








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
• per pole	66 W
power loss [W] for rated value of the current 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 acc. to IEC 60068-2-27	15g / 11 ms
vibration resistance acc. to IEC 60068-2-6	2g
reference code acc. to IEC 81346-2	Q
Substance Prohibance (Date)	28.05.2009 00:00:00
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
• acc. 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 <ul style="list-style-type: none"> at DC rated value at DC 	30 V 4 ... 30 V
control supply voltage <ul style="list-style-type: none"> at DC initial value for signal <1> detection at DC full-scale value for signal <0> recognition 	4 V 1 V
control current at minimum control supply voltage <ul style="list-style-type: none"> 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 <ul style="list-style-type: none"> side-by-side mounting 	screw fixing Yes
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 <ul style="list-style-type: none"> for main current circuit for auxiliary and control circuit 	screw-type terminals screw-type terminals
type of connectable conductor cross-sections <ul style="list-style-type: none"> for main contacts <ul style="list-style-type: none"> solid finely stranded with core end processing at AWG cables for main contacts 	2x (1.5 ... 2.5 mm ²), 2x (2.5 ... 6 mm ²) 2x (1 ... 2.5 mm ²), 2x (2.5 ... 6 mm ²), 1x 10 mm ² 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 	1.5 ... 6 mm ² 1 ... 10 mm ²
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 at AWG cables for auxiliary and control contacts 	1x (0.5 ... 2.5 mm ²), 2x (0.5 ... 1.0 mm ²) 1x (0.5 ... 2.5 mm ²), 2x (0.5 ... 1.0 mm ²) 1x (0.5 ... 2.5 mm ²), 2x (0.5 ... 1.0 mm ²) 1x (AWG 20 ... 12)
AWG number as coded connectable conductor cross section for main contacts	14 ... 10
tightening torque <ul style="list-style-type: none"> for main contacts with screw-type terminals for auxiliary and control contacts with screw-type terminals 	2 ... 2.5 N·m 0.5 ... 0.6 N·m
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 	7 ... 10.3 lbf·in 4.5 ... 5.3 lbf·in
design of the thread of the connection screw	

<ul style="list-style-type: none">• for main contacts• of the auxiliary and control contacts	M4 M3	
stripped length of the cable <ul style="list-style-type: none">• for main contacts• for auxiliary and control contacts	10 mm 7 mm	
Safety related data		
protection class IP on the front acc. to IEC 60529	IP20	
touch protection on the front acc. 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	-25 ... +60 °C -55 ... +80 °C	
Electromagnetic compatibility		
conducted interference <ul style="list-style-type: none">• due to burst acc. to IEC 61000-4-4• due to conductor-earth surge acc. to IEC 61000-4-5• due to conductor-conductor surge acc. to IEC 61000-4-5• due to high-frequency radiation acc. 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 acc. to IEC 61000-4-3	80 MHz ... 1 GHz 10 V/m, 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	
Short-circuit protection, design of the fuse link		
manufacturer's article number <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	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 <ul style="list-style-type: none">• at NH design usable• at cylindrical design 22 x 58 mm usable	3NA6807: These fuses have a smaller rated current than the semiconductor relays 3NW6205-1: These fuses have a smaller rated current than the semiconductor relays	
manufacturer's article number <ul style="list-style-type: none">• of DIAZED fuse usable• of NEOZED fuse usable	5SB2711: These fuses have a smaller rated current than the semiconductor relays 5SE2320: These fuses have a smaller rated current than the semiconductor relays	
Certificates/ approvals		
General Product Approval	EMC	Declaration of Conformity
		
	Miscellaneous	
Test Certificates		
other		
Type Test Certificates/Test Report		
Confirmation		

Further information

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

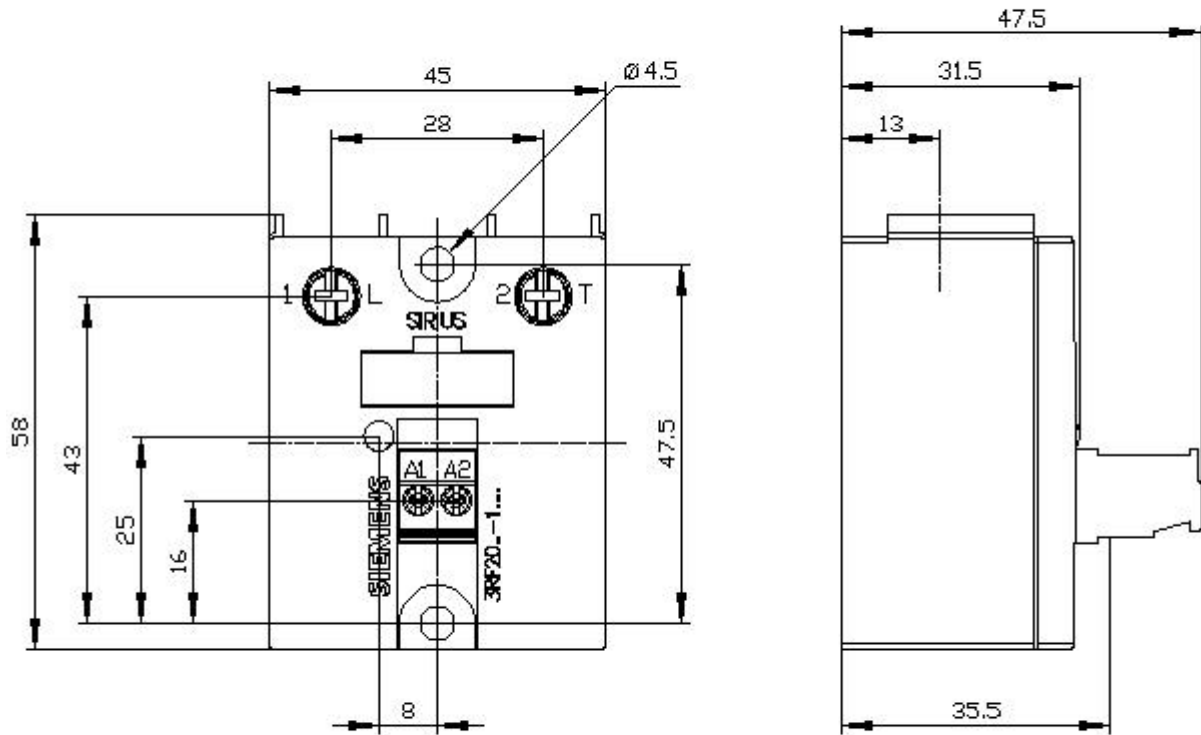
<http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RF2050-1AA44>

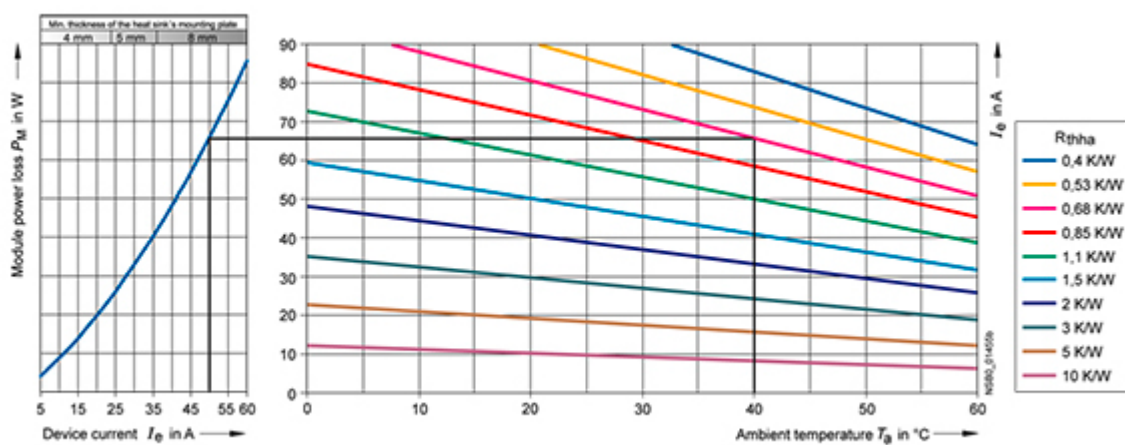
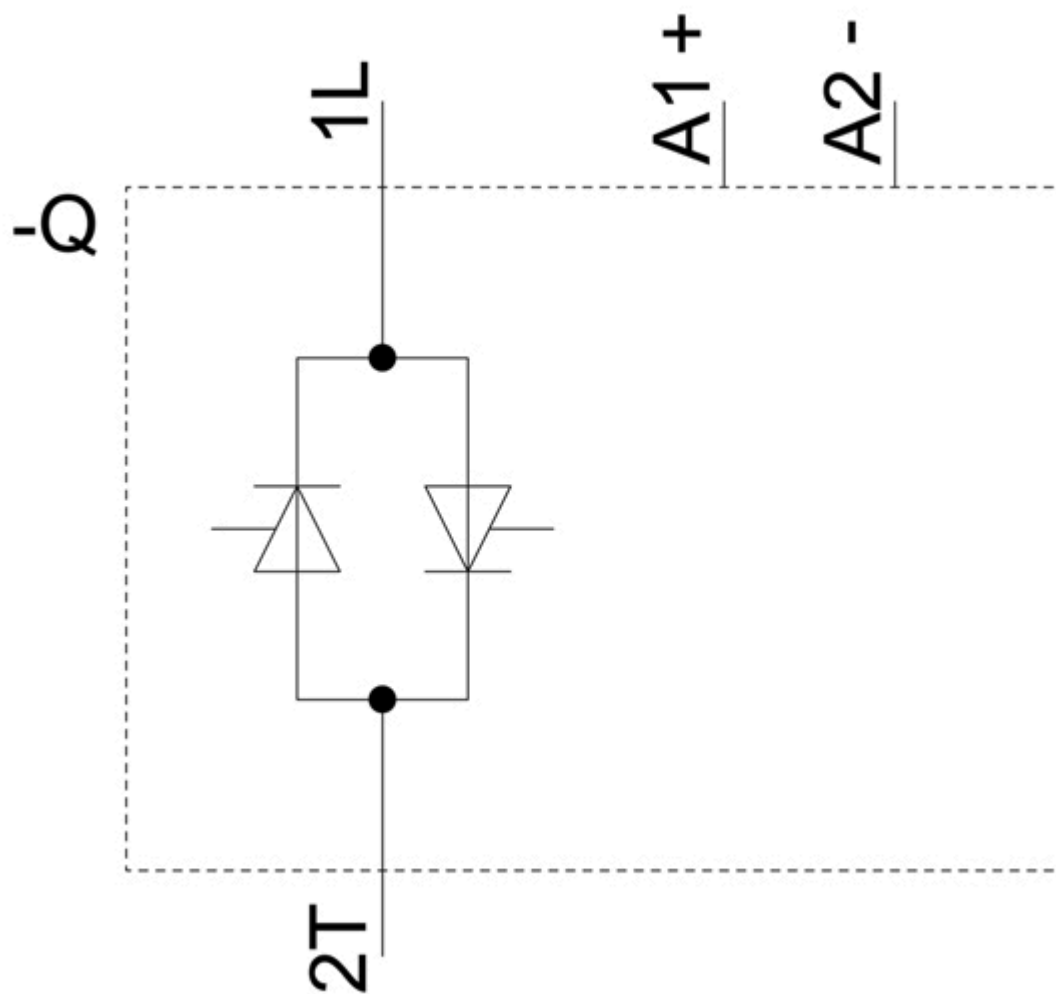
Service&Support (Manuals, Certificates, Characteristics, FAQs,...)

<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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