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11/2020

# › GN Series

## Classic Solid State Relays

## Panel Mount - AC Output Single Phase

- › Output current of 10, 25, 50, 75, 100 and 125 Amps
- › Output voltage of 24-280 V~ and 48-660 V~
- › Control voltage of 4-32 V⎓, 18-36 V≂, 20-265 V~ and 90-260 V~
- › Zero cross or instantaneous (resistive or inductive loads)
- › Integrated IP20 touch-safe removable covers
- › Built-in overvoltage protection (only Zero Cross)
- › LED input status indicator



*Zero Cross Version*



*Instantaneous Version*

**Product Selection - Zero Cross (Resistive Loads)**

| **Rated Load Current** | 10A | 25A | | 50A | 75A | 100A | 125A |
|---|---|---|---|---|---|---|---|
| Output Voltage | 24-280 V~ | 24-280 V~ | 48-660 V~ | 48-660 V~ | 48-660 V~ | 48-660 V~ | 48-660 V~ |
| **Control Voltage** | | | | | | | |
| 4-32 V⎓ | **84137000N** | **84137010N** | **84137110N** | **84137120N** | **84137130N** | **84137140N** | **84137180N** |
| 18-36 V≂ | | **84137012N** | | **84137122N** | | | |
| 20-265 V~ | **84137001N** | **84137011N** | **84137111N** | **84137121N** | **84137131N** | **84137141N** | **84137181N** |

**Product Selection- Instantaneous (Inductive Loads)**

| **Rated Load Current** | 25A | 50A | 75A |
|---|---|---|---|
| Output Voltage | 24-280 V~ | 48-660 V~ | 48-660 V~ |
| **Control Voltage** | | | |
| 4-32 V⎓ | **84137210N** | **84137320N** | **84137330N** |
| 90-260 V~ | **84137211N** | **84137321N** | |

## PART NUMBERING SYSTEM

**Series**
**8413:** Single Phase

**Output Voltage**
**0:** 280 V~ / Zero Cross
**1:** 660 V~ / Zero Cross
**2:** 280 V~ / Random
**3:** 660 V~ / Random

**Generation**
**N:** New Generation

**8413** **7** **0** **1** **1** **N**

**Cover/Layout**
**7:** Included

**Output Current**
**0:** 10 A
**1:** 25 A
**2:** 50 A
**3:** 75 A
**4:** 100 A
**8:** 125 A

**Control Voltage**
**0:** 4-32 V⎓
**1:** 20-265 V~
**2:** 18-36 V≂

Do you need an adapted or customized solution? Contact us on **www.crouzet.com**

**Description:**

Crouzet Solid State Relays are designed to be used in almost any application, offering very long life expectancy and are easy to install, easy to use, robust and multipurpose.
For more information about Crouzet's Solid State relays, please visit **www.crouzet.com**.

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| Accessories | | |
|---|---|---|
| **Type** | **Description** | **Part-Number** |
| Heatsink | 0.9 °C/W Thermal Resistance | **26532752N** |
| Heatsink | 1.1 °C/W Thermal Resistance | **26532753N** |
| Heatsink | 1.2 °C/W Thermal Resistance | **26532754N** |
| Heatsink | 1.75 °C/W Thermal Resistance | **26532755N** |
| Heatsink | 2.2 °C/W Thermal Resistance | **26532756N** |
| Adapter | DIN Rail | **26532764N** |
| Thermal Pad | Pre-cut Thermal Pad | **26532720N** |
| Thermal Pad | Self-Adhesive Thermal Pad | **26532722N** |
| Screws | Screw Mounting Kit | **26532001** |
| Thermal Grease | Thermal Grease for Heatsink mounting | **26532003** |

| Output Specifications[1] | | | | | | |
|---|---|---|---|---|---|---|
| **Description** | 10A | 25A | 50A | 75A | 100A | 125A |
| Maximum Load Current [Arms][3] | 10 | 25 | 50 | 75 | 100 | 125 |
| Minimum Load Current [mArms] | 5 | | | | | |
| Min / Max Operating Voltage (47-63Hz) [Vrms] | 24-280 V~ | 48-660 V~ | | | | |
| Transient Voltage [Vpeak][2](Random version) | 600<br>(600) | 1200<br>(1600) | | | | |
| Maximum Off-State Leakage Current @ Rated Voltage [mArms]<br>(Random version) | 1<br>(5) | | | | | |
| Minimum Off-State dV/dt @ Maximum Rated Voltage [V/µsec] | 500 | | | | | |
| 1 Second Surge Current (Apk. Ta=25 °C) 50/60 Hz | 45 | 100 | 125 | 230 | 347 | 613 |
| Maximum 1 Cycle Surge Current (50/60 Hz) [Apeak]<br>Typ @ 50 Hz | 120/126 (min)<br>160 (typ) | 270/284 (min)<br>340 (typ) | 280/_ (min)<br>500 (typ) | 700/_ (min)<br>750 (typ) | 1100/_ (min)<br>1200 (typ) | 2000/_ (min)<br>2100 (typ) |
| Maximum On-State Voltage Drop @ Rated Current [Vpeak]<br>(Random version) | 1.2 | 1.23<br>(1.08) | 1.25<br>(1.37) | 1.38<br>(1.37) | 1.34<br>(1.34) | 1.45<br>1.15 |
| Thermal Resistance Junction to Case (Rjc) [°C/W]<br>(Random version) | 2.3 | 1.7<br>(0.7) | 0.55<br>(0.7) | 0.4<br>(0.4) | 0.3<br>(0.3) | 0.25 |
| Maximum 1/2 Cycle I² t for Fusing @ 50 Hz (min. / typical) [A² sec]<br>(Random version) | 78/128 | 487/600<br>(512/882) | 720/1250<br>(512/882) | 2450/2800<br>(2450/2500) | 6000/7200<br>(6000/7200) | 6000/7200<br>20000/22000 |
| Minimum Heat Sink for Rated Current @ 40 °C [°C/W]<br>(Random version) | 5.3 | 1.3<br>(2.6) | 2.08<br>(2.6) | 0.84<br>(0.84) | 0.52<br>(0.52) | 0.23<br>0.29 |

| Input Specifications | | | | |
|---|---|---|---|---|
| **Description** | 4-32 V⎓ | 18-36 V≂ | 20-265 V~ | 90-260 V~ |
| Input Voltage Range | 4-32 V⎓ [4] | 18-36 V≂ | 20-265 V~ | 90-260 V~ |
| Maximum Reverse Voltage | -32 V⎓ | N/A | | |
| Minimum Turn-On Voltage | 3 V⎓ | 18 V≂ | | 90 V~ |
| Must Turn-Off Voltage | 1 V⎓ | 5 V≂ | | 5 V~ |
| Minimum Input Current (for on-state) | 10 mA | 5 mA AC / 4 mA DC | | 6.5 mA |
| Maximum Input Current [mA] | 14 mA | 10 mA | | |
| Nominal Input Impedance [Ohms] | Current Limited | | | |
| Maximum Turn-On Time [msec] | 1/2 Cycle[5] | | | < 0.1 |
| Maximum Turn-Off Time [msec] | 1/2 Cycle[5] | | | |

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## General Specifications

| Description | 10A | 25A | 50A | 75A | 100A | 125A |
|---|---|---|---|---|---|---|
| Dielectric Strength, Input to Output (50/60 Hz) | 4000 Vrms | | | | | |
| Dielectric Strength, Input/Output to Ground (50/60 Hz) | 2500 Vrms | 4000 Vrms | | | | |
| Minimum Insulation Resistance (@ 500 V⎓) | $10^9\Omega$ | | | | | |
| Maximum Capacitance, Input/Output | 0.8 pF | | | | | |
| Ambient Operating Temperature Range | -40 to 80 °C | | | | | |
| Ambient Storage Temperature Range | -40 to 100 °C | | | | | |
| Weight (typical) | 80 g | | | | | |
| Housing Material | UL94 V-0 | | | | | |
| Baseplate Material | Aluminum | | | | | |
| Input Terminal Screw Torque Range (in-lb/Nm) | 11-18 /1.2-2.0 | | | | | |
| Load Terminal Screw Torque Range (in-lb/Nm) | 18-26 / 2-3 | | | | | |
| SSR Mounting Screw Torque Range (in-lb/Nm) | 11-16 /1.2-1.8 | | | | | |
| Humidity per IEC60068-2-78 | 40-85 % | | | | | |
| LED Input Status Indicator | Green | | | | | |
| MTBF (Mean Time Between Failures) at 40 °C ambient temperature(5)(years) | 72 | | | | | |
| MTBF (Mean Time Between Failures) at 60 °C ambient temperature(5)(years) | 46 | | | | | |

## General Notes

(1) All parameters at 25 °C unless otherwise specified

(2) Output will self trigger between 450-600 Vpk not suitable for capacitive loads

(3) Heat sinking required, see derating curves

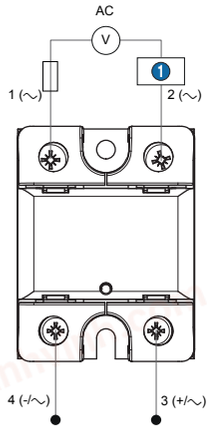
(4) Increase minimum voltage by 1 V for operations from -20 to -40 °C

(5) All parameters at 50 % power rating and 100 % duty cycle (contact tech support for detailed report)

## Diagrams

### Wiring

GN




Recommended Wire Size

| TERMINALS | WIRE SIZE | | Terminal Screw Torque (N.m) |
|---|---|---|---|
| | SOLID | STRANDED | |
| **Input** | 18..14 AWG (0.75..2.5 mm²)<br>2 x 18..14 AWG (0.75..2.5 mm²) | 18..14 AWG (0.75..2.5 mm²)<br>2 x 18..14 AWG (0.75..2.5 mm²) | 1.2 - 2 |
| **Output** | 16..8 AWG (1.5..10 mm²)<br>2 x 16..8 AWG (1.5..10 mm²) | 16..8 AWG (1.5..6 mm²)<br>2 x 16..10 AWG (1.5..6 mm²) | 2 - 3 |

**For the random (instantaneous) models, external overvoltage protection is recommended: TVS Diode**

1 *Load*

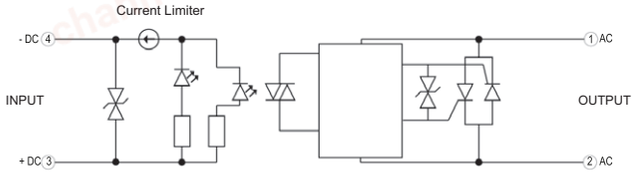
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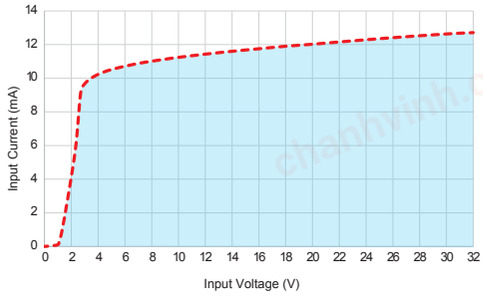
## Diagrams

### Equivalent Circuit Block

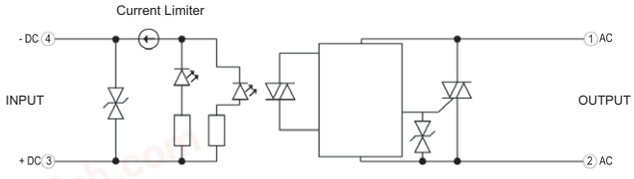
GN Series 4-32 V⎓ control (Thyristors) - All out 660 V∿



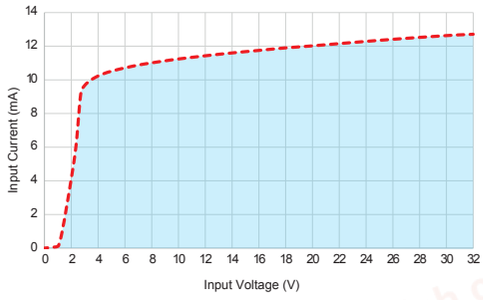

Input current vs Input Voltage
Standard Regulated DC inputs



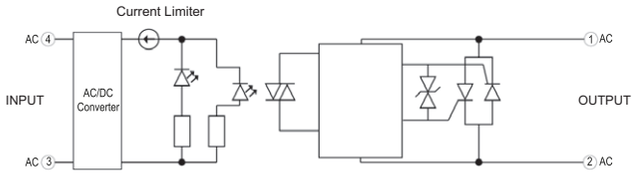

GN Series 4-32 V⎓ control (Triac) - 10 A /25 A (280 V∿)



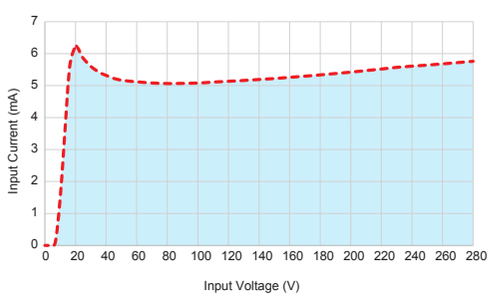

Input current vs Input Voltage
Standard Regulated DC inputs



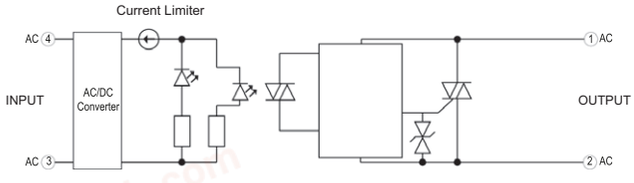

GN Series 18-36 V⎓ control



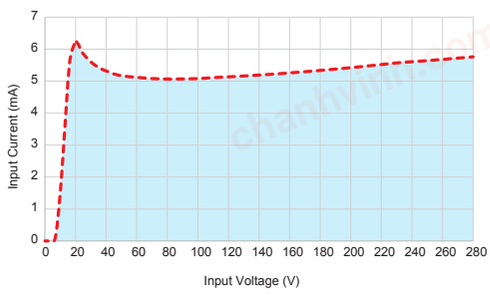

Input current vs Input Voltage
Standard Regulated AC/DC inputs




GN Series 20-265 V∿ control



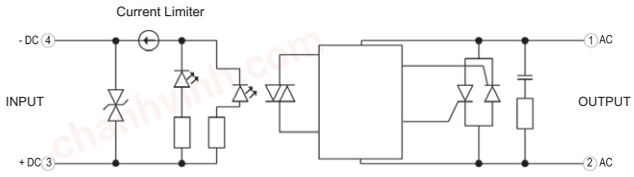

Input current vs Input Voltage
Standard Regulated AC inputs



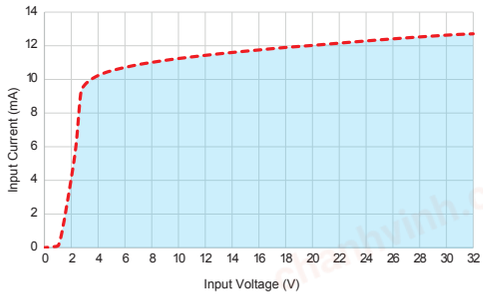
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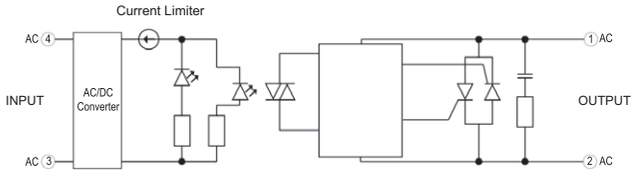
GN Series 4-32 V⎓ control instantaneous



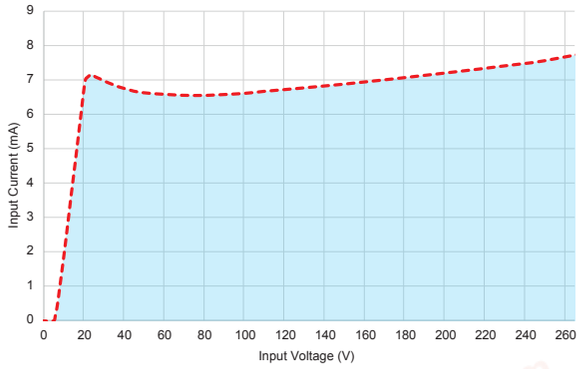

Input current vs Input Voltage
Standard Regulated DC inputs




GN Series 90-260 V∿ control instantaneous



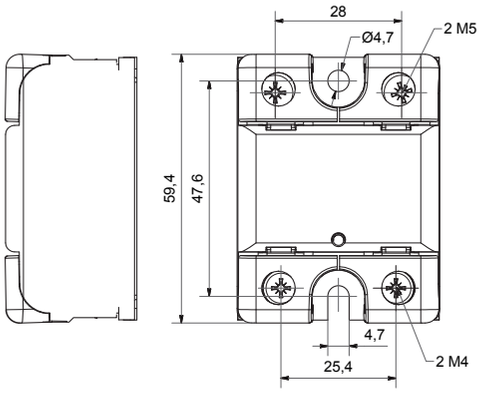

Input current vs Input Voltage
Standard Regulated AC inputs



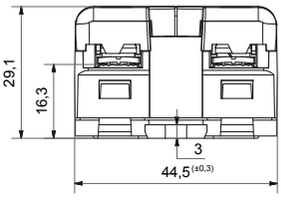

## Diagrams

### Dimensions (mm)

GN front view




GN side view



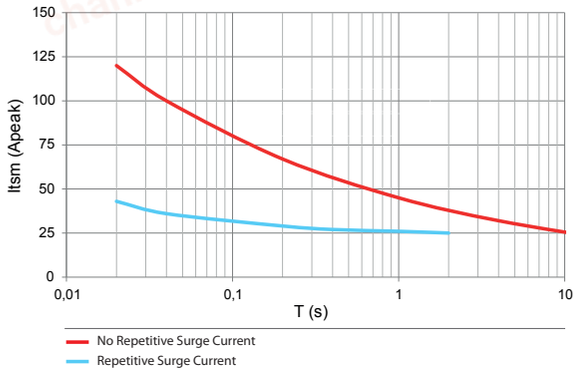
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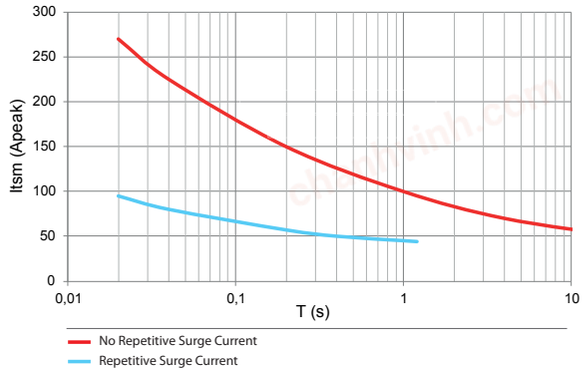
## Curves

### Surge Current Information

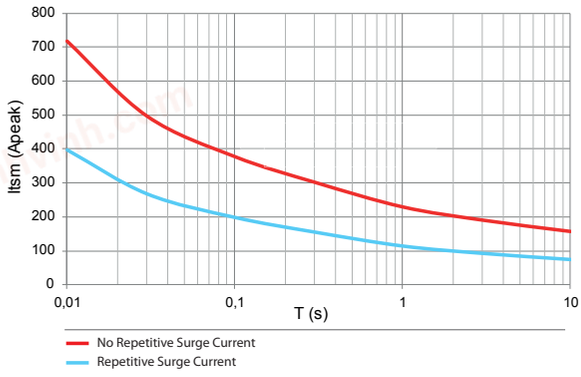
GN - 10 A



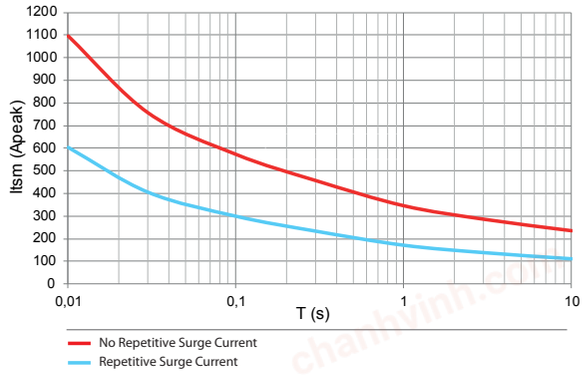

GN - 25 A



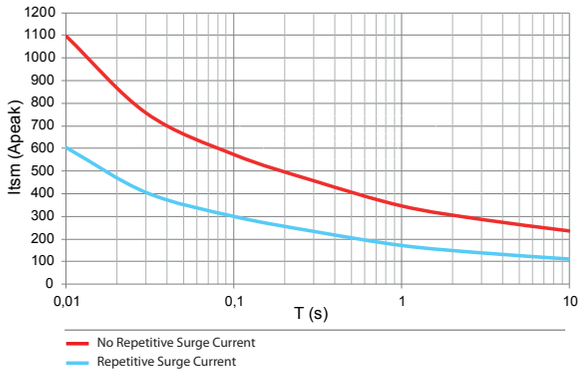

GN - 50 A



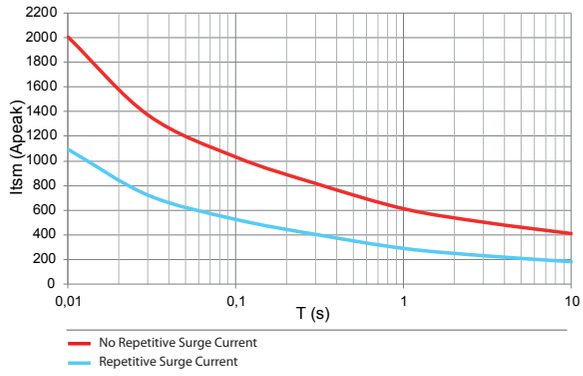

GN - 75 A



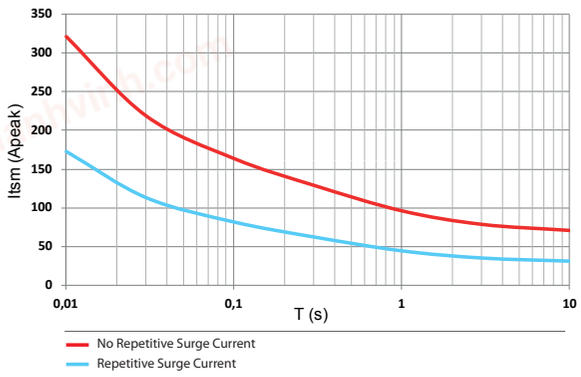

GN - 100 A



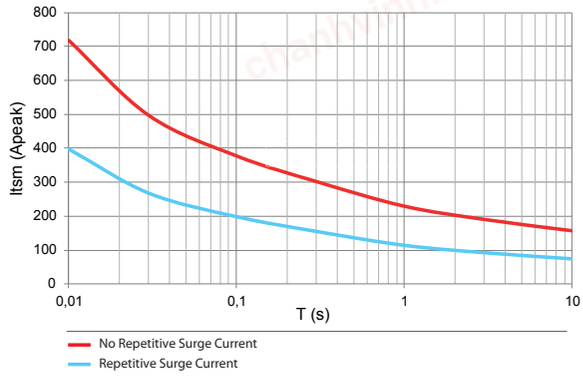

GN - 125 A




GN - 25 A Instantaneous



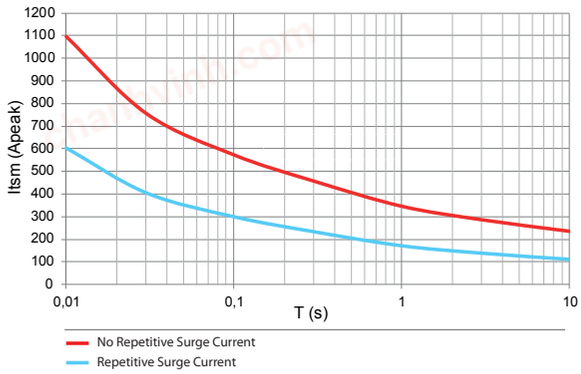

GN - 50 A Instantaneous



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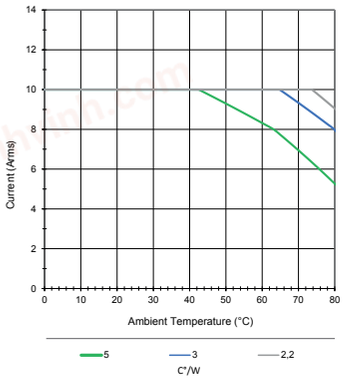
### GN - 75 A Instantaneous



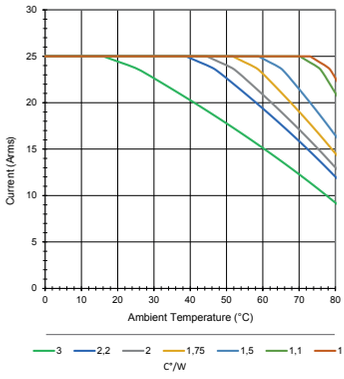

## Curves

### Thermal Derating Curves

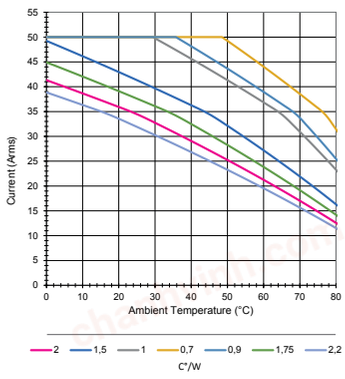
#### GN - 10 A



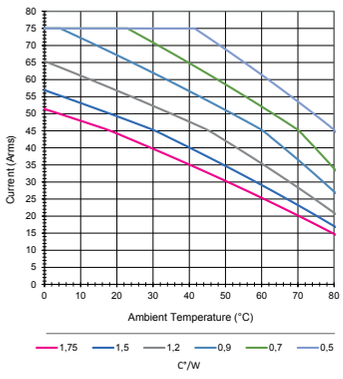

#### GN - 25 A



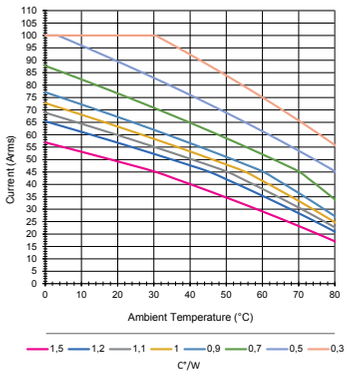

#### GN - 50 A



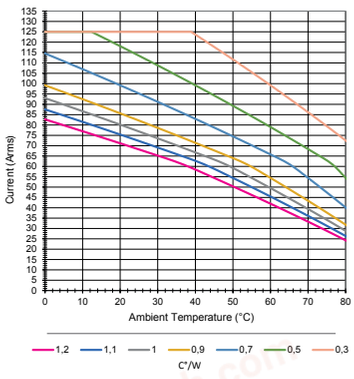

#### GN - 75 A



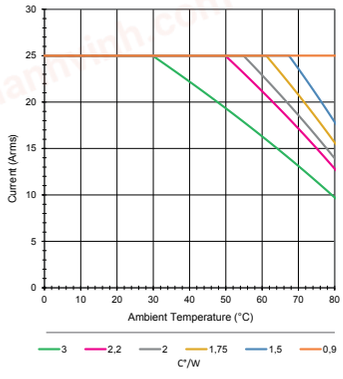

#### GN - 100 A



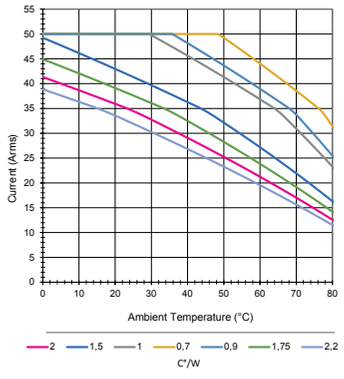

#### GN - 125 A



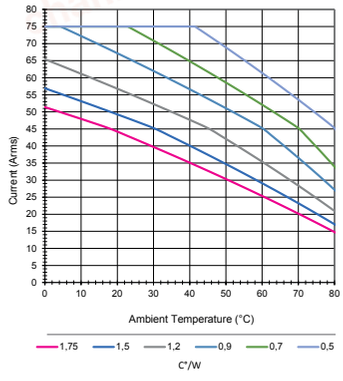

#### GN - 25 A Instantaneous




#### GN - 50 A Instantaneous




#### GN - 75 A Instantaneous



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## Standards Specifications

ZERO CROSS

| | |
|---|---|
| IEC/EN61000-4-4 (bursts) | 2 kv crit B |
| IEC/EN61000-4-5 (surge) | 2 kv crit B |
| VIBRATION resistance IEC 60068-2-6 | 10 g |
| SHOCK resistance IEC 60068-2-27 | 50 G (11 ms) |

RANDOM

| | |
|---|---|
| IEC/EN61000-4-4 (bursts) | 4 kv crit A |
| IEC/EN61000-4-5 (surge) | 4 kv crit A |
| VIBRATION resistance IEC 60068-2-6 | 10 g |
| SHOCK resistance IEC 60068-2-27 | 50 G (11 ms) |

c UL us ES16951 VDE REG 10102* CE

* VDE ONLY 84137000N / 84137110N / 84137120N / 84137130N / 84137140N / 84137180N / 84137210N / 84137211N / 84137320N / 84137321N / 84137330N

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