



**PRELIMINARY DATA**

**MOSFET BASED  
DC SOLID-STATE RELAY**

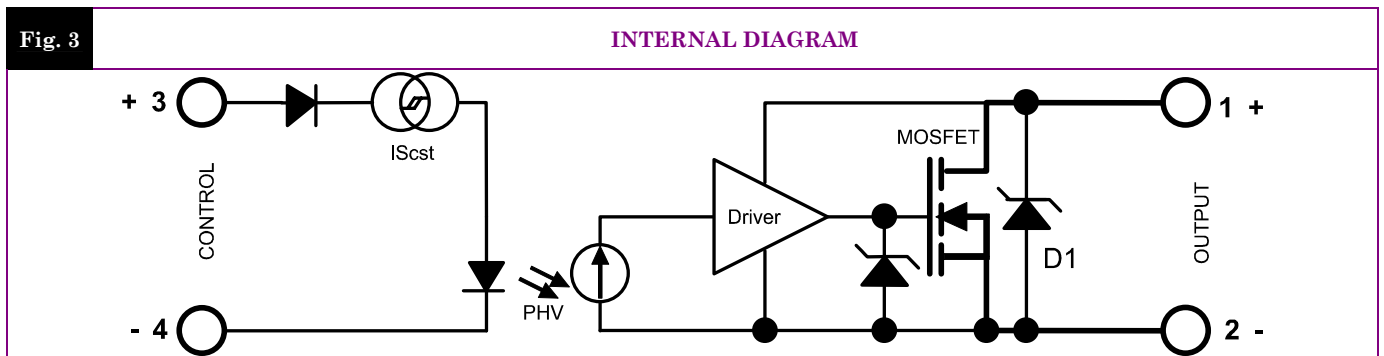
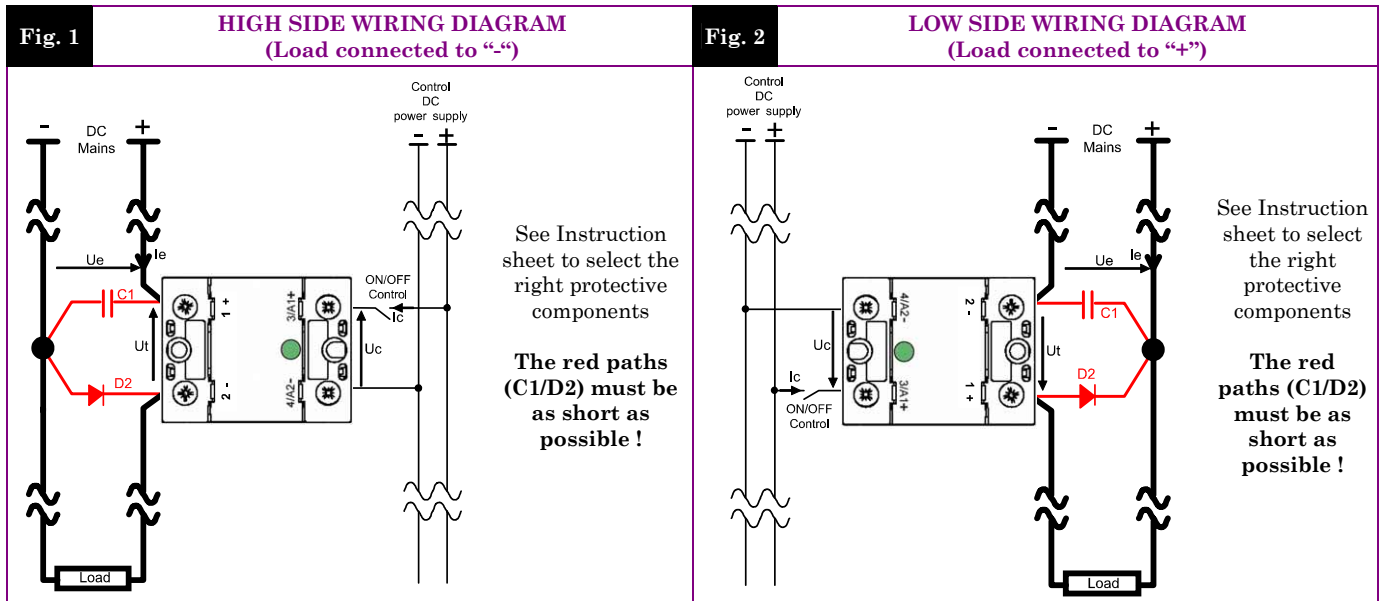
- ▶ Latest MOSFET technology generation.
- ▶ Ultra low on-state resistance.
- ▶ Low output leakage current.
- ▶ Low control current consumption.
- ▶ Built-in overvoltage protection
- ▶ Reverse protected triggered control input to avoid linear control risks
- ▶ No radiated or conducted disturbances
- ▶ Touch protected housing IP20

**SOM020200**



|                                 |                  |
|---------------------------------|------------------|
| Control voltage range           | <b>3.5-32VDC</b> |
| Max. permanent output voltage   | <b>110VDC</b>    |
| Max. load current with heatsink | <b>20ADC</b>     |

| Load voltage range | Load current range        | Control input voltage range | In & case / Out Insulation | Connections     | Dimensions (WxHxD) | Weight |
|--------------------|---------------------------|-----------------------------|----------------------------|-----------------|--------------------|--------|
| 5-110VDC           | Up to 20A (with heatsink) | 3.5-32VDC                   | 2.5kV                      | Screw terminals | 45 x 58.5 x 30     | 80g    |



*Proud to serve you*



**PRELIMINARY DATA**

**CONTROL INPUT CHARACTERISTICS**

| INPUT CIRCUIT | CHARACTERISTIC               | LABEL           | VALUE                                   | INFO.             |
|---------------|------------------------------|-----------------|---|-------------------|
|               | Nom. Control voltage         | <b>Ucnom</b>    | 12-24VDC                                |                   |
|               | Min. Control current         | <b>Icmin</b>    | 35mADC                                  | -100µA/°C         |
|               | Control voltage range        | <b>Uc</b>       | 3.5 – 32VDC                             | typical ON=3.3V   |
|               | Control current consumption  | <b>Ic</b>       | 32 – 35mADC (for control voltage range) | <b>See fig. 5</b> |
|               | Releasing control voltage    | <b>Ucoffmax</b> | 1VDC                                    | typical OFF= 2.6V |
|               | Max. reverse control voltage | <b>-Ucmax</b>   | 32VDC                                   | -Icmax<100µA      |
|               | Input impedance              | <b>Rin</b>      | Current limitation                      | <b>See fig. 5</b> |

**POWER OUTPUT CHARACTERISTICS**

| POWER CIRCUIT                 | CHARACTERISTIC  | LABEL                 | VALUE                   | INFO.                             |                            |
|-------------------------------|---|-----------------------|-------------------------|-----------------------------------|----------------------------|
|                               | Nominal voltage   | <b>Uenom</b>          | <b>90VDC</b>            |                                   |                            |
|                               | Voltage range   | <b>Ut</b>   <b>Ue</b> | <b>5-110VDC</b>         |                                   |                            |
|                               | Non-repetitive peak voltage                             | <b>Utp</b>            | 200V                    |                                   |                            |
|                               | Overvoltage protection                                  | <b>D1</b>             | Varistor 75V size 20    |                                   |                            |
|                               | Max reverse voltage drop (internal diode at OFF state)  | <b>-Ut</b>            | 1.5V                    | @Ic=-20A<br>@Uc=0                 |                            |
|                               | Maximum nominal currents                                | <b>Ie max</b>         | <b>Resistive</b><br>20A | <b>Motor</b><br>Please contact us | <b>See fig. 7 (limits)</b> |
|                               | Non-repetitive peak overload current                    | <b>Iepeak</b>         | 160A                    |                                   | <b>See fig. 8</b>          |
|                               | Min. load current                                       | <b>Iemin</b>          | 5mA                     |                                   |                            |
|                               | Max. leakage current                                    | <b>Ielk max</b>       | 3mA                     |                                   | @Utmax @Tjmax              |
|                               | Max. on-state resistance                                | <b>RDSon</b>          | 90mΩ                    |                                   | @Iemax @Tjmax              |
|                               | Typ. output capacitance                                 | <b>Cout</b>           | 0.6nF                   |                                   |                            |
|                               | Junction/case thermal resistance per power element      | <b>Rthjc</b>          | 1.2 K/W                 |                                   |                            |
|                               | Built-in heatsink thermal resistance vertically mounted | <b>Rthra</b>          | 10K/W                   |                                   | @ΔTra=75°C                 |
|                               | Heatsink thermal time constant                          | <b>Tthra</b>          | 10 minutes              |                                   | @ΔTra=50°C                 |
|                               | Control inputs/power outputs insulation voltage         | <b>Uimp</b>           | 2.5kV                   |                                   |                            |
|                               | Inputs/case insulation voltage                          | <b>Uimp</b>           | 2.5kV                   |                                   |                            |
|                               | Outputs/case insulation voltage                         | <b>Uimp</b>           | 2.5kV                   |                                   |                            |
|                               | Isolation resistance                                    | <b>Rio</b>            | 1GΩ                     |                                   |                            |
|                               | Isolation capacitance                                   | <b>Cio</b>            | <8pF                    |                                   |                            |
|                               | Maximum junction temperature                            | <b>Tjmax</b>          | 175°C                   |                                   |                            |
|                               | Storage ambient temperature                             | <b>Tstg</b>           | -40->+100°C             |                                   |                            |
| Operating ambient temperature | <b>Tamb</b>   | -25->+90°C            |                         | <b>See fig. 7</b>                 |                            |
| Max. case temperature         | <b>Tc</b>   | 100°C                 |                         |                                   |                            |

**PROTECTION CHARACTERISTICS**

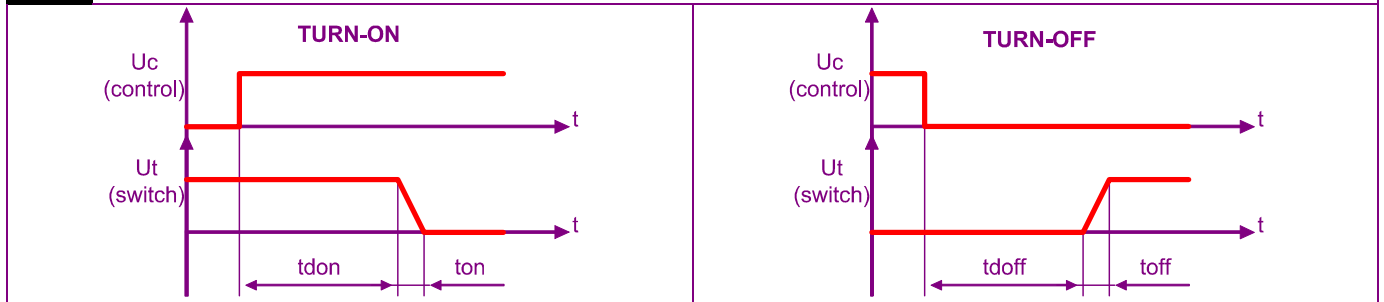
| PROTECTION | Leakage current (Ielk) vs DC voltage (Ut)   | Absolute limits  |   |
|------------|---|--|---|
|            |   |  | <p><b>Uto &lt; Utp</b></p> $t_{max} = \frac{0.75}{(Uto - Ut_{max}) \times Ie}$ $\frac{P_{(protection)} = 1W_{max}}{\Rightarrow \frac{(Uto - Ut_{max}) \times Ie \times t}{T} \leq 1}$ |
|            | <p><b>Ielk</b> : Leakage current of the relay<br/> <b>Ie</b> : User load nominal current<br/> <b>Utp</b> : Relay max. non repetitive peak voltage</p> | <p><b>Utmax</b> : Max. nominal voltage of the relay<br/> <b>Uto</b> : Possible overvoltage above Utmax<br/> <b>Utn = Ue</b> : User DC power supply voltage</p> | <p><b>t</b> : Overvoltage duration<br/> <b>T</b> : Time between 2 overvoltage</p>   |



**TIME CHARACTERISTICS**

Fig. 4

TIME DIAGRAMS



| TIME CHARACT. | CHARACTERISTIC        | LABEL                       | VALUE   | INFO.                          |
|---------------|-----------------------|-----------------------------|---|--------------------------------|
|               | Turn on time          | <b>ton</b>                  | 20µs  |                                |
|               | Turn on delay         | <b>tdon</b>                 | 20µs  |                                |
|               | Turn off time         | <b>toff</b>                 | 20µs  |                                |
|               | Turn off delay        | <b>tdoff</b>                | 20µs  |                                |
|               | Max. On-Off frequency | <b>F<sub>(on-off)</sub></b> | >1000Hz (for high frequency, take 2 x Ie to calculate the heatsink; the protections must be chosen carefully) | Refer to the instruction sheet |

**GENERAL INFORMATION**

| CONNEX-TIONS | Connections   |  | Power     |  | Control |  |
|--------------|---|--|-----------|--|---------|--|
|              | Screwdriver advised                                 |  | POZIDRIV2 |  |         |  |
|              | Min and max tightening torque                       |  | 2 N.m     |  | 1.2 N.m |  |
|              | Insulated crimp terminals (round tabs, eyelet type) |  | M5        |  | M4      |  |

| MISC. | Display     |  | Green LED (indicates relay has switched ON) |  |                    |
|-------|-------------|--|---|--|--------------------|
|       | Housing     |  | UL94V0                                      |  |                    |
|       | Mounting    |  | 2 screws (M4x12mm ; tightening = 1.2N.m)    |  | See mounting sheet |
|       | Noise level |  | None  |  |                    |
|       | Weight      |  | 80g   |  |                    |

**STANDARDS**

| GENERAL | Standards                       |  | IEC60947-1 |  |  |
|---------|---------------------------------|--|------------|--|--|
|         | Protection level                |  | IP20       |  |  |
|         | Protection against direct touch |  | Yes        |  |  |
|         | CE marking                      |  | Yes        |  |  |
|         | UL, cULUS and VDE approvals     |  | Pending    |  |  |

| E.M.C. IMMUNITY | TYPE OF TEST                      | STANDARD    | LEVEL   | EFFECT |
|-----------------|-----------------------------------|-------------|---------|--------|
|                 | E.S.D. (Electrostatic discharges) | EN61000-4-2 | Pending | ?      |
|                 | Radiated electromagnetic fields   | EN61000-4-3 | Pending | ?      |
|                 | Fast transients bursts            | EN61000-4-4 | Pending | ?      |
|                 | Electric chocks                   | EN61000-4-5 | Pending | ?      |
| Voltage drop    | EN61000-4-11                      | -           |         |        |

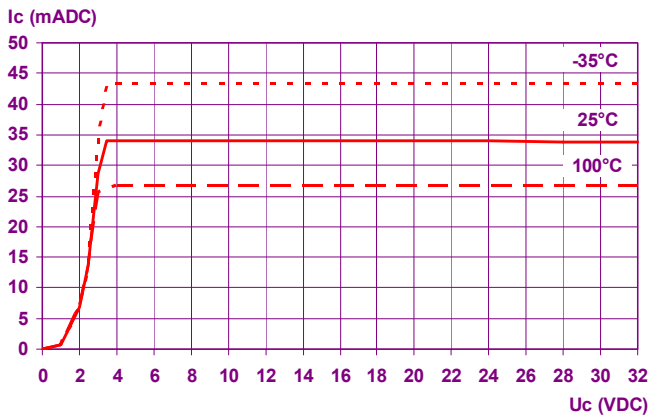
| E.M.C. EMISSION |                                     |           |         |  |
|-----------------|-------------------------------------|-----------|---------|--|
|                 | Radiated and conducted disturbances | NFEN55011 | Pending |  |



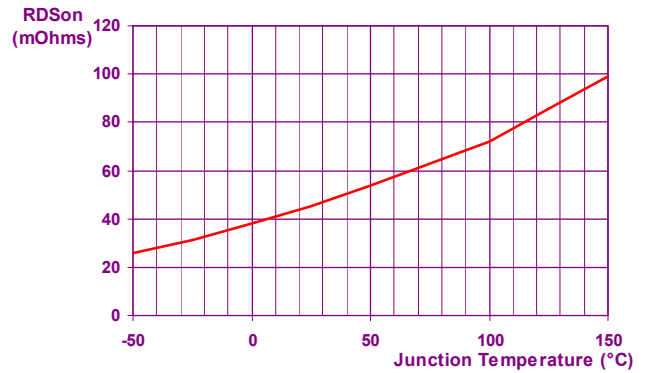
**PRELIMINARY DATA**

**CHARACTERISTIC CURVES**

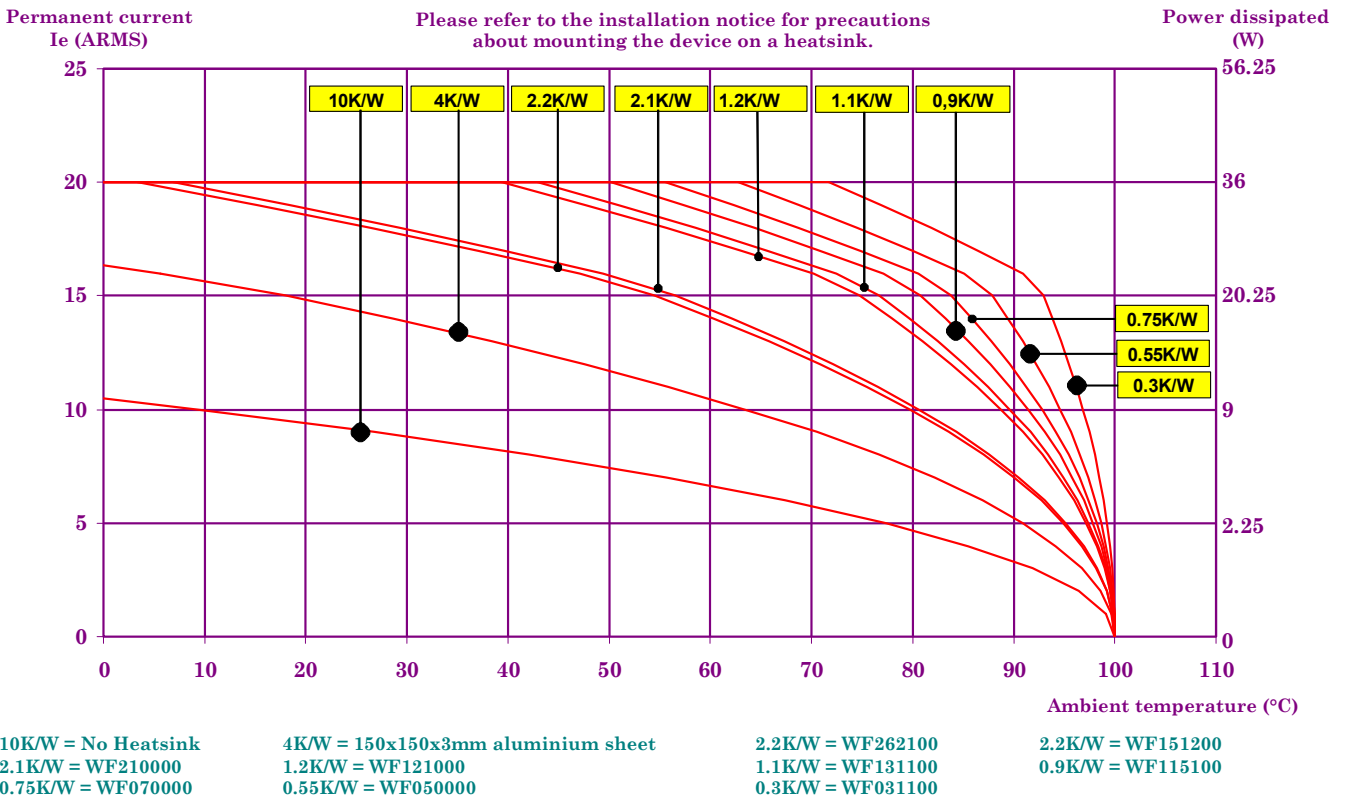
**Fig. 5 INPUT CHARACTERISTIC**



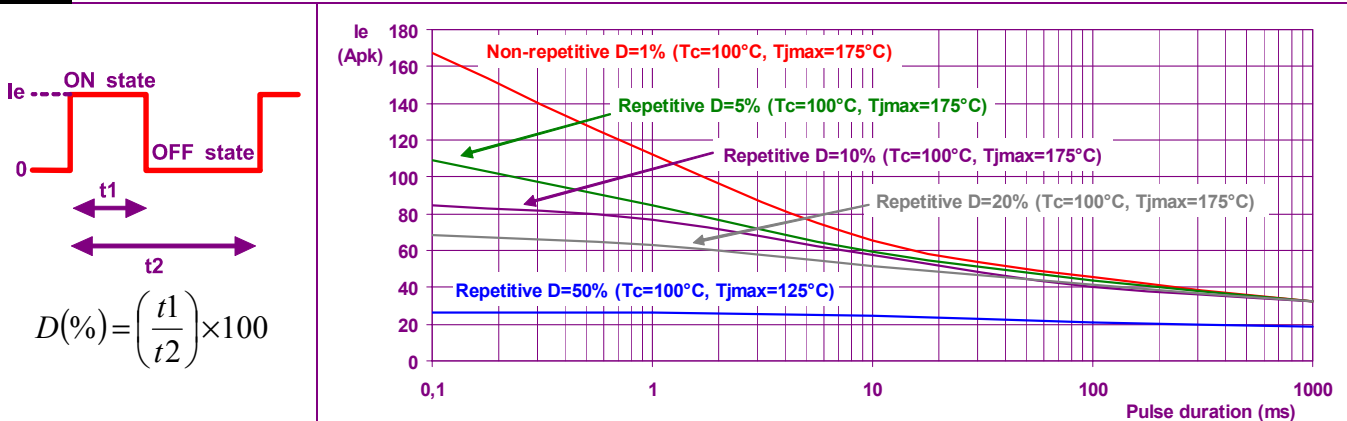
**Fig. 6 ON RESISTANCE VS JUNCTION TEMPERATURE**



**Fig. 7 POWER DISSIPATED AND LOAD CURRENT LIMIT VS TEMPERATURE**



**Fig. 8 PEAK OVERLOAD CURRENT vs. PULSE DURATION CHARACTERISTIC**





**DIMENSIONS AND ACCESSORIES**

Fig. 9

DIMENSIONS (mm)

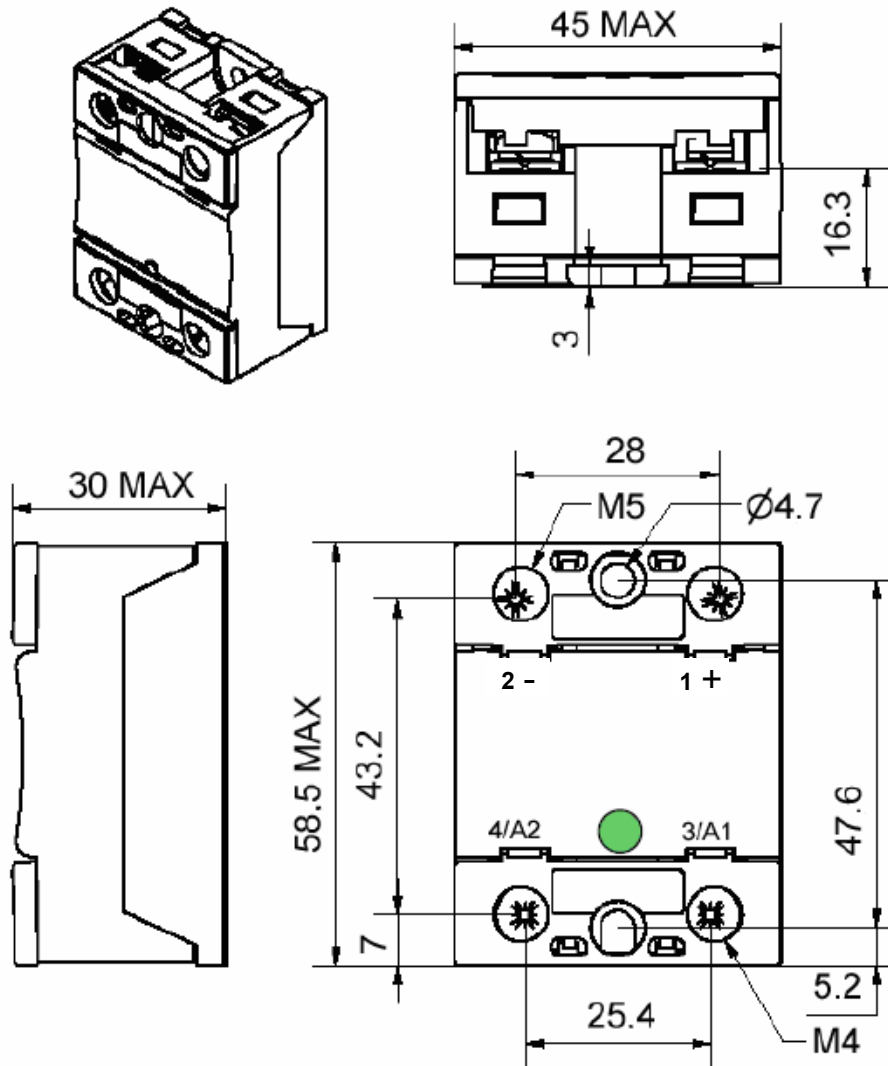


Fig. 10

ACCESSORIES

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ISO 9001  
N° 1993/1106a

ASSOCIATION  
FRANÇAISE POUR  
L'ASSURANCE DE  
LA QUALITÉ