

3M™ IDC Ribbon Cable Socket

Series 891

Product Specification 78-5102-0022-0

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Steven A. Neu: Approved 09-27-11
Sandra J. Stuckert: Approved 09-27-11
Jim W. Wessman: Approved 09-27-11

1. Scope

This document summarizes test methods, test conditions and product performance requirements for the 3M 891XX-0X0X socket. 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

78-5100-0449-8 TS-0449, Technical Data Sheet for IDC Ribbon Cable Socket, 891 Series
78-5100-2243-3 TS-2243, Technical Data Sheet for IDC Ribbon Cable Socket, D89 Series
34-7029-6396-7 3443-107N 3M™Locator Plate Instructions

3. Performance and Test Description

Unless otherwise specified, all primary qualification tests shall be performed on 89150-0001 (15μ" Au) sockets, and all current rating tests shall be performed on 89160-0103 (30μ" Au) sockets. Both sets of tests shall be mated to straight 30μ" gold 3M™ headers and performed using multiple types of 26 and 28 AWG stranded 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.)

	1 Line	6* Lines	All Lines
28 AWG	4.25	1.75	1.25
26 AWG	4.50	2.25	1.50

Temperature: -55°C to +105°C

Insulation resistance: >1 x10⁹Ω at 500 VDC

*Lines are adjacent in 2x3 configuration

4.2 Materials

Socket

Insulation: Glass Filled Polyester PBT

Strain Relief: Plastic

IDC Contact: Phosphor Bronze

4.3 Finishes

Plating:

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 (891 Series)

15 μ inches, MIL-G-45204 Type II, Grade C (D89 Series)

4.4 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.

3M Electronic Solutions Division

Interconnect Products

6801 River Place Blvd.

Austin, TX 78726-9000

www.3Mconnectors.com

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	28 AWG	Amperes	Wire gage.	EIA-364-70A	
	4.25		26 AWG		1 line driven. 30°C temp. rise. 20% derated.
	1.75		4.50		6 lines driven. 30°C temp. rise. 20% derated.
	1.25		2.25		All line driven. 30°C temp. rise. 20% derated.
1.50					
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	

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	0.5 max	lbs	Mated to a .025" square pin. (Insertion Force)	EIA-364-13B
Unmating Force / Contact	0.075 min	lbs	Mated to a .025" square pin. (Withdrawl Force)	EIA-364-13B
Contact Wiper Normal Force	≥100	g	Displacement equivalent to mating with a .0245" square pin. Test at end of sequence C.	EIA-364-04
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- 30 μ" 25- 15 μ"	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 15 100-300	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

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

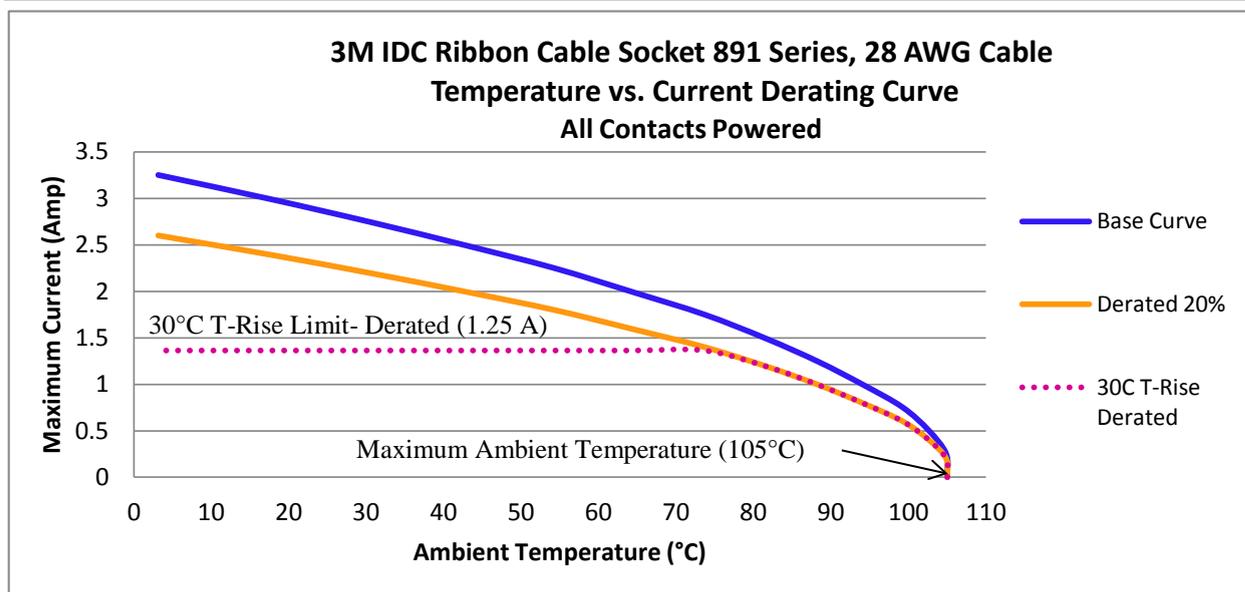
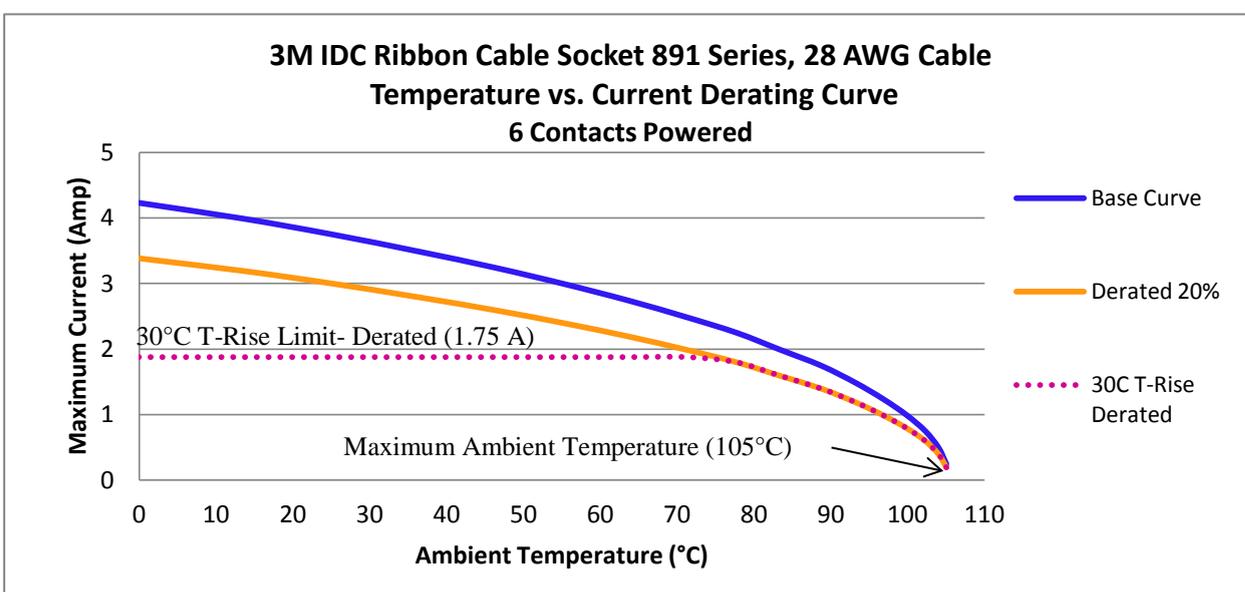
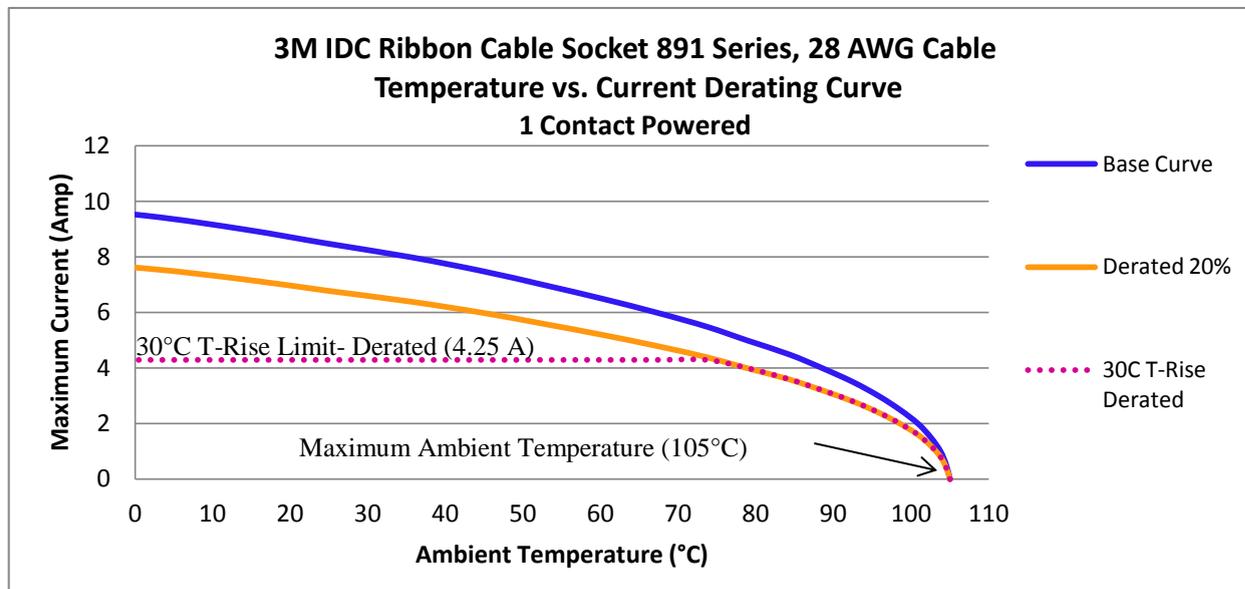
TEST FLOW

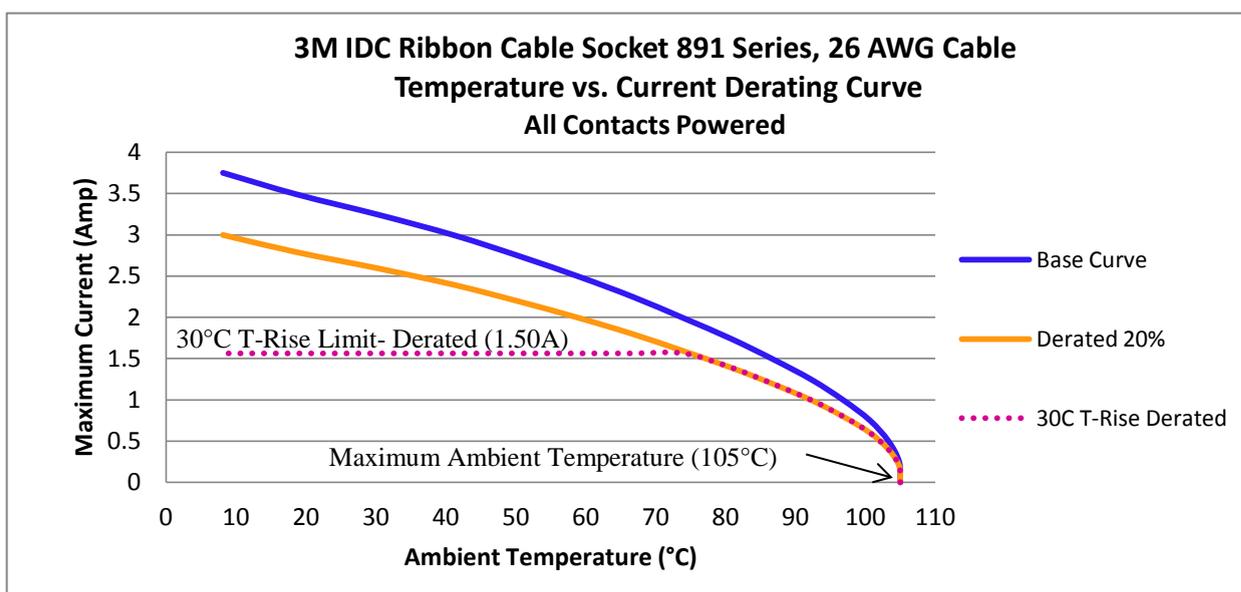
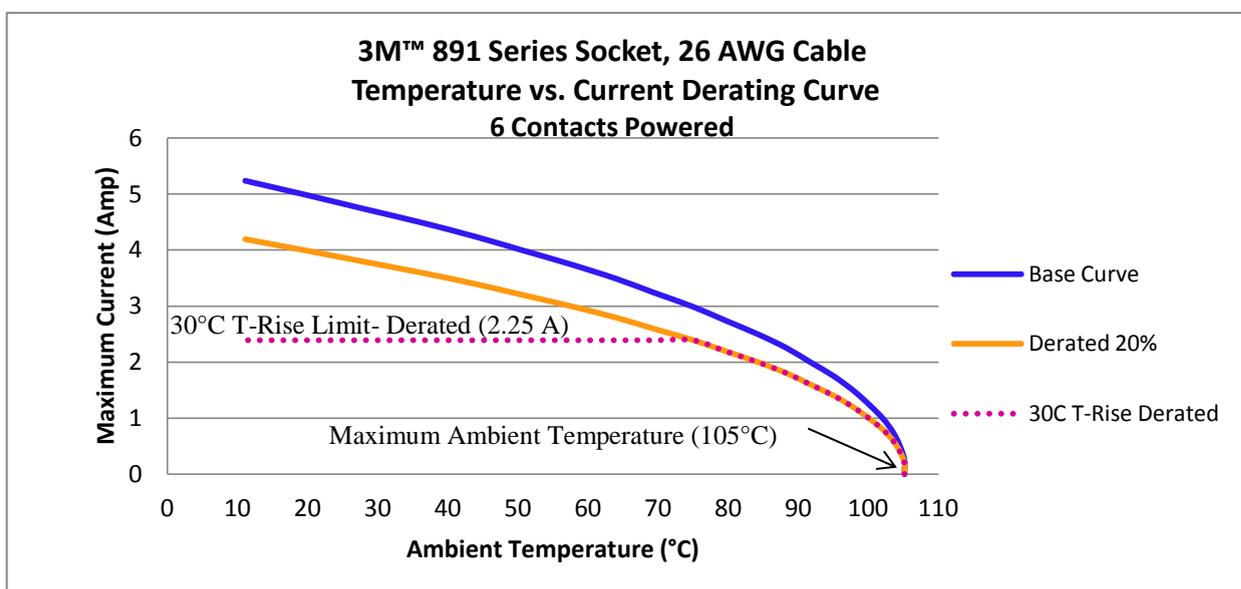
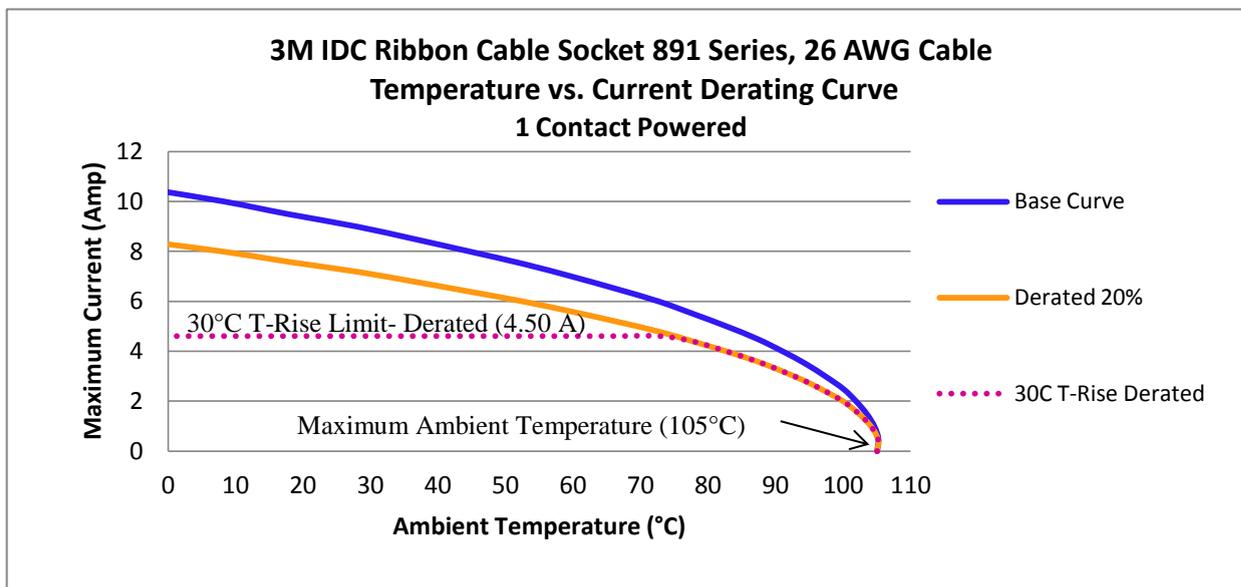
Test	Sequence Numbers for Test Group				
	A	B	C	D	E
Visual				1	1
Low Level Connection Resistance (LLCR)	1,3,5	1,3,5,7	1,3	2,4,6	2,4,6
Vibration				3	
Physical Shock				5	
Durability (with Environmental)		2			3
Temperature Life (Thermal Aging)			2		
Humidity	4	6			
Thermal Shock	2	4			
Salt Spray					5
Contact Wiper Normal Force			4		
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

10. Figures
10.1 Current Rating





11. Agency Listings

11.1 Underwriters Laboratories (UL)

Agency	File No.
UL	E68080
CUL	E68080

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