

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



SOM040200



Control voltage range	3.5-32VDC
Max. permanent output voltage	110VDC
Max. load current with heatsink	40ADC

Load voltage range	Load current range	Control input voltage range	In & case / Out Insulation	Connections	Dimensions (WxHxD)	Weight
5-110VDC	Up to 40A (with heatsink)	3.5-32VDC	2.5kV	Screw terminals	45 x 58.5 x 30	80g

Fig. 1

HIGH SIDE WIRING DIAGRAM (Load connected to "-")

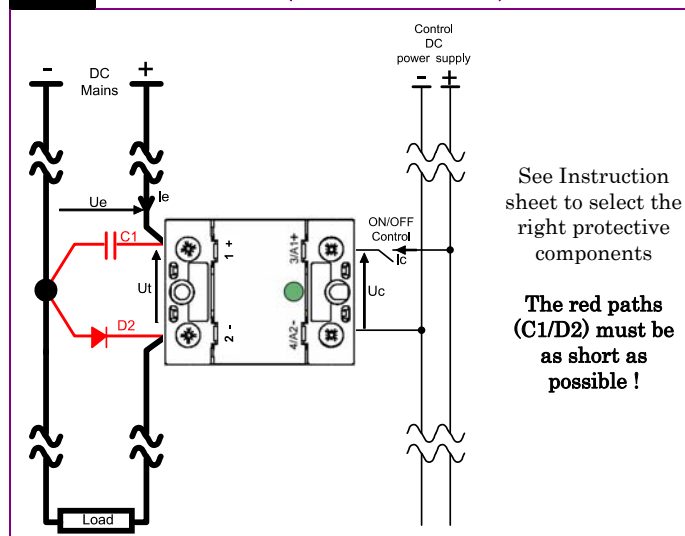


Fig. 2

LOW SIDE WIRING DIAGRAM (Load connected to "+")

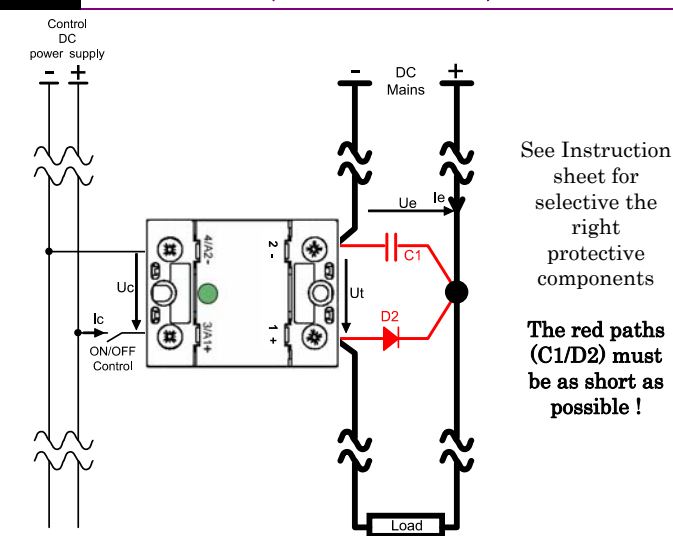
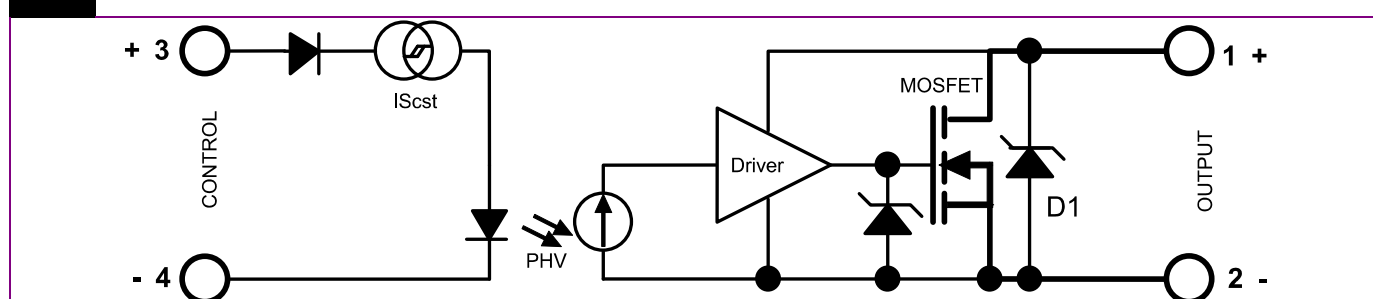


Fig. 3

INTERNAL DIAGRAM



Proud to serve you

Data given at Tambient=25°C and subject to modification without previous notice

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CONTROL INPUT CHARACTERISTICS

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

POWER OUTPUT CHARACTERISTICS

POWER CIRCUIT

CHARACTERISTIC	LABEL		VALUE	INFO.
Nominal voltage	Uenom		90VDC	
Voltage range	Ut	Ue	5-110VDC	
Non-repetitive peak voltage	Utp		200V	
Overvoltage protection	D1		Varistor 75V size 20	
Max reverse voltage drop (internal diode at OFF state)	-Ut		1.5V	@Ie=-56A @Uc=0
Maximum nominal currents	Ie max	Resistive	Motor	See fig. 7 (limits)
		40A	Please contact us	
Non-repetitive peak overload current	Id max		380A	See fig. 8
Min. load current	Iemin		5mA	
Max. leakage current	Ielk max		3mA	@Utmax @Tjmax
Max. on-state resistance	RDSon		46mΩ	@Iemax @Tjmax
Typ. output capacitance	Cout		1.1nF	
Junction/case thermal resistance per power element	Rthjc		0.7K/W	
Built-in heatsink thermal resistance vertically mounted	Rthra		10K/W	@ΔTra=75°C
Heatsink thermal time constant	Tthra		10 minutes	@ΔTra=40°C
Control inputs/power outputs insulation voltage	Uimp		2.5kV	
Inputs/case insulation voltage	Uimp		2.5kV	
Outputs/case insulation voltage	Uimp		2.5kV	
Isolation resistance	Rio		1GΩ	
Isolation capacitance	Cio		<8pF	
Maximum junction temperature	Tjmax		175°C	
Storage ambient temperature	Tstg		-40->+100°C	
Operating ambient temperature	Tamb		-25->+90°C	See fig. 7
Max. case temperature	Tc		100°C	

PROTECTION CHARACTERISTICS

PROTECTION

Leakage current (Ielk) vs DC voltage (Ut)

Ielk : Leakage current of the relay
Ie : User load nominal current
Utp : Relay max. non repetitive peak voltage

Absolute limits

$$U_{to} < U_{tp}$$

$$t_{max} = \frac{0.75}{(U_{to} - U_{tmax}) \times I_e}$$

$$P_{(protection)} = 1W_{max}$$

$$\Rightarrow \frac{(U_{to} - U_{tmax}) \times I_e \times t}{T} \leq 1$$

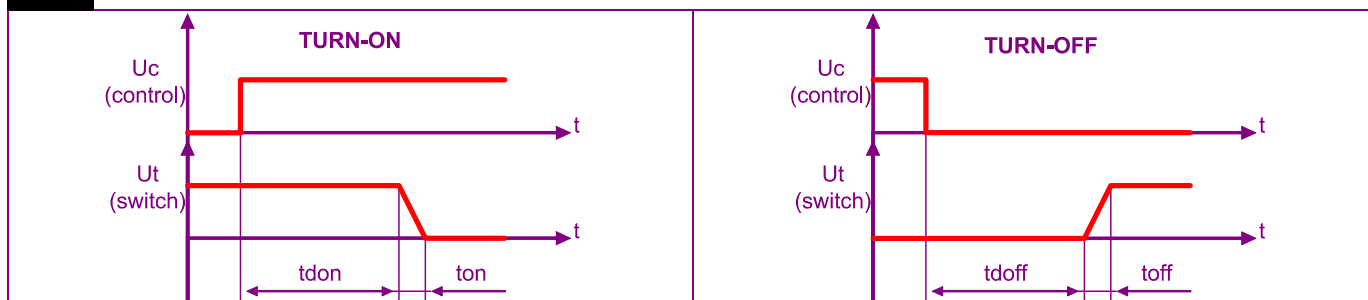
U_{tmax} : Max. nominal voltage of the relay
U_{to} : Possible overvoltage above U_{tmax}
U_{tn} = U_e : User DC power supply voltage

t : Overvoltage duration
T : Time between 2 overvoltage

TIME CHARACTERISTICS

Fig. 4

TIME DIAGRAM



TIME CHARACT.	CHARACTERISTIC	LABEL	VALUE	INFO.
	Turn on time	ton	20μs	
	Turn on delay	tdon	20μs	
	Turn off time	toff	20μs	
	Turn off delay	tdoff	20μs	
	Max. On-Off frequency	F(on-off)	>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

CONNECTIONS	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		Yes	
E.M.C. IMMUNITY	TYPE OF TEST	STANDARD	LEVEL	EFFECT
	Fast transients bursts	EN61000-4-4	4kV criterion B	
	Electric chocks	EN61000-4-5	1kV criterion B	
	Voltage drop	EN61000-4-11	-	

CHARACTERISTIC CURVES

Fig. 5

INPUT CHARACTERISTIC

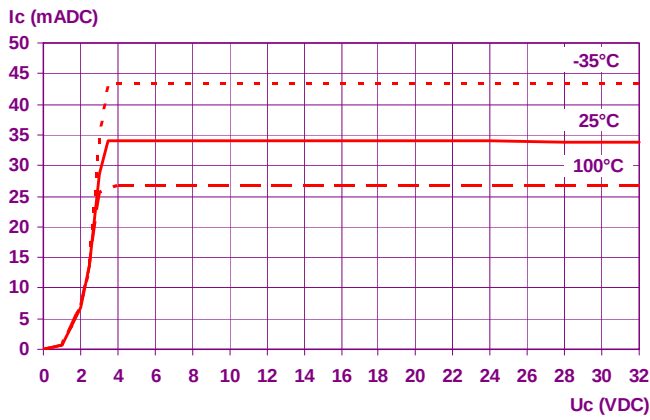


Fig. 6

ON RESISTANCE VS JUNCTION TEMPERATURE

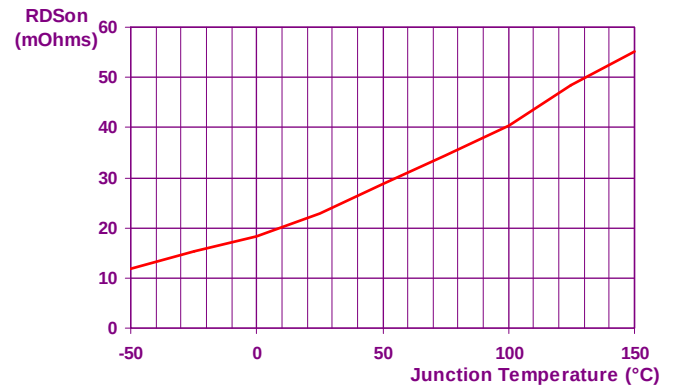


Fig. 7

POWER DISSIPATED AND LOAD CURRENT LIMIT VS TEMPERATURE

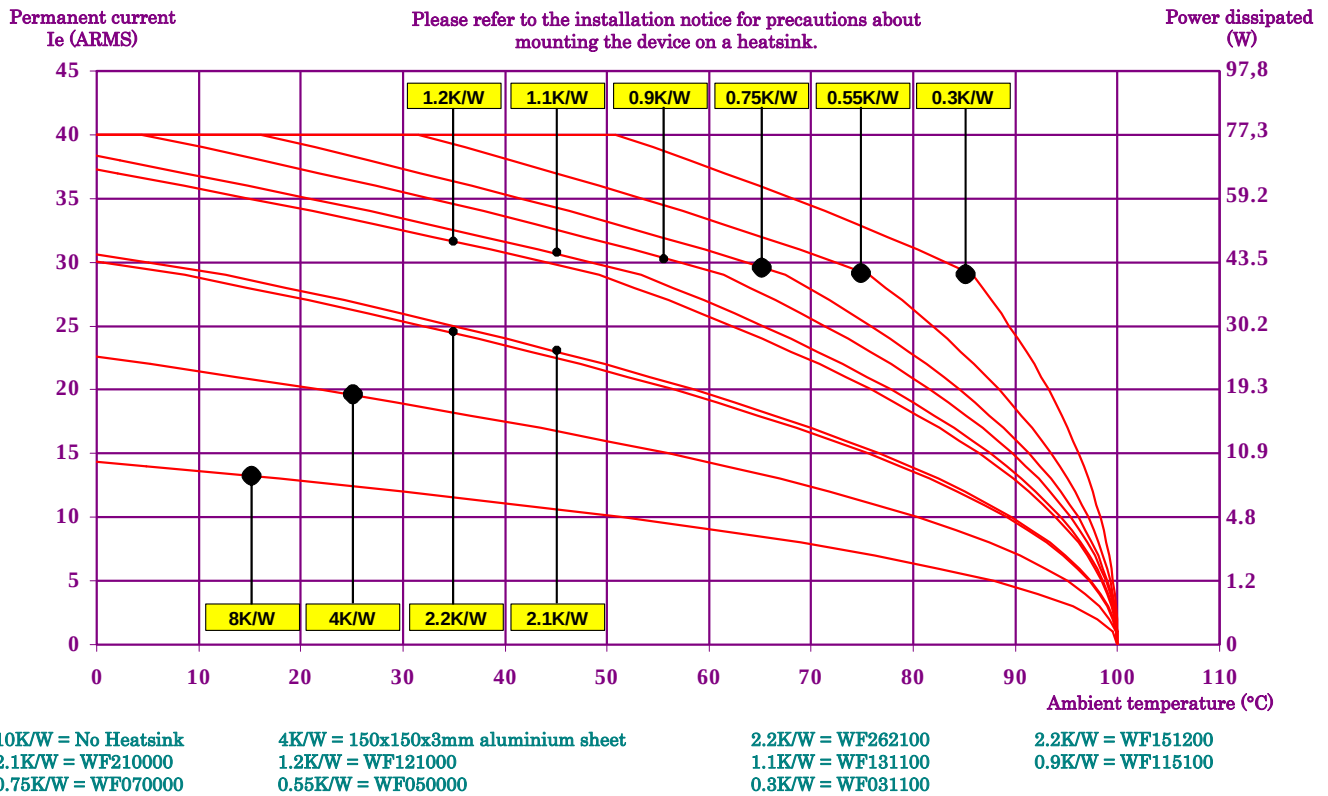
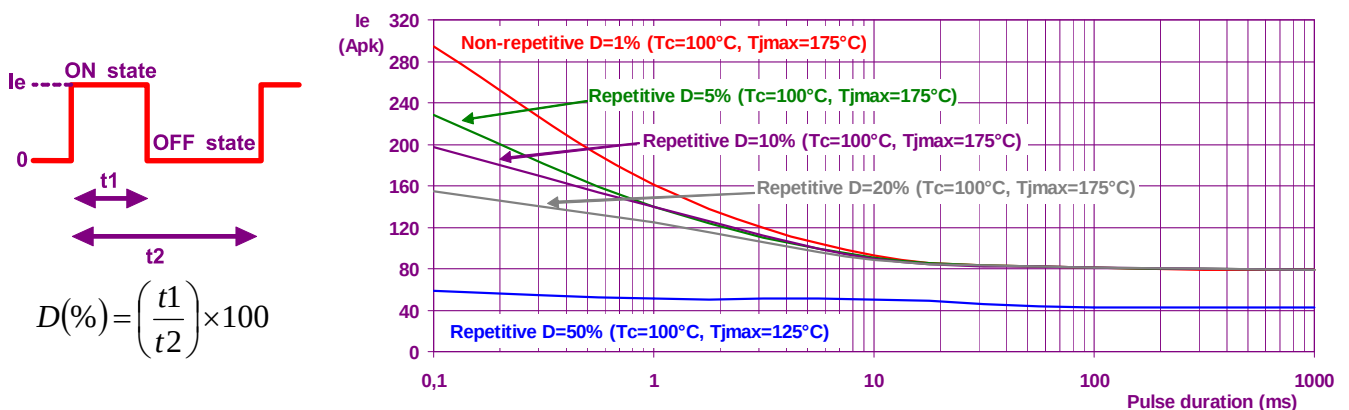


Fig. 8

PEAK OVERLOAD CURRENT vs. PULSE DURATION CHARACTERISTIC



DIMENSIONS AND ACCESSORIES

Fig. 9

DIMENSIONS (mm)

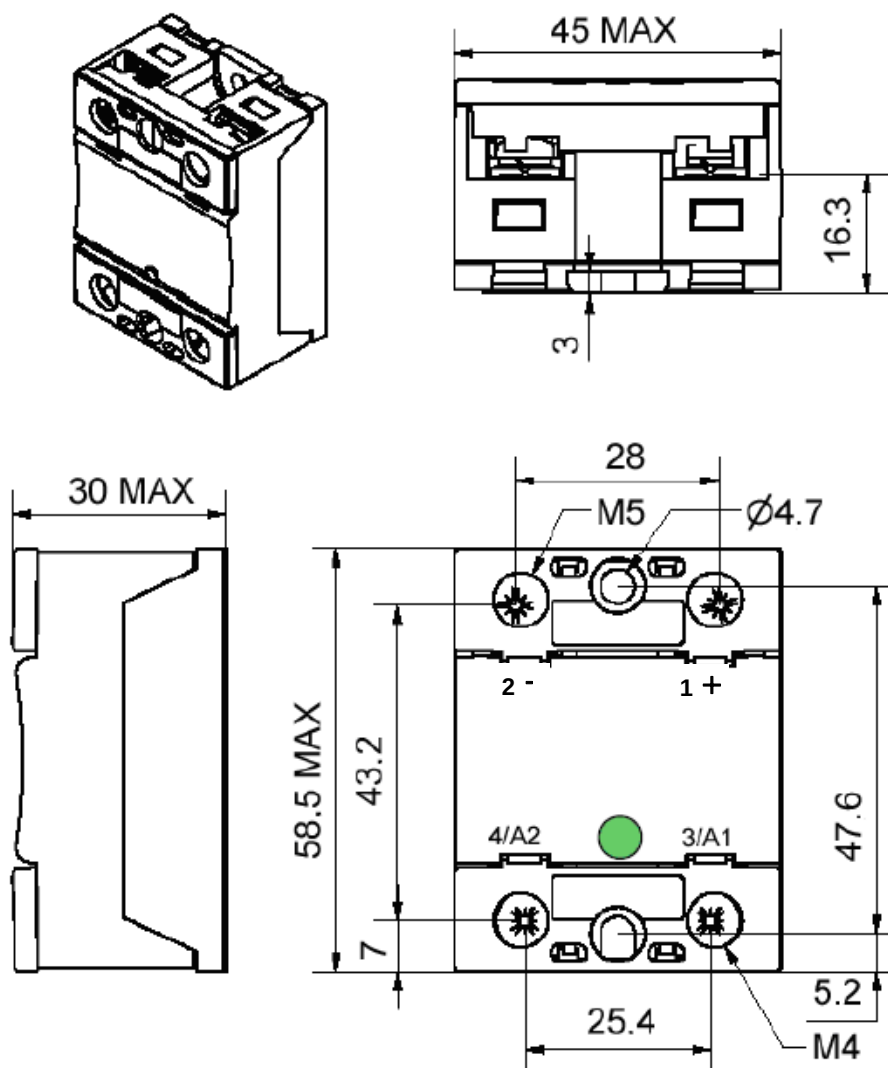


Fig. 10

ACCESSORIES

FASTON : Please contact us

