

\*\*\*phase-out type\*\*\* semiconductor relay, 1-phase 3RF2 width 45 mm, 50 A 48-600 V / 4-30 V DC screw terminal blocking voltage 1200 V for mounting on available cooling surfaces

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| product brand name  | SIRIUS   |
| product designation   | solid-state relay  |
| design of the product   | 1-pole   |
| product type designation  | 3RF20  |
| <b>General technical data</b>   |  |
| product function  | zero-point switching   |
| power loss [W] for rated value of the current                               |  |
| • at AC in hot operating state  | 66 W   |
| • at AC in hot operating state per pole                                     | 66 W   |
| • without load current share typical  | 0.5 W  |
| insulation voltage rated value  | 600 V  |
| protection class IP   | IP20   |
| protection class IP on the front according to IEC 60529                     | IP20   |
| shock resistance according to IEC 60068-2-27                                | 15 g / 11 ms   |
| vibration resistance according to IEC 60068-2-6                             | 2 g  |
| reference code according to IEC 81346-2                                     | Q  |
| Substance Prohibitance (day/month/year)                                     | 05/28/2009   |
| SVHC substance name   | 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<br>Melamine CAS-No. 108-78-1 |
| Net Weight  | 0.084 kg   |
| <b>Main circuit</b>   |  |
| number of poles for main current circuit                                    | 1  |
| number of NO contacts for main contacts                                     | 1  |
| number of NC contacts for main contacts                                     | 0  |
| type of voltage of the operating voltage                                    | AC   |
| operating voltage   |  |
| • at AC   |  |
| — at 50 Hz rated value  | 48 ... 600 V   |
| — at 60 Hz rated value  | 48 ... 600 V   |
| operating frequency rated value   | 50 ... 60 Hz   |
| relative symmetrical tolerance of the operating frequency                   | 10 %   |
| operating range relative to the operating voltage at AC                     |  |
| • at 50 Hz  | 40 ... 660 V   |
| • at 60 Hz  | 40 ... 660 V   |
| operational current rated value maximum                                     | 50 A   |
| operational current   |  |
| • at AC-1 at 400 V rated value  | 50 A   |
| • at AC-51 rated value  | 50 A   |
| • according to UL 508 rated value   | 50 A   |
| ampacity maximum  | 50 A   |
| operational current minimum   | 500 mA   |
| rate of voltage rise at the thyristor for main contacts maximum permissible | 1 000 V/μs   |
| blocking voltage at the thyristor for main contacts maximum permissible     | 1 200 V  |
| reverse current of the thyristor  | 10 mA  |
| derating temperature  | 40 °C  |

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| surge current resistance rated value                                      | 600 A   |
| I <sup>2</sup> t value maximum  | 1 800 A <sup>2</sup> ·s   |
| <b>Control circuit/ Control</b>   |   |
| type of voltage of the control supply voltage                             | DC  |
| control supply voltage 1 at DC rated value maximum permissible            | 30 V  |
| control supply voltage 1 at DC  | 4 ... 30 V  |
| control supply voltage at DC  |   |
| • initial value for signal <1> detection                                  | 4 V   |
| • full-scale value for signal<0> recognition                              | 1 V   |
| control current at minimum control supply voltage                         |   |
| • at DC   | 13 mA   |
| control current at DC rated value   | 15 mA   |
| ON-delay time   | 1 ms; additionally max. one half-wave   |
| OFF-delay time  | 1 ms; additionally max. one half-wave   |
| <b>Installation/ mounting/ dimensions</b>                                 |   |
| fastening method side-by-side mounting                                    | Yes   |
| fastening method  | screw fixing  |
| design of the thread of the screw for securing the equipment              | M4  |
| tightening torque of fixing screw maximum                                 | 1.5 N·m   |
| tightening torque [lbf·in] of fixing screw maximum                        | 13 lbf·in   |
| height  | 58 mm   |
| width   | 45 mm   |
| depth   | 48 mm   |
| <b>Connections/ Terminals</b>   |   |
| product component removable terminal for auxiliary and control circuit    | Yes   |
| type of electrical connection   |   |
| • for main current circuit  | screw-type terminals  |
| • for auxiliary and control circuit                                       | screw-type terminals  |
| type of connectable conductor cross-sections                              |   |
| • for main contacts   |   |
| — solid   | 2x (1.5 ... 2.5 mm <sup>2</sup> ), 2x (2.5 ... 6 mm <sup>2</sup> )                      |
| — finely stranded with core end processing                                | 2x (1 ... 2.5 mm <sup>2</sup> ), 2x (2.5 ... 6 mm <sup>2</sup> ), 1x 10 mm <sup>2</sup> |
| • for AWG cables for main contacts  | 2x (14 ... 10)  |
| connectable conductor cross-section for main contacts                     |   |
| • solid or stranded   | 1.5 ... 6 mm <sup>2</sup>   |
| • finely stranded with core end processing                                | 1 ... 10 mm <sup>2</sup>  |
| type of connectable conductor cross-sections                              |   |
| • for auxiliary and control contacts                                      |   |
| — solid   | 1x (0.5 ... 2.5 mm <sup>2</sup> ), 2x (0.5 ... 1 mm <sup>2</sup> )                      |
| — finely stranded with core end processing                                | 1x (0.5 ... 2.5 mm <sup>2</sup> ), 2x (0.5 ... 1 mm <sup>2</sup> )                      |
| — finely stranded without core end processing                             | 1x (0.5 ... 2.5 mm <sup>2</sup> ), 2x (0.5 ... 1 mm <sup>2</sup> )                      |
| • for AWG cables for auxiliary and control contacts                       | 1x (20 ... 12)  |
| AWG number as coded connectable conductor cross section for main contacts | 14 ... 10   |
| tightening torque   |   |
| • for main contacts with screw-type terminals                             | 2 ... 2.5 N·m   |
| • for auxiliary and control contacts with screw-type terminals            | 0.5 ... 0.6 N·m   |
| tightening torque [lbf·in]  |   |
| • for main contacts with screw-type terminals                             | 7 ... 10.3 lbf·in   |
| • for auxiliary and control contacts with screw-type terminals            | 4.5 ... 5.3 lbf·in  |
| design of the thread of the connection screw                              |   |
| • for main contacts   | M4  |
| • of the auxiliary and control contacts                                   | M3  |
| stripped length of the cable  |   |
| • for main contacts   | 10 mm   |

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| <ul style="list-style-type: none"> <li>for auxiliary and control contacts</li> </ul>  | 7 mm   |
| <b>UL/CSA ratings</b>   |  |
| <b>operational current according to UL 508 rated value</b>  | 50 A   |
| <b>Electrical Safety</b>  |  |
| <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>  | -25 ... +60 °C<br>-55 ... +80 °C   |
| <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>   | 2 kV / 5 kHz, behavior criterion 2<br>2 kV, behavior criterion 2<br>1 kV, behavior criterion 2<br>140 dBuV in the frequency range 0.15 ... 80 MHz, behavior criterion 1  |
| <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 cylindrical design usable</li> <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 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> | <a href="#">3NE1802-0: These fuses have a smaller rated current than the semiconductor relays</a><br><a href="#">5SE1335: These fuses have a smaller rated current than the semiconductor relays</a><br><a href="#">3NE8017-1</a><br><a href="#">3NC1450</a><br><a href="#">3NC2250</a>  |
| manufacturer's article number of the gG fuse <ul style="list-style-type: none"> <li>at NH design usable</li> <li>at NH design 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>   | <a href="#">3NA6807: These fuses have a smaller rated current than the semiconductor relays</a><br>These fuses have a smaller rated current than the semiconductor relays<br><a href="#">3NW6205-1: These fuses have a smaller rated current than the semiconductor relays</a><br>These fuses have a smaller rated current than the semiconductor relays |
| manufacturer's article number <ul style="list-style-type: none"> <li>of NEOZED fuse usable</li> </ul>   | <a href="#">5SE2320: These fuses have a smaller rated current than the semiconductor relays</a>  |

**Approvals Certificates**

|                    |                                 |
|--------------------|---------------------------------|
| <b>Environment</b> | <b>General Product Approval</b> |
|--------------------|---------------------------------|

[Environmental Confirmations](#)



|            |                          |              |
|------------|--------------------------|--------------|
| <b>EMV</b> | <b>Test Certificates</b> | <b>other</b> |
|------------|--------------------------|--------------|



[Type Test Certificates/Test Report](#)

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[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=3RF2050-1AA45>

Cax online generator

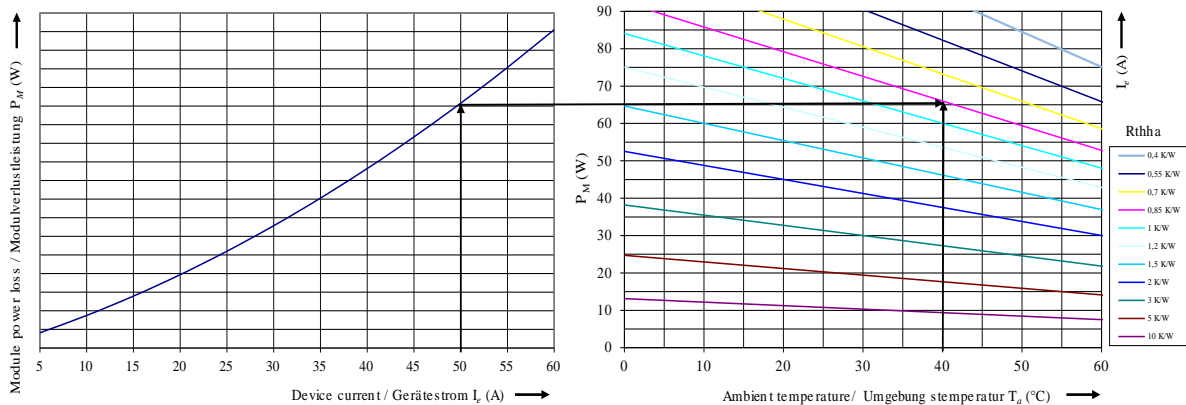
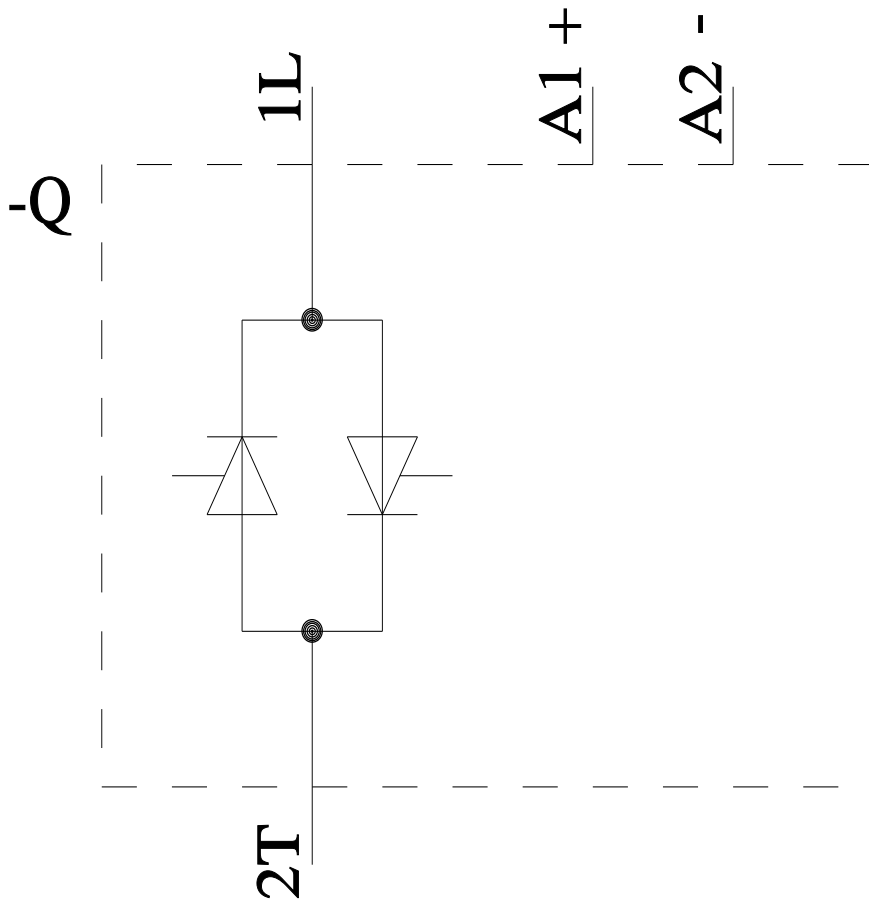
<https://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RF2050-1AA45>

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

<https://support.industry.siemens.com/cs/ww/en/ps/3RF2050-1AA45>

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

[https://www.automation.siemens.com/bilddb/cax\\_de.aspx?mlfb=3RF2050-1AA45&lang=en](https://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3RF2050-1AA45&lang=en)



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