

Siemens
EcoTech



semiconductor relay, 1-pole 3RF3 for use with heat sinks width 22.5 mm, 80 A 24-230 V 110-230 V AC ring cable lug connection

product brand name	SIRIUS
product designation	solid-state relay
product type designation	3RF31
manufacturer's article number	
• _1 of the accessories that can be ordered	3RF2900-3PA88
• _2 of the accessories that can be ordered	3RF3900-0WA88
product designation	
• _1 of the accessories that can be ordered	terminal cover
• _2 of the accessories that can be ordered	heat conducting foil
General technical data	
product function	zero-point switching
power loss [V·A] maximum	83 VA
power loss [W] for rated value of the current	
• at AC in hot operating state	83 W
• at AC in hot operating state per pole	83 W
• without load current share typical	3.5 W
type of calculation of power loss current-dependent	linear
insulation voltage rated value	600 V
surge voltage resistance of main circuit rated value	6 kV
protection class IP	IP00
protection class IP on the front according to IEC 60529	IP00
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)	01/15/2024
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	0.08 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 — at 60 Hz rated value	24 ... 230 V 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 • at 60 Hz	20 ... 253 V 20 ... 253 V
operational current rated value maximum	80 A
operational current • at AC-1 at 400 V rated value • at AC-51 rated value • at AC-51 according to IEC 60947-4-3 • according to UL 508 rated value	80 A 80 A 80 A 80 A
ampacity maximum	90 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	1 300 A
I²t value maximum	8 000 A ² ·s
Control circuit/ Control	
type of voltage of the control supply voltage	AC
control supply voltage at AC • at 50 Hz • at 60 Hz	110 ... 230 V 110 ... 230 V
control supply voltage 1 at AC • at 50 Hz • at 60 Hz	110 ... 230 V 110 ... 230 V
control supply voltage at AC • at 50 Hz full-scale value for signal<0> recognition • at 60 Hz full-scale value for signal<0> recognition • initial value for signal <1> detection	40 V 40 V 90 V
control supply voltage frequency • 1 rated value • 2 rated value	50 Hz 60 Hz
symmetrical line frequency tolerance	5 Hz
operating range factor control supply voltage rated value at AC at 50 Hz • initial value	0.82
operating range factor control supply voltage rated value at AC at 60 Hz • initial value	0.82
control current at minimum control supply voltage • at AC	2 mA
control current at AC rated value	15 mA
ON-delay time	40 ms; additionally max. one half-wave
OFF-delay time	40 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	85 mm
width	22.5 mm

depth	48 mm
Connections/ Terminals	
product component removable terminal for auxiliary and control circuit	Yes
type of electrical connection - for main current circuit - for auxiliary and control circuit	Ring cable lug connection screw-type terminals
type of connectable conductor cross-sections - for main contacts for JIS cable lug - for AWG cables for main contacts - for DIN cable lug for main contacts	JIS C 2805 R 2-5, 5,5-5, 8-5, 14-5 1x (12 ... 4) 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 - finely stranded with core end processing - finely stranded without core end processing - for AWG cables for auxiliary and control contacts	1x (0.5 ... 2.5 mm ²), 2x (0.5 ... 1 mm ²) 1x (0.5 ... 2.5 mm ²), 2x (0.5 ... 1 mm ²) 1x (0.5 ... 2.5 mm ²), 2x (0.5 ... 1 mm ²) 1x (20 ... 12)
AWG number as coded connectable conductor cross section for main contacts	12 ... 4
tightening torque - 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] - for main contacts with screw-type terminals - for auxiliary and control contacts with screw-type terminals	18 ... 22 lbf·in 4.5 ... 5.3 lbf·in
design of the thread of the connection screw - for main contacts - of the auxiliary and control contacts	M5 M3
stripped length of the cable - for main contacts - for auxiliary and control contacts	7 mm 7 mm
UL/CSA ratings	
operational current according to UL 508 rated value	80 A
Electrical Safety	
touch protection on the front according to IEC 60529	finger-safe, for vertical contact from the front with cover
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 full range R fuse link for semiconductor protection at NH design usable - of gS fuse for semiconductor protection at NH design usable	3NE1021-2 3NE1820-0: These fuses have a smaller rated current than the semiconductor relays

• 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 22 x 58 mm usable	5SE1363: These fuses have a smaller rated current than the semiconductor relays 3NE8021-1 3NC2200
manufacturer's article number of the gG fuse • at NH design usable • at NH design usable note • at cylindrical design 10 x 38 mm usable • at cylindrical design 10 x 38 mm usable note • at cylindrical design 14 x 51 mm usable • at cylindrical design 14 x 51 mm usable note • at cylindrical design 22 x 58 mm usable • at cylindrical design 22 x 58 mm usable note	3NA6817: These fuses have a smaller rated current than the semiconductor relays These fuses have a smaller rated current than the semiconductor relays 3NW6012-1: These fuses have a smaller rated current than the semiconductor relays These fuses have a smaller rated current than the semiconductor relays 3NW6117-1: These fuses have a smaller rated current than the semiconductor relays These fuses have a smaller rated current than the semiconductor relays 3NW6217-1: These fuses have a smaller rated current than the semiconductor relays These fuses have a smaller rated current than the semiconductor relays
manufacturer's article number • of DIAZED fuse usable • of DIAZED fuse usable note • of NEOZED fuse usable	5SB4111: These fuses have a smaller rated current than the semiconductor relays These fuses have a smaller rated current than the semiconductor relays 5SE2335: These fuses have a smaller rated current than the semiconductor relays

Approvals Certificates

Environment		General Product Approval			
Environmental Conformations					
EMV	Test Certificates	other			
	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,...)

<https://www.siemens.com/ic10>

Industry Mall (Online ordering system)

<https://mall.industry.siemens.com/mall/en/en/Catalog/product?mlfb=3RF3190-3AA22>

Cax online generator

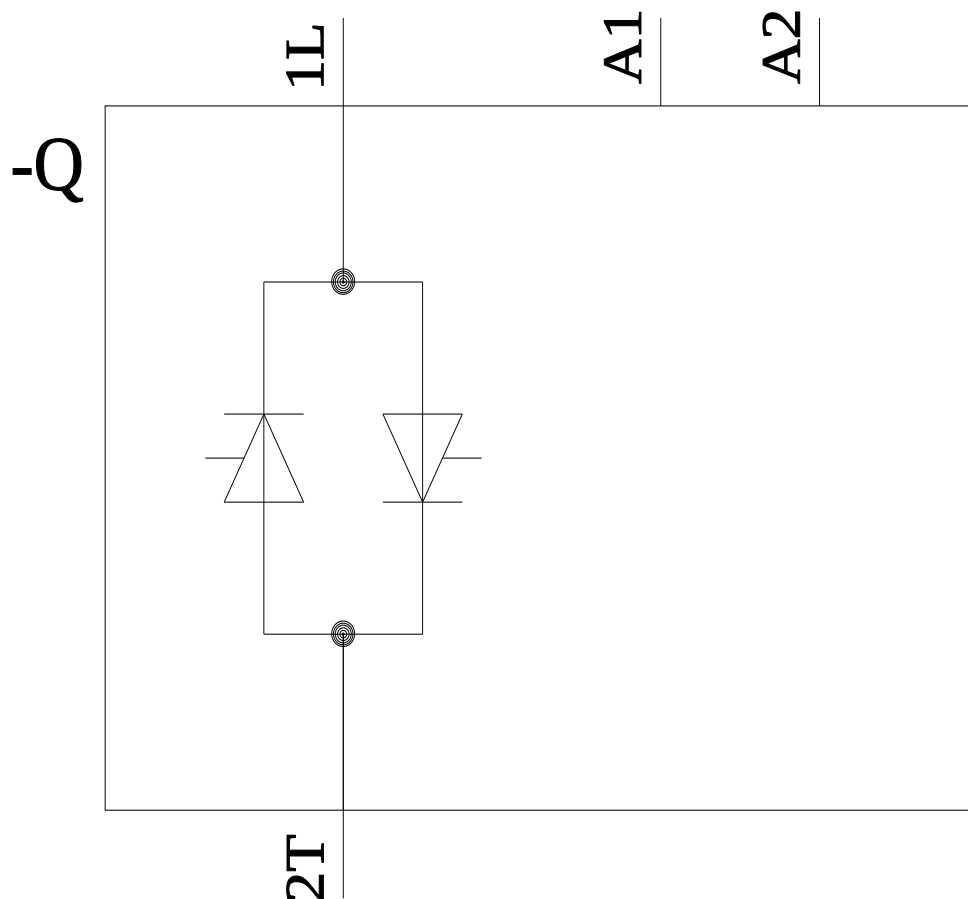
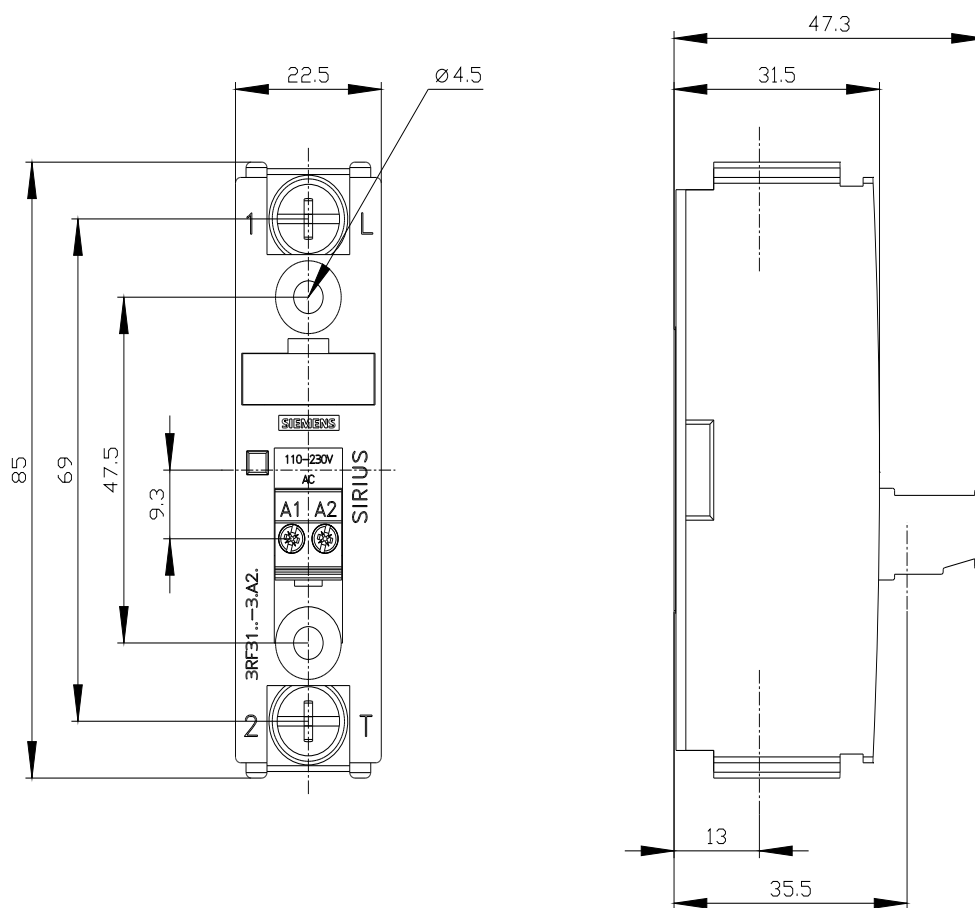
<https://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RF3190-3AA22>

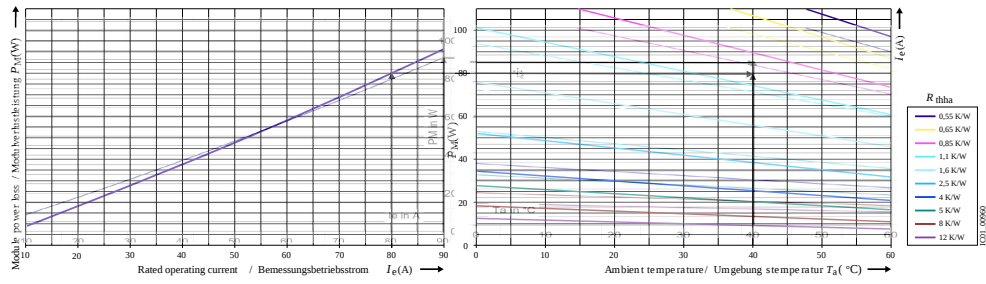
Service&Support (Manuals, Certificates, Characteristics, FAQs,...)

<https://support.industry.siemens.com/cs/ww/en/ps/3RF3190-3AA22>

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

https://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3RF3190-3AA22&lang=en





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