3M™ Board Stacking Connector System
0.5 mm, Vertical, Surface Mount, 4, 5 & 6 mm Stack Height
P05N Series

Product Specification 78-5102-0118-5

Released: 10-1-11

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1. Scope

This document summarizes test methods, test conditions and product performance requirements for the 3M P05N Series board stacking connector system. Listings of materials, finishes, test conditions, and test standards are included in this specification. In the event of conflict between this specification and any documents listed below, the listed documentation supersedes this specification.

2. 3M Documents

78-5100-1092-C TS-1092, Technical Data Sheet for Board Stacking Connector System P05N Series

3. Performance and Test Description

Unless otherwise specified, all tests shall be performed on P05N-100ST-B-G sockets mated to P05N-100PT-X-G plugs at ambient environmental conditions per EIA-364. Unless otherwise specified, all values and limits are typical of those obtained by qualification testing of the subject product. All specifications are subject to revision and change without notice from 3M.

4. Requirements Overview

4.1 Ratings

Dielectric withstanding voltage: 150 VAC_{RMS} at sea level for 1 minute

Current:

0.5 Amperes/contact (Max. 16 A)

Temperature: -55°C to +85°C

Insulation resistance: >1 $x10^{9}\Omega$ at 500 VDC

Processing Temperature: 260°C maximum

4.2 Materials

Socket

Insulation: High Temperature Thermoplastic
IDC Contact: Copper Alloy

Header

Body Insulation: High Temperature Thermoplastic
Pin Contact: Copper Alloy

4.3 Finishes

Plating: (socket and header)

Nickel: 50 µ inches
Gold - Contact: 8 µ inches

4.4 Regulatory Compliance

See the Regulatory Information Appendix (RIA) in the “RoHS compliance” section of **www.3Mconnector.com** for compliance information. See customer drawings for regulatory specifics on each connector.

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5. Electrical

Description or Parameter	Values & Limits	Units	Requirement or Conditions
Dielectric Withstanding Voltage	150	VAC_{RMS}	No shorts or damage.
Current Rating	0.5	Amperes/ Contact	16 A Maximum per connector.
Insulation Resistance	$>1 \times 10^9$	Ohms	Using 500V DC.
Contact Resistance	60	mΩ	Max measured based on the HP 4338B measurement method of JIS C 5402

6. Mechanical

Description or Parameter	Values & Limits	Units	Requirement or Conditions
Mating Force / Contact	80	gf/ Contact	Maximum.
Unmating Force / Contact	0.0588	gf/ Contact	Minimum.
Vibration	60	mΩ	After test, contact resistance max. 60 mΩ. Current breaks shall not occur.
Impact Resistance Test	300	mΩ	After test, maximum. Current breaks shall not occur.
Durability (with Environmental)	50	Mating cycles	Repeated insertion and removal. Speed of max. 200 times/hours.

7. Physical

Description or Parameter	Values & Limits	Units	Requirement or Conditions
Plating Thickness Nickel Gold	 50 8	Microinches	XRF measurement.

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8. Environmental

Description or Parameter	Values & Limits	Units	Requirement or Conditions	Test Standard or Method
Soldering Heat Resistance	300 350 260	degrees C	within 5 sec. with Soldering Iron within 3 sec. with Soldering Iron Maximum peak temperature with Infrared reflow soldering	——
Humidity	120	hours	40±2 degrees C / 90-95%RH. Insulation resistance min. 100 MΩ, contact resistance max. 60 mΩ.	MIL-STD-1344A Method 1002 Condition 1
Thermal Shock	5	cycles	-55 to +85 degrees C. Insulation resistance min. 100 MΩ, contact resistance max. 60 mΩ.	MIL-STD-202F Method 107G
Salt Spray	5	% NaCl	24 hours. 10 milliohm maximum ∆R contact resistance per mated interface throughout testing.	MIL-STD-1344A Method 1001
H2S Resistance (Header and Socket Mated)	48	hr	Contact resistance max. 60 mΩ. 48 cycles, contact resistance max. 80 mΩ. Bath temperature 40±°C, gas concentration 3±1 ppm, humidity 75-80% RH.	——
Heat Resistance Test	500	hr	at +85°C, Contact resistance maximum 60 mΩ	MIL-STD-1344A, Method 1005, Condition 3
Low-Temperature Resistance Test	500	hr	at -55°C, Contact resistance maximum 60 mΩ	JEC Pub 512-6 test 11j

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