SIEMENS

## Data sheet 3RF2090-1AA24


semiconductor relay, 1-phase 3RF2 width 45 mm, 90 A 48-460 V / 110-230 V AC
screw terminal for mounting on available cooling surfaces

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| **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 | 118 W |
| ● at AC in hot operating state per pole | 118 W |
| ● without load current share typical | 3.5 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** | 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 |
| **SVHC substance name** | Lead - 7439-92-1<br>Lead monoxide (lead oxide) - 1317-36-8 |
| **Weight** | 0.088 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 | 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 rated value maximum** | 88 A |
| **operational current** | |
| ● at AC-51 rated value | 50 A |
| ● according to UL 508 rated value | 50 A |
| **operational current minimum** | 500 mA |
| **rate of voltage rise at the thyristor for main contacts maximum permissible** | 1 000 V/µs |

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| **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** | 1 150 A |
| **I2t value maximum** | 6 600 A²·s |
| **Control circuit/ Control** | |
| **type of voltage of the control supply voltage** | AC |
| **control supply voltage 1 at AC** | |
| ● at 50 Hz | 110 ... 230 V |
| ● at 60 Hz | 110 ... 230 V |
| **control supply voltage frequency** | |
| **● 1 rated value** | 50 Hz |
| **● 2 rated value** | 60 Hz |
| **control supply voltage at AC** | |
| ● at 50 Hz full-scale value for signal<0> recognition | 40 V |
| ● at 60 Hz full-scale value for signal<0> recognition | 40 V |
| **control supply voltage** | |
| ● at AC initial value for signal <1> detection | 90 V |
| **symmetrical line frequency tolerance** | 5 Hz |
| **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 |
| **Auxiliary circuit** | |
| **type of switching contact** | normally open contact (NO) |
| **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 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 |

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| **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 |
| Electrical Safety | |
| **protection class IP on the front according to IEC 60529** | IP20 |
| **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 full range R fuse link for semiconductor protection at NH design usable | 3NE1021-2 |
| ● of back-up R fuse link for semiconductor protection at NH design usable | 3NE8021-1 |
| ● of back-up R fuse link for semiconductor protection at cylindrical design 22 x 58 mm usable | 3NC2280: These fuses have a smaller rated current than the semiconductor relays |
| manufacturer's article number of the gG fuse | |
| ● at NH design usable | 3NA6812: These fuses have a smaller rated current than the semiconductor relays |
| ● at cylindrical design 22 x 58 mm usable | 3NW6212-1: These fuses have a smaller rated current than the semiconductor relays |
| manufacturer's article number | |
| ● of DIAZED fuse usable | 5SB4111: These fuses have a smaller rated current than the semiconductor relays |
| ● of NEOZED fuse usable | 5SE2335: These fuses have a smaller rated current than the semiconductor relays |

**Approvals Certificates**

| General Product Approval | EMV | Test Certificates |
|---|---|---|
| CE EG-Konf. UKCA UR EAC RCM | | Type Test Certificates/Test Report |

| other | Environment |
|---|---|

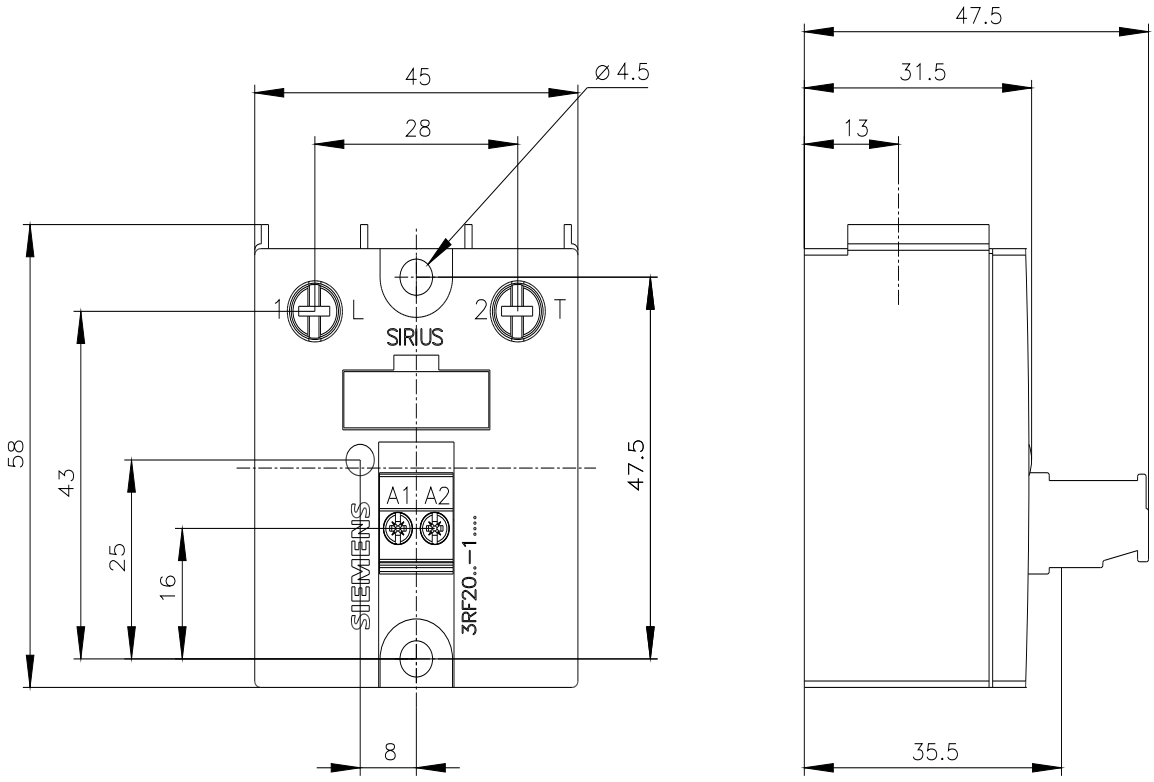
产品合格
QC PASS

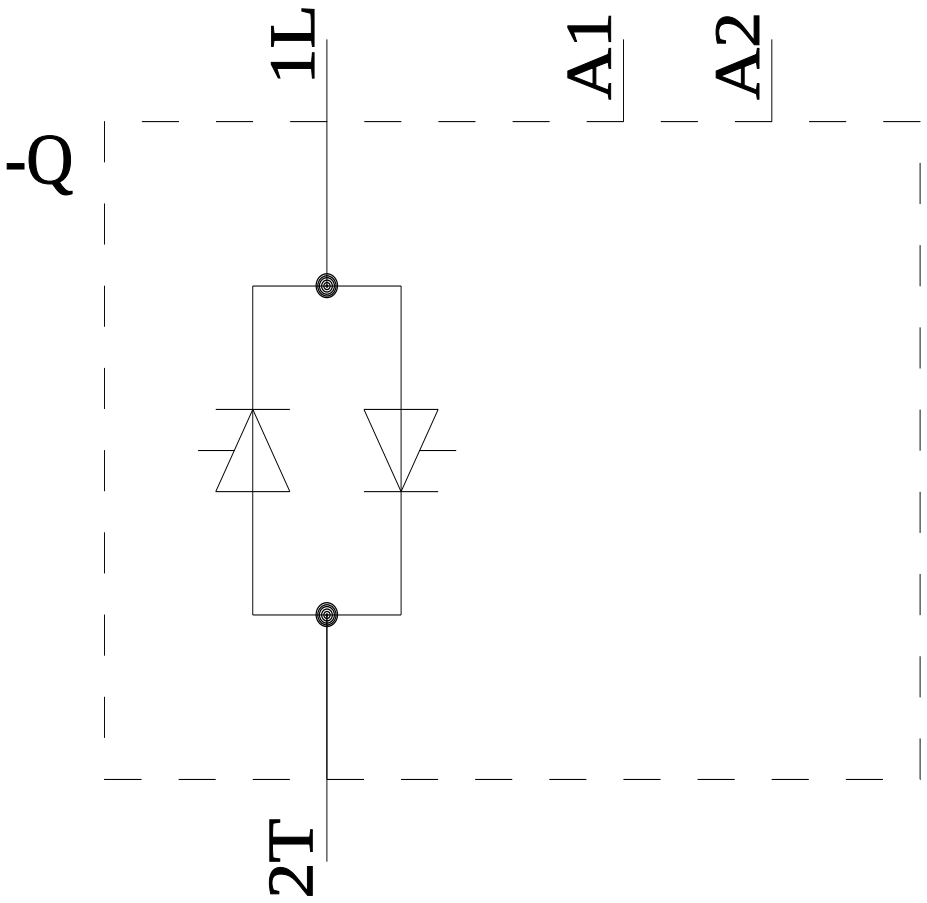
Confirmation

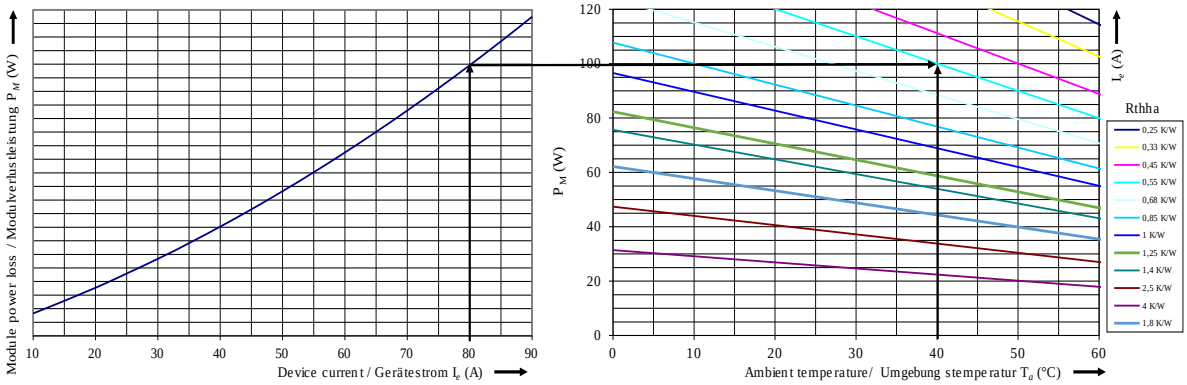
Environmental Con-firmations

## 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=3RF2090-1AA24
**Cax online generator**
https://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RF2090-1AA24
**Service&Support (Manuals, Certificates, Characteristics, FAQs,...)**
https://support.industry.siemens.com/cs/ww/en/ps/3RF2090-1AA24
**Image database (product images, 2D dimension drawings, 3D models, device circuit diagrams, EPLAN macros, ...)**
https://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3RF2090-1AA24&lang=en



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