# 3M™ Wiremount Sockets, CHG Series

**0.100" x 0.100" (2.54mm x 2.54mm)**

**Product Specification 78-5102-0010-0**

**Released: 4-1-22**

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## 1. Scope

This document summarizes test methods, test conditions and product performance requirements for the 3M™ Wiremount Socket, CHG Series with 30 µ" gold plating. 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

| | |
|---|---|
| 78-5100-0189-0 | Technical Data Sheet, 3M™ Wiremount Socket .100" x .100", CHG-10XX-001010-KXX, CHG Series |
| 78-5100-0191-6 | Technical Data Sheet, 3M™ Wiremount Socket CHG-20XX-001010-KXX CHG Series |
| 78-5100-0192-4 | Technical Data Sheet, 3M™ Pak 100 Plarized Wiremount Socket, CHG Series |
| 34-7021-1570-0 | Assembly Instructions, 3M™ Wiremount Socket Connector 3739-CHGA Instructions for Notched Flat Cable |
| 3624-41 | Assembly Instructions, 3M™ Assembly Heads 3624-41 and 3624-42 |
| 3624-42 | Instructions for discrete wire |
| 3586-12 | Manual Pistol Grip 3586-12 |

## 3. Performance and Test Description

Unless otherwise specified, all tests shall be performed on 3M™ Pak 100 Polarized Wiremount Socket, CHG Series sockets mated to 3M™ Four-Wall Header, 3000 Series or 3M™ Wiremount Socket CHG-20XX-001010-KXX CHG Series mated to 3M™ Pin Strip Header, 929 Series 0.235" to 0.318" lengths. Cable must be tinned 22, 24, 26, and 28 AWG; solid or stranded wire. 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
Temperature: -55°C to +105°C
Insulation resistance: >1 x$10^9$Ω at 500 VDC
Current: ( EIA-364-070 method 2, 30°C maximum temperature rise. )

| | AWG | | | | |
|---|---|---|---|---|---|
| | **22** | **24** | **26** | **28** | **Units** |
| 1 Contact Powered | 4.50 | 3.75 | 3.50 | 3.50 | Amperes |
| 4* Contacts Powered | 3.00 | 2.50 | 2.00 | 2.00 | |
| All Contacts Powered | 1.50 | 1.25 | 1.00 | 1.00 | |

*Lines are adjacent in 2x2 configuration

### 4.2 Materials

Socket
Insulation: Glass Filled PBT
Flammability: UL 94V-0
IDC Contact: Copper Alloy

### 4.3 Finishes

Plating:
Nickel (second wipe, U-Slot, underplate): 50 - 150 µ inches (1.27 - 3.81 µm), ASTM B689-97, SAE AMS-QQ-N-290
Gold (first wiping area): 30 µ inches (0.76 µm) Avg, MIL-G-45204 Type II, Grade C

### 4.4 Cable Accommodation

General Accommodation:
Tinned 22, 24, 26, 28 AWG stranded or solid conductor
.050" (1.27mm) pitch notched flat ribbon cable or discrete wire
PVC, FEP, or TPE insulation.

### 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 | 1000 | | $VAC_{RMS}$ | Measured between adjacent and opposing contacts. No disruptive discharge during 1 minute duration. Sea level with 70% relative humidity. Excludes cable. | EIA-364-20F Method B Test Condition I |
| Dielectric Breakdown Voltage | 1000 | | VAC/sec | Ramp assembled pair at 500V/s until electrical arc. Sea level with 70% relative humidity. Excludes cable. | EIA-364-20F Method B Test Condition I |
| Insulation Resistance | $>1x10^9$ | | Ohms | Mated connectors. Measured between adjacent and opposing contacts. 500 VDC for 1 minute duration. | EIA-364-21F |
| Temperature Rise ( Current Rating ) | **22 AWG** | **24 AWG** | Amperes | Tested with:<br>Sockt Part Number: CHG-2060-01010-KEP<br>Header Part Number: 2560-6002-UG | EIA-364-70A, Method 2 |
| | 4.00 | 3.75 | | 1 line energized. 30°C temp. rise. 20% derated. | |
| | 3.00 | 2.50 | | 4 lines (2x2) energized. 30°C temp. rise. 20% derated. | |
| | 1.50 | 1.25 | | All lines energized. 30°C temp. rise. 20% derated. | |
| | **26 AWG** | **28 AWG** | | Tested with:<br>Sockt Part Number: CHG-2060-01010-KCP<br>Header Part Number: 2560-6002-UG | |
| | 3.50 | 3.50 | | 1 line energized. 30°C temp. rise. 20% derated. | |
| | 2.00 | 2.00 | | 4 lines (2x2) energized. 30°C temp. rise. 20% derated. | |
| | 1.00 | 1.00 | | All lines energized. 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 |

**6. Mechanical**

| Description or Parameter | Values & Limits | Units | Requirement or Conditions | Test Standard or Method |
|---|---|---|---|---|
| Vibration | 50-2000<br>5.35 | Hz<br>g | 1.5 hours X, Y, & Z axis. Mated connector shall exhibit no discontinuities greater than 10 ns and 10 milliohm maximum ΔR contact resistance throughout testing. | EIA-364-28F Condition V, Table 2 Condition A, 1.5 |
| Mechanical Shock | 50 | g | 3 Shocks each directions for X, Y, & Z axis. 18 total. Mated connector shall exhibit no discontinuities greater than 10 ns and 10 milliohm maximum ΔR contact resistance throughout testing. | EIA-364-27B Test Cond. C |
| Mating Force / Contact | 200 max avg | g | Mated to a .025" square pin. Average for connector. (Insertion Force) | EIA-364-13E Method A |
| Unmating Force / Contact | 35 min avg | g | Mated to a .025" square pin. Average for connector. (Withdrawl Force) | EIA-364-13E Method A |
| Durability (with Environmental) | 50 (30 μ") | 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 |
| (Metallic Coating) Adhesion | NA | NA | No cracking, flaking. | MIL-G-45204 Section 4.6.2 |
| Plating thickness<br>Nickel<br>Gold | 50-150<br>30 Avg | μ" | Average of random measurements from any 3 lots. | EIA-364-48 |

**8. Environmental**

| Description or Parameter | Values & Limits | Units | Requirement or Conditions | Test Standard or Method |
|---|---|---|---|---|
| Temperature Life | 250<br>105 | hours<br>°C | 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<br>+25 to +65<br>80 to 100<br>-10 | Days<br>°C<br>% RH<br>°C | -10C subcycle. No physical abnormalities. 10 milliohm maximum ΔR contact resistance per mated interface throughout testing. | EIA-364-31F Method IV Fig 1 |
| Thermal Shock | -55 to +105<br>5 | °C<br>cycles | No physical abnormalities. 10 milliohm maximum ΔR contact resistance per mated interface throughout testing. | EIA-364-32G Method A, Test Cond. VII |
| Salt Spray | 5<br>48 | % NaCl<br>hours | 10 milliohm maximum ΔR contact resistance per mated interface throughout testing. | EIA-364-26C Test Cond. B |

**9. Test Sequence**

**9.1 Sequenced Tests**

**TEST FLOW**

| TEST | EIA 364 TP NO. | TEST GROUP & TEST SEQUENCE | | | | | |
|---|---|---|---|---|---|---|---|
| | | A | B | C | D | E | F |
| Visual | 18 | 0,8 | 0,4 | 0,6 | 0,6 | 0,6 | 0,3 |
| LLCR | 23 | 1,3,5,7 | 1,3 | 1,3,5 | 1,3,5 | | |
| Durability (Full) | 13 | 2 | | | 2 | 3 | |
| Temperature Life (Full) | 17 | | 2 | | | | |
| Mechanical Shock | 27 | | | 2 | | | |
| Vibration | 28 | | | 4 | | | |
| Thermal Shock | 32 | 4 | | | | | |
| Humidity Temperature Cycling | 31 | 6 | | | | | |
| Salt Spray | 26 | | | | 4 | | |
| Dielectric Withstanding Voltage | 20 | | | | | 1,4 | 2 |
| Dielectric Breakdown Voltage | 20 | | | | | 7 | |
| Insulation Resistance | 21 | | | | | 2,5 | |
| Temperature Rise vs. Current | 70 | | | | | | 1 |

**9.2 Independent Tests**

1. Mating & Unmating Force
2. (Metal Coating) Adhesion

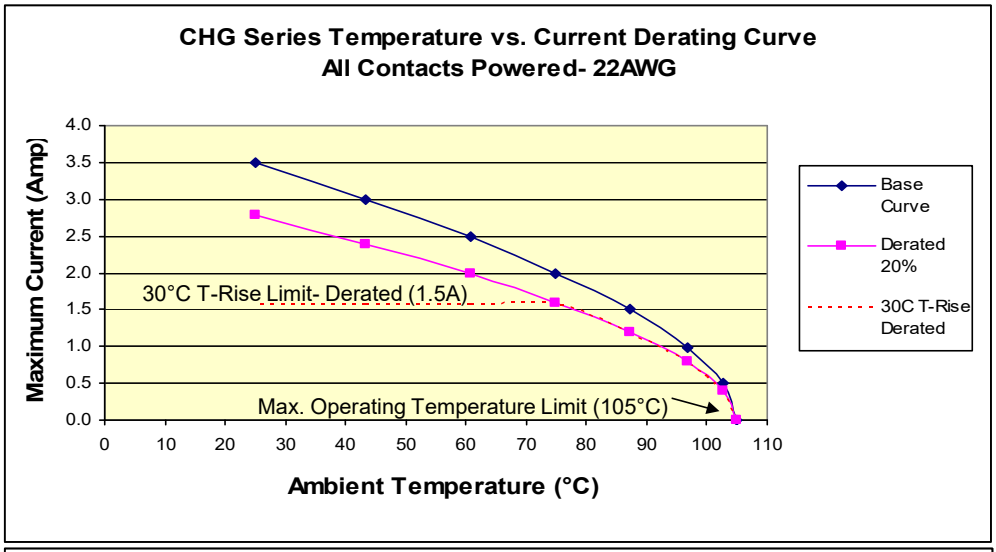
**10. Agency Listings**

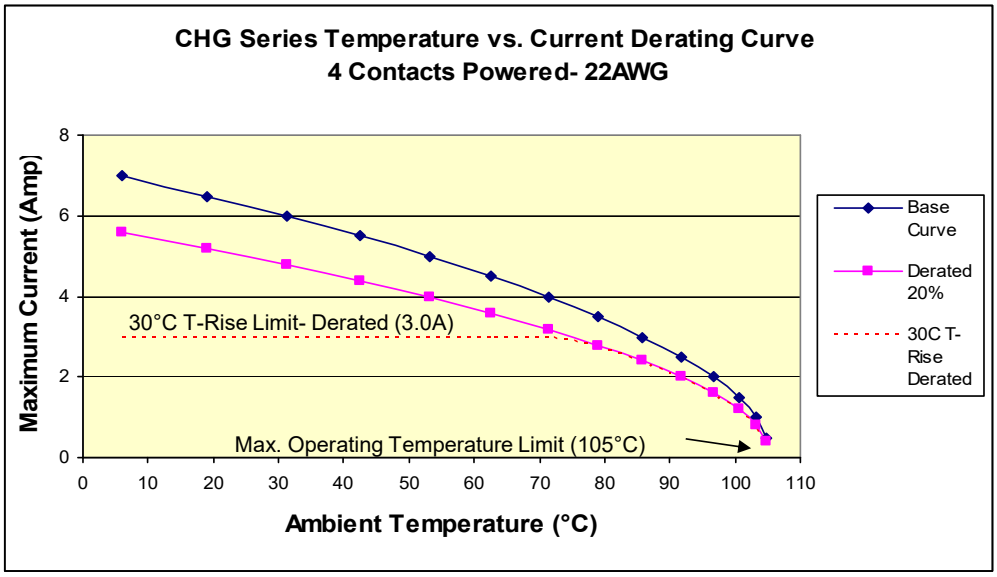
**10.1 Underwriters Laboratories (UL)**

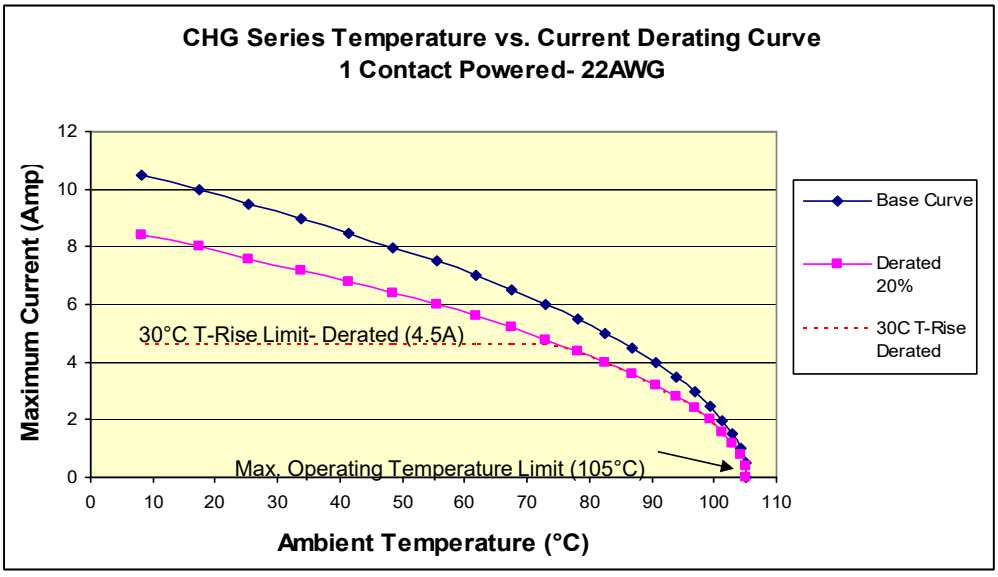
| Agency | File No. |
|---|---|
| UL | E68080 |
| CUL | E68080 |

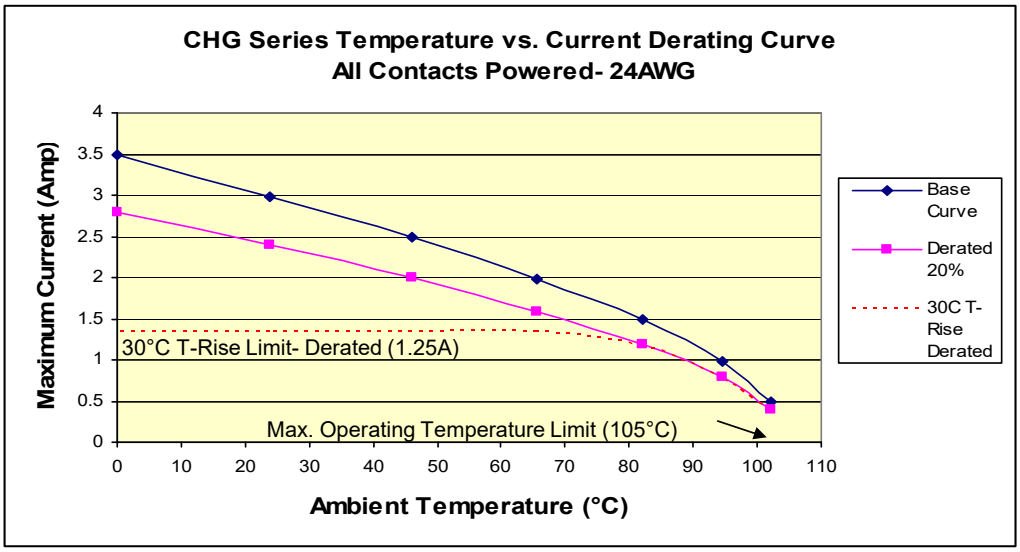
**11.0 Figures**

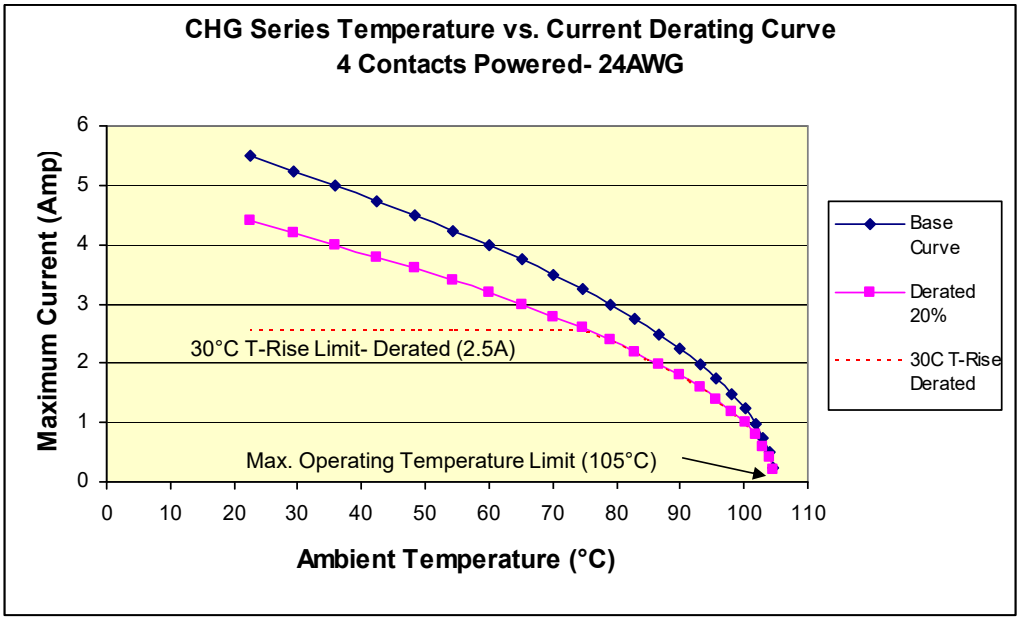
**11.1 Temperature Rise vs. Current**

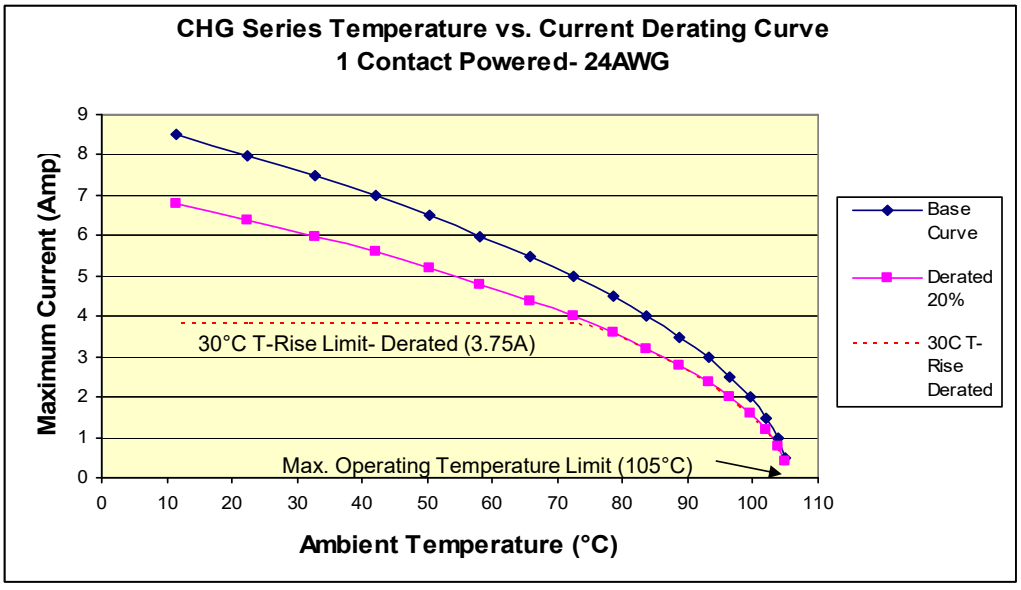


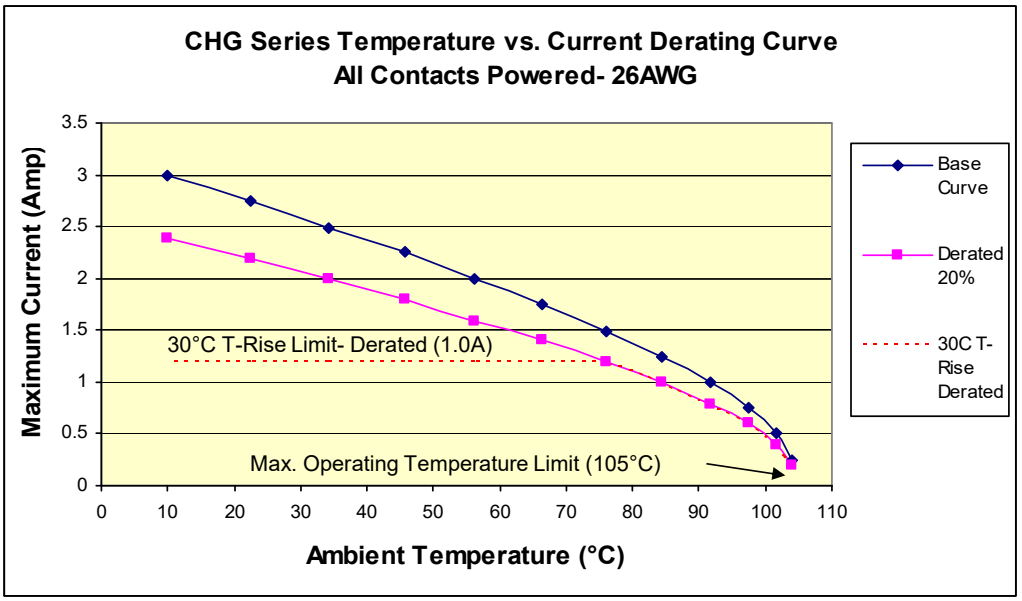



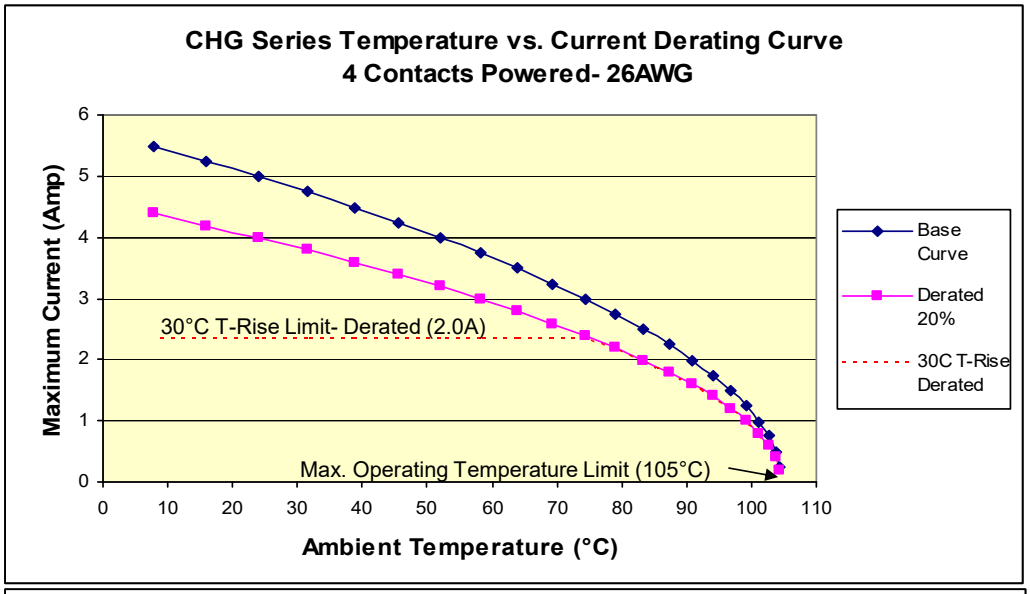



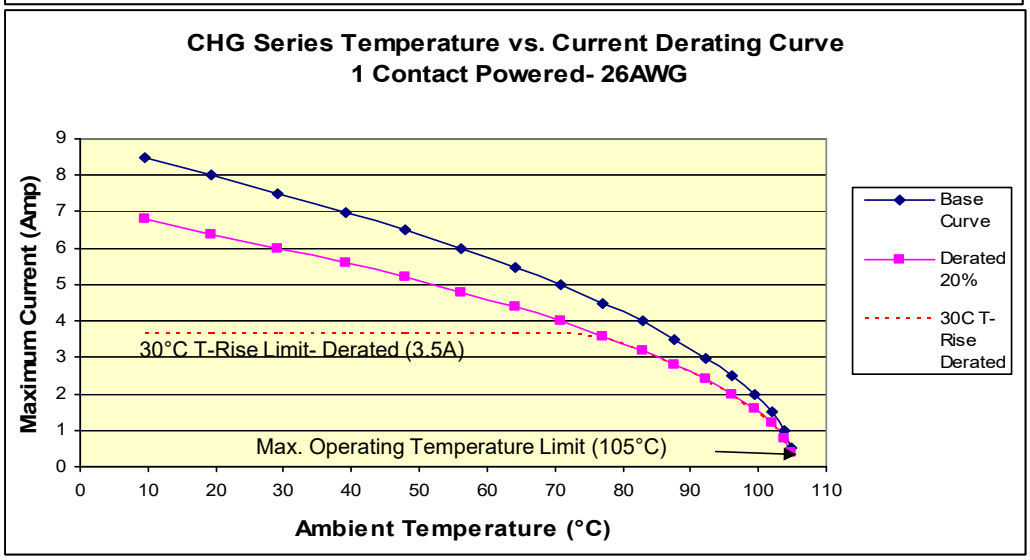

CHG Series Temperature vs. Current Derating Curve
All Contacts Powered- 24AWG
Maximum Current (Amp)
Ambient Temperature (°C)
Base Curve
Derated 20%
30C T-Rise Derated
30°C T-Rise Limit- Derated (1.25A)
Max. Operating Temperature Limit (105°C)

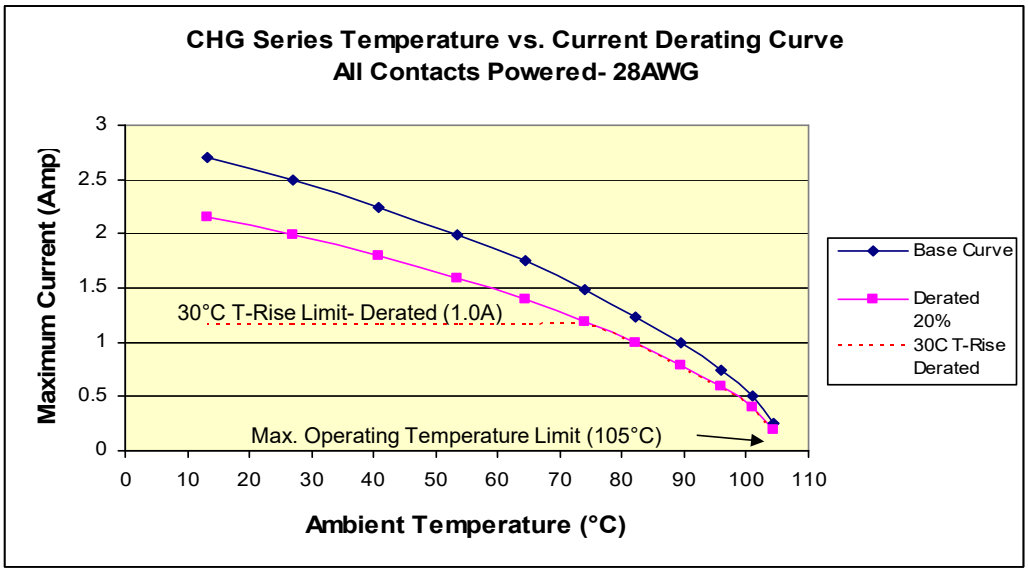

CHG Series Temperature vs. Current Derating Curve
4 Contacts Powered- 24AWG
Maximum Current (Amp)
Ambient Temperature (°C)
Base Curve
Derated 20%
30C T-Rise Derated
30°C T-Rise Limit- Derated (2.5A)
Max. Operating Temperature Limit (105°C)

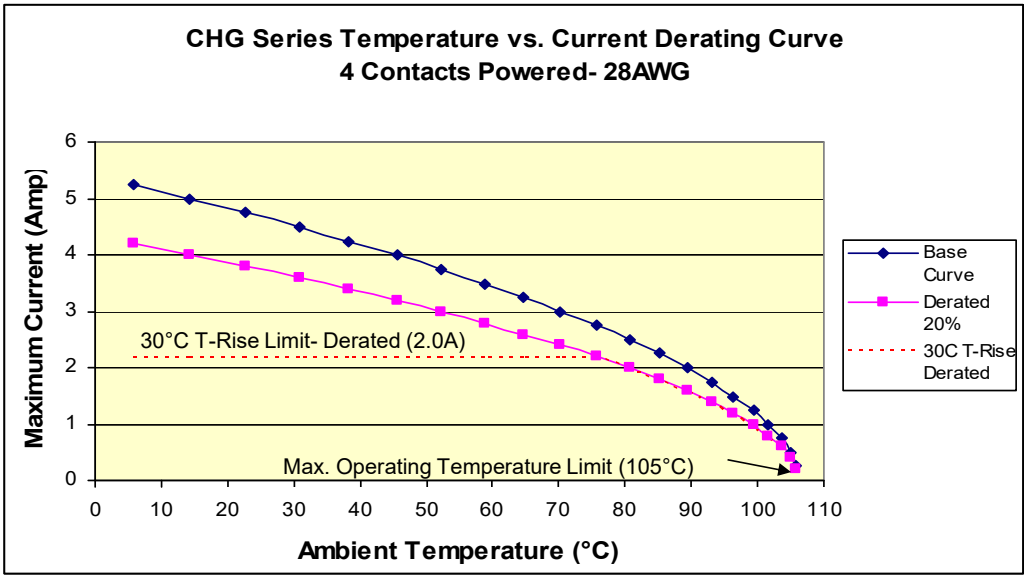

CHG Series Temperature vs. Current Derating Curve
1 Contact Powered- 24AWG
Maximum Current (Amp)
Ambient Temperature (°C)
Base Curve
Derated 20%
30C T-Rise Derated
30°C T-Rise Limit- Derated (3.75A)
Max. Operating Temperature Limit (105°C)

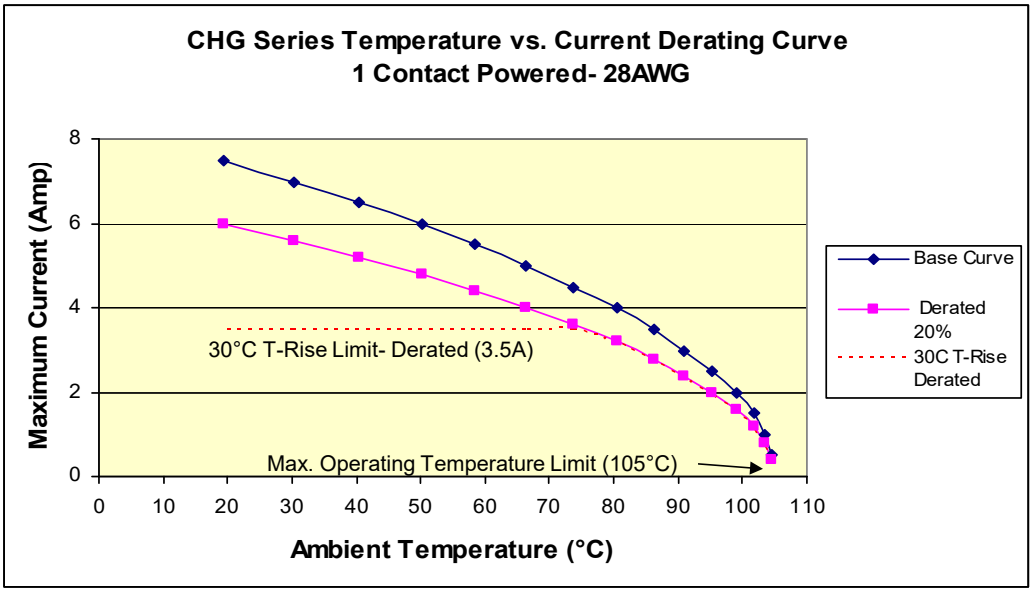

CHG Series Temperature vs. Current Derating Curve
All Contacts Powered- 26AWG
Maximum Current (Amp)
Ambient Temperature (°C)
30°C T-Rise Limit- Derated (1.0A)
Max. Operating Temperature Limit (105°C)
Base Curve
Derated 20%
30C T-Rise Derated


CHG Series Temperature vs. Current Derating Curve
4 Contacts Powered- 26AWG
Maximum Current (Amp)
Ambient Temperature (°C)
30°C T-Rise Limit- Derated (2.0A)
Max. Operating Temperature Limit (105°C)
Base Curve
Derated 20%
30C T-Rise Derated


CHG Series Temperature vs. Current Derating Curve
1 Contact Powered- 26AWG
Maximum Current (Amp)
Ambient Temperature (°C)
30°C T-Rise Limit- Derated (3.5A)
Max. Operating Temperature Limit (105°C)
Base Curve
Derated 20%
30C T-Rise Derated


CHG Series Temperature vs. Current Derating Curve
All Contacts Powered- 28AWG
Maximum Current (Amp)
Ambient Temperature (°C)
30°C T-Rise Limit- Derated (1.0A)
Max. Operating Temperature Limit (105°C)
Base Curve
Derated 20%
30C T-Rise Derated


CHG Series Temperature vs. Current Derating Curve
4 Contacts Powered- 28AWG
Maximum Current (Amp)
Ambient Temperature (°C)
30°C T-Rise Limit- Derated (2.0A)
Max. Operating Temperature Limit (105°C)
Base Curve
Derated 20%
30C T-Rise Derated


CHG Series Temperature vs. Current Derating Curve
1 Contact Powered- 28AWG
Maximum Current (Amp)
Ambient Temperature (°C)
30°C T-Rise Limit- Derated (3.5A)
Max. Operating Temperature Limit (105°C)
Base Curve
Derated 20%
30C T-Rise Derated

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