3M™ Tripolarized Wiremount Socket, 820 Series
3M™ 4-Wall, Tripolarized Header, 810 Series

0.050" x 0.100" (1.27mm x 2.54mm) Pitch

Product Specification 78-5102-0074-0

Released: 2-22-2022

3M Electronic Materials Solutions Division
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1. Scope

This document summarizes test methods, test conditions and product performance requirements for the 3M™ Tripolarized Wiremount Socket, 820 Series, 82XXX-600X-RB and 3M™ 4-Wall, Tripolarized Header, 810 Series, 81XXX-XX0X0X-RB. 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 3M™ Tripolarized Wiremount Socket, 820 Series
78-5100-0253-4 TS-0253, Technical Data Sheet for 3M™ 4-Wall, Tripolarized Header, 810 Series
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-364-070A 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

UL: 0.75A, 30V, 125°C
CUL: 0.75A, 30V, 125°C
Temperature: -55°C to +105°C
Insulation resistance: >1 $x10^9\Omega$ at 500 VDC
Process Temperature (Header): 260°C
Moisture Sensitiviety 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 - Wiping Area: 30 µ inches Average, MIL-G-45204 Type II, Grade C
- Tin - Socket IDC: Matte Sn, 100 - 300 µ inches
- Tin - Header Solder Tails: Matte Sn, 100 - 300 µ inches

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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™ Round Conductor Flat Cable, 3754 Series: PVC, round stranded conductor
3M™ Round Conductor Flat Cable, 3447 Series: PVC, round solid conductor
3M™ Round Conductor Flat Cable, 3756 Series: TPE, round stranded conductor
3M™ Round Conductor Flat Cable, 3749 Series: TPE, round solid conductor
3M™ Round Conductor Flat Cable, 3609 Series: FEP, round stranded conductor
3M™ Round Conductor Flat Cable, 3604 Series: FEP, round solid conductor
3M™ Round Conductor Flat Cable, HF447 Series: PO, Halogen Free, round solid conductor
3M™ Round Conductor Flat, Controlled Impedance Cable, 7700 Series: PO, shielded, round solid conductor

3M™ Jacketed and Shielded Ribbon Cables:

3M™ Pleated Foil Shielded Cable, 90101 Series: TPE/PVC, round solid conductor, flat jacketed
3M™ Pleated Foil Shielded Cable, 90111 Series: TPE/PVC, round solid conductor, flat jacketed
3M™ Pleated Foil Shielded Cable, 90201 Series: TPE/TPE, round solid conductor, flat jacketed
3M™ Pleated Foil Shielded Cable, 90202 Series: TPE/TPE, round stranded conductor, flat jacketed
3M™ Pleated Foil Shielded Cable, 90211 Series: TPE/TPE, round solid conductor, flat jacketed
3M™ Pleated Foil Shielded Cable, 93101 Series: TPE/PVC, round solid conductor, flat jacketed

4.5 Regulatory Compliance

For regulatory information about this product, visit 3M.com/regs or contact your 3M representative.

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-364-20F Method A Test Cond I**
Dielectric breakdown voltage	**1000**	**VAC_{RMS}**	**Ramp assembled pair at 500V/s until electrical arc. Sea level with 70% relative humidity. Excludes cable.**	**EIA-364-20F Method A Test Cond I**
Current rating	**3.00**	**Amperes**	**1 line driven. 30°C temp. rise. 20% derated.**	**EIA-364-70A Method 2**
	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-364-23C**
Insulation resistance	**>1 x 10^9**	**Ohms**	**Measured between adjacent and opposing contacts. 500 VDC for 1 minute duration.**	**EIA-364-21F**

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6. Mechanical

Description or parameter	Values & limits	Units	Requirement or conditions	Test Standard or method
Header pin retention / contact	>500	gF	Average Force / pin 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-364-28F Condition V, Level A, 1.5hrs
Mechanical Shock	≤10	ns	Mated connectors shall exhibit no discontinuities greater than specified. 10 milliohm maximum ΔR contact resistance per mated interface throughout testing.	EIA-364-27C Table 1 Test Cond. A
Mating Force / contact	1.12 max	N	Mated to a .015" square pin. No latches. (Insertion Force)	EIA-364-13E
Unmating Force / contact	0.33 min	N	Mated to a .015" square pin. No latches. (Withdrawl Force)	EIA-364-13E
Latch Retention Force	> 130	N	Retention force of 2 latches on header, mated to socket. Straight pull on cable.	N/A
Durability (Full)	50	Mating cycles	10 milliohm maximum △R 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 (A)
Header solderability, lead-free dip test	>95	Percent	Coverage of solderable area.	EIA-364-52 (A) 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**	**1008 hours. No physical abnormalities . 10 milliohm maximum ΔR contact resistance per mated interface throughout testing.**	**EIA-364-17C Method A Condition 4**
Humidity Temperature Cycling	**10**	**24 hr cycles**	**25-65 C / 90-98%RH with one -10 degree C subcycle. 10 milliohm maximum ΔR contact resistance per mated interface throughout testing.**	**EIA-364-31F Method IV Fig 1**
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-364-32G Method A Test Cond. VII**
Salt Spray	**5**	**% NaCl**	**48 hours. 10 milliohm maximum ΔR contact resistance per mated interface throughout testing.**	**EIA-364-26C 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-020E**

9. Test Sequence

9.1 Sequenced Tests **TEST FLOW**

Test	Sequence Numbers for Test Group				
	A	B	C	D	E
Visual	0, 8	0,4	0,6	0,6	0,6
Low Level Connection Resistance (LLCR)	1,3,5,7	1,3	1,3,5	1,3,5	
Durability (Full)	2			2	3
Mechanical Shock			2		
Vibration			4		
Thermal Shock	4				
Humidity Temperature Cycling	6				
Temperature Life (Thermal Aging)		2			
Salt Spray				4	
Dielectric Withstand Voltage					1,4
Dielectric Breakdown Voltage					7
Insulation Resistance					2,5
Temperature Rise vs. Current					

9.2 Independent Tests

1. Plating Thicknesses
2. Header Solderability
3. Header Moisture Sensitivity Level
4. Header Pin Retention
8. Mating Force / Contact
9. Unmating Force / Contact
10. Latch Retention Force

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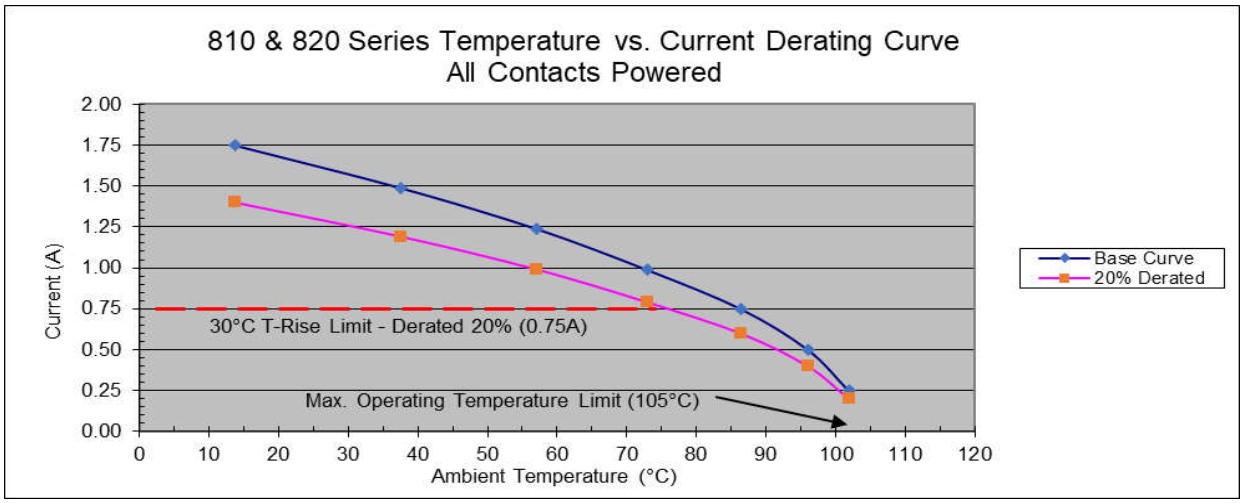
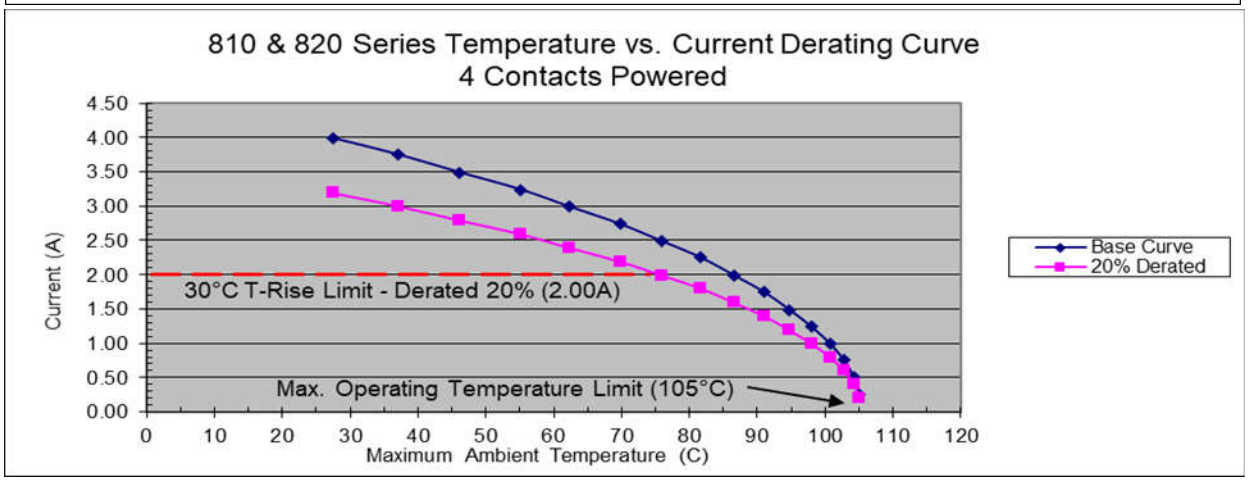
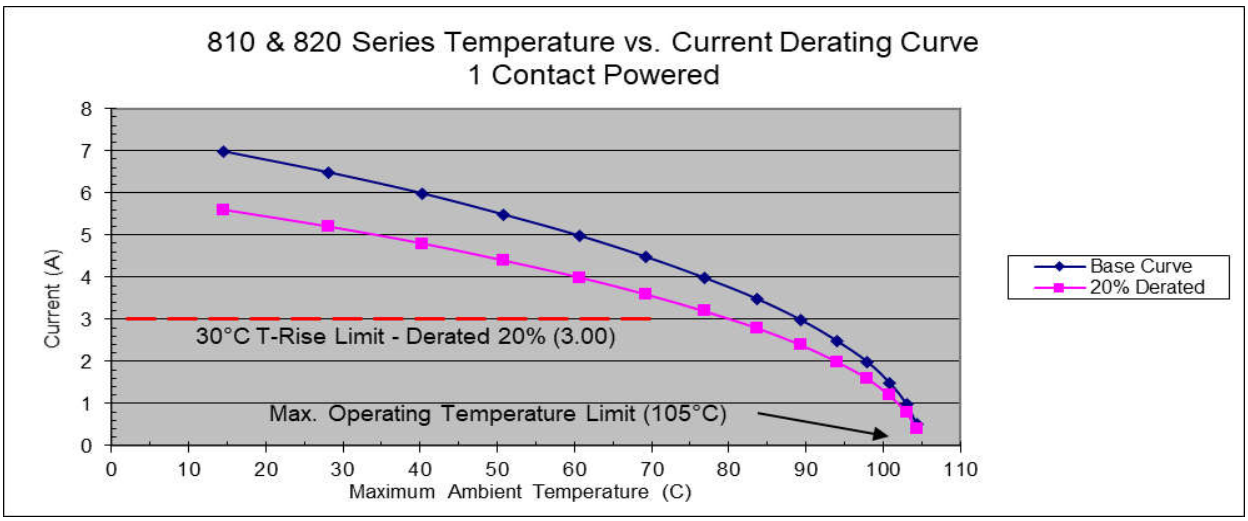
10. Figures

10.1 Current Rating







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11. Agency Listings

11.1 Underwriters Laboratories (UL)

Agency	File No.
UL	E68080
CUL	E68080

Unless otherwise noted, references to industry specifications are intended to indicate substantial compliance to the material elements of the specification. Such references should not be construed as a guarantee of compliance to all

Regulatory: For regulatory information about this product, visit 3M.com/regs

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