
Min. on Solder Tails, All Over Nickel Plating 1.27μm Min.
- C. Latch : JIS SUS301R-1/2H. Tin-Lead (90/10) Plating 2.54μm Min. Over
Nickel Plating 0.76 μm Min.

DR	DATE	APVD	DATE
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3.3. MECHANICAL REQUIREMENTS

A. CONTACT NORMAL FORCE

THE NORMAL FORCE OF THE INDIVIDUAL CONTACT SHALL BE 50gf MINIMUM END OF LIFE.

B. DURABILITY

AFTER 50 MATING AND UNMATING CYCLES WITH 1.0mm THICK BOARD AT THE RATE OF 25.4mm/MINUTE, THE CONNECTOR SHALL BE OF NO DAMAGE TO THE HOUSING OR CONTACTS. THE CONNECTOR SHALL ALSO MEET THE REQUIREMENTS OF CONTACT RESISTANCE IN THE PARAGRAPH 3.4.C.

C. VIBRATION

THERE SHALL BE NO EVIDENCE OF PHYSICAL OR MECHANICAL DAMAGE, WHEN THE MATED CONNECTOR IS SUBJECTED TO PROLONGED MECHANICAL VIBRATION. DURING THE VIBRATION ALONG EACH AXIS, THE CONTACT SHALL BE OF NO EVIDENCE OF DISCONTINUITY GREATER THAN 1 MICROSECOND. AT THE COMPLETION OF THE TEST, THE CONTACT RESISTANCE SHALL NOT EXCEED THE VALUE SPECIFIED IN TABLE I (SEE PARAGRAPH 3.4.C). THE TEST IS IN ACCORDANCE WITH MIL-STD-1344A, METHOD 2005. FOLLOWING DETAILS SHALL APPLY :

<a> TEST CONDITION : I (10-55-10 Hz TRAVERSED).

 TEST DURATION : 2 HOURS ALONG EACH OF 3 MUTUALLY PERPENDICULAR PLANES. (9 HOURS TOTALLY).

<c> TEST BOARD THICKNESS : 1.0 +/- 0.02mm.

D. PHYSICAL SHOCK

THERE SHALL BE OF NO EVIDENCE OF PHYSICAL DAMAGE, WHEN THE MATED MINI PCI AND MINI PCI CONNECTOR IS SUBJECTED TO TRANSIENT ACCELERATION. DURING AND AFTER EACH SHOCK, THE CONTACTS SHALL BE NO DISCONTINUITY GREATER THAN 1 MICROSECOND. THE TEST SHALL BE IN ACCORDANCE WITH MIL-STD -202F, METHOD 213. THE FOLLOWING DETAILS SHALL APPLY :

<a> TEST CONDITION : A (50G, 11ms HALF-SINE).

 NUMBER OF DROPS : 3 DROPS IN EACH OF 3 MUTUALLY PERPENDICULAR PLANES.

<c> TEST BOARD THICKNESS : 1.0 +/- 0.02mm.

E. CONTACT RETENTION FORCE

THE INDIVIDUAL CONTACT RETENTION FORCE SHALL NOT BE LESS THAN 180gf MINIMUM, WHILE APPLYING A AXIAL DRAWING FORCE TO THE SUPPORT MEMBER OF THE CONTACT. THE TEST SHALL BE PERFORMED 10PCS OF EACH DIFFERENT ROW HAVE CONTACTS PER EVERY UNMATED MINI PCI SOCKETS. THE CROSSHEAD SPEED SHOULD BE LESS THAN 5mm PER MINUTE.

F. PC BOARD MATING FORCE

THE PC BOARD MATING FORCE SHALL BE 5.3kgf MAXIMUM. MEASURE THE FORCE REQUIRED TO MATE CONNECTORS. (IN THIS TEST THE FORCE REQUIRED TO TURN PCB BE FIRE ON LACKING IS EXCLUDED.) AT THE OPERATION SPEED OF 100mm/min.

3.4. ELECTRICAL REQUIREMENTS

A. CURRENT RATING

THE MAXIMUM CURRENT RATING BASED UPON A 30 DEGREE RISE OVER AMBIENT TEMPERATURE IS 0.3 AMPERE DC FOR A 124 POSITION MINI PCI WITH ALL CONTACTS CARRYING CURRENT.

B. VOLTAGE RATING

THE MAXIMUM VOLTAGE RATING IS 25V AC.

C. LOW LEVEL CONTACT RESISTANCE

THE LOW LEVEL CONTACT RESISTANCE SHALL NOT EXCEED THE VALUE SPECIFIED IN TABLE I, WHEN MEASURED IN ACCORDANCE WITH MIL-STD-1344A, METHOD 3002.1.

<u>INITIAL</u>	<u>AFTER TEST</u>
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METHOD 3002.1. THE FOLLOWING DETAILS SHALL APPLY :

<a> METHOD OF CONNECTION : ATTACH CURRENT AND VOLTAGE LEADS AS SHOWN IN FIGURE I THE RESISTANCE SHALL BE MEASURED FROM THE SOLDER TAIL TO THE SOLDER FINGER OF THE MINI PCI.

 TEST VOLTAGE : 20 MILLIVOLTS DC MAX. OPEN CIRCUIT.

<c> TEST CURRENT : NOT TO EXCEED 100 MILLIAMPERES.

D. INSULATION RESISTANCE

THE INSULATION RESISTANCE OF THE MATED CONNECTORS SHALL NOT BE LESS THAN 500 MEGAOHMS, INITIALLY; AND 100 MEGAOHMS AFTER ENVIRONMENTAL EXPOSURE WHEN MEASURED IN ACCORDANCE WITH MIL-STD-202F, METHOD 302. THE FOLLOWING DETAILS SHALL APPLY :

<a> TEST VOLTAGE : 500 VOLTS DC.

 PREPARATION : THE CONNECTORS SHALL BE MATED AND UNMATED BUT NOT SOLDERED TO A P.C. BOARD (THIS IS BECAUSE THE TYPE OF PRINTED WIRING BOARD AND THE GEOMETRY OF ITS LAND AREA WILL AFFECT THE PARAMETER.

<c> MEASUREMENT POINTS : THE INSULATION RESISTANCE SHALL BE MEASURED BETWEEN 10 ADJACENT 10 OPPOSING CONTACTS PER CONNECTOR.

E. DIELECTRIC WITHSTANDING VOLTAGE

THERE SHALL BE OF NO EVIDENCE OF INSULATOR, FLASHOVER, OR EXCESSIVE LEAKAGE CURRENT IN EXCESS OF 0.5 MILLIAMPERE, WHEN THE MATED MINI PCI SOCKET IS TESTED IN ACCORDANCE WITH MIL-STD-202F, METHOD 301. THE FOLLOWING DETAILS SHALL APPLY :

<a> TEST VOLTAGE : 250 VAC AT 60 Hz.

 TEST DURATION : 60 SECONDS.

<d> PREPARATION : THE CONNECTORS SHALL BE MOUNTED BUT NOT SOLDERED TO THE P.C. BOARD.

<e> MEASUREMENT POINTS : THE DIELECTRIC WITHSTANDING VOLTAGE SHALL BE APPLIED ACROSS A MINIMUM OF 10 ADJACENT AND 10 OPPOSING CONTACTS.

3.5. ENVIRONMENTAL REQUIREMENTS

A. HUMIDITY

WITHIN ONE HOUR AFTER EXPOSURE OF THE UNMATED MINI PCI TO A HIGH HUMIDITY ENVIRONMENT, THE INSULATION RESISTANCE SHALL NOT BE LESS THAN 100 MEGAOHMS (SEE PARAGRAPH 3.4.D), AND THE CONTACT RESISTANCE SHALL NOT EXCEED THAT SPECIFIED IN TABLE I (SEE PARAGRAPH 3.4.C). THE TEST SHALL BE IN ACCORDANCE WITH MIL-STD-202F, METHOD 103B. THE FOLLOWING DETAILS SHALL APPLY :

- <a> TEST CONDITION : B.
- RELATIVE HUMIDITY : 90 +/- 5%.
- <c> TEMPERATURE : 40 ± 3 DEGREE C.
- <d> TEST DURATION : 96 HOURS.

B. THERMAL SHOCK

AFTER EXPOSURE OF THE UNMATED MINI PCI SOCKET TO ALTERNATED PERIODS OF EXTREME HIGH AND LOW TEMPERATURE, THERE SHALL BE NO EVIDENCE OF CRACK, CRAZE OF INSULATOR HOUSING, OR PHYSICAL DAMAGE TO THE CONNECTOR. AFTER THE TEST, THE DIELECTRIC WITHSTANDING VOLTAGE OF THESE UNMATED MINI PCI SOCKET SHALL BE GREATER THAN 250 VAC FOR 1 MINUTE (SEE PARAGRAPH 3.4.E). THE TEST SHALL BE IN ACCORDANCE WITH MIL-STD-202F, METHOD 107. THE FOLLOWING DETAILS SHALL APPLY :

- <a> TEST CONDITION : A (5, 1-HOUR CYCLE).
- TEMPERATURE RANGE : -55 ± 5 TO 85 ± 5 DEGREE C.
- <c> TIME AT EACH TEMPERATURE : 30 MINUTES.
- <d> TRANSFER TIME : 5 MINUTES MAXIMUM.
- <e> NUMBER OF CYCLES : 5 CYCLES.

C. SALT SPRAY

AFTER 24-HOUR EXPOSURE OF THE UNMATED MINI PCI SOCKET. TO A SALT SPRAY CHAMBER, IN WHICH 5% OF SALT (NaCl) IS IN PLACE, THE LOW LEVEL CONTACT RESISTANCE IS STILL WITHIN THE SPECIFICATION AS IN TABLE I. THE TEST IS IN ACCORDANCE WITH MIL-STD-1344A, METHOD 1001.1 CONDITION B. THE FOLLOWING DETAILS SHALL APPLY :

<a> AMBIENT TEMPERATURE : 35 +/- 2 DEGREE C.

 TEST DURATION : 24 HOURS.

<c> SPECIAL TREATMENT : THE MEASUREMENT SHALL BE CONDUCTED AFTER THE MATED MINI PCI SOCKET ARE MILDLY RINSED IN RUNNING WATER TO REMOVE DEPOSITION OF SALT, FOLLOWED BY NATURAL DRYING BY PLACING IT FOR 24 HOURS AT ROOM TEMPERATURE.

D. TEMPERATURE LIFE

AFTER EXPOSURE OF THE UNMATED THE SUBJECT SOCKET TO A HIGH TEMPERATURE CHAMBER, THE INSULATION RESISTANCE SHALL NOT BE LESS THAN 50 MEGAOHMS (SEE PARAGRAPH 3.4.D), THE DIELECTRIC WITHSTANDING VOLTAGE SHALL BE WITHIN THE SPECIFICATION AS IN PARAGRAPH 3.4.E, AND THE VARIATION OF LOW LEVEL CONTACT RESISTANCE MEET THE REQUIREMENT AS IN TABLE I. (SEE PARAGRAPH 3.4.C) THIS TEST IS IN ACCORDANCE WITH MIL-STD-202F, METHOD 108. AND FOLLOWING DETAILS SHALL APPLY :

<a> TEST TEMPERATURE : 85 DEGREE C.

 TEST DURATION : 48 HOURS.

E. SOLDERABILITY TEST

THE SOLDER TAILS OF CONTACTS OF THE SUBJECT SOCKET SHALL BE WITH 95% MINIMUM IN ACCORDANCE WITH MIL-STD-202F, METHOD 208D. FOLLOWING DETAILS SHALL APPLY :

<a> SOLDER DWELL TIME : CONTACTS ARE HELD ABOVE THE SOLDER FOR 10 SECONDS. AND THEN IMMERSSED IN THE SOLDER FOR 3 ± 0.5 SECONDS.

 SOLDER TEMPERATURE : 230 ± 5 DEGREE C.

F. RESISTANCE TO REFLOW SOLDERING HEAT

THERE SHALL BE OF NO EVIDENCE OF PHYSICAL DAMAGE TO THE INSULATOR OR FINISHED PRODUCTS WHEN THE UNMATED MINI PCI SOCKET IS SUBJECTED TO THE REFLOW SOLDERING, PROCESS, FOLLOWING, DETAILS SHALL APPLY :

<a> TEST CONNECTOR SHALL BE ON P.C. BOARD.

 PRE-HEAT : 100~150 DEGREE C FOR 60 SECONDS MAXIMUM.

<c> HEAT : 210 DEGREE C MINIMUM FOR 30 SECONDS MAXIMUM.

<d> HEAT PEAK : 240 DEGREE C.

G. INDUSTRIAL GAS (SO₂)

THE INDUSTRIAL GAS OF THE MATED CONNECTORS

<a> SO₂ GAS : 10 PPM, 95% R.H.

 TEST TEMPERATURE : 25 DEGREE C.

<c> TEST DURATION : 24 HOURS.

4. TEST SEQUENCE

TABLE I

TEST / OPERATION

TEST GROUP	A	B	C	D	E	F	G	H	
Q'TY OF SAMPLES	4	4	4	4	4	4	4	4	PARAGRAPH
CONFIRMATION OF PRODUCTS	1 9	1 5	1 5	1 5	1 5	1 3	1 3	1 3	3.3.2
CONTACT RESISTANCE (LOW LEVEL)	2 6	2 4	2 4	2 4	2 4				5.3
INSULATION RESISTANCE	3,7								5.4
DIELECTRIC WITHSTANDING VOLTAGE	4 8								5.5
HUMIDITY	5								6.1
SALT SPRAY		3							6.3
TEMPERATURE LIFE			3						6.4
RESISTANCE TO REFLOWING SOLDERING				3					6.6
DURABILITY (50 CYCLES)					3				4.2
P.C. BOARD MATING FORCE						2			4.6
CONTACT RETENTION FORCE							2		4.5
SOLDERABILITY TEST								2	6.5

5. VALIDATION

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