

## MOSFET BASED DC SOLID STATE RELAY



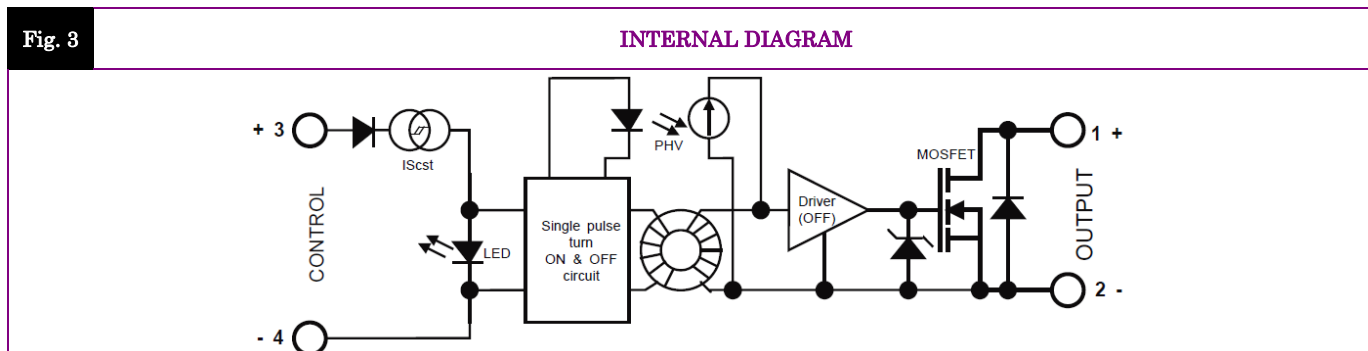
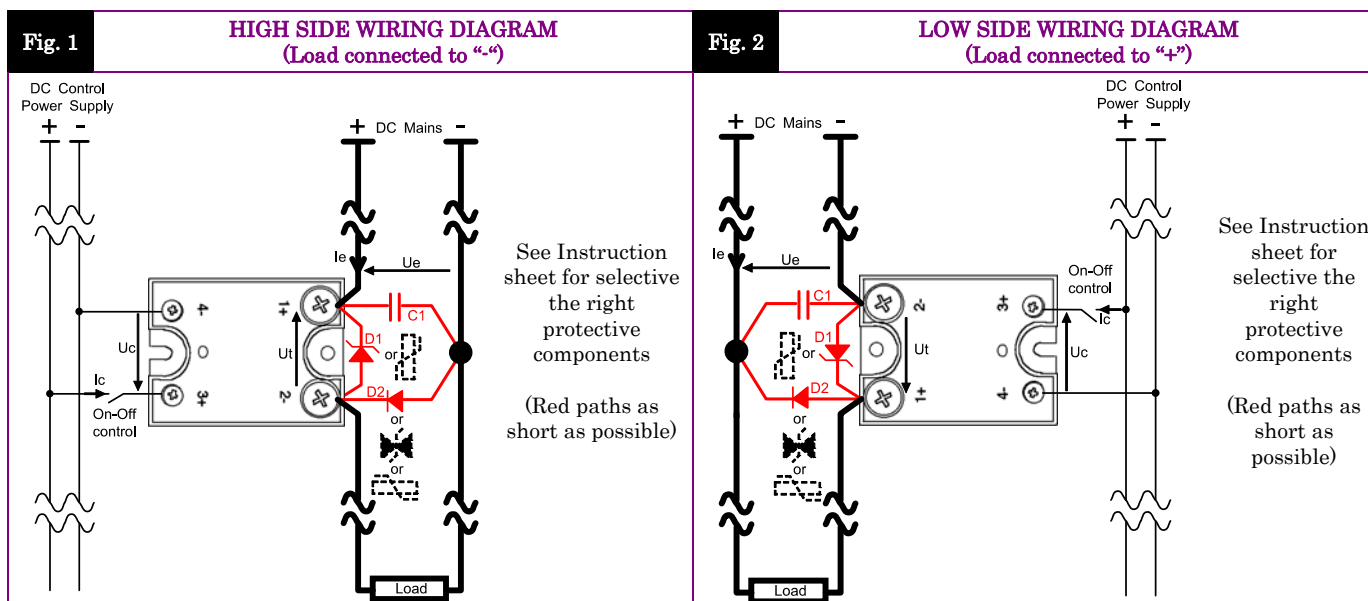
- ▶ Latest MOSFET technology generation.
- ▶ Ultra low on-state resistance.
- ▶ New innovative isolated driver ensuring fast power transistor turn on and off therefore low power transient.
- ▶ Ultra low output leakage current
- ▶ Low control current consumption
- ▶ Triggered control input to avoid linear control risks
- ▶ Low conducted and radiated disturbances

### SCM040600



|                                 |           |
|---------------------------------|-----------|
| Control voltage range           | 4.5-32VDC |
| Max. output peak voltage        | 600VDC    |
| Nom. load current with heatsink | 40ADC     |

| Load voltage range                     | Load current range       | Control input voltage range | In & case / Out Insulation | Connections                    | Dimensions (WxHxD)    | Weight |
|----------------------------------------|--------------------------|-----------------------------|----------------------------|--------------------------------|-----------------------|--------|
| Depends on protection clamping voltage | 0 to 40A (with heatsink) | 4.5-32VDC                   | 4kV                        | M3 round tabs<br>M5 round tabs | 44.5 x 58.2 x 27 (mm) | 100g   |



*Proud to serve you*

Data given at Tambient=40°C and subject to modification without previous notice

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r e l a i s

**CONTROL INPUT CHARACTERISTICS**

| INPUT CIRCUIT | CHARACTERISTIC               | LABEL    | VALUE                                 | INFO.      |
|---------------|------------------------------|----------|---------------------------------------|------------|
|               | Control voltage range        | Uc       | 4.5 – 32VDC                           |            |
|               | Current consumption          | Ic       | 25 – 42mADC for control voltage range | See fig. 5 |
|               | Typical turn on voltage      | Ucontyp  | 4.3V                                  |            |
|               | Min. releasing voltage       | Ucoffmin | 1VDC                                  |            |
|               | Typical releasing voltage    | Ucofftyp | 3.5V                                  |            |
|               | Max. input voltage           | Ucmax    | 32VDC                                 |            |
|               | Max. reverse voltage         | -Ucmax   | 32VDC                                 |            |
|               | Max. reverse leakage current | -Icmax   | 100µA                                 |            |
|               | Input impedance              | Re       | Current limitation                    | See fig. 5 |

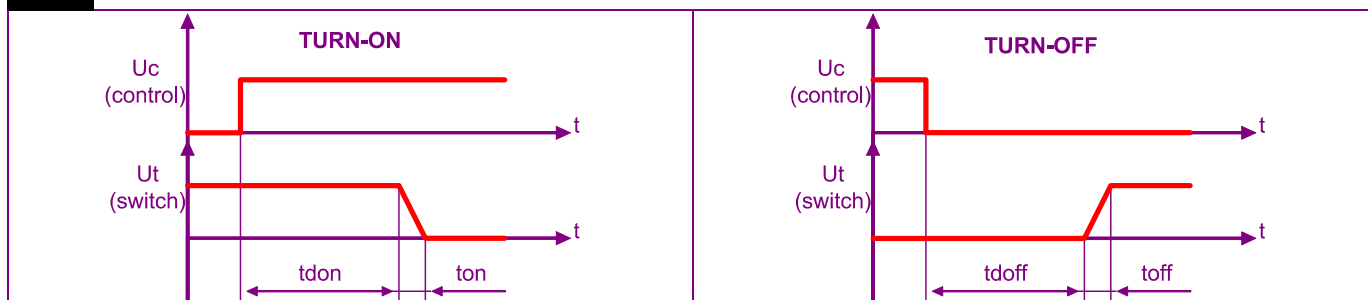
**POWER OUTPUT CHARACTERISTICS**

| POWER CIRCUIT | CHARACTERISTIC                                          | LABEL  | VALUE                                                                                                  |                   | INFO.                                                               |
|---------------|---------------------------------------------------------|--------|--------------------------------------------------------------------------------------------------------|-------------------|---------------------------------------------------------------------|
|               | Mains voltage range                                     | Ue     | Depends on protection clamping voltage (D1)                                                            |                   |                                                                     |
|               | Non-repetitive peak voltage                             | Utp    | 600V                                                                                                   |                   |                                                                     |
|               | Overvoltage protection                                  | D1     | Not integrated<br>A voltage clamping mean must be connected across the terminals 1 & 2 (see fig 1 & 2) |                   | See Instruction sheet for selective the right protective components |
|               | Reverse voltage (internal diode)                        | -Ut    | 1,2V                                                                                                   |                   | @Ic=-47A<br>@Uc=0                                                   |
|               | Max. repetitive avalanche current                       | Iep    | 20A                                                                                                    |                   | Pulse width limited by Tj max                                       |
|               | Max. single pulse avalanche energy                      | Eep    | 1800mJ                                                                                                 |                   | @Ut=50V<br>@Ie=10A                                                  |
|               | Max. repetitive pulse avalanche energy                  | Eep    | 1mJ                                                                                                    |                   | @Ie=20A                                                             |
|               | Maximum nominal currents                                | Ie     | Resistive                                                                                              | Motor             | See fig. 7<br>Values with heatsink                                  |
|               |                                                         |        | 40A                                                                                                    | Please consult us |                                                                     |
|               | Non-repetitive peak overload current                    | Iepeak | 140A                                                                                                   |                   | See fig. 8                                                          |
|               | Min. load current                                       | Iemin  | 0mA                                                                                                    |                   |                                                                     |
|               | Max. leakage current                                    | Ielk   | 250µADC                                                                                                |                   | @Utp @Tjmax                                                         |
|               | Max. on-state resistance                                | RDson  | 140mΩ                                                                                                  |                   | @Iemax @Tjmax                                                       |
|               | Typ. output capacitance                                 | Cout   | 2.2nF                                                                                                  |                   |                                                                     |
|               | Junction/case thermal resistance per power element      | Rthjc  | 0.4K/W                                                                                                 |                   | Total = 1 power elements                                            |
|               | Built-in heatsink thermal resistance vertically mounted | Rthra  | 8K/W                                                                                                   |                   | @ΔTra=60°C                                                          |
|               | Heatsink thermal time constant                          | Tthra  | 10min                                                                                                  |                   | @ΔTra=60°C                                                          |
|               | Control inputs/power outputs insulation voltage         | Uimp   | 4kV                                                                                                    |                   |                                                                     |
|               | Inputs/case insulation voltage                          | Uimp   | 4kV                                                                                                    |                   |                                                                     |
|               | Outputs/case insulation voltage                         | Uimp   | 4kV                                                                                                    |                   |                                                                     |
|               | Isolation resistance                                    | Rio    | 1GΩ                                                                                                    |                   |                                                                     |
|               | Isolation capacitance                                   | Cio    | <8pF                                                                                                   |                   |                                                                     |
|               | Maximum junction temperature                            | Tjmax  | 150°C                                                                                                  |                   |                                                                     |
|               | Storage ambient temperature                             | Tstg   | -40->+100°C                                                                                            |                   |                                                                     |
|               | Operating ambient temperature                           | Tamb   | -40->+90°C                                                                                             |                   | See fig. 7                                                          |
|               | Max. case temperature                                   | Tc     | 100°C                                                                                                  |                   |                                                                     |

## TIME CHARACTERISTICS

Fig. 4

TIME DIAGRAM



| TIME CHARACT. | CHARACTERISTIC        | LABEL     | VALUE                 | INFO. |
|---------------|-----------------------|-----------|-----------------------|-------|
|               | Turn on time          | ton       | 10µs (1.2µs typical)  |       |
|               | Turn on delay         | tdon      | 600µs (500µs typical) |       |
|               | Turn off time         | toff      | 10µs (1µs typical)    |       |
|               | Turn off delay        | tdoff     | 100µs (60µs typical)  |       |
|               | Max. On-Off frequency | F(on-off) | 700Hz                 |       |

## GENERAL INFORMATION

| CONNECTIONS | Connections                                         |  | Power        | Control      |  |
|-------------|-----------------------------------------------------|--|--------------|--------------|--|
|             | Screwdriver advised                                 |  | Philips™ NR2 | Philips™ NR1 |  |
|             | Min and max tightening torque                       |  | 1.8 N.m      | 0.8 N.m      |  |
|             | Insulated crimp terminals (round tabs, eyelet type) |  | M5           | M3           |  |

| MISC. | Display     |  | Green LED<br>(indicates relay has switched ON) |                    |
|-------|-------------|--|------------------------------------------------|--------------------|
|       | Housing     |  | UL94V0                                         |                    |
|       | Mounting    |  | 2 screws (M4x12mm)                             | See mounting sheet |
|       | Noise level |  | No audible noise                               |                    |
|       | Weight      |  | 100g                                           |                    |

## STANDARDS

| GENERAL | Standards                       |  | IEC60947-1 |  |
|---------|---------------------------------|--|------------|--|
|         | Protection level                |  | IP00       |  |
|         | Protection against direct touch |  | None       |  |
|         | CE marking                      |  | Yes        |  |
|         | UL, cULUS                       |  | Yes        |  |

| 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  | 4kV coupling by clamp on the input side and direct for power side | No effect |
|                 | Electric chocks                     | EN61000-4-5  | 1kV direct coupling on the input side (pending for power side)    | ?         |
| E.M.C. EMISSION | Voltage drop                        | EN61000-4-11 | -                                                                 |           |
|                 | Radiated and conducted disturbances | NFEN55011    | Pending                                                           |           |

## CHARACTERISTIC CURVES

Fig. 5

INPUT CHARACTERISTIC

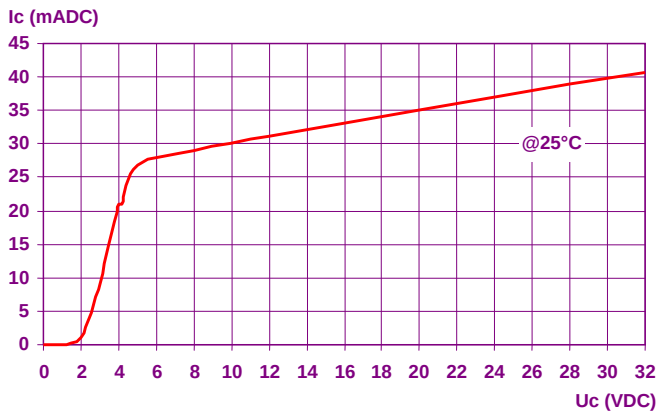


Fig. 6

ON RESISTANCE VS TEMPERATURE

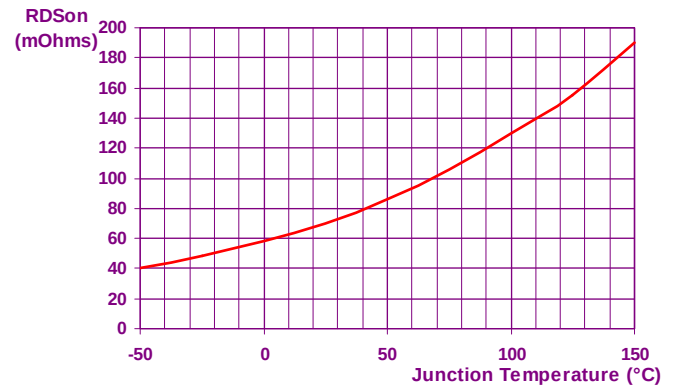


Fig. 7

POWER DISSIPATED AND LOAD CURRENT LIMIT VS TEMPERATURE

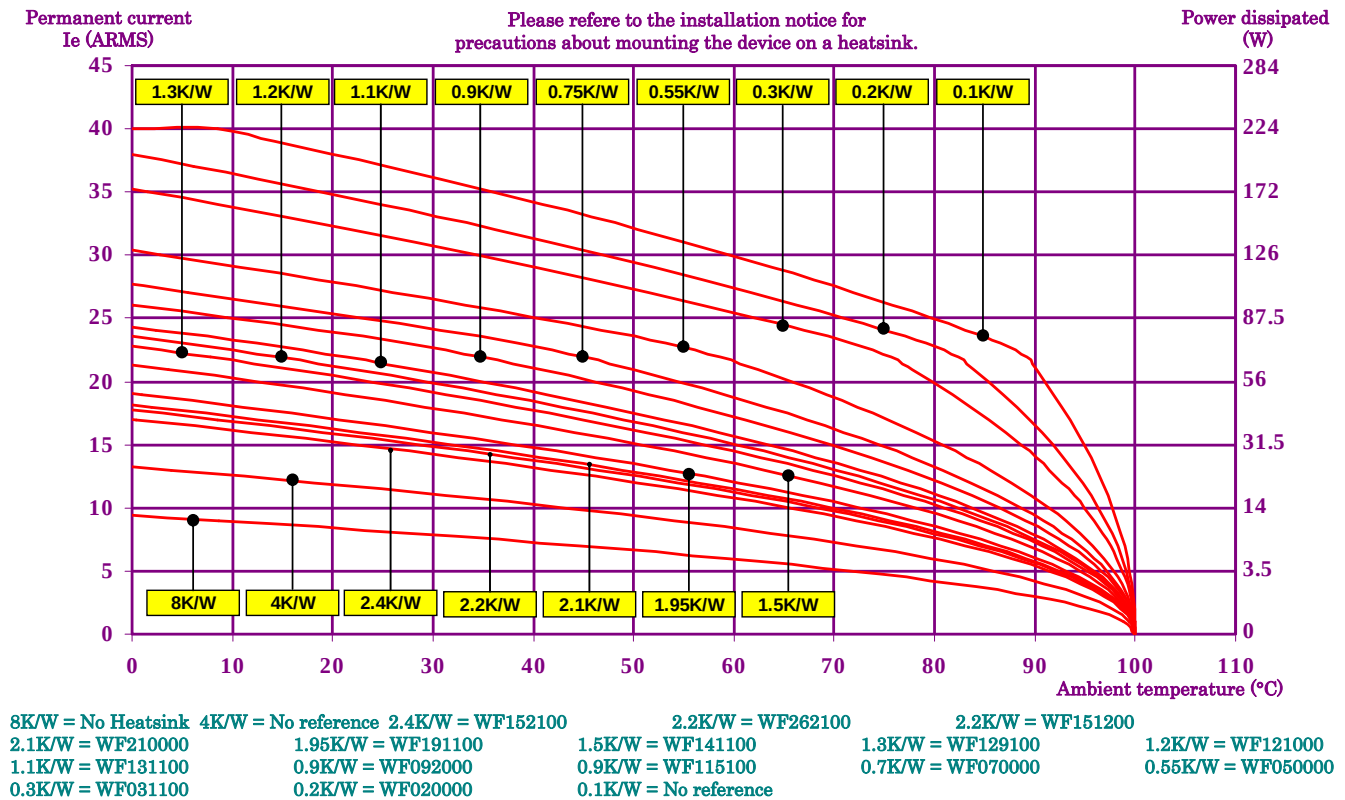
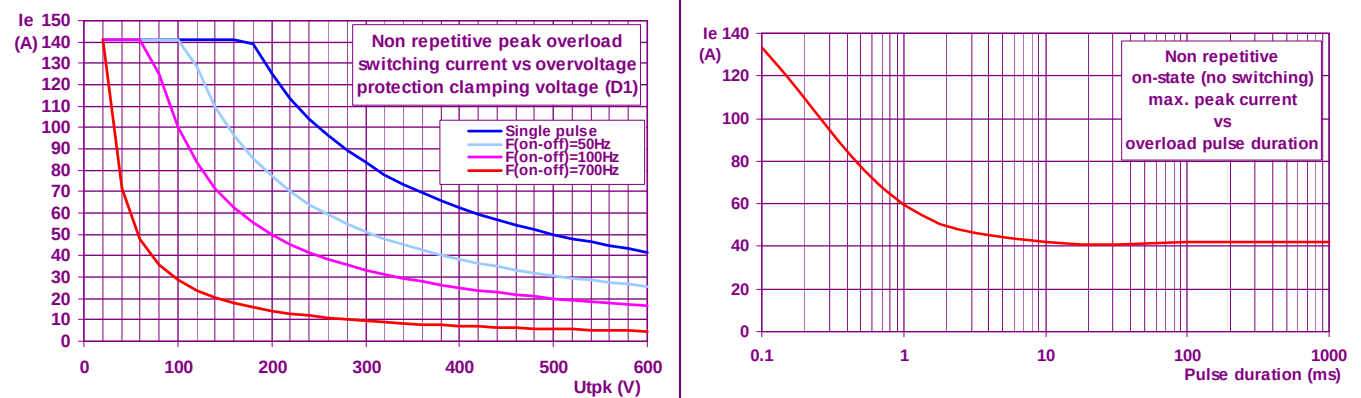


Fig. 8

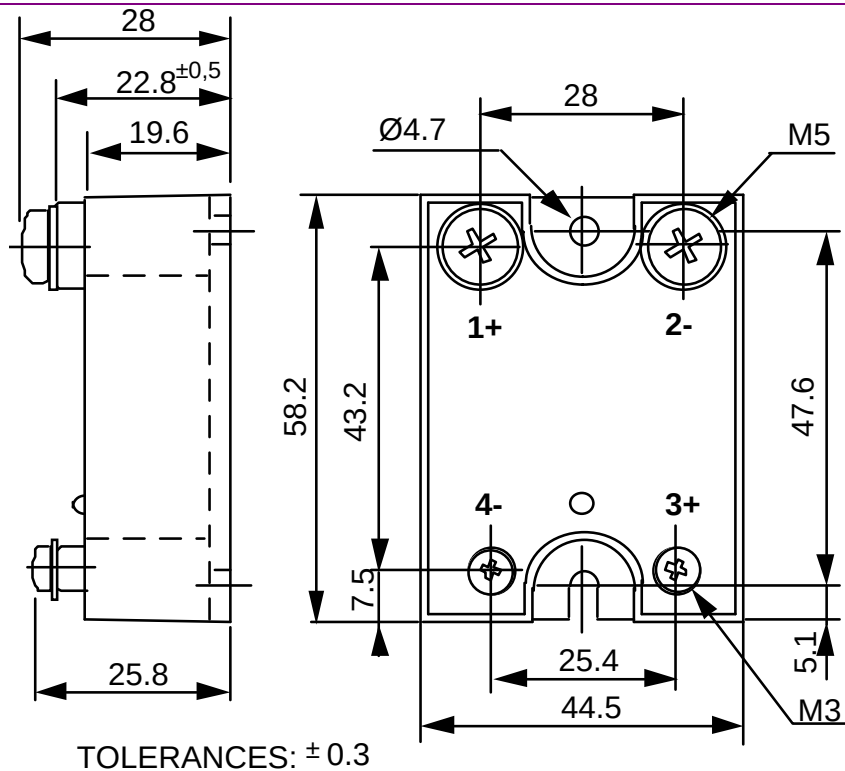
CURRENT OVERLOAD CHARACTERISTIC



## ***DIMENSIONS AND ACCESSORIES***

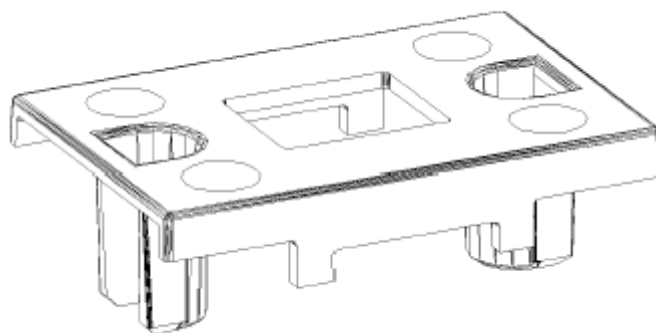
**Fig. 9**

## DIMENSIONS



**Fig.**  
**10**

## ACCESSORIES



PROTECTIVE COVER 1K470000