SIEMENS

Data sheet 3RF2190-3AA02

Semiconductor relay, 1-phase 3RF2 Overall width 22.5 mm, 90 A 24-230 V / 24 V DC Ring cable connection

Product brand name	SIRIUS
Product designation	solid-state relay
Product type designation	3RF21
Manufacturer's article number	
• _1 / of the accessories that can be ordered	3RF2900-3PA88
• _3 / of the accessories that can be ordered	3RF2900-0EA18
• _4 / of the accessories that can be ordered	3RF2990-0GA13
Product designation	
• _1 / of the accessories that can be ordered	terminal cover
• _3 / of the accessories that can be ordered	converter
• _4 / of the accessories that can be ordered	load monitoring

General technical data

Product function	zero-point switching
Power loss [V•A] / maximum	118 V·A
Power loss [W] / for rated value of the current / at AC / in hot operating state	118 W
Insulation voltage	
• rated value	600 V
Protection class IP	IP00

Shock resistance / acc. to IEC 60068-2-27	15g / 11 ms
Vibration resistance / acc. to IEC 60068-2-6	2g
Reference code / acc. to DIN 40719 extended according to IEC 204-2 / acc. to IEC 750	K
Reference code / acc. to DIN EN 81346-2	Q
Reference code / acc. to DIN EN 61346-2	Q

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
Operating voltage / 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
Operating current / minimum	500 mA
Operating current	
• at AC-1 / at 400 V / rated value	90 A
• at AC-51 / rated value	88 A
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	800 V
Reverse current / of the thyristor	10 mA
Derating temperature	40 °C
Surge current resistance / rated value	1 150 A
I2t value / maximum	6 600 A²·s

Control circuit/ Control

Type of voltage / of the control supply voltage	DC
Control supply voltage / 1	
• at DC / rated value	30 V
• at DC	15 ... 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
Control current / at minimum control supply voltage	
• at DC	2 mA

Control current / at DC / rated value	15 mA
Switch-on delay time	1 ms; additionally max. one half-wave
Off-delay time	1 ms; additionally max. one half-wave
Number of NC contacts / for auxiliary contacts	0
Number of NO contacts / for auxiliary contacts	0
Number of CO contacts / for auxiliary contacts	0

Installation/ mounting/ dimensions

Mounting type	screw fixing
• Side-by-side mounting	Yes
Height	85 mm
Width	22.5 mm
Depth	48 mm
Installation altitude / at height above sea level / maximum	1 000 m

Connections/ Terminals

Type of connectable conductor cross-sections	
• for main contacts / for JIS cable lug	JIS C 2805 R 2-5, 5,5-5, 8-5, 14-5
• for DIN cable lug / for main contacts	DIN 46234 -5-2,5, -5-6, -5-10, -5-16, -5-25
Type of connectable conductor cross-sections	
• for auxiliary and control contacts	
— solid	1x (0.5 ... 2.5 mm²), 2x (0.5 ... 1.0 mm²)
— finely stranded / with core end processing	1x (0.5 ... 2.5 mm²), 2x (0.5 ... 1.0 mm²)
— finely stranded / without core end processing	1x (0.5 ... 2.5 mm²), 2x (0.5 ... 1.0 mm²)
• at AWG conductors / for auxiliary and control contacts	1x (AWG 20 ... 12)
Tightening torque / for main contacts / with screw-type terminals	2 ... 2.5 N·m
Tightening torque / 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	M5
• of the auxiliary and control contacts	M3
Wire stripping length / of the cable	
• for main contacts	7 mm
• for auxiliary and control contacts	7 mm

Ambient conditions

Ambient temperature	

• during operation	-25 ... +60 °C
• during storage	-55 ... +80 °C

Electromagnetic compatibility

Conducted interference	
• due to burst / acc. to IEC 61000-4-4	2 kV / 5 kHz behavior criterion 2
• due to conductor-earth surge / acc. to IEC 61000-4-5	2 kV behavior criterion 2
• due to conductor-conductor surge / acc. to IEC 61000-4-5	1 kV behavior criterion 2
• due to high-frequency radiation / acc. to IEC 61000-4-6	140 dBuV in the frequency range 0.15 ... 80 MHz, behavior criterion 1
Electrostatic discharge / acc. to IEC 61000-4-2	4 kV contact discharging / 8 kV air discharging, behavior criterion 2
Conducted HF-interference emissions / acc. to CISPR11	Class A for industrial environment
Field-bound HF-interference emission / acc. to CISPR11	Class B for the domestic, business and commercial environments

Further information

Information- and Downloadcenter (Catalogs, Brochures,...)
www.siemens.com/sirius/catalogs

Industry Mall (Online ordering system)
https://mall.industry.siemens.com/mall/en/en/Catalog/product?mlfb=3RF2190-3AA02

Cax online generator
http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RF2190-3AA02

Service&Support (Manuals, Certificates, Characteristics, FAQs,...)
https://support.industry.siemens.com/cs/ww/en/ps/3RF2190-3AA02

Image database (product images, 2D dimension drawings, 3D models, device circuit diagrams, EPLAN macros, ...)
http://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3RF2190-3AA02&lang=en

Short-circuit protection, design of the fuse link
https://www.automation.siemens.com/cd-static/material/info/3RF20_eng.pdf

Short-circuit protection, design of the fuse link
https://www.automation.siemens.com/cd-static/material/info/3RF21_eng.pdf

Short-circuit protection, design of the fuse link
https://www.automation.siemens.com/cd-static/material/info/3RF22_eng.pdf

Short-circuit protection, design of the fuse link
https://www.automation.siemens.com/cd-static/material/info/3RF23_eng.pdf

Short-circuit protection, design of the fuse link
https://www.automation.siemens.com/cd-static/material/info/3RF24_eng.pdf