



semiconductor relay, 1-pole 3RF3 width 22.5 mm, 50 A 24-230 V / 24 V DC screw terminal

product brand name	SIRIUS
product designation	solid-state relay
product type designation	3RF31
manufacturer's article number	
<ul style="list-style-type: none"> • _1 of the accessories that can be ordered • _2 of the accessories that can be ordered • _3 of the accessories that can be ordered • _4 of the accessories that can be ordered • _5 of the accessories that can be ordered 	3RF2900-3PA88 3RF3900-0WA88 3RF3950-0HA13 3RF3900-0EA18 3RF3950-0GA13
product designation	
<ul style="list-style-type: none"> • _1 of the accessories that can be ordered • _2 of the accessories that can be ordered • _3 of the accessories that can be ordered • _4 of the accessories that can be ordered • _5 of the accessories that can be ordered 	terminal cover heat conducting foil power regulator converter load monitoring
General technical data	
product function	zero-point switching
power loss [W] for rated value of the current	
<ul style="list-style-type: none"> • at AC in hot operating state • at AC in hot operating state per pole • without load current share typical 	51 W 51 W 0.4 W
insulation voltage rated value	600 V
surge voltage resistance of main circuit rated value	6 kV
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)	01/15/2024
SVHC substance name	Lead - 7439-92-1 Lead monoxide (lead oxide) - 1317-36-8
Net Weight	0.065 kg
Main circuit	
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	
<ul style="list-style-type: none"> • at AC 	

— at 50 Hz rated value	24 ... 230 V
— at 60 Hz rated value	24 ... 230 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	20 ... 253 V
• at 60 Hz	20 ... 253 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
• at AC-51 according to IEC 60947-4-3	50 A
• according to UL 508 rated value	50 A
rate of voltage rise at the thyristor for main contacts maximum permissible	1 000 V/ μ s
blocking voltage at the thyristor for main contacts maximum permissible	800 V
reverse current of the thyristor	10 mA
derating temperature	40 °C
surge current resistance rated value	600 A
I²t value maximum	1 800 A ² ·s
Control circuit/ Control	
type of voltage of the control supply voltage	DC
control supply voltage at DC	15 ... 24 V
control supply voltage 1 at DC rated value	24 V
control supply voltage	
• at DC initial value for signal <1> detection	15 V
• at DC full-scale value for signal<0> recognition	5 V
operating range factor control supply voltage rated value at DC	
• initial value	0.63
• full-scale value	1
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
Auxiliary circuit	
number of CO contacts for auxiliary contacts	0
Installation/ mounting/ dimensions	
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	85 mm
width	22.5 mm
depth	48 mm
Connections/ Terminals	
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 ... 2.5 mm ²), 2x (2.5 ... 6 mm ²)
— finely stranded with core end processing	2x (1 ... 2.5 mm ²), 2x (2.5 ... 6 mm ²), 1x 10 mm ²
• for AWG cables for main contacts	2x (14 ... 10)

connectable conductor cross-section for main contacts	
<ul style="list-style-type: none"> • solid or stranded • finely stranded with core end processing 	<p>1.5 ... 6 mm²</p> <p>1 ... 10 mm²</p>
type of connectable conductor cross-sections	
<ul style="list-style-type: none"> • for auxiliary and control contacts <ul style="list-style-type: none"> — solid — finely stranded with core end processing — finely stranded without core end processing • for AWG cables for auxiliary and control contacts 	<p>1x (0.5 ... 2.5 mm²), 2x (0.5 ... 1 mm²)</p> <p>1x (0.5 ... 2.5 mm²), 2x (0.5 ... 1 mm²)</p> <p>1x (0.5 ... 2.5 mm²), 2x (0.5 ... 1 mm²)</p> <p>1x (20 ... 12)</p>
AWG number as coded connectable conductor cross section for main contacts	14 ... 8
tightening torque	
<ul style="list-style-type: none"> • for main contacts with screw-type terminals • for auxiliary and control contacts with screw-type terminals 	<p>2 ... 2.5 N·m</p> <p>0.5 ... 0.6 N·m</p>
tightening torque [lbf·in]	
<ul style="list-style-type: none"> • for main contacts with screw-type terminals • for auxiliary and control contacts with screw-type terminals 	<p>18 ... 22 lbf·in</p> <p>4.5 ... 5.3 lbf·in</p>
design of the thread of the connection screw	
<ul style="list-style-type: none"> • for main contacts • of the auxiliary and control contacts 	<p>M4</p> <p>M3</p>
stripped length of the cable	
<ul style="list-style-type: none"> • for main contacts • for auxiliary and control contacts 	<p>10 mm</p> <p>7 mm</p>
Electrical Safety	
protection class IP on the front according to IEC 60529	IP20
touch protection on the front according to IEC 60529	finger-safe, for vertical contact from the front
Ambient conditions	
installation altitude at height above sea level maximum	1 000 m
ambient temperature	
<ul style="list-style-type: none"> • during operation • during storage 	<p>-25 ... +60 °C</p> <p>-55 ... +80 °C</p>
Electromagnetic compatibility	
conducted interference	
<ul style="list-style-type: none"> • due to burst according to IEC 61000-4-4 • due to conductor-earth surge according to IEC 61000-4-5 • due to conductor-conductor surge according to IEC 61000-4-5 • due to high-frequency radiation according to IEC 61000-4-6 	<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>
field-based interference according to IEC 61000-4-3	80 MHz ... 1 GHz 10 V/m, behavior criterion 1
electrostatic discharge according to IEC 61000-4-2	4 kV contact discharging / 8 kV air discharging, behavior criterion 2
conducted HF interference emissions according to CISPR11	Class A for industrial environment
field-bound HF interference emission according to CISPR11	Class B for the domestic, business and commercial environments
Short-circuit protection, design of the fuse link	
<p>manufacturer's article number</p> <ul style="list-style-type: none"> • of gS fuse for semiconductor protection at NH design usable • of full range R fuse link for semiconductor protection at cylindrical design usable • of back-up R fuse link for semiconductor protection at NH design usable • of back-up R fuse link for semiconductor protection at cylindrical design 14 x 51 mm usable • of back-up R fuse link for semiconductor protection at cylindrical design 22 x 58 mm usable 	<p>3NE1817-0</p> <p>5SE1350</p> <p>3NE8017-1</p> <p>3NC1450</p> <p>3NC2263</p>
<p>manufacturer's article number of the gG fuse</p> <ul style="list-style-type: none"> • at NH design usable • at cylindrical design 10 x 38 mm usable 	<p>3NA6810: These fuses have a smaller rated current than the semiconductor relays</p> <p>3NW6007-1: These fuses have a smaller rated current than the semiconductor relays</p>

- at cylindrical design 14 x 51 mm usable

[3NW6107-1: These fuses have a smaller rated current than the semiconductor relays](#)

- 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](#)

- of NEOZED fuse usable

[5SE2320: These fuses have a smaller rated current than the semiconductor relays](#)

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