



Semiconductor relay, 1-phase 3RF2 Overall width 45 mm, 50 A 24-230 V / 110-230 V AC 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	3.5 W
insulation voltage rated value	600 V
type of voltage of the control supply voltage	AC
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	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	
• 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	800 V
reverse current of the thyristor	10 mA
derating temperature	40 °C
surge current resistance rated value	600 A
I <sup>2</sup> t value maximum	1 800 A <sup>2</sup> ·s

Control circuit/ Control	
<b>type of voltage of the control supply voltage</b>	AC
<b>control supply voltage 1 at AC</b>	
• at 50 Hz	110 ... 230 V
• at 60 Hz	110 ... 230 V
<b>control supply voltage frequency</b>	
• 1 rated value	50 Hz
• 2 rated value	60 Hz
<b>control supply voltage at AC</b>	
• at 50 Hz full-scale value for signal<0> recognition	40 V
• at 60 Hz full-scale value for signal<0> recognition	40 V
<b>control supply voltage</b>	
• at AC initial value for signal <1> detection	90 V
<b>symmetrical line frequency tolerance</b>	5 Hz
<b>control current at minimum control supply voltage</b>	
• at AC	2 mA
control current at AC rated value	15 mA
<b>ON-delay time</b>	40 ms; additionally max. one half-wave
<b>OFF-delay time</b>	40 ms
Auxiliary circuit	
<b>number of NC contacts for auxiliary contacts</b>	0
<b>number of NO contacts for auxiliary contacts</b>	0
number of CO contacts for auxiliary contacts	0
Installation/ mounting/ dimensions	
<b>fastening method</b>	screw fixing
• side-by-side mounting	Yes
<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>	58 mm
<b>width</b>	45 mm
<b>depth</b>	48 mm
Connections/ Terminals	
<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 (1.5 ... 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)
<b>connectable conductor cross-section for main contacts</b>	
• solid or stranded	1.5 ... 6 mm²
• finely stranded with core end processing	1 ... 10 mm²
<b>type of connectable conductor cross-sections</b>	
• 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
<b>tightening torque</b>	
• 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
<b>tightening torque [lbf·in]</b>	
• 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
<b>design of the thread of the connection screw</b>	
• for main contacts	M4

<ul style="list-style-type: none"><li>• of the auxiliary and control contacts</li></ul>	M3				
<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>	10 mm 7 mm				
<b>Safety related data</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>	-25 ... +60 °C -55 ... +80 °C				
<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>	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				
<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>					
manufacturer's article number					
<ul style="list-style-type: none"><li>• of gS fuse for semiconductor protection at NH design usable</li><li>• of full range R fuse link for semiconductor protection at cylindrical 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>	<a href="#">3NE1817-0</a> <a href="#">5SE1350</a> <a href="#">3NE8017-1</a> <a href="#">3NC1450</a> <a href="#">3NC2263</a>				
manufacturer's article number of the gG fuse					
<ul style="list-style-type: none"><li>• at NH design usable</li><li>• at cylindrical design 14 x 51 mm usable</li><li>• at cylindrical design 22 x 58 mm usable</li></ul>	<a href="#">3NA6810</a> ; These fuses have a smaller rated current than the semiconductor relays <a href="#">3NW6107-1</a> ; These fuses have a smaller rated current than the semiconductor relays <a href="#">3NW6207-1</a> ; These fuses have a smaller rated current than the semiconductor relays				
manufacturer's article number					
<ul style="list-style-type: none"><li>• of DIAZED fuse usable</li><li>• of NEOZED fuse usable</li></ul>	<a href="#">5SB2711</a> ; These fuses have a smaller rated current than the semiconductor relays <a href="#">5SE2320</a> ; These fuses have a smaller rated current than the semiconductor relays				
<b>Certificates/ approvals</b>					
<b>General Product Approval</b>	<b>EMC</b>	<b>Declaration of Conformity</b>			
	<a href="#">Confirmation</a>				
<b>Declaration of Conformity</b>	<b>Test Certificates</b>	<b>other</b>			

#### 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=3RF2050-1AA22>

##### Cax online generator

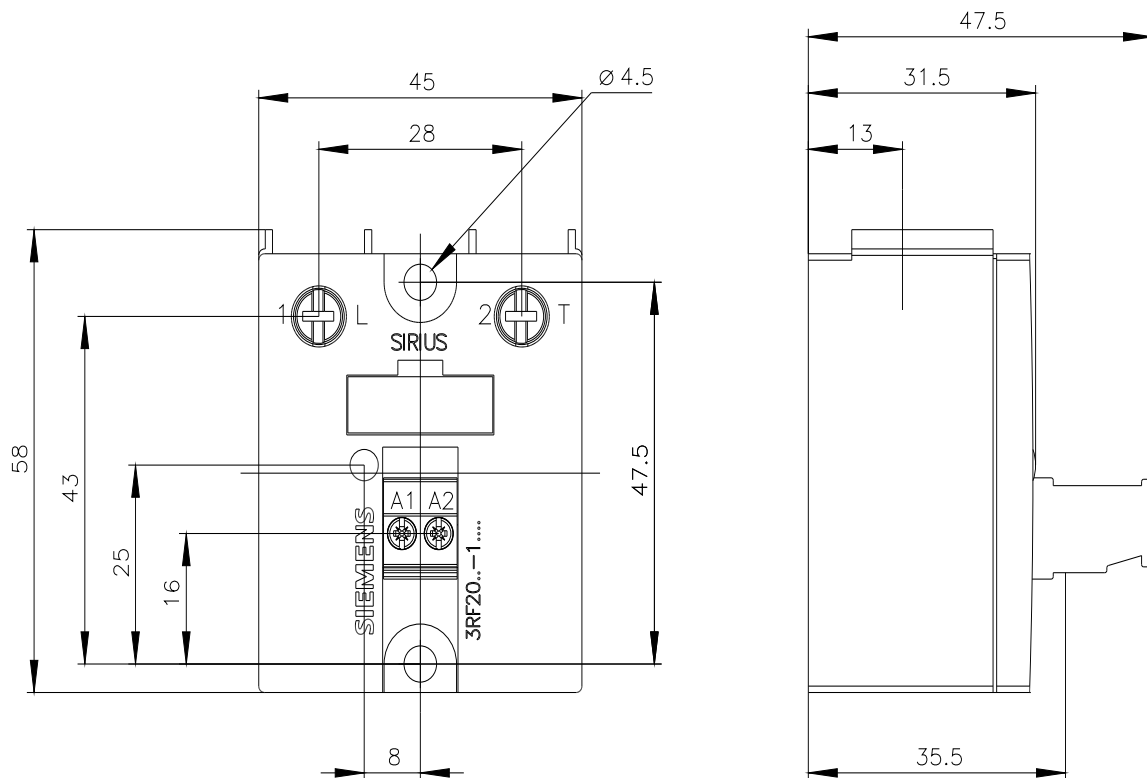
<http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RF2050-1AA22>

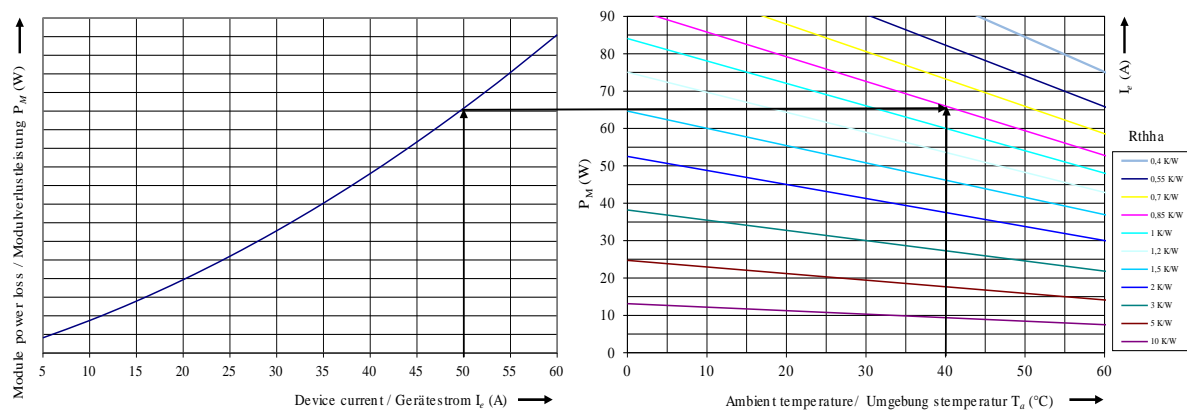
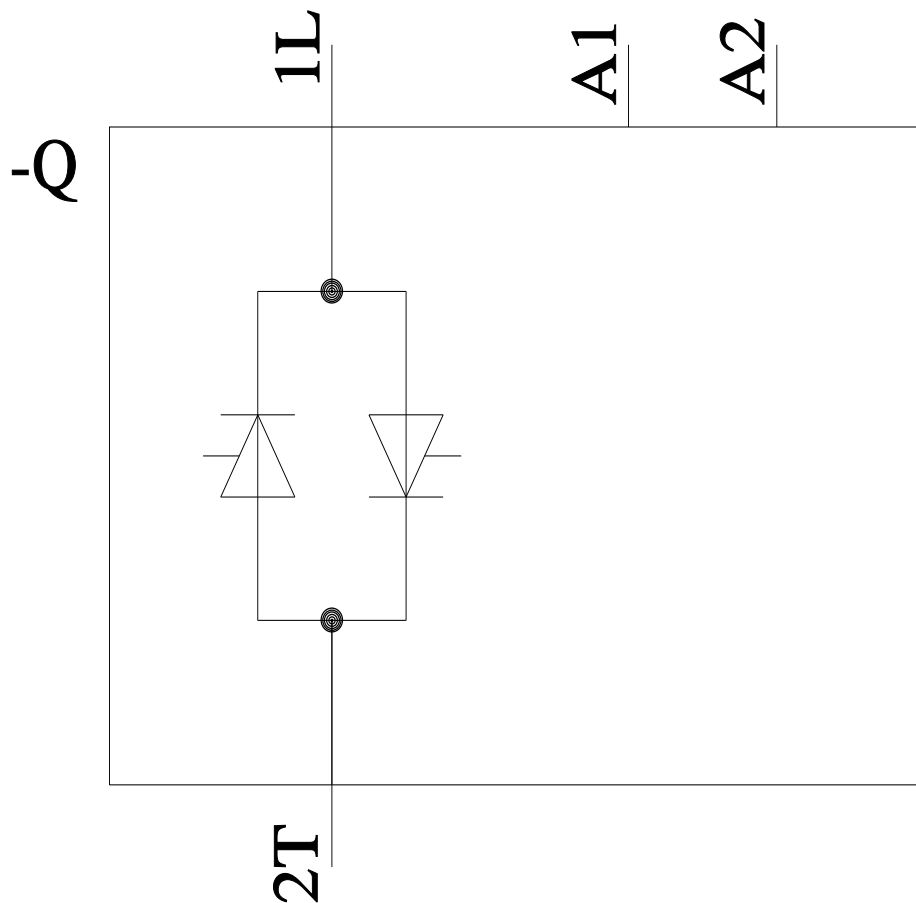
##### Service&Support (Manuals, Certificates, Characteristics, FAQs,...)

<https://support.industry.siemens.com/cs/ww/en/ps/3RF2050-1AA22>

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

[http://www.automation.siemens.com/bilddb/cax\\_de.aspx?mlfb=3RF2050-1AA22&lang=en](http://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3RF2050-1AA22&lang=en)





last modified:

12/15/2020