

3M Connector System 0.050" x 0.100" Pitch

3M™ Tripolarized Wiremount Socket - Series 820

3M™ 4-Wall, Tripolarized Header - Series 810

Product Specification 78-5110-0074-0

Released: 10-1-10



3M Electronic Solutions Division

Interconnect Products

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1. Scope

This document summarizes test methods, test conditions and product performance requirements for the 3M Tripolarized Wiremount Socket 82XXX-600X-XX and 3M 4-Wall, Tripolarized Header 81XXX-XX0X0X-XXt. 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

78-5100-0254-2 TS-0254, Technical Data Sheet for 82XXX Tripolarized Wiremount Socket
 78-5100-0253-4 TS-0253, Technical Data Sheet for 81XXX Tripolarized Header
 78-5100-0334-7 TS-0334, Technical Data Sheet for 81XXX Tripolarized Header, 4 Rows of Solder Tails
 34-7028-4354-0 3443-113 3M™ Locator Plate Instructions

3. Performance and Test Description

Unless otherwise specified, all tests shall be performed on 82100 sockets mated to 81100 headers using 3447/100, 3609/100, 3754/100, and 3756/100 cable 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: 500 VAC_{RMS} at sea level
 Current: (EIA-364-070 method 2, 30°C maximum temperature rise.)
 0.75 Amperes, all contacts powered
 2.00 Amperes, 4 contacts powered
 3.00 Amperes, 1 contact powered
 Temperature: -55°C to +105°C
 Insulation resistance: >1 x10⁹Ω at 500 VDC
 Process Temperature (Header): 260°C
 Moisture Sensitivity Level (Header): 1

4.2 Materials

Socket

Insulation: Glass Filled PBT
 Cover Clip: Stainless Steel
 Strain Relief: Stainless Steel
 IDC Contact: Beryllium Copper Alloy

Header

Body Insulation: High Temperature LCP
 Latch Insulation: High Temperature LCP
 Pin Contact: Copper Alloy

4.3 Finishes

Plating: (socket and header)

Nickel: 50 - 150 μ inches, ASTM B689-97, SAE AMS-QQ-N-290

Gold - Contact: 30 μ inches, MIL-G-45204 Type II, Grade C

Sn Option - IDC: Matte or Satin Sn, 100 - 300 μ inches, Grain Size > 5μm, Organic content < 0.05%

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4.4 Cable Accomodation

General Accomodation:

30 AWG, 0.025" pitch, stranded or solid conductor, flat cable, PVC, TPE, FEP, PO insulation

3M™ Ribbon Cables:

3M 3754 PVC round stranded conductor flat cable
 3M 3756 TPE round stranded conductor flat cable
 3M 3749 TPE round solid conductor flat cable
 3M 3609 FEP round stranded conductor flat cable
 3M 3604 FEP round solid conductor flat cable
 3M HF754 PO round stranded conductor flat cable
 3M HF447 PO round solid conductor flat cable

3M™ Jacketed and Shielded Ribbon Cables:

3M 90101 TPE/PVC pleated foil shielded flat jacketed flat cable
 3M 90111 TPE/PVC pleated foil shielded flat jacketed flat cable
 3M 90201 TPE/TPE pleated foil shielded flat jacketed flat cable
 3M 90202 TPE/TPE pleated foil shielded flat jacketed flat cable
 3M 90211 TPE/TPE pleated foil shielded flat jacketed flat cable
 3M 93101 TPE/PVC low skew pleated foil shielded flat jacketed flat cable
 3M HF896 PO/PO round jacketed flat cable
 3M HF857 PO/PO round jacketed flat cable

4.5 Regulatory Compliance

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

5. Electrical

Description or parameter	Values & limits	Units	Requirement or conditions	Test Standard or method
Dielectric withstanding voltage	500	VAC _{RMS}	Measured between adjacent and opposing contacts. No disruptive discharge during 1 minute duration. Sea level with 70% relative humidity.	EIA-364-20A Method D Test Cond I
Current rating	3.00	Amperes	1 line driven. 30°C temp. rise. 20% derated.	EIA-364-70A
	2.00		4 line driven. 30°C temp. rise. 20% derated.	
	0.75		All line driven. 30°C temp. rise. 20% derated.	
Low level connection resistance	<10	Milliohms	10 milliohm maximum ΔR contact resistance per mated interface throughout testing.	EIA-364-23
Insulation resistance	>1 x 10 ⁹	Ohms	Measured between adjacent and opposing contacts. 500 VDC for 1 minute duration.	EIA-364-21

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6. Mechanical

Description or parameter	Values & limits	Units	Requirement or conditions	Test Standard or method
Header pin retention / contact	2 min	lbs	Force / contact required to remove pin from header body.	EIA-364-29B
Vibration	≤10	ns	Mated connectors shall exhibit no discontinuities greater than specified. 10 milliohm maximum ΔR contact resistance per mated interface throughout testing.	EIA-364-28D Condition III
Physical Shock	≤10	ns	Mated connectors shall exhibit no discontinuities greater than specified. 10 milliohm maximum ΔR contact resistance per mated interface throughout testing.	EIA-364-27B Test Cond. A
Mating Force / contact	0.25 max	lbs	Mated to a .016" square pin. (Insertion Force)	EIA-364-13B
Unmating Force / contact	0.075 min	lbs	Mated to a .016" square pin. (Withdrawl Force)	EIA-364-13B
Latch Retention Force	30 min	lbs	Retention force of 2 latches on header, mated to socket. Straight pull on cable.	N/A
Durability (with Environmental)	50	Mating cycles	10 milliohm maximum ΔR contact resistance per mated interface throughout testing.	EIA-364-09C

7. Physical

Description or parameter	Values & limits	Units	Requirement or conditions	Test standard or method
Visual	na	na	No defects such as deformation, blister, damage, crack, etc.	EIA-364-18A
Plating thickness Nickel Gold SN	50-150 30 100-300	Microinches	Average of random measurements from any 3 lots.	EIA-364-48
Header solderability, lead-free dip test	>95	Percent	Coverage of solderable area.	EIA-364-52 Category 3

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8. Environmental

Description or parameter	Values & limits	Units	Requirement or conditions	Test Standard or method
Temperature Life (Thermal Aging)	105	degrees C	1000 hours. No physical abnormalities . 10 milliohm maximum ΔR contact resistance per mated interface throughout testing.	EIA-364-17A Method A Condition 4
Humidity	10	24 hr cycles	25-65 C / 90-98%RH with -10 degree C subcycles. 10 milliohm maximum ΔR contact resistance per mated interface throughout testing.	EIA-364-31B Method 3 Condition 7a
Thermal Shock	5	cycles	-55 to +105 degrees C. No evidence of mechanical damage. 10 milliohm maximum ΔR contact resistance per mated interface throughout testing.	EIA-364-32C Test Cond. VII
Salt Spray	5	% NaCl	48 hours. 10 milliohm maximum ΔR contact resistance per mated interface throughout testing.	EIA-364-26B Test Cond. B
Moisture Sensitivity Level (Header)	1	MSL	260 C Reflow. No defects such as deformation, blister, damage, crack, etc., must maintain dimensional stability.	J-STD-020C

9. Test Sequence**9.1 Sequenced Tests****TEST FLOW**

Test	Sequence Numbers for Test Group				
	A	B	C	D	E
Visual				1	1
Low Level Connection Resistance (LLCR)	1,3,5	1,3,5,7	1,3	2,4,6	2,4,6
Vibration				3	
Physical Shock				5	
Durability (with Environmental)		2			3
Temperature Life (Thermal Aging)			2		
Humidity	4	6			
Thermal Shock	2	4			
Salt Spray					5
Number of Samples (Connectors)	20	6	20	20	10

9.2 Independent Tests

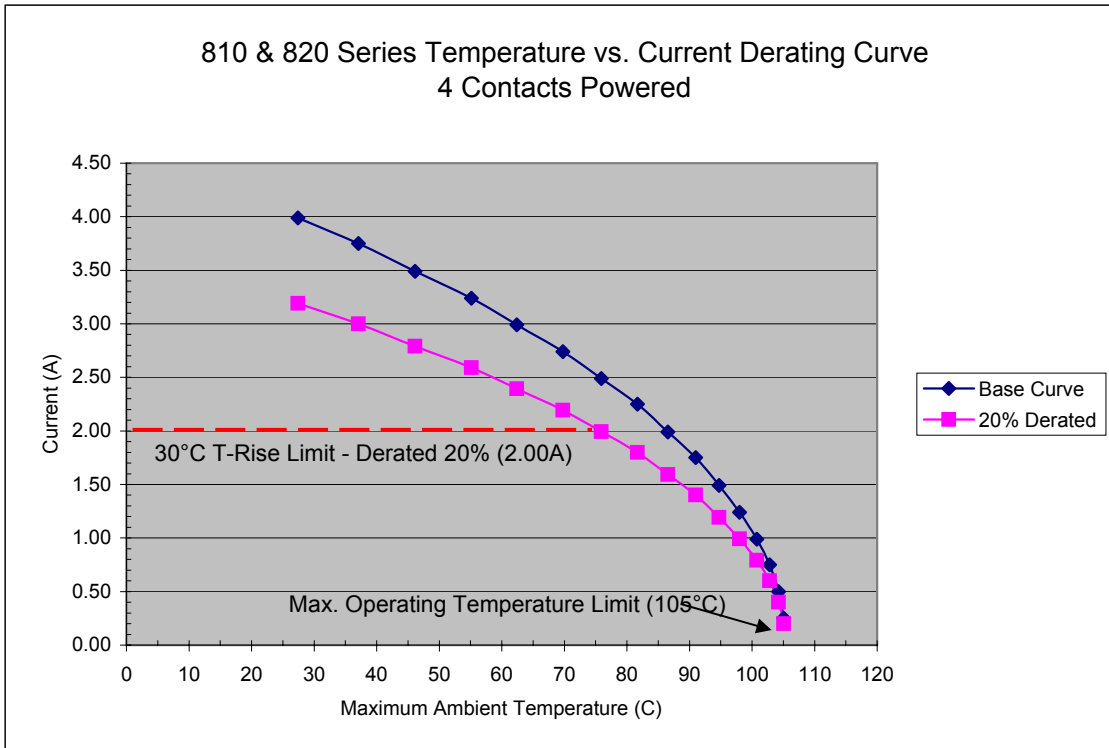
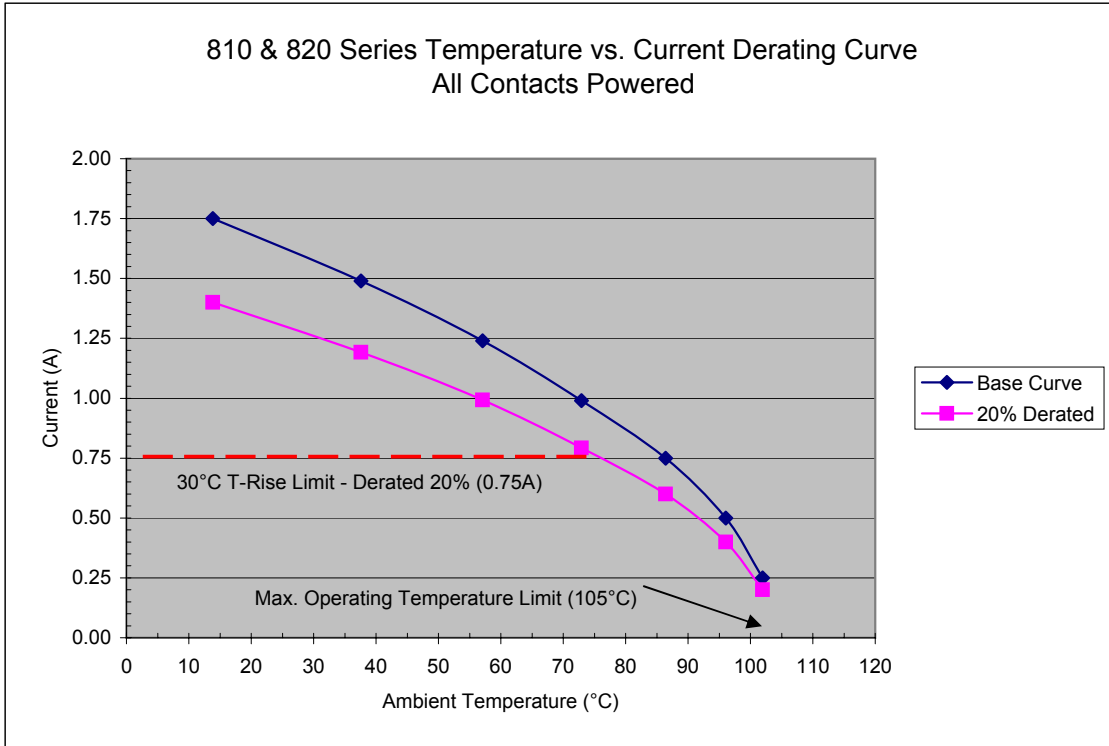
1. Plating Thicknesses
2. Header Solderability
3. Header Moisture Sensitivity Level
4. Header Pin Retention
5. Dielectric Withstanding Voltage
6. Current Rating
7. Insulation Resistance
8. Mating Force / Contact
9. Unmating Force / Contact
10. Latch Retention Force

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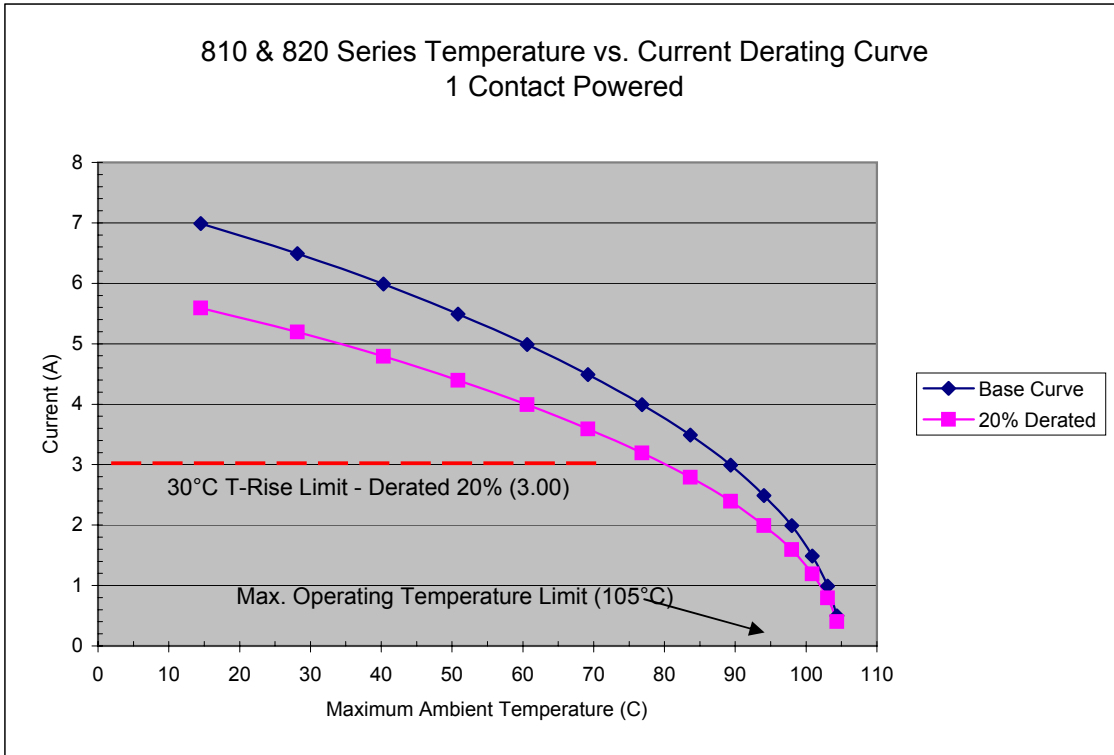
10. Figures

10.1 Current Rating



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11. Agency Listings

11.1 Underwriters Laboratories (UL)

Agency	File No.
UL	E68080
CUL	E68080

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