

# Solid State Relays

## Datasheet WG 280 D xxxx

**Comus International Bvba**  
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### Features

|                     |   |
|---------------------|---|
| <b>Switching</b>    | Zero cross  |
| <b>Output</b>       | Back-to-back SCR with internal snubber  |
| <b>Input</b>        | DC with constant current control  |
| <b>Applications</b> | resistive and inductive loads with $\cos\phi > 0,85$ (Z-Type)<br>inductive load with $\cos\phi > 0,65$ (R-Type) |

### Technical data

| WG 280D...                                | 10 Z                  | 10 R   | 25 Z                  | 25 R         | 45 Z                  | 45 R   |
|---|-----------------------|--------|-----------------------|--------------|-----------------------|--------|
| <b>Input circuit</b>                      |                       |        |                       |              |                       |        |
| Control voltage range                     |                       |        | 3...32 VDC            |              |                       |        |
| Control current max.                      |                       |        | 10 mA                 |              |                       |        |
| Turn-off voltage min.                     |                       |        | 1 VDC                 |              |                       |        |
| Input resistance                          |                       |        | Constant current      |              |                       |        |
| <b>Output circuit</b>                     |                       |        |                       |              |                       |        |
| Load voltage range                        |                       |        | 24...280 VAC          |              |                       |        |
| Peak-off-state voltage                    |                       |        | 600 V <sub>drm</sub>  |              |                       |        |
| Off-state leakage current                 | 6 mA eff.             |        |                       | 12 mA eff.   |                       |        |
| Load current range                        | 0,1...10 A            |        | 0,2...25 A            |              | 0,4...45 A            |        |
| Surge current 1 half wave                 | 110 A <sub>peak</sub> |        | 230 A <sub>peak</sub> |              | 500 A <sub>peak</sub> |        |
| I <sup>2</sup> t for fusing               | 60 A <sup>2</sup> s   |        | 260 A <sup>2</sup> s  |              | 1250 A <sup>2</sup> s |        |
| On-state voltage                          |                       |        | 1,6 V <sub>peak</sub> |              |                       |        |
| Off-state (static) dv/dt                  |                       |        | 1000 V/μs             |              |                       |        |
| Snubber                                   | 47 Ω / 47nF           |        |                       | 47 Ω / 100nF |                       |        |
| <b>General data</b>                       |                       |        |                       |              |                       |        |
| Turn-on time max.                         | 11 ms                 | 0,1 ms | 11 ms                 | 0,1 ms       | 11 ms                 | 0,1 ms |
| Turn-off time max.                        |                       |        | 11 ms                 |              |                       |        |
| Line frequency range                      |                       |        | 47...63 Hz            |              |                       |        |
| Isolation volt. between input/output      |                       |        | 4.000 V               |              |                       |        |
| Isolation volt. between input-output/base |                       |        | 2.500 V               |              |                       |        |
| Isolation resistance                      |                       |        | 50 MΩ                 |              |                       |        |
| Operation temperature                     |                       |        | -20...+80 °C          |              |                       |        |
| Recommended varistor                      |                       |        | SIOV-S20 K230         |              |                       |        |
| Approvals                                 |                       |        | cULus, VDE            |              |                       |        |

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### Technical data

| WG 280Dxxxx-LD                            | 50 Z                  | 50 R   | 75 Z                  | 75 R   | 90 Z                   | 90 R   |
|---|-----------------------|--------|-----------------------|--------|------------------------|--------|
| <b>Input circuit</b>                      |                       |        |                       |        |                        |        |
| Control voltage range                     |                       |        | 3...32 VDC            |        |                        |        |
| Control current max.                      |                       |        | 10 mA                 |        |                        |        |
| Turn-off voltage min.                     |                       |        | 1 VDC                 |        |                        |        |
| Input resistance                          |                       |        | Constant current      |        |                        |        |
| <b>Output circuit</b>                     |                       |        |                       |        |                        |        |
| Load voltage range                        |                       |        | 24...280 VAC          |        |                        |        |
| Peak-off-state voltage                    |                       |        | 600 V <sub>drm</sub>  |        |                        |        |
| Off-state leakage current                 |                       |        | . 12 mA eff.          |        |                        |        |
| Load current range                        | 0,4...50 A            |        | 0,4...75 A            |        | 0,4...90 A             |        |
| Surge current 1 half wave                 | 570 A <sub>peak</sub> |        | 910 A <sub>peak</sub> |        | 1090 A <sub>peak</sub> |        |
| I <sup>2</sup> t for fusing               | 1620 A <sup>2</sup> s |        | 4150 A <sup>2</sup> s |        | 5980 A <sup>2</sup> s  |        |
| On-state voltage                          |                       |        | 1,6 V <sub>peak</sub> |        |                        |        |
| Off-state (static) dv/dt                  |                       |        | 1000 V/μs             |        |                        |        |
| Snubber                                   |                       |        | 47 Ω / 100 nF         |        |                        |        |
| <b>General data</b>                       |                       |        |                       |        |                        |        |
| Turn-on time max.                         | 11 ms                 | 0,1 ms | 11 ms                 | 0,1 ms | 11 ms                  | 0,1 ms |
| Turn-off time max.                        |                       |        | 11 ms                 |        |                        |        |
| Line frequency range                      |                       |        | 47...63 Hz            |        |                        |        |
| Isolation volt. between input/output      |                       |        | 4.000 V               |        |                        |        |
| Isolation volt. between input-output/base |                       |        | 2.500 V               |        |                        |        |
| Isolation resistance                      |                       |        | 50 MΩ                 |        |                        |        |
| Operation temperature                     |                       |        | -20...+80 °C          |        |                        |        |
| Recommended varistor                      |                       |        | SIOV-S20 K230         |        |                        |        |
| Approvals                                 |                       |        | cULus, VDE            |        |                        |        |

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### Technical data

| WG 280Dxxxx-LD                            | 110 Z                  | 110 R                 | 125 Z                  | 125 R  |
|---|------------------------|-----------------------|------------------------|--------|
| <b>Input circuit</b>                      |                        |                       |                        |        |
| Control voltage range                     |                        | 3...32 VDC            |                        |        |
| Control current max.                      |                        | 10 mA                 |                        |        |
| Turn-off voltage min.                     |                        | 1 VDC                 |                        |        |
| Input resistance                          |                        | Constant current      |                        |        |
| <b>Output circuit</b>                     |                        |                       |                        |        |
| Load voltage range                        |                        | 24...280 VAC          |                        |        |
| Peak-off-state voltage                    |                        | 600 V <sub>drm</sub>  |                        |        |
| Off-state leakage current                 |                        | 12 mA eff.            |                        |        |
| Load current range                        | 0,4...110 A            |                       | 0,4...125 A            |        |
| Surge current 1 half wave                 | 1350 A <sub>peak</sub> |                       | 1590 A <sub>peak</sub> |        |
| I <sup>2</sup> t for fusing               | 9100 A <sup>2</sup> s  |                       | 12650 A <sup>2</sup> s |        |
| On-state voltage                          |                        | 1,6 V <sub>peak</sub> |                        |        |
| Off-state (static) dv/dt                  |                        | 1000 V/μs             |                        |        |
| Snubber                                   |                        | 47 Ω / 100 nF         |                        |        |
| <b>General data</b>                       |                        |                       |                        |        |
| Turn-on time max.                         | 11 ms                  | 0,1 ms                | 11 ms                  | 0,1 ms |
| Turn-off time max.                        |                        | 11 ms                 |                        |        |
| Line frequency range                      |                        | 47...63 Hz            |                        |        |
| Isolation volt. between input/output      |                        | 4.000 V               |                        |        |
| Isolation volt. between input-output/base |                        | 2.500 V               |                        |        |
| Isolation resistance                      |                        | 50 MΩ                 |                        |        |
| Operation temperature                     |                        | -20...+80 °C          |                        |        |
| Recommended varistor                      |                        | SIOV-S20 K230         |                        |        |
| Approvals                                 |                        | cULus, VDE            |                        |        |

### Housing specification

|                             |  |
|-----------------------------|--|
| Weight                      | Approx. 80 gr unpotted , 100 gr potted (optional)                  |
| Housing material            | Glass filled polyester   |
| Potting compound (optional) | UL recognized Epoxy  |
| Base plate                  | 10 ... 45 A : Aluminium<br>50 ... 125A : Aluminium , nickel plated |
| Terminals                   | Input : M4-screws<br>Output : M3,5-screws                          |

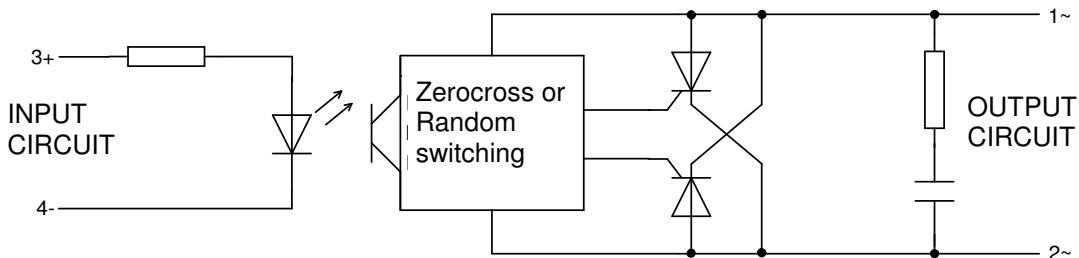
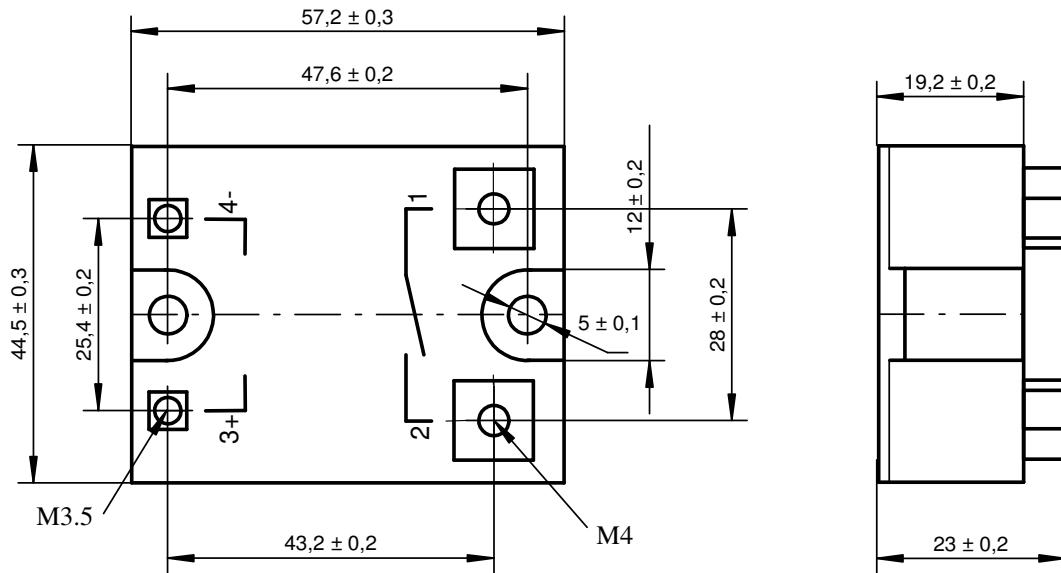
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### Dimensions in mm



### Ordering Information

WG 280 D 10 Z

|            |                |
|------------|----------------|
| CURRENT    | SWITCHING      |
| 10 : 10A   | R : Random     |
| 25 : 25A   | Z : Zero cross |
| 45 : 45A   |                |
| 50 : 50A   |                |
| 75 : 75A   |                |
| 90 : 90A   |                |
| 110 : 110A |                |
| 125 : 125A |                |

Options: Suffix - **P**, 100% potted

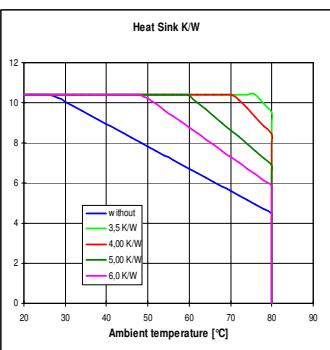
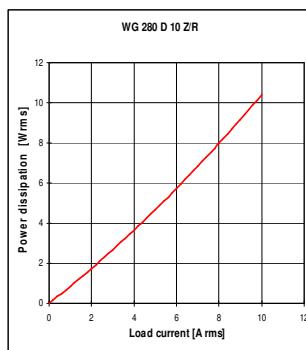
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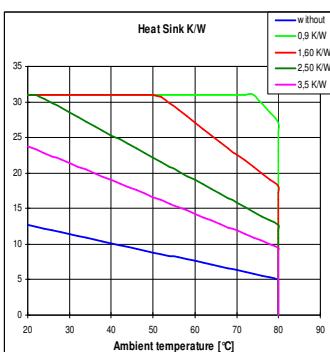
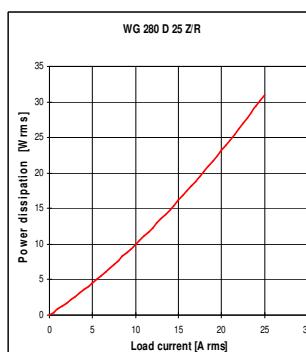
### Derating diagrams



**Number of SSR per Heatsink/  
Load current per SSR**

| Heat sink  | 1 SSR | 2 SSR | 3 SSR |
|------------|-------|-------|-------|
| WG K1/100  | 10 A  | 10 A  |       |
| WG K2/100  | 10 A  | 10 A  |       |
| WG K3/160  | 10 A  | 10 A  | 10 A  |
| WG K4/160L | 10 A  | 10 A  | 10 A  |
| WG K5/80   | 10 A  |       |       |

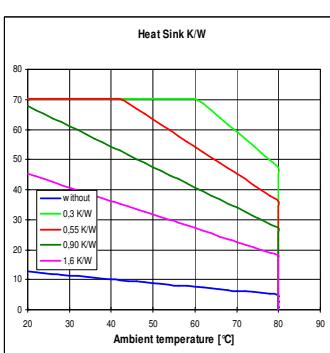
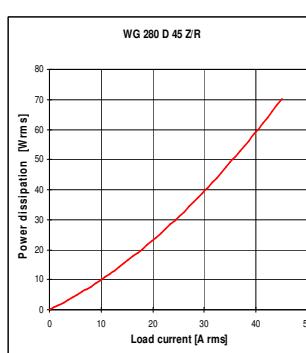
Values for 40 °C enclosure-temperature and mounted with conducting paste between the SSR and the heat sink



**Number of SSR per Heatsink/  
Load current per SSR**

| Heat sink  | 1 SSR | 2 SSR | 3 SSR |
|------------|-------|-------|-------|
| WG K1/100  | 18 A  | 12 A  |       |
| WG K2/100  | 23 A  | 17 A  |       |
| WG K3/160  | 25 A  | 25 A  | 23 A  |
| WG K4/160L | 25 A  | 25 A  | 25 A  |
| WG K5/80   | 25 A  |       |       |

Values for 40 °C enclosure-temperature and mounted with conducting paste between the SSR and the heat sink



**Number of SSR per Heatsink/  
Load current per SSR**

| Heat sink  | 1 SSR | 2 SSR | 3 SSR |
|------------|-------|-------|-------|
| WG K1/100  | 18 A  | 12 A  |       |
| WG K2/100  | 23 A  | 17 A  |       |
| WG K3/160  | 40 A  | 29 A  | 23 A  |
| WG K4/160L | 45 A  | 45 A  | 41 A  |
| WG K5/80   | 34 A  |       |       |

Values for 40 °C enclosure-temperature and mounted with conducting paste between the SSR and the heat sink

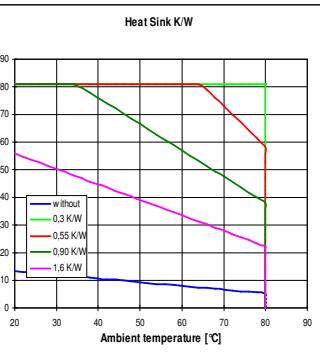
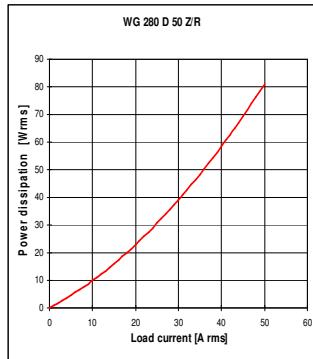
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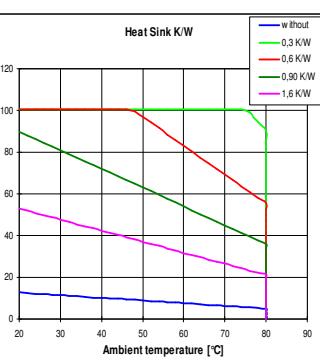
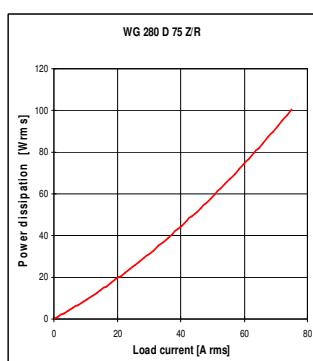
### Derating diagrams



**Number of SSR per Heatsink/  
Load current per SSR**

| Heat sink  | 1 SSR | 2 SSR | 3 SSR |
|------------|-------|-------|-------|
| WG K1/100  | 20 A  | 13 A  |       |
| WG K2/100  | 26 A  | 18 A  |       |
| WG K3/160  | 50 A  | 34 A  | 26 A  |
| WG K4/160L | 50 A  | 50 A  | 50 A  |
| WG K5/80   | 41 A  |       |       |

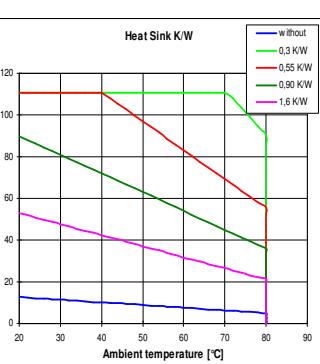
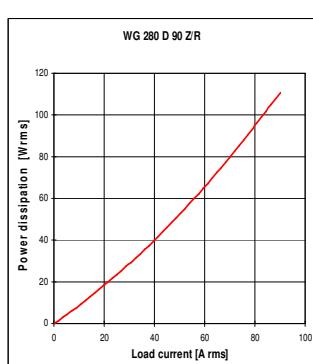
Values for 40 °C enclosure-temperature and mounted with conducting paste between the SSR and the heat sink



**Number of SSR per Heatsink/  
Load current per SSR**

| Heat sink  | 1 SSR | 2 SSR | 3 SSR |
|------------|-------|-------|-------|
| WG K1/100  | 23 A  | 14 A  |       |
| WG K2/100  | 31 A  | 21 A  |       |
| WG K3/160  | 66 A  | 42 A  | 31 A  |
| WG K4/160L | 75 A  | 75 A  | 68 A  |
| WG K5/80   | 51 A  |       |       |

Values for 40 °C enclosure-temperature and mounted with conducting paste between the SSR and the heat sink



**Number of SSR per Heatsink/  
Load current per SSR**

| Heat sink  | 1 SSR | 2 SSR | 3 SSR |
|------------|-------|-------|-------|
| WG K1/100  | 25 A  | 15 A  |       |
| WG K2/100  | 33 A  | 22 A  |       |
| WG K3/160  | 73 A  | 45 A  | 33 A  |
| WG K4/160L | 90 A  | 90 A  | 76 A  |
| WG K5/80   | 56 A  |       |       |

Values for 40 °C enclosure-temperature and mounted with conducting paste between the SSR and the heat sink

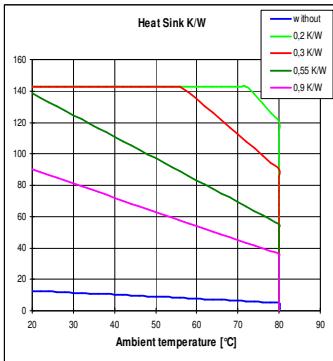
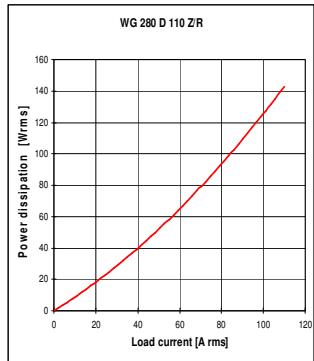
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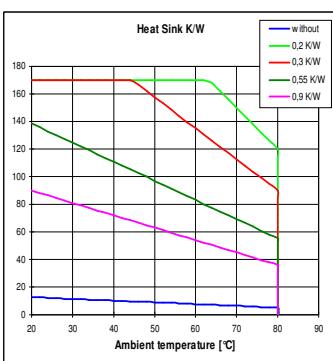
### Derating diagrams



**Number of SSR per Heatsink/  
Load current per SSR**

| Heat sink  | 1 SSR | 2 SSR | 3 SSR |
|------------|-------|-------|-------|
| WG K1/100  | 25 A  | 15 A  |       |
| WG K2/100  | 33 A  | 22 A  |       |
| WG K3/160  | 74 A  | 46 A  | 33 A  |
| WG K4/160L | 110 A | 103 A | 77 A  |
| WG K5/80   | 56 A  |       |       |

Values for 40°C enclosure-temperature and mounted with conducting paste between the SSR and the heat sink



**Number of SSR per Heatsink/  
Load current per SSR**

| Heat sink  | 1 SSR | 2 SSR | 3 SSR |
|------------|-------|-------|-------|
| WG K1/100  | 25 A  | 15 A  |       |
| WG K2/100  | 33 A  | 22 A  |       |
| WG K3/160  | 74 A  | 46 A  | 33 A  |
| WG K4/160L | 125 A | 103 A | 77 A  |
| WG K5/80   | 257 A |       |       |

Values for 40°C enclosure-temperature and mounted with conducting paste between the SSR and the heat sink