



semiconductor relay, 1-phase 3RF2 width 45 mm, 70 A 48-600 V / 24 V DC screw terminal 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  | 94 W   |
| • at AC in hot operating state per pole                                     | 94 W   |
| • without load current share typical  | 0.4 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                                | 15g / 11 ms  |
| vibration resistance according to IEC 60068-2-6                             | 2g   |
| reference code according to IEC 81346-2                                     | Q  |
| Substance Prohibitance (Date)   | 05/28/2009   |
| SVHC substance name   | Lead - 7439-92-1<br>Lead monoxide (lead oxide) - 1317-36-8 |
| Weight  | 0.085 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                                     | 70 A   |
| operational current   |  |
| • at AC-51 rated value  | 50 A   |
| • according to UL 508 rated value   | 50 A   |
| operational current minimum   | 500 mA   |
| rate of voltage rise at the thyristor for main contacts maximum permissible | 1 000 V/ $\mu$ s   |

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| <b>blocking voltage at the thyristor for main contacts maximum permissible</b>   | 1 600 V   |
| <b>reverse current of the thyristor</b>  | 10 mA   |
| <b>derating temperature</b>  | 40 °C   |
| <b>surge current resistance rated value</b>                                      | 1 150 A   |
| <b>I<sup>2</sup>t value maximum</b>  | 6 600 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 1 at DC rated value maximum permissible</b>            | 30 V  |
| <b>control supply voltage 1 at DC</b>  | 15 ... 24 V   |
| <b>control supply voltage</b>  |   |
| • at DC initial value for signal <1> detection                                   | 15 V  |
| • at DC full-scale value for signal<0> recognition                               | 5 V   |
| <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>Auxiliary circuit</b>   |   |
| <b>type of switching contact</b>   | normally open contact (NO)  |
| <b>number of NC contacts for auxiliary contacts</b>                              | 0   |
| <b>number of NO contacts for auxiliary contacts</b>                              | 0   |
| <b>number of CO contacts for auxiliary contacts</b>                              | 0   |
| <b>Installation/ mounting/ dimensions</b>  |   |
| <b>fastening method side-by-side mounting</b>                                    | 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>  | 58 mm   |
| <b>width</b>   | 45 mm   |
| <b>depth</b>   | 48 mm   |
| <b>Connections/ Terminals</b>  |   |
| <b>product component removable terminal for auxiliary and control circuit</b>    | Yes   |
| <b>type of electrical connection</b>   |   |
| • for main current circuit   | screw-type terminals  |
| • for auxiliary and control circuit  | screw-type terminals  |
| <b>type of connectable conductor cross-sections</b>                              |   |
| • 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)  |
| <b>connectable conductor cross-section for main contacts</b>                     |   |
| • solid or stranded  | 1.5 ... 6 mm <sup>2</sup>   |
| • finely stranded with core end processing                                       | 1 ... 10 mm <sup>2</sup>  |
| <b>type of connectable conductor cross-sections</b>                              |   |
| • 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)  |
| <b>AWG number as coded connectable conductor cross section for main contacts</b> | 14 ... 10   |
| <b>tightening torque</b>   |   |
| • 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   |
| <b>tightening torque [lbf·in]</b>  |   |
| • for main contacts with screw-type terminals                                    | 7 ... 10.3 lbf·in   |

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| <ul style="list-style-type: none"> <li>for auxiliary and control contacts with screw-type terminals</li> </ul>   | 4.5 ... 5.3 lbf-in   |
| <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>   | M4<br>M3   |
| <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>  | 10 mm<br>7 mm  |
| <b>Electrical Safety</b>   |  |
| <b>protection class IP on the front according to IEC 60529</b>   | IP20   |
| <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 full range R fuse link for semiconductor protection at NH 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 22 x 58 mm usable</li> </ul> | <a href="#">3NE1020-2</a><br><a href="#">3NE8020-1</a><br><a href="#">3NC2280</a>  |
| manufacturer's article number of the gG fuse   |  |
| <ul style="list-style-type: none"> <li>at NH design usable</li> </ul>  | <a href="#">3NA6812-6</a> ; These fuses have a smaller rated current than the semiconductor relays   |

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| <b>Approvals Certificates</b>   |     |
| <b>General Product Approval</b> | EMV |



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

[Type Test Certificates/Test Report](#)



[Confirmation](#)

[Environmental Confirmations](#)

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| <b>Further information</b> |
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**Information on the packaging**

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

**Information for data generation and storage**

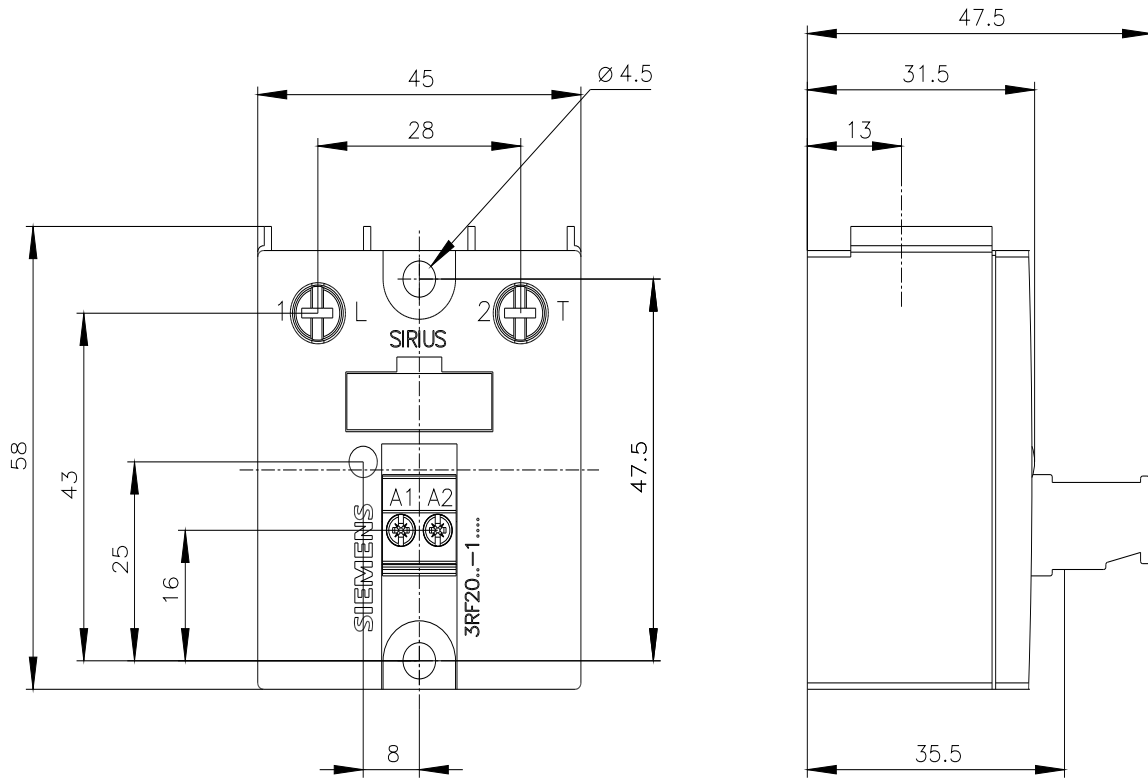
<https://support.industry.siemens.com/cs/ww/en/view/109995012>

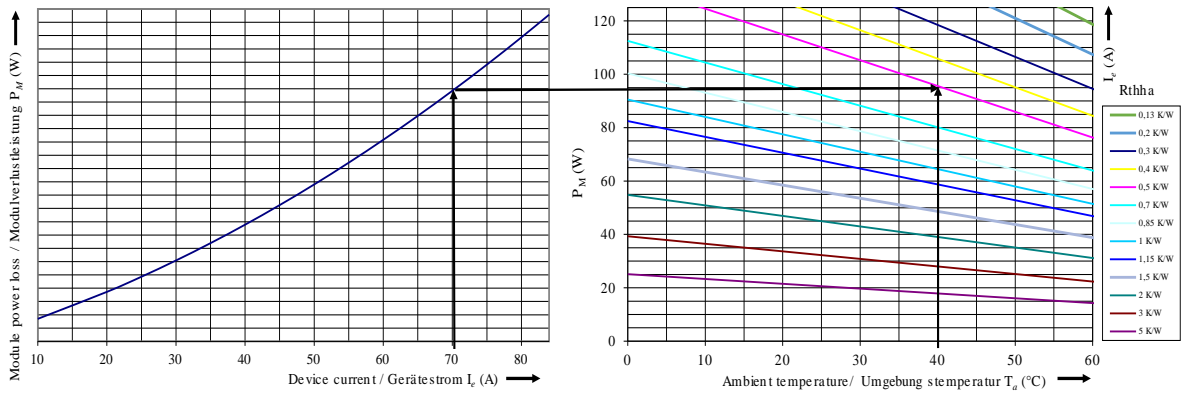
**Information- and Downloadcenter (Catalogs, Brochures,...)**

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

**Industry Mall (Online ordering system)**

<https://mall.industry.siemens.com/mall/en/en/Catalog/product?mlfb=3RF2070-1AA06>





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