



Semiconductor relay, 1-phase 3RF2 Overall width 45 mm, 50 A 48-460 V / 4-30 V DC screw terminal

product brand name	SIRIUS
product designation	solid-state relay
design of the product	single-phase
product type designation	3RF20
General technical data	
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
type of voltage of the control supply voltage	DC
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
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	48 ... 460 V
• at 60 Hz rated value	48 ... 460 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 ... 506 V
• at 60 Hz	40 ... 506 V
operational current	
• 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
surge current resistance rated value	600 A
I ² t value maximum	1 800 A ² ·s

Control circuit/ Control	
type of voltage of the control supply voltage	DC
control supply voltage 1	30 V
• at DC rated value	4 ... 30 V
• at DC	
control supply voltage	
• at DC initial value for signal <1> detection	4 V
• at DC 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
Auxiliary circuit	
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	
fastening method	screw fixing
• side-by-side mounting	Yes
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
Connections/ Terminals	
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 mm²), 2x (2.5 ... 6 mm²)
— finely stranded with core end processing	2x (1 ... 2.5 mm²), 2x (2.5 ... 6 mm²), 1x 10 mm²
• at AWG cables for main contacts	2x (14 ... 10)
connectable conductor cross-section for main contacts	
• solid or stranded	1.5 ... 6 mm²
• finely stranded with core end processing	1 ... 10 mm²
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 cables for auxiliary and control contacts	1x (AWG 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
• for auxiliary and control contacts	7 mm
Safety related data	
protection class IP on the front according to IEC	IP20

60529

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

- during operation
- during storage

-25 ... +60 °C

-55 ... +80 °C

Electromagnetic compatibility**conducted interference**

- 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

2 kV / 5 kHz behavior criterion 2

2 kV behavior criterion 2

1 kV behavior criterion 2

140 dBuV in the frequency range 0.15 ... 80 MHz, behavior criterion 1

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

manufacturer's article number

- 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

[3NE1802-0](#); These fuses have a smaller rated current than the semiconductor relays[5SE1335](#); These fuses have a smaller rated current than the semiconductor relays[3NE8017-1](#)[3NC1450](#)[3NC2250](#)

manufacturer's article number of the gG fuse

- at NH design usable

[3NA6807](#); These fuses have a smaller rated current than the semiconductor relays

- at cylindrical design 22 x 58 mm usable

[3NW6205-1](#); 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**Certificates/ approvals**

General Product Approval

EMC

Declaration of
Conformity[Confirmation](#)Declaration of
Conformity

Test Certificates

other



EG-Konf.

[Type Test Certificates/Test Report](#)[Confirmation](#)**Further information**

Information on the packaging

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

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=3RF2050-1AA44>

Cax online generator

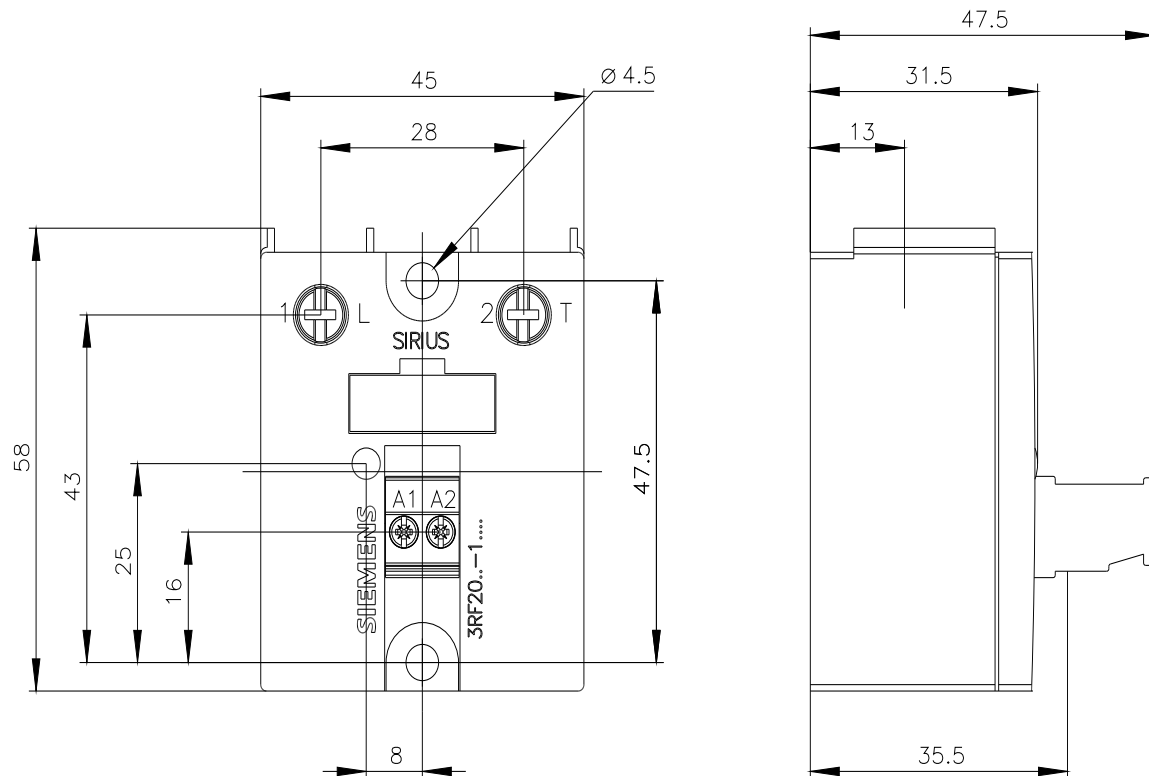
<http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RF2050-1AA44>

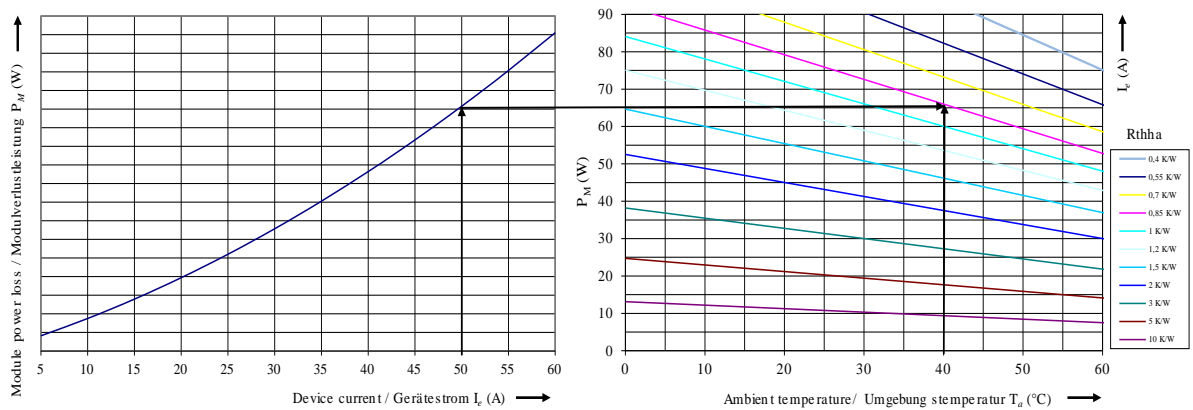
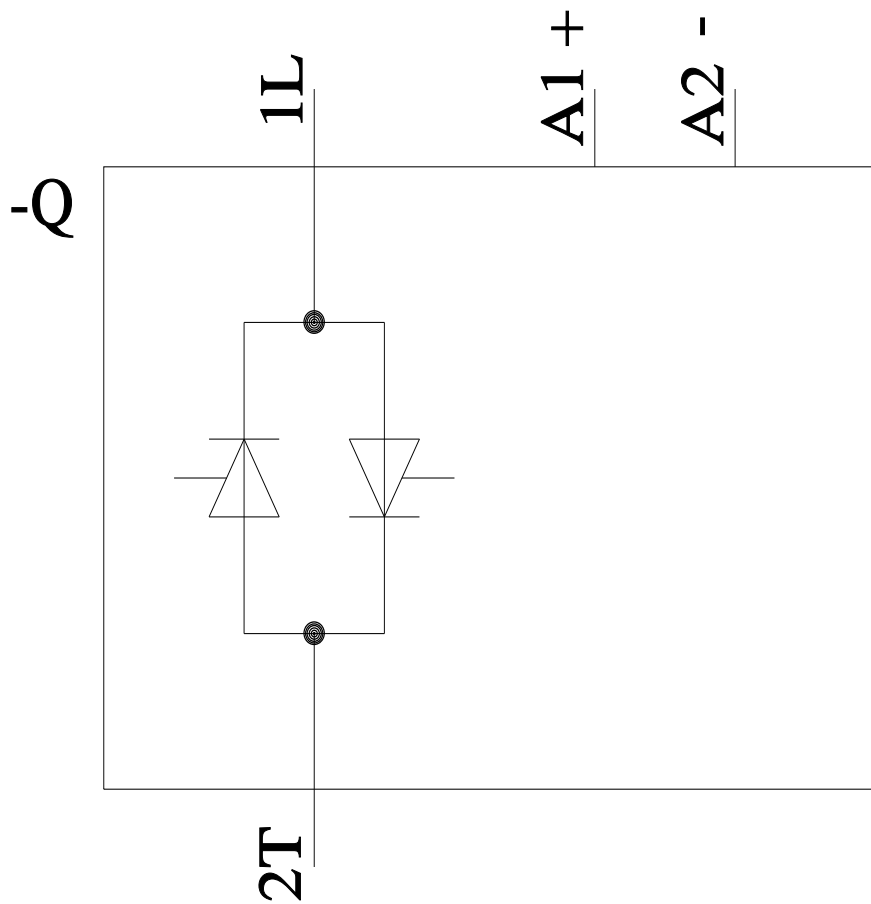
Service&Support (Manuals, Certificates, Characteristics, FAQs,...)

<https://support.industry.siemens.com/cs/ww/en/ps/3RF2050-1AA44>

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

http://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3RF2050-1AA44&lang=en





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12/15/2020