

# GN3 Series 3 Phase Solid State Relay - DC Input



- Three-phase solid-state relay
- Ratings up to 50 amps @ 530Vac
- DBC substrate for superior thermal performance
- Epoxy-free design reduces internal component stress
- Back-to-Back dual SCR output for heavy industrial loads
- 100k-cycle UL508 endurance rating for enhanced reliability
- No external transient protection required (internal TVS)
- EMC Compliant for reliable operation in harsh environments
- UL/CSA/TUV Approved, CE & RoHS Compliant



## Output Specifications

| Output Current (40°C)                             | 25         | 50         |
|---------------------------------------------------|------------|------------|
| Voltage range (Vrms) (1)                          | 48-600Vac  | 48-600Vac  |
| Peak Voltage (Vpk, t = 1 min.)                    | 1100       | 1100       |
| Off-state leakage mArms<br>(without RC / with RC) | 0.06 / 3.0 | 0.06 / 3.0 |
| Minimum Current (mArms)                           | 100        | 100        |
| Max. 1 cycle surge current<br>(Apk, Ta = 25°C)    | 500        | 800        |
| Max. 1 second surge current<br>(Apk, Ta = 25°C)   | 100        | 160        |
| Forward voltage drop<br>(Vpk @ Imax, Ta = 40°C)   | 1.35       | 1.35       |
| I <sup>2</sup> T (60Hz, ½ cycle)                  | 1040       | 2600       |
| Rjb (thermal res. Junction to<br>baseplate, °C/W) | 0.24       | 0.12       |
| Static off-state dv/dt<br>(Vµs, Ta = 25°C)        | 500        | 500        |
| HP Ratings at 240V                                | 1          | 3          |
| HP Ratings at 480V                                | 3          | 7.5        |
| HP Ratings at 600V                                | 5          | 10         |
| Min/Max wire size                                 | 16/8 AWG   | 16/8 AWG   |
| Terminal Torque (N-m)                             | 2.4        |            |

## Input Specifications

|                                   |                   |
|-----------------------------------|-------------------|
| Input voltage                     | 4-32Vdc           |
| Drop out voltage                  | 1Vdc              |
| Min. input current (for on-state) | 24mA              |
| Maximum input current             | 35mA              |
| Input Resistance (Ohms)           | Current Regulated |
| Turn-on time (2)                  | 8.33msec          |
| Turn-off time                     | 8.33msec          |
| Min/Max stranded/solid wire       | 24/14 AWG         |
| Torque (N-m)                      | 1.9               |

## General Characteristics

|                                  |                              |
|----------------------------------|------------------------------|
| Operating Temperature (°C)       | -40 to + 80                  |
| Storage Temperature (°C)         | -40 to + 100                 |
| Input to output isolation        | 4000Vrms                     |
| Input/output to ground isolation | 2500Vrms                     |
| Input to output capacitance      | 8pF (typical)                |
| Operating Frequency              | 47 to 63 Hz                  |
| Housing Material                 | UL 94V0 (self extinguishing) |
| Weight (grams)                   | 360                          |

## Standards of Compliance

|                                                  |                                                         |
|--------------------------------------------------|---------------------------------------------------------|
| CE Compliant with the LVD 73/23/EEC              |                                                         |
| UL Recognized per UL 508 and CSA C22.2 no. 14-95 |                                                         |
| TUV Certified per EN 60950                       |                                                         |
| IEC 62314                                        |                                                         |
| IEC 60068-2-6                                    | 35mm/10-55Hz                                            |
| IEC 60068-2-27                                   | 15G / 11ms                                              |
| IEC 61000-4-2 Level 3                            | Electrostatic Discharge                                 |
| IEC 61000-4-3 Level 3                            | Radiated Electromagnetic Noise                          |
| IEC 61000-4-4 Level 3                            | Immunity to Electrically Fast Transients                |
| IEC 61000-4-5 Level 3                            | Immunity to Electrical Surges                           |
| IEC 61000-4-6 Level 3                            | Conducted Electromagnetic Noise                         |
| CISPR 11 Class A                                 | Conducted and Radiated Noise for Industrial Enviroments |

## Part Numbers

### Zero Crossing Output

| Rating | Output    | Input   | Part Number |
|--------|-----------|---------|-------------|
| 25 Amp | 48-600Vac | 4-32Vdc | GN325DLZ    |
| 50 Amp | 48-600Vac | 4-32Vdc | GN350DLZ    |

## Part Numbers

### Random Fire Output

| Rating | Output    | Input   | Part Number |
|--------|-----------|---------|-------------|
| 25 Amp | 48-600Vac | 4-32Vdc | GN325DLR    |
| 50 Amp | 48-600Vac | 4-32Vdc | GN350DLR    |

## Part Numbers

### Zero Crossing Output

| Rating | Output    | Input   | Part Number |
|--------|-----------|---------|-------------|
| 25 Amp | 48-530Vac | 4-32Vdc | GN325DSZ    |
| 50 Amp | 48-530Vac | 4-32Vdc | GN350DSZ    |

## Part Numbers

### Random Fire Output

| Rating | Output    | Input   | Part Number |
|--------|-----------|---------|-------------|
| 25 Amp | 48-530Vac | 4-32Vdc | GN325DSR    |
| 50 Amp | 48-530Vac | 4-32Vdc | GN350DSR    |

### Notes:

- (1) Voltage range for relay with snubber circuit is 48-530Vac.
- (2) Random SSR's turn on in less than 100µs

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# GN3 Series 3 Phase Solid State Relay - AC Input



- Three-phase solid-state relay
- Ratings up to 50 amps @ 530Vac
- DBC substrate for superior thermal performance
- Epoxy-free design reduces internal component stress
- Back-to-Back dual SCR output for heavy industrial loads
- 100k-cycle UL508 endurance rating for enhanced reliability
- No external transient protection required (internal TVS)
- EMC Compliant for reliable operation in harsh environments
- UL/CSA/TUV Approved, CE & RoHS Compliant



## Output Specifications

| Output Current (40°C)                             | 25         | 50         |
|---------------------------------------------------|------------|------------|
| Voltage range (Vrms) (1)                          | 48-600Vac  | 48-600Vac  |
| Peak Voltage (Vpk, t = 1 min.)                    | 1100       | 1100       |
| Off-state leakage mArms<br>(without RC / with RC) | 0.06 / 3.0 | 0.06 / 3.0 |
| Minimum Current (mArms)                           | 100        | 100        |
| Max. 1 cycle surge current<br>(Apk, Ta = 25°C)    | 500        | 800        |
| Max. 1 second surge current<br>(Apk, Ta = 25°C)   | 100        | 160        |
| Forward voltage drop<br>(Vpk @ Imax, Ta = 40°C)   | 1.35       | 1.35       |
| I <sup>2</sup> T (60Hz, ½ cycle)                  | 1040       | 2600       |
| Rjb (thermal res. Junction to<br>baseplate, °C/W) | 0.24       | 0.12       |
| Static off-state dv/dt<br>(Vµs, Ta = 25°C)        | 500        | 500        |
| HP Ratings at 240V                                | 1          | 3          |
| HP Ratings at 480V                                | 3          | 7.5        |
| HP Ratings at 600V                                | 5          | 10         |
| Min/Max wire size                                 | 16/8 AWG   | 16/8 AWG   |
| Terminal Torque (N-m)                             | 2.4        |            |

## Input Specifications

| Input voltage AC/DC               | 18-36V            | 90-140V   | 180-280V  |
|-----------------------------------|-------------------|-----------|-----------|
| Drop out voltage AC/DC            | 2V                | 10V       | 10V       |
| Min. input current (for on-state) | 15mA              | 7mA       | 7mA       |
| Maximum input current             | 20mA              | 16mA      | 20mA      |
| Input Resistance (Ohms)           | Current Regulated |           |           |
| Turn-on time (2)                  | 28mSec            | 20mSec    | 20mSec    |
| Turn-off time                     | 30mSec            | 30mSec    | 30mSec    |
| Min/Max stranded/solid wire       | 24/14 AWG         | 24/14 AWG | 24/14 AWG |
| Terminal Torque (N-m)             | 1.9               |           |           |

## General Characteristics

|                                  |                              |
|----------------------------------|------------------------------|
| Operating Temperature (°C) (3)   | -40 to + 80                  |
| Storage Temperature (°C)         | -40 to + 100                 |
| Input to output isolation        | 4000Vrms                     |
| Input/output to ground isolation | 2500Vrms                     |
| Input to output capacitance      | 8pF (typical)                |
| Operating Frequency              | 47 to 63 Hz                  |
| Housing Material                 | UL 94V0 (self extinguishing) |
| Weight (grams)                   | 360                          |

## Standards of Compliance

|                                                  |                                                         |
|--------------------------------------------------|---------------------------------------------------------|
| CE Compliant with the LVD 73/23/EEC              |                                                         |
| UL Recognized per UL 508 and CSA C22.2 no. 14-95 |                                                         |
| TUV Certified per EN 60950                       |                                                         |
| IEC 62314                                        |                                                         |
| IEC 60068-2-6                                    | 35mm/10-55Hz                                            |
| IEC 60068-2-27                                   | 15G / 11ms                                              |
| IEC 61000-4-2 Level 3                            | Electrostatic Discharge                                 |
| IEC 61000-4-3 Level 3                            | Radiated Electromagnetic Noise                          |
| IEC 61000-4-4 Level 3                            | Immunity to Electrically Fast Transients                |
| IEC 61000-4-5 Level 3                            | Immunity to Electrical Surges                           |
| IEC 61000-4-6 Level 3                            | Conducted Electromagnetic Noise                         |
| CISPR 11 Class A                                 | Conducted and Radiated Noise for Industrial Enviroments |

## Part Numbers

### Zero Crossing Output

| Rating | Output    | Input      | Part Number |
|--------|-----------|------------|-------------|
| 25 Amp | 48-600Vac | 180-260VAC | GN325ALZ    |
| 25 Amp | 48-600Vac | 90-140VAC  | GN325BLZ    |
| 25 Amp | 48-600Vac | 18-36Vac   | GN325ELZ    |
| 50 Amp | 48-600Vac | 180-260VAC | GN350ALZ    |
| 50 Amp | 48-600Vac | 90-140VAC  | GN350BLZ    |
| 50 Amp | 48-600Vac | 18-36Vac   | GN350ELZ    |

## Part Numbers

### Random Fire Output

| Rating | Output    | Input      | Part Number |
|--------|-----------|------------|-------------|
| 25 Amp | 48-600Vac | 180-260VAC | GN325ALR    |
| 25 Amp | 48-600Vac | 90-140VAC  | GN325BLR    |
| 25 Amp | 48-600Vac | 18-36Vac   | GN325ELR    |
| 50 Amp | 48-600Vac | 180-260VAC | GN350ALR    |
| 50 Amp | 48-600Vac | 90-140VAC  | GN350BLR    |
| 50 Amp | 48-600Vac | 18-36Vac   | GN350ELR    |

## Part Numbers

### Zero Crossing Output

| Rating | Output    | Input      | Part Number |
|--------|-----------|------------|-------------|
| 25 Amp | 48-530Vac | 180-260VAC | GN325ASZ    |
| 25 Amp | 48-530Vac | 90-140VAC  | GN325BSZ    |
| 25 Amp | 48-530Vac | 18-36Vac   | GN325ESZ    |
| 50 Amp | 48-530Vac | 180-260VAC | GN350ASZ    |
| 50 Amp | 48-530Vac | 90-140VAC  | GN350BSZ    |
| 50 Amp | 48-530Vac | 18-36Vac   | GN350ESZ    |

## Part Numbers

### Random Fire Output

| Rating | Output    | Input      | Part Number |
|--------|-----------|------------|-------------|
| 25 Amp | 48-530Vac | 180-260VAC | GN325ASR    |
| 25 Amp | 48-530Vac | 90-140VAC  | GN325BSR    |
| 25 Amp | 48-530Vac | 18-36Vac   | GN325ESR    |
| 50 Amp | 48-530Vac | 180-260VAC | GN350ASR    |
| 50 Amp | 48-530Vac | 90-140VAC  | GN350BSR    |
| 50 Amp | 48-530Vac | 18-36Vac   | GN350ESR    |

### Notes:

(1) Voltage range for relay with snubber circuit is 48-530Vac.

(2) Random AC input SSR's turn-on is 20ms

(3) Operating temperature for 180-260VAC input is -20 to +60°C

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Technical drawing of a mechanical part showing three views: front, top, and side. The drawing includes dimensions in millimeters and inches.

**Front View Dimensions:**

- Overall width: 103.89 [4.090]
- Overall height: 20.19 [0.795]
- Central slot height: 15.24 [0.600]
- Side slot height: 35.43 [1.395]

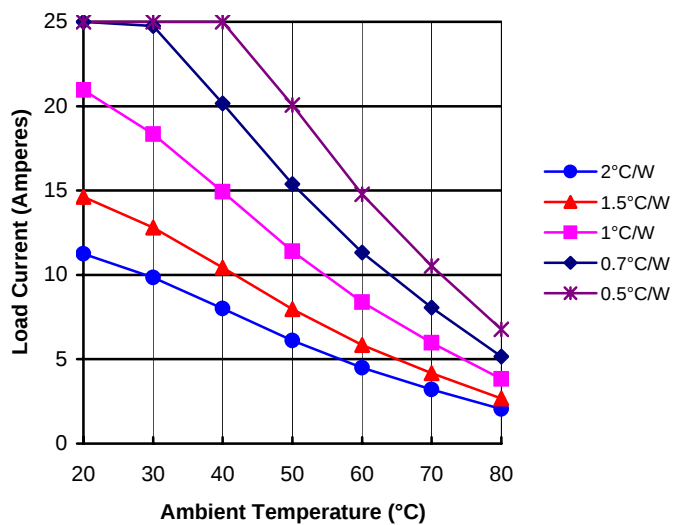
**Top View Dimensions:**

- Overall width: 101.28 [3.988]
- Overall height: 79.74 [3.139]
- Distance from left edge to first hole: 3.29 [0.130]
- Distance from left edge to second hole: 47.60 [1.874]
- Distance from left edge to third hole: 19.30 [0.760]
- Distance from left edge to fourth hole: 38.61 [1.520]
- Distance from left edge to fifth hole: 5.11 [0.201]
- Distance from left edge to sixth hole: 19.00 [0.748]
- Distance from left edge to seventh hole: 5.59 [0.220]
- Distance from left edge to eighth hole: 4.93 [0.194]
- Distance from left edge to ninth hole: 6.86 [0.270]

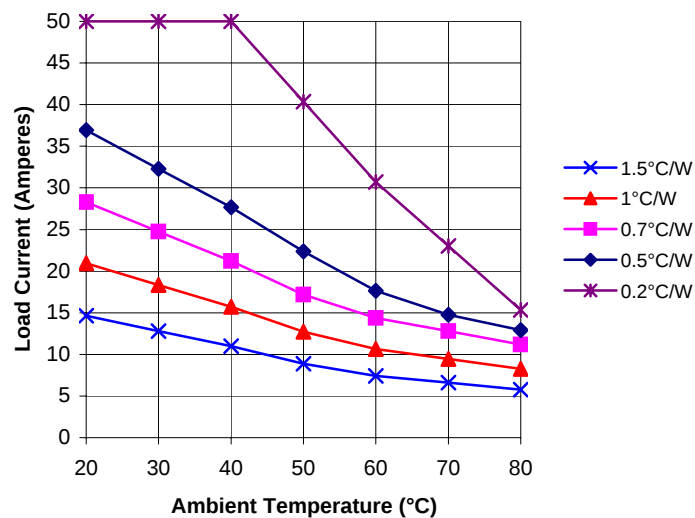
**Side View Dimensions:**

- Overall width: 101.28 [3.988]
- Overall height: 20.19 [0.795]
- Central slot height: 15.24 [0.600]
- Side slot height: 35.43 [1.395]

**DERATE CURVES:  
GN3 3 Phase SSR 25A**



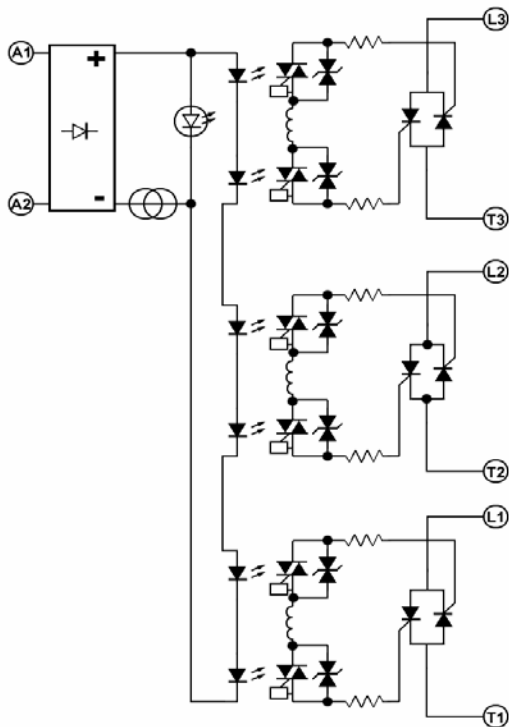
**DERATE CURVES:  
GN3 3 Phase SSR 50A**



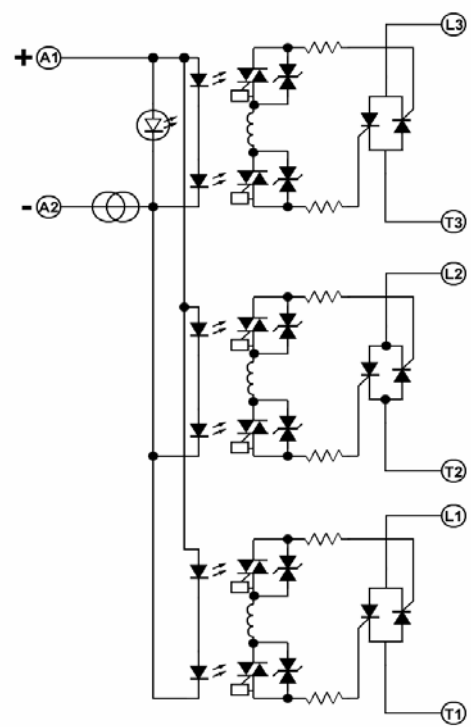
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# GN3 SSR Equivalent Circuits

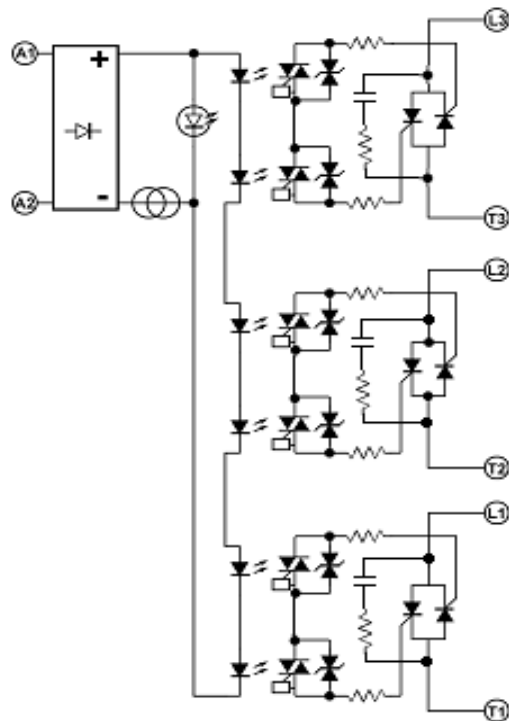
AC Input Equivalent Snubberless Circuit



DC Input Equivalent Snubberless Circuit



AC Input Equivalent Circuit with Snubber



DC Input Equivalent Circuit with Snubber

