SIEMENS

Data sheet 3RF2020-1AA42



phase-out type semiconductor relay, 1-phase 3RF2 width 45 mm, 20 A 24-230 V / 4-30 V DC screw terminal for mounting on available cooling surfaces

product brand name	SIRIUS
product designation	solid-state relay
design of the product	1-pole
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	28.6 W
● at AC in hot operating state per pole	28.6 W
● without load current share typical	0.5 W
insulation voltage rated value	600 V
protection class IP	IP20
protection class IP on the front according to IEC 60529	IP20
shock resistance according to IEC 60068-2-27	15 g / 11 ms
vibration resistance according to IEC 60068-2-6	2 g
reference code according to IEC 81346-2	Q
Substance Prohibitance (day/month/year)	05/28/2009
SVHC substance name	Lead CAS-No. 7439-92-1 Lead monoxide (lead oxide) CAS-No. 1317-36-8 2-methyl-1-(4-methylthiophenyl)-2-morpholinopropan-1-one CAS-No. 71868-10-5 Melamine CAS-No. 108-78-1
Net Weight	0.068 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	
● 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	20 A
operational current	
● at AC-1 at 400 V rated value	20 A

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● at AC-51 rated value	20 A
● according to UL 508 rated value	20 A
ampacity maximum	20 A
operational current minimum	100 mA
rate of voltage rise at the thyristor for main contacts maximum permissible	500 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	200 A
I2t value maximum	200 A²·s
Control circuit/ Control	
type of voltage of the control supply voltage	DC
control supply voltage 1 at DC rated value maximum permissible	30 V
control supply voltage 1 at DC	4 ... 30 V
control supply voltage at DC	
● initial value for signal <1> detection	4 V
● 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
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	58 mm
width	45 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 (1.5 ... 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
● for 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 mm²)
— finely stranded with core end processing	1x (0.5 ... 2.5 mm²), 2x (0.5 ... 1 mm²)
— finely stranded without core end processing	1x (0.5 ... 2.5 mm²), 2x (0.5 ... 1 mm²)
● for AWG cables for auxiliary and control contacts	1x (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

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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
UL/CSA ratings	
operational current according to UL 508 rated value	20 A
Electrical Safety	
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	-25 ... +60 °C
● during storage	-55 ... +80 °C
Electromagnetic compatibility	
conducted interference	
● due to burst according to IEC 61000-4-4	2 kV / 5 kHz, behavior criterion 2
● due to conductor-earth surge according to IEC 61000-4-5	2 kV, behavior criterion 2
● due to conductor-conductor surge according to IEC 61000-4-5	1 kV, behavior criterion 2
● due to high-frequency radiation according to IEC 61000-4-6	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	3NE1814-0
● of full range R fuse link for semiconductor protection at cylindrical design usable	5SE1325
● of back-up R fuse link for semiconductor protection at NH design usable	3NE8015-1
● of back-up R fuse link for semiconductor protection at cylindrical design 10 x 38 mm usable	3NC1032
● of back-up R fuse link for semiconductor protection at cylindrical design 14 x 51 mm usable	3NC1430
● of back-up R fuse link for semiconductor protection at cylindrical design 22 x 58 mm usable	3NC2225
manufacturer's article number of the gG fuse	
● at NH design usable	3NA6803; These fuses have a smaller rated current than the semiconductor relays
● at NH design usable note	These fuses have a smaller rated current than the semiconductor relays
● at cylindrical design 10 x 38 mm usable	3NW6001-1; These fuses have a smaller rated current than the semiconductor relays
● at cylindrical design 10 x 38 mm usable note	These fuses have a smaller rated current than the semiconductor relays
● at cylindrical design 14 x 51 mm usable	3NW6101-1; These fuses have a smaller rated current than the semiconductor relays
● at cylindrical design 14 x 51 mm usable note	These fuses have a smaller rated current than the semiconductor relays
manufacturer's article number	
● of NEOZED fuse usable	5SE2306; These fuses have a smaller rated current than the semiconductor relays
Approvals Certificates	

Environment	General Product Approval

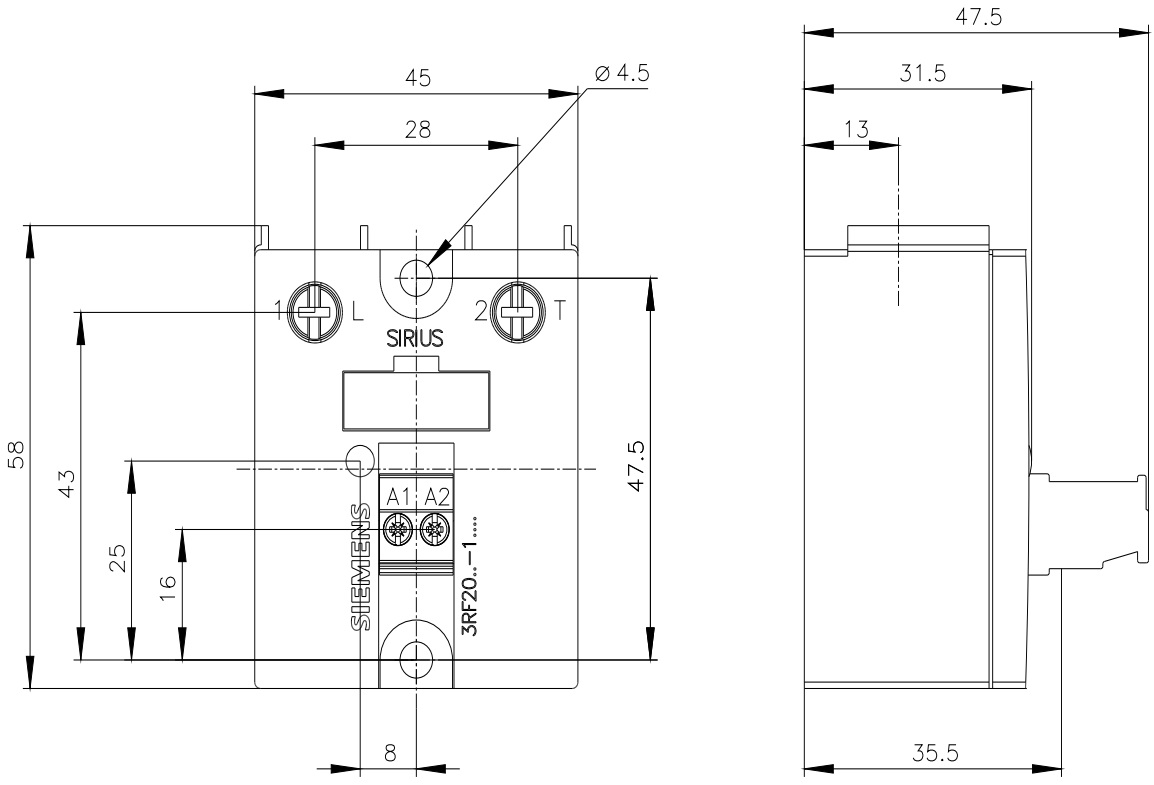
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Environmental Confirmations

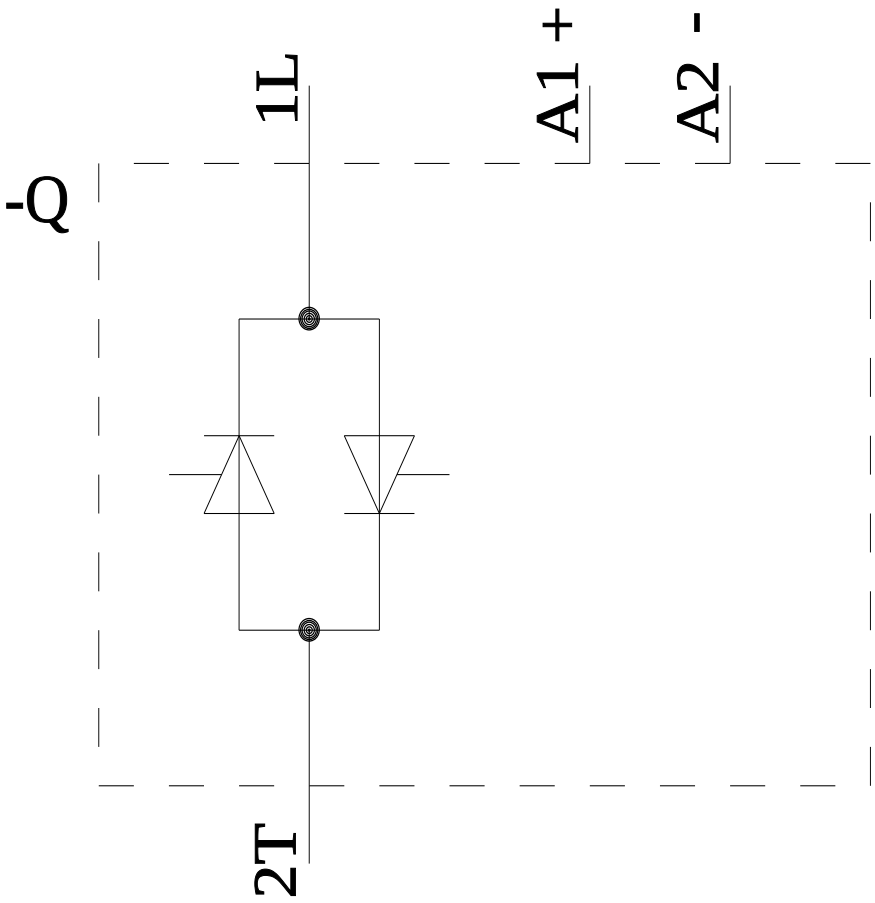
EMV	Test Certificates	other	
RCM	Type Test Certificates/Test Report	Confirmation	Confirmation

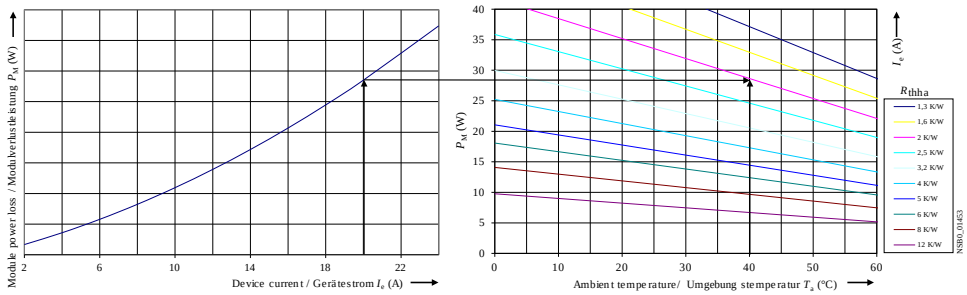
Further information

Information on the packaging
https://support.industry.siemens.com/cs/ww/en/view/109813875
Information for data generation and storage
https://support.industry.siemens.com/cs/ww/en/view/109995012
Information- and Downloadcenter (Catalogs, Brochures,…)
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Industry Mall (Online ordering system)
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Service&Support (Manuals, Certificates, Characteristics, FAQs,...)
https://support.industry.siemens.com/cs/ww/en/ps/3RF2020-1AA42
Image database (product images, 2D dimension drawings, 3D models, device circuit diagrams, EPLAN macros, ...)
https://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3RF2020-1AA42&lang=en



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