

MOSFET BASED DC SOLID-STATE RELAY (With built-in transient voltage suppressor)

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

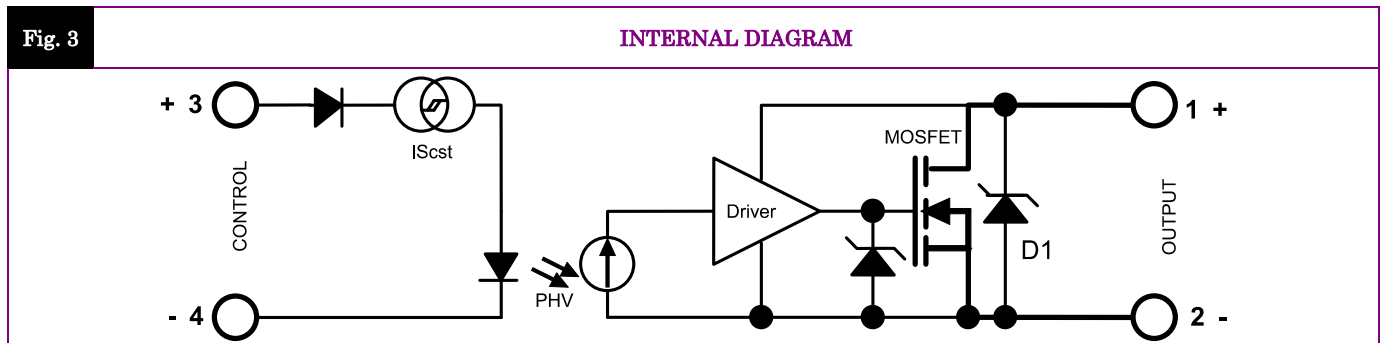
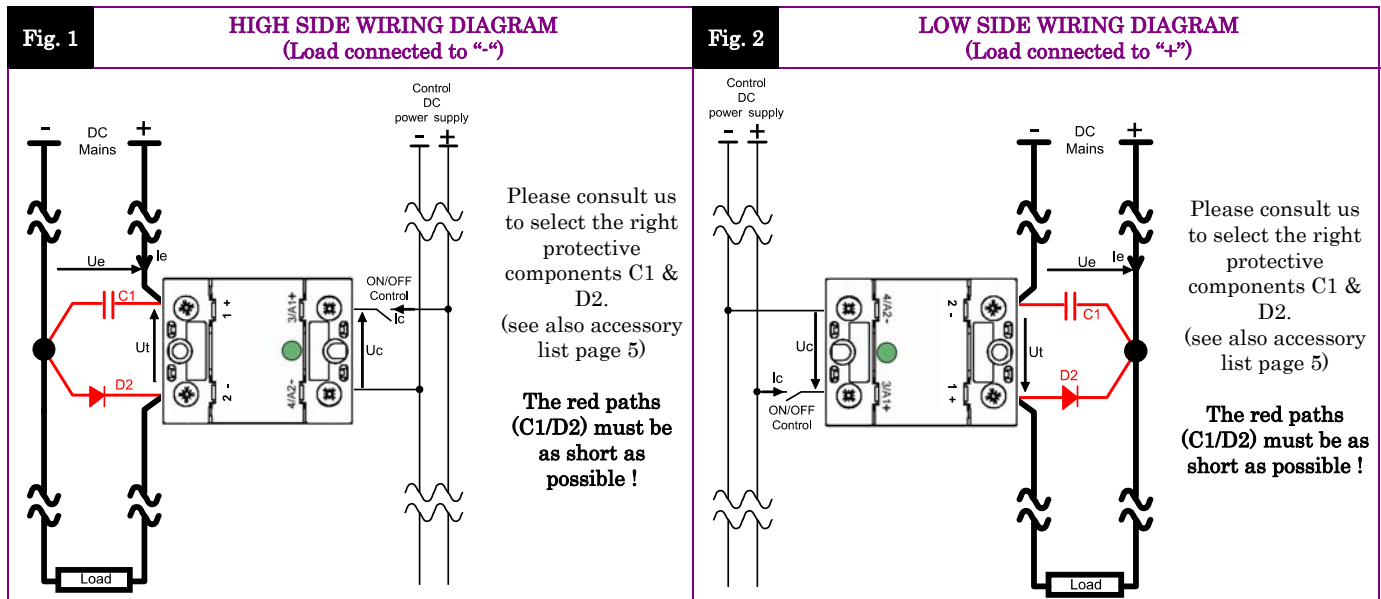


SOM06075



Control voltage range	3.5-32VDC
Max transient peak voltage	75v
Max. DC Mains peak voltage	40VDC
Max. Load Current (with heatsink)	60ADC

DC Mains voltage range	Load current range	Control input voltage range	In & case / Out Insulation	Connections	Dimensions (WxHxD)	Weight
5-40VDC (75Vpeak)	Up to 60A (with heatsink)	3.5-32VDC	2.5kV	Screw terminals	45 x 58.5 x 30	80g



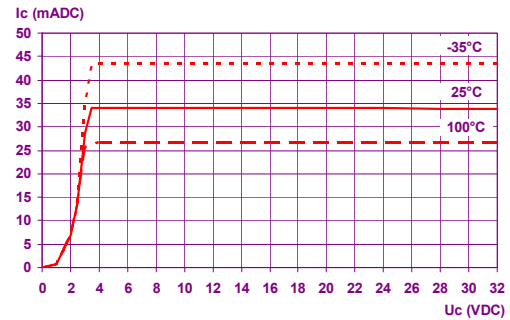
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CONTROL INPUT CHARACTERISTICS

INPUT CIRCUIT	CHARACTERISTIC	LABEL	VALUE	INFO.	Fig. 4	CONTROL CURRENT vs. CONTROL VOLTAGE
	Nom. Control voltage	U_{Cnom}	12-24VDC			
	Nom. Control current	I_{Cnom}	35mADC	-100µA/°C		
	Control voltage range	U_c	3.5 – 32VDC	typical=3.3V		
	Control current consumption	I_c	32 – 35mADC	See curve		
	Releasing control voltage	U_{Coffmax}	1VDC	Typical= 2.6V		
	Max. reverse control voltage	-U_{Cmax}	32VDC	-I _{Cmax} <100µA		
	Input impedance	R_{in}	Current limitation	See curve		


TIME CHARACTERISTICS

TIME CHARACT.	CHARACTERISTIC	LABEL	VALUE	
	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 I _e to calculate the heatsink; the protections must be chosen carefully. Please consult us if any.

POWER OUTPUT CHARACTERISTICS

POWER CIRCUIT	CHARACTERISTIC	LABEL	VALUE	INFO.
	Nominal voltage	U_{enom}	24VDC	
	Voltage range	U_t U_e	5-40VDC	U _{tmax} =40VDC
	Non-repetitive peak voltage	U_{tp}	75V	
	Overvoltage protection	D1	39V (Transient voltage suppressor)	1500W / 1ms See fig.10 & 11
	Off-state max reverse voltage drop (internal diode)	-U_t	0.92V	@I _e =75A & @U _c =0 See fig. 6
	Maximum nominal currents	I_{e max}	Resistive 60A	Motor Please contact us
	Max. non-repetitive peak current	I_{epeak}	Switch OFF D<1% 294A	ON-state 750A
	Min. load current	I_{emin}	5mA	See fig. 9
	Max. leakage current	I_{elk max}	3mA	@U _{tmax} & T _{jmax}
	Max. on-state resistance	R_{DSon}	4.5mOhms @T _j =25°C	@I _{emax}
	Typ. output capacitance	C_{out}	1.5nF	@U _{tp}
	Junction/case thermal resistance per power element	R_{thjc}	1.2K/W	
	Built-in heatsink thermal resistance vertically mounted	R_{thra}	10K/W	@ΔT _{ra} =75°C
	Heatsink thermal time constant	T_{thra}	10 minutes	@ΔT _{ra} =60°C
	Control inputs/power outputs insulation voltage	U_{imp}	2.5kV	
	Inputs/case insulation voltage	U_{imp}	2.5kV	
	Outputs/case insulation voltage	U_{imp}	2.5kV	
	Isolation resistance	R_{io}	1GΩ	
	Isolation capacitance	C_{io}	<8pF	
	Maximum junction temperature	T_{jmax}	175°C	
	Storage ambient temperature	T_{stg}	-40->+100°C	
	Operating ambient temperature	T_{amb}	-25->+90°C	See fig. 9
	Max. case temperature	T_c	100°C	

OUTPUT SWITCH CHARACTERISTIC CURVES

Fig. 5 ON RESISTANCE VS JUNCTION TEMPERATURE

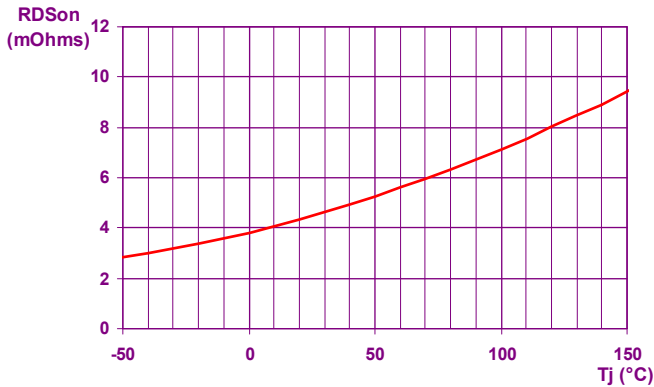


Fig. 6 REVERSE VOLTAGE DROP VS REVERSE CURRENT

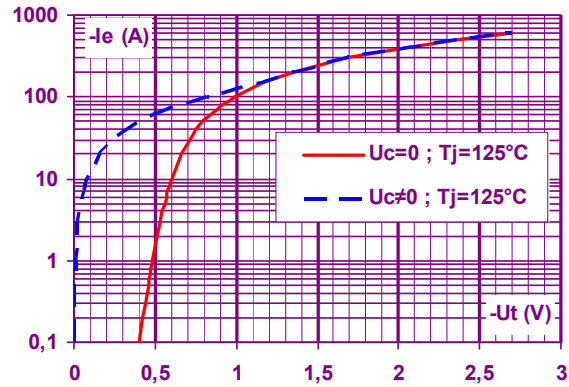


Fig. 7 POWER ELEMENT TRANSIENT THERMAL IMPEDANCE vs. PULSE DURATION

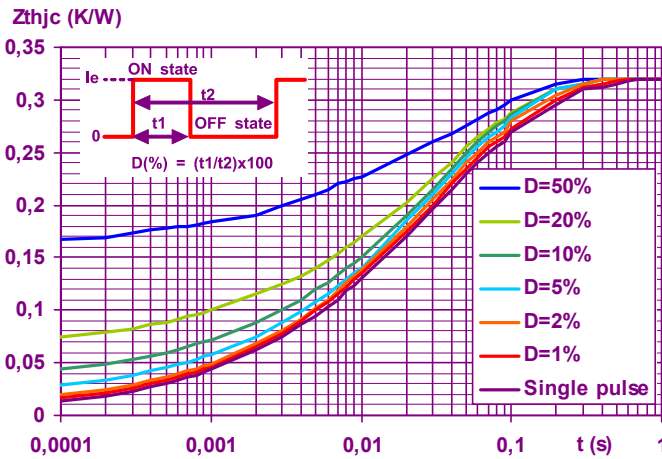


Fig. 8 ON-STATE PEAK OVERLOAD CURRENT vs. PULSE DURATION

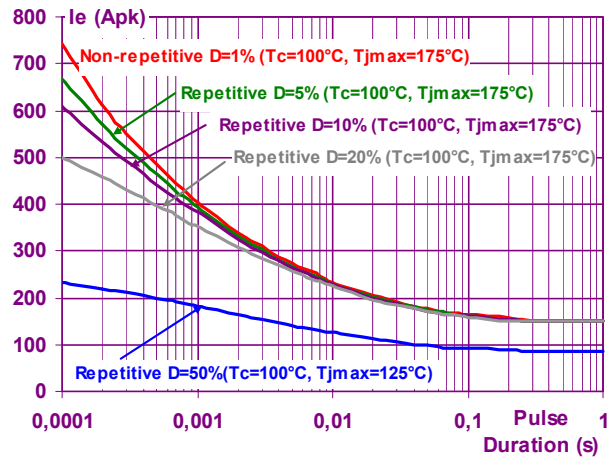
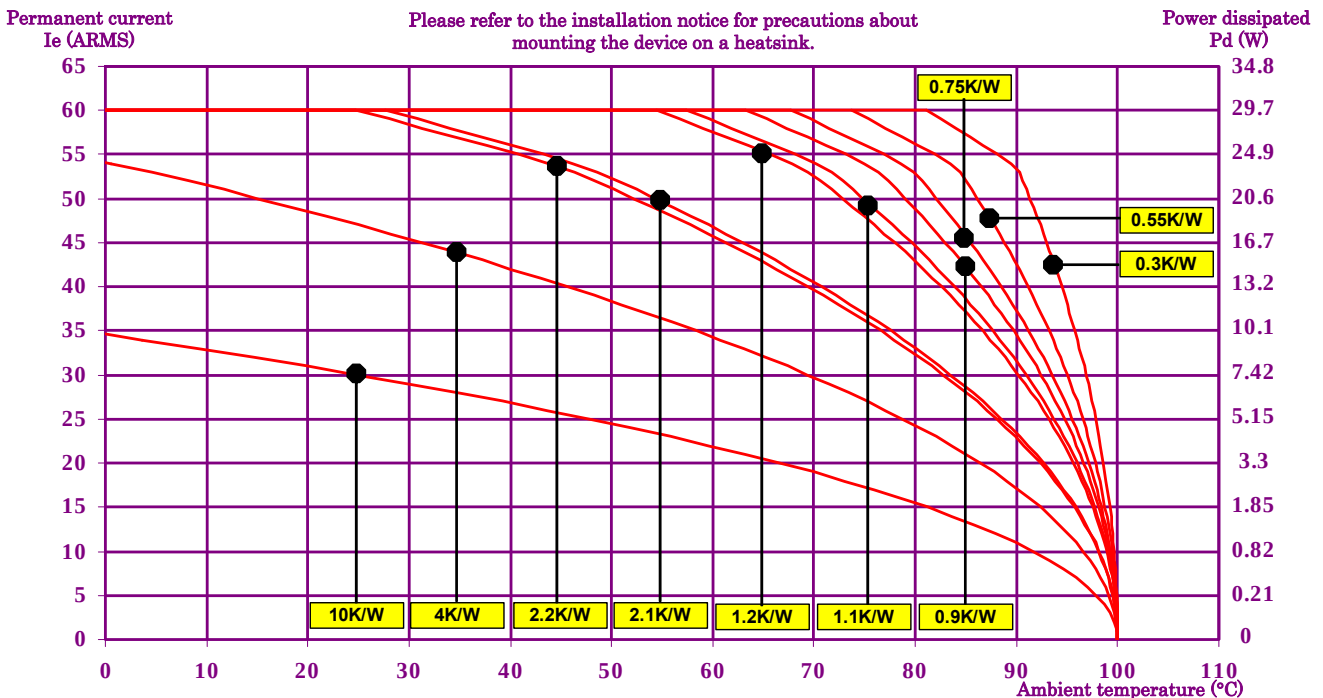


Fig. 9 POWER DISSIPATED AND LOAD CURRENT LIMIT VS TEMPERATURE



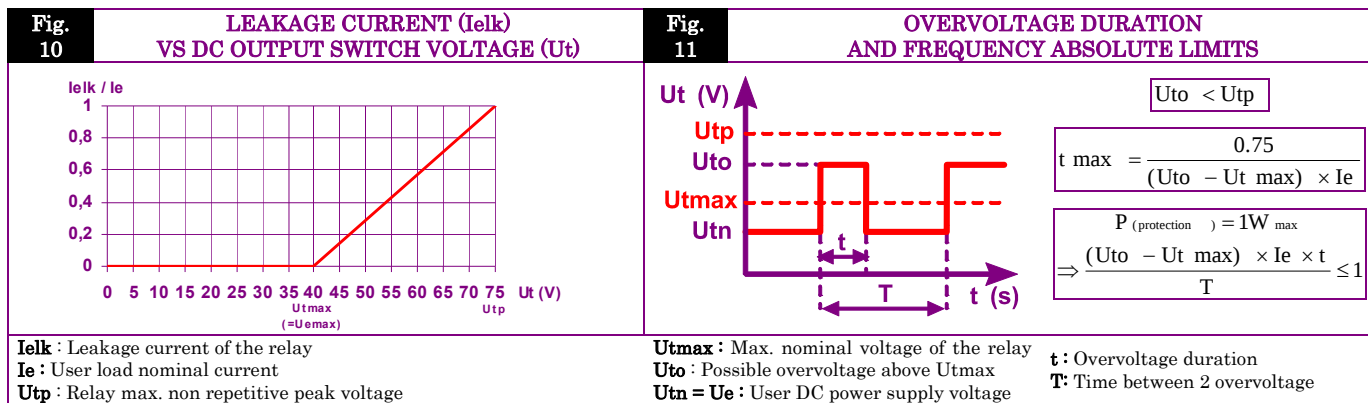
10K/W = No Heatsink / 1LD12020
2.1K/W = WF210000
0.9K/W = WF115100

4K/W = 150x150x3mm aluminium sheet
1.2K/W = WF121000
0.75K/W = WF070000

2.2K/W = WF262100 / WF151200
1.1K/W = WF131100
0.55K/W = WF050000

0.3K/W = WF031100

BUILT-IN OVERVOLTAGE PROTECTION CHARACTERISTICS



GENERAL INFORMATION

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	-	

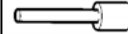
CONNECTIONS

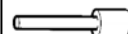
Direct connection with wires with or without ferrules



With ring terminals



okpac®				Control wiring	
Number of wires				Screwdriver type	Recommended tightening torque M4 screw
1	2	1	2		
SOLID (No ferrule)	FINE STRANDED (With ferrule)	SOLID (No ferrule)	FINE STRANDED (With ferrule)		
					N.m
0,75 ... 2,5 mm ² AWG18...AWG14	0,75 ... 2,5 mm ² AWG18...AWG14	0,75 ... 2,5 mm ² AWG18...AWG14	0,75 ... 2,5 mm ² AWG18...AWG14	POZIDRIV 2	Mini 1,2 / Typ 1.5 / Max 2

okpac®				Power wiring	
Number of wires				Modèle de tournevis / Screwdriver type	Recommended tightening torque M5 screw
1	2	1	2		
SOLID (No ferrule)	FINE STRANDED (With ferrule)	SOLID (No ferrule)	FINE STRANDED (With ferrule)		
					N.m
1,5 ... 10 mm ² AWG16...AWG8	1,5 ... 6 mm ² AWG16...AWG10	1,5 ... 10 mm ² AWG16...AWG8	1,5 ... 6 mm ² AWG16...AWG10	POZIDRIV 2	Mini 2 / Typ 2.4 / Max 3

Power with ring terminals.

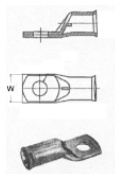
$W_{max} = 12,6mm$

16 mm² (AWG6)

25 mm² (AWG4)

35mm² (AWG2 /AWG3)

50mm² (AWG0 /AWG1)



Suitable ring terminals and special kit for high current can be delivered: see high power SSR and data-sheet for power connection.

IP20 flaps

Flaps are delivered mounted on the relay.

Labels

Marking labels are available, for mounting on flaps.
Part number : 1MZ09000
(delivered per 200 parts)



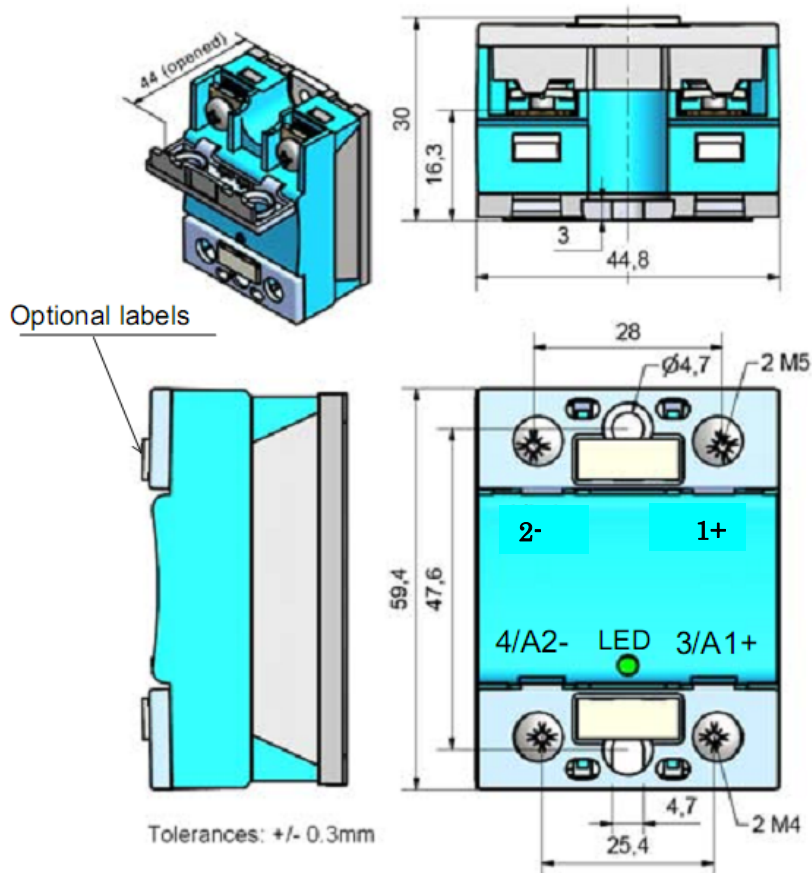
FASTONS: Consult us

DIMENSIONS AND ACCESSORIES

Fig.
12

DIMENSIONS (mm)

CAD documents : www.celduc-relais.com/uk/plan3D.asp



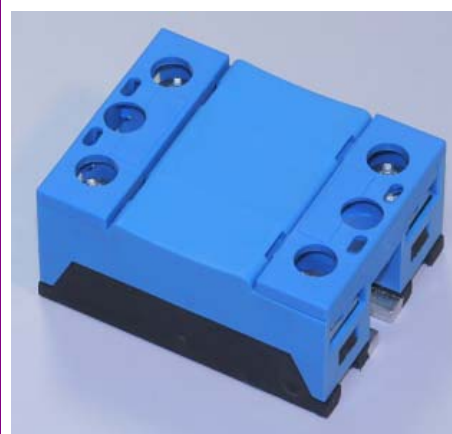
ACCESSORIES

READY TO USE OVERVOLTAGE PROTECTION ESO01000

(Please check our website for availability)

This device includes a diode (D2) and a capacitor (C1) suitable for most of the DC application.

To be mounted close to the SOM.



Please consult our website for other accessory references
(Heatsinks, mounting adaptors, thermal grease...)