



semiconductor relay, 1-pole 3RF3 width 22.5 mm, 50 A 48-460 V / 24 V DC screw terminal

<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</li> <li>• _2 of the accessories that can be ordered</li> <li>• _3 of the accessories that can be ordered</li> <li>• _4 of the accessories that can be ordered</li> <li>• _5 of the accessories that can be ordered</li> </ul>	<a href="#">3RF2900-3PA88</a> <a href="#">3RF3900-0WA88</a> <a href="#">3RF3950-0HA16</a> <a href="#">3RF3900-0EA18</a> <a href="#">3RF3950-0GA16</a>
<b>product designation</b>	
<ul style="list-style-type: none"> <li>• _1 of the accessories that can be ordered</li> <li>• _2 of the accessories that can be ordered</li> <li>• _3 of the accessories that can be ordered</li> <li>• _4 of the accessories that can be ordered</li> <li>• _5 of the accessories that can be ordered</li> </ul>	terminal cover heat conducting foil power regulator converter load monitoring
<b>General technical data</b>	
<b>product function</b>	zero-point switching
<b>power loss [W] for rated value of the current</b>	
<ul style="list-style-type: none"> <li>• at AC in hot operating state</li> <li>• at AC in hot operating state per pole</li> <li>• without load current share typical</li> </ul>	51 W 51 W 0.4 W
<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>	15g / 11 ms
<b>vibration resistance according to IEC 60068-2-6</b>	2g
<b>reference code according to IEC 81346-2</b>	Q
<b>Substance Prohibitance (Date)</b>	01/15/2024
<b>SVHC substance name</b>	Lead - 7439-92-1 Lead monoxide (lead oxide) - 1317-36-8
<b>Net Weight</b>	0.1 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>	
<ul style="list-style-type: none"> <li>• at AC</li> </ul>	

— at 50 Hz rated value	48 ... 460 V
— at 60 Hz rated value	48 ... 460 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	40 ... 506 V
• at 60 Hz	40 ... 506 V
<b>operational current rated value maximum</b>	50 A
<b>operational current</b>	
• at AC-1 at 400 V rated value	50 A
• at AC-51 rated value	50 A
• at AC-51 according to IEC 60947-4-3	50 A
• according to UL 508 rated value	50 A
<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>	1 200 V
<b>reverse current of the thyristor</b>	10 mA
<b>derating temperature</b>	40 °C
<b>surge current resistance rated value</b>	600 A
<b>I<sup>2</sup>t value maximum</b>	1 800 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>	15 ... 24 V
<b>control supply voltage 1 at DC rated value</b>	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>operating range factor control supply voltage rated value at DC</b>	
• initial value	0.63
• full-scale value	1
<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>	
number of CO contacts for auxiliary contacts	0
<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 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 ... 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>	
<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>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>	<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>	
<p>manufacturer's article number</p> <ul style="list-style-type: none"> <li>• of gS fuse 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 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="#">3NE1802-0</a>: These fuses have a smaller rated current than the semiconductor relays</p> <p><a href="#">3NE8017-1</a></p> <p><a href="#">3NC1450</a></p> <p><a href="#">3NC2250</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 cylindrical design 10 x 38 mm usable</li> <li>• at cylindrical design 14 x 51 mm usable</li> </ul>	<p><a href="#">3NA6807</a>: These fuses have a smaller rated current than the semiconductor relays</p> <p><a href="#">3NW6007-1</a>: These fuses have a smaller rated current than the semiconductor relays</p> <p><a href="#">3NW6107-1</a>: These fuses have a smaller rated current than the semiconductor relays</p>

- at cylindrical design 22 x 58 mm usable

[3NW6207-1: These fuses have a smaller rated current than the semiconductor relays](#)

manufacturer's article number

- of DIAZED fuse usable

[5SB2711: These fuses have a smaller rated current than the semiconductor relays](#)

**last modified:**

12/7/2025 