

Siemens  
EcoTech



semiconductor relay, 1-pole 3RF3 for use with heat sinks width 22.5 mm, 25 A 24-230 V / 4-30 V DC screw terminal



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|--|--|
| <b>product brand name</b>                                  | SIRIUS   |
| <b>product designation</b>                                 | solid-state relay  |
| <b>product type designation</b>                            | 3RF31  |
| <b>manufacturer's article number</b>                       | <ul style="list-style-type: none"> <li>• _1 of the accessories that can be ordered <a href="#">3RF2900-3PA88</a></li> <li>• _2 of the accessories that can be ordered <a href="#">3RF3900-0WA88</a></li> <li>• _3 of the accessories that can be ordered <a href="#">3RF3920-0HA13</a></li> <li>• _4 of the accessories that can be ordered <a href="#">3RF3900-0EA18</a></li> <li>• _5 of the accessories that can be ordered <a href="#">3RF3920-0GA13</a></li> <li>• _6 of the accessories that can be ordered <a href="#">3RF3920-0FA08</a></li> </ul> |
| <b>product designation</b>                                 | <ul style="list-style-type: none"> <li>• _1 of the accessories that can be ordered terminal cover</li> <li>• _2 of the accessories that can be ordered heat conducting foil</li> <li>• _3 of the accessories that can be ordered power regulator</li> <li>• _4 of the accessories that can be ordered converter</li> <li>• _5 of the accessories that can be ordered load monitoring</li> <li>• _6 of the accessories that can be ordered basic load monitoring</li> </ul>   |
| <b>General technical data</b>                              |  |
| <b>product function</b>                                    | zero-point switching   |
| <b>power loss [V·A] maximum</b>                            | 30 VA  |
| <b>power loss [W] for rated value of the current</b>       | <ul style="list-style-type: none"> <li>• at AC in hot operating state 30 W</li> <li>• at AC in hot operating state per pole 30 W</li> <li>• without load current share typical 0.5 W</li> </ul>  |
| <b>type of calculation of power loss current-dependent</b> | linear   |
| <b>insulation voltage rated value</b>                      | 600 V  |
| surge voltage resistance of main circuit rated value       | 6 kV   |
| <b>protection class IP</b>                                 | IP20   |
| protection class IP on the front according to IEC 60529    | IP20   |
| <b>shock resistance according to IEC 60068-2-27</b>        | 15 g / 11 ms   |
| <b>vibration resistance according to IEC 60068-2-6</b>     | 2 g  |
| <b>reference code according to IEC 81346-2</b>             | Q  |
| <b>Substance Prohibitance (day/month/year)</b>             | 01/15/2024   |
| <b>SVHC substance name</b>                                 | Lead CAS-No. 7439-92-1<br>Lead monoxide (lead oxide) CAS-No. 1317-36-8<br>2-methyl-1-(4-methylthiophenyl)-2-morpholinopropan-1-one CAS-No. 71868-10-5  |

|  |                                       |
|--|---------------------------------------|
|  | Melamine CAS-No. 108-78-1             |
| <b>Net Weight</b>  | 0.066 kg                              |
| <b>Main circuit</b>  |                                       |
| <b>number of poles for main current circuit</b>                                    | 1                                     |
| <b>number of NO contacts for main contacts</b>                                     | 1                                     |
| <b>number of NC contacts for main contacts</b>                                     | 0                                     |
| <b>type of voltage of the operating voltage</b>                                    | AC                                    |
| <b>operating voltage</b>   |                                       |
| • at AC  |                                       |
| — at 50 Hz rated value   | 24 ... 230 V                          |
| — at 60 Hz rated value   | 24 ... 230 V                          |
| <b>operating frequency rated value</b>   | 50 ... 60 Hz                          |
| <b>relative symmetrical tolerance of the operating frequency</b>                   | 10 %                                  |
| <b>operating range relative to the operating voltage at AC</b>                     |                                       |
| • at 50 Hz   | 20 ... 253 V                          |
| • at 60 Hz   | 20 ... 253 V                          |
| <b>operational current rated value maximum</b>                                     | 25 A                                  |
| <b>operational current</b>   |                                       |
| • at AC-1 at 400 V rated value   | 25 A                                  |
| • at AC-51 rated value   | 25 A                                  |
| • at AC-51 according to IEC 60947-4-3  | 25 A                                  |
| • according to UL 508 rated value  | 25 A                                  |
| <b>ampacity maximum</b>  | 25 A                                  |
| <b>operational current minimum</b>   | 100 mA                                |
| <b>rate of voltage rise at the thyristor for main contacts maximum permissible</b> | 1 000 V/ $\mu$ s                      |
| <b>blocking voltage at the thyristor for main contacts maximum permissible</b>     | 800 V                                 |
| <b>reverse current of the thyristor</b>  | 10 mA                                 |
| <b>derating temperature</b>  | 40 °C                                 |
| <b>surge current resistance rated value</b>  | 260 A                                 |
| <b>I<sup>2</sup>t value maximum</b>  | 360 A <sup>2</sup> ·s                 |
| <b>Control circuit/ Control</b>  |                                       |
| <b>type of voltage of the control supply voltage</b>                               | DC                                    |
| <b>control supply voltage at DC</b>  | 4 ... 30 V                            |
| <b>control supply voltage 1 at DC</b>  | 4 ... 30 V                            |
| <b>control supply voltage at DC</b>  |                                       |
| • initial value for signal <1> detection   | 4 V                                   |
| • full-scale value for signal<0> recognition                                       | 1 V                                   |
| <b>operating range factor control supply voltage rated value at DC</b>             |                                       |
| • initial value  | 0.17                                  |
| • full-scale value   | 1.25                                  |
| <b>control current at minimum control supply voltage</b>                           |                                       |
| • at DC  | 13 mA                                 |
| control current at DC rated value  | 15 mA                                 |
| <b>ON-delay time</b>   | 1 ms; additionally max. one half-wave |
| <b>OFF-delay time</b>  | 1 ms; additionally max. one half-wave |
| <b>Installation/ mounting/ dimensions</b>  |                                       |
| fastening method side-by-side mounting   | Yes                                   |
| <b>fastening method</b>  | screw fixing                          |
| <b>design of the thread of the screw for securing the equipment</b>                | M4                                    |
| <b>tightening torque of fixing screw maximum</b>                                   | 1.5 N·m                               |
| <b>tightening torque [lbf·in] of fixing screw maximum</b>                          | 13 lbf·in                             |
| <b>height</b>  | 85 mm                                 |
| <b>width</b>   | 22.5 mm                               |
| <b>depth</b>   | 48 mm                                 |
| <b>Connections/ Terminals</b>  |                                       |
| <b>product component removable terminal for auxiliary and</b>                      | Yes                                   |

|   |   |
|---|---|
| <b>control circuit</b>  |   |
| <b>type of electrical connection</b>  |   |
| <ul style="list-style-type: none"> <li>• for main current circuit</li> <li>• for auxiliary and control circuit</li> </ul>   | <p>screw-type terminals</p> <p>screw-type terminals</p>   |
| <b>type of connectable conductor cross-sections</b>   |   |
| <ul style="list-style-type: none"> <li>• for main contacts <ul style="list-style-type: none"> <li>— solid</li> <li>— finely stranded with core end processing</li> </ul> </li> <li>• for AWG cables for main contacts</li> </ul>  | <p>2x (1 ... 2.5 mm<sup>2</sup>), 2x (2.5 ... 6 mm<sup>2</sup>)</p> <p>2x (1 ... 2.5 mm<sup>2</sup>), 2x (2.5 ... 6 mm<sup>2</sup>), 1x 10 mm<sup>2</sup></p> <p>2x (14 ... 10), 1x 8</p>   |
| <b>connectable conductor cross-section for main contacts</b>  |   |
| <ul style="list-style-type: none"> <li>• solid or stranded</li> <li>• finely stranded with core end processing</li> </ul>   | <p>1.5 ... 6 mm<sup>2</sup></p> <p>1 ... 10 mm<sup>2</sup></p>  |
| <b>type of connectable conductor cross-sections</b>   |   |
| <ul style="list-style-type: none"> <li>• for auxiliary and control contacts <ul style="list-style-type: none"> <li>— solid</li> <li>— finely stranded with core end processing</li> <li>— finely stranded without core end processing</li> </ul> </li> <li>• for AWG cables for auxiliary and control contacts</li> </ul> | <p>1x (0.5 ... 2.5 mm<sup>2</sup>), 2x (0.5 ... 1 mm<sup>2</sup>)</p> <p>1x (0.5 ... 2.5 mm<sup>2</sup>), 2x (0.5 ... 1 mm<sup>2</sup>)</p> <p>1x (0.5 ... 2.5 mm<sup>2</sup>), 2x (0.5 ... 1 mm<sup>2</sup>)</p> <p>1x (20 ... 12)</p> |
| <b>AWG number as coded connectable conductor cross section for main contacts</b>  | 14 ... 8  |
| <b>tightening torque</b>  |   |
| <ul style="list-style-type: none"> <li>• for main contacts with screw-type terminals</li> <li>• for auxiliary and control contacts with screw-type terminals</li> </ul>   | <p>2 ... 2.5 N·m</p> <p>0.5 ... 0.6 N·m</p>   |
| <b>tightening torque [lbf·in]</b>   |   |
| <ul style="list-style-type: none"> <li>• for main contacts with screw-type terminals</li> <li>• for auxiliary and control contacts with screw-type terminals</li> </ul>   | <p>18 ... 22 lbf·in</p> <p>4.5 ... 5.3 lbf·in</p>   |
| <b>design of the thread of the connection screw</b>   |   |
| <ul style="list-style-type: none"> <li>• for main contacts</li> <li>• of the auxiliary and control contacts</li> </ul>  | <p>M4</p> <p>M3</p>   |
| <b>stripped length of the cable</b>   |   |
| <ul style="list-style-type: none"> <li>• for main contacts</li> <li>• for auxiliary and control contacts</li> </ul>   | <p>10 mm</p> <p>7 mm</p>  |
| <b>UL/CSA ratings</b>   |   |
| <b>operational current according to UL 508 rated value</b>  | 25 A  |
| Electrical Safety   |   |
| <b>touch protection on the front according to IEC 60529</b>   | finger-safe, for vertical contact from the front  |
| <b>Ambient conditions</b>   |   |
| installation altitude at height above sea level maximum   | 1 000 m   |
| <b>ambient temperature</b>  |   |
| <ul style="list-style-type: none"> <li>• during operation</li> <li>• during storage</li> </ul>  | <p>-25 ... +60 °C</p> <p>-55 ... +80 °C</p>   |
| <b>Electromagnetic compatibility</b>  |   |
| <b>conducted interference</b>   |   |
| <ul style="list-style-type: none"> <li>• due to burst according to IEC 61000-4-4</li> <li>• due to conductor-earth surge according to IEC 61000-4-5</li> <li>• due to conductor-conductor surge according to IEC 61000-4-5</li> <li>• due to high-frequency radiation according to IEC 61000-4-6</li> </ul>               | <p>2 kV / 5 kHz, behavior criterion 2</p> <p>2 kV, behavior criterion 2</p> <p>1 kV, behavior criterion 2</p> <p>140 dBuV in the frequency range 0.15 ... 80 MHz, behavior criterion 1</p>  |
| <b>field-based interference according to IEC 61000-4-3</b>  | 80 MHz ... 1 GHz 10 V/m, behavior criterion 1   |
| <b>electrostatic discharge according to IEC 61000-4-2</b>   | 4 kV contact discharging / 8 kV air discharging, behavior criterion 2   |
| <b>conducted HF interference emissions according to CISPR11</b>   | Class A for industrial environment  |
| <b>field-bound HF interference emission according to CISPR11</b>  | Class B for the domestic, business and commercial environments  |
| <b>Short-circuit protection, design of the fuse link</b>  |   |
| manufacturer's article number   |   |
| <ul style="list-style-type: none"> <li>• of gS fuse for semiconductor protection at NH design usable</li> <li>• of full range R fuse link for semiconductor protection at</li> </ul>  | <p><a href="#">3NE1815-0</a></p> <p><a href="#">5SE1325</a></p>   |

|  |   |
|--|---|
| <p>cylindrical design usable</p> <ul style="list-style-type: none"> <li>• of back-up R fuse link for semiconductor protection at NH design usable</li> <li>• of back-up R fuse link for semiconductor protection at cylindrical design 10 x 38 mm usable</li> <li>• of back-up R fuse link for semiconductor protection at cylindrical design 14 x 51 mm usable</li> <li>• of back-up R fuse link for semiconductor protection at cylindrical design 22 x 58 mm usable</li> </ul>                | <p><a href="#">3NE8015-1</a></p> <p><a href="#">3NC1020: These fuses have a smaller rated current than the semiconductor relays</a></p> <p><a href="#">3NC1430</a></p> <p><a href="#">3NC2225</a></p>   |
| <p>manufacturer's article number of the gG fuse</p> <ul style="list-style-type: none"> <li>• at NH design usable</li> <li>• at NH design usable note</li> <li>• at cylindrical design 10 x 38 mm usable</li> <li>• at cylindrical design 10 x 38 mm usable note</li> <li>• at cylindrical design 14 x 51 mm usable</li> <li>• at cylindrical design 14 x 51 mm usable note</li> <li>• at cylindrical design 22 x 58 mm usable</li> <li>• at cylindrical design 22 x 58 mm usable note</li> </ul> | <p><a href="#">3NA6803: These fuses have a smaller rated current than the semiconductor relays</a></p> <p>These fuses have a smaller rated current than the semiconductor relays</p> <p><a href="#">3NW6001-1: These fuses have a smaller rated current than the semiconductor relays</a></p> <p>These fuses have a smaller rated current than the semiconductor relays</p> <p><a href="#">3NW6101-1: These fuses have a smaller rated current than the semiconductor relays</a></p> <p>These fuses have a smaller rated current than the semiconductor relays</p> <p><a href="#">3NW6208-1: These fuses have a smaller rated current than the semiconductor relays</a></p> <p>These fuses have a smaller rated current than the semiconductor relays</p> |
| <p>manufacturer's article number</p> <ul style="list-style-type: none"> <li>• of DIAZED fuse usable</li> <li>• of DIAZED fuse usable note</li> <li>• of NEOZED fuse usable</li> </ul>  | <p><a href="#">5SB251: These fuses have a smaller rated current than the semiconductor relays</a></p> <p>These fuses have a smaller rated current than the semiconductor relays</p> <p><a href="#">5SE2310: These fuses have a smaller rated current than the semiconductor relays</a></p>  |

**Approvals Certificates**

|             |                          |
|-------------|--------------------------|
| Environment | General Product Approval |
|-------------|--------------------------|

[Environmental Confirmations](#)



|     |                   |       |
|-----|-------------------|-------|
| EMV | Test Certificates | other |
|-----|-------------------|-------|



[Type Test Certificates/Test Report](#)

[Confirmation](#)



[Confirmation](#)

**Further information**

**Information on the packaging**

<https://support.industry.siemens.com/cs/ww/en/view/109813875>

**Information for data generation and storage**

<https://support.industry.siemens.com/cs/ww/en/view/109995012>

**Information- and Downloadcenter (Catalogs, Brochures,...)**

<https://www.siemens.com/ic10>

**Industry Mall (Online ordering system)**

<https://mall.industry.siemens.com/mall/en/en/Catalog/product?mlfb=3RF3125-1AA42>

**Cax online generator**

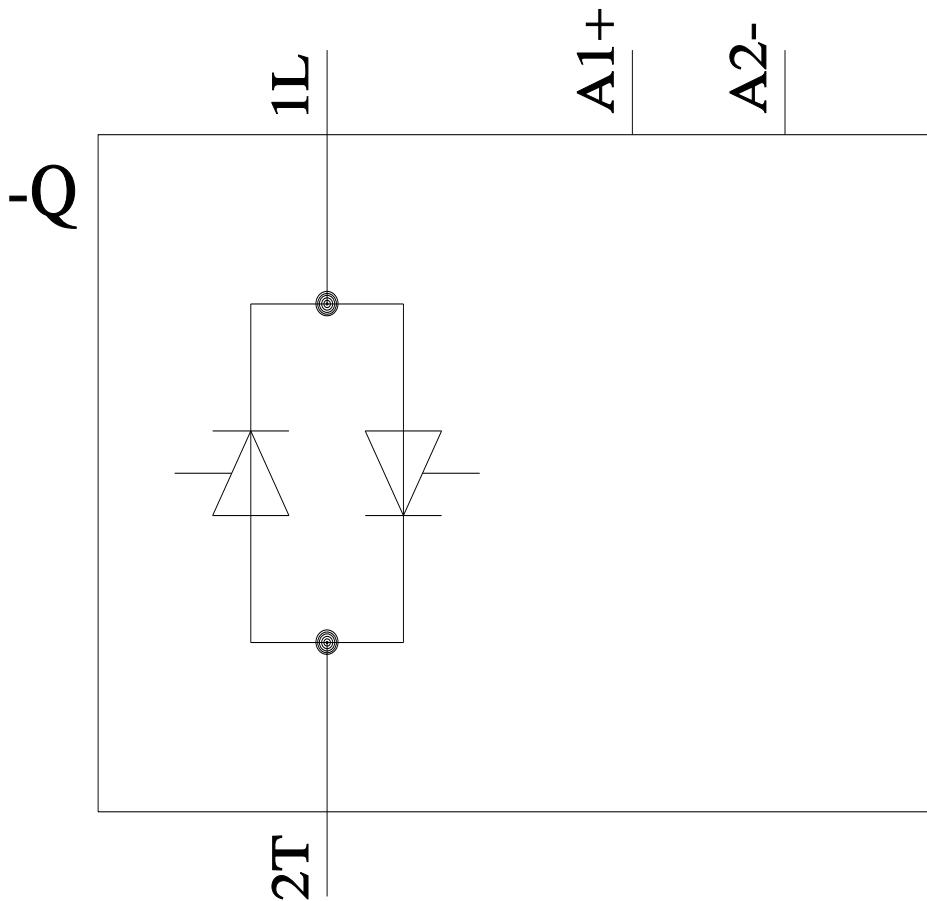
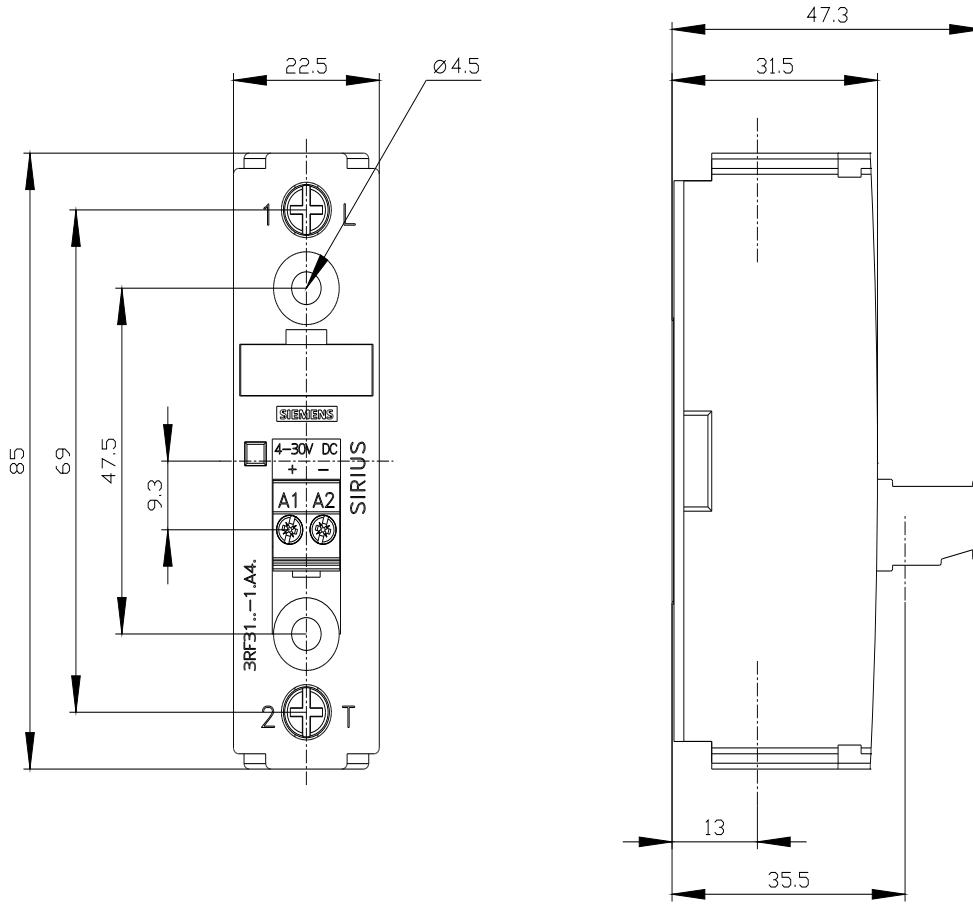
<https://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RF3125-1AA42>

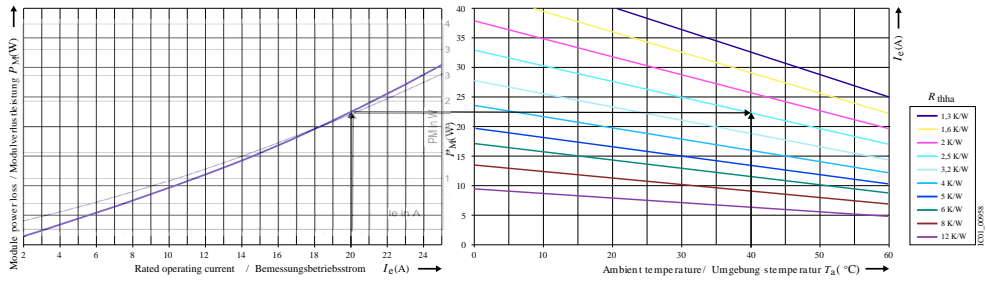
**Service&Support (Manuals, Certificates, Characteristics, FAQs,...)**

<https://support.industry.siemens.com/cs/ww/en/ps/3RF3125-1AA42>

**Image database (product images, 2D dimension drawings, 3D models, device circuit diagrams, EPLAN macros, ...)**

[https://www.automation.siemens.com/bilddb/cax\\_de.aspx?mlfb=3RF3125-1AA42&lang=en](https://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3RF3125-1AA42&lang=en)





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