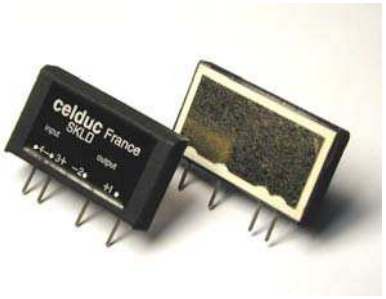
MOSFET BASED DC SOLID STATE RELAY

SKLD10510

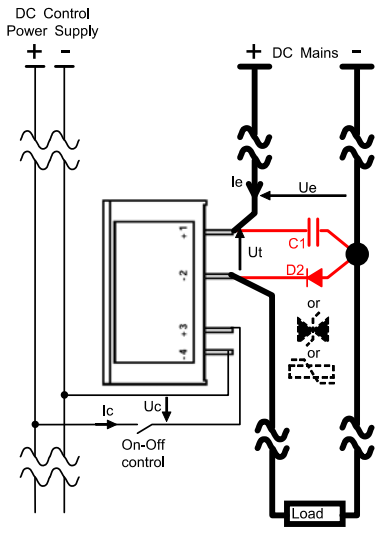
- For PCB or standard sockets
- Latest MOSFET technology generation.
- Ultra low on-state resistance.
- Built-in overvoltage protection (transil diode)
- Low control current consumption
- Applications :
  - ➔ Traffic lights
  - ➔ Small motors, electromagnets, lights, heaters
  - ➔ Measurement products
  - ➔ ...



Control voltage range	3-10VDC
Max output peak voltage	100VDC
Nom. load current without heatsink	8ADC

Load voltage range	Load current range	Control input voltage range	In & case / Out Insulation	Connections	Dimensions (WxHxD in mm)	Weight
24-48VDC	0 to 8A (more with a heatsink)	3-10VDC	2.5kV	Terminals for PCB or standard sockets	43.6 x 24.5 x 6.3 (housing)	15g

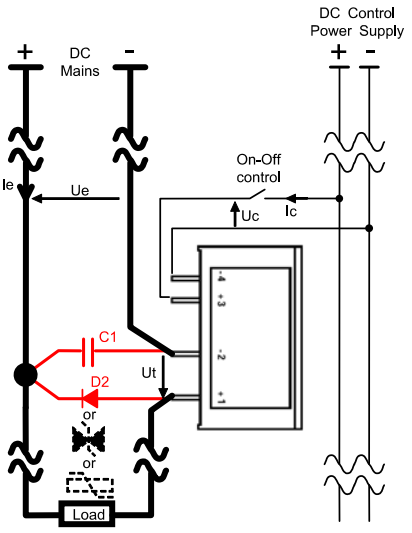
Fig. 1 HIGH SIDE WIRING DIAGRAM (Load connected to "-")



See Instruction sheet for selective the right protective components.

Red paths (C1/D2) should be as short as possible!

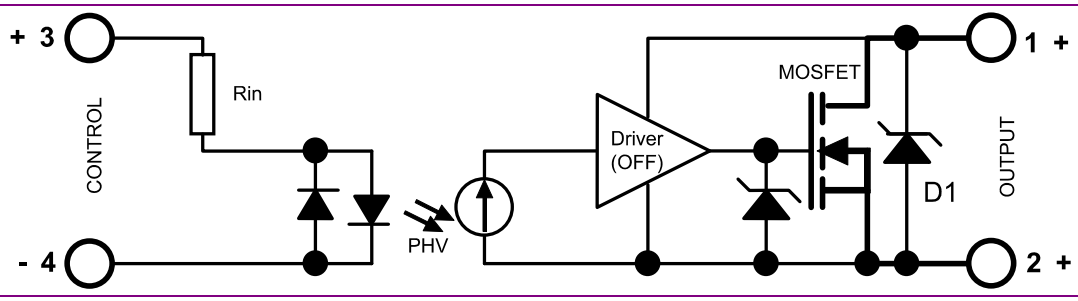
Fig. 2 LOW SIDE WIRING DIAGRAM (Load connected to "+")



See Instruction sheet for selective the right protective components.

Red paths (C1/D2) should be as short as possible!

Fig. 3 INTERNAL DIAGRAM



CONTROL INPUT CHARACTERISTICS

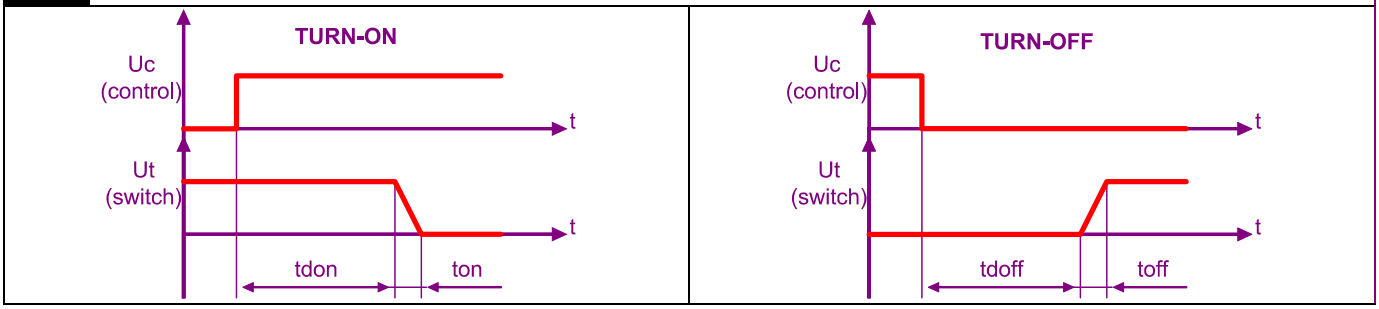
	CHARACTERISTIC	LABEL	VALUE	INFO.
INPUT CIRCUIT	Nominal control voltage	Ucnom	5VDC	
	Nominal control current	Icnom	14mADC	
	Control voltage range	Uc	3 – 10VDC	
	Current consumption	Ic	7 – 32mADC for control voltage range	See fig. 5
	Releasing voltage	Ucoffmax	1VDC	
	Max. reverse voltage	-Ucmax	10VDC	
	Input impedance	Rin	270Ω	See fig. 5

POWER OUTPUT CHARACTERISTICS

	CHARACTERISTIC	LABEL	VALUE		INFO.
POWER CIRCUIT	Mains Nominal voltage	Uenom	**24-48VDC**		
	Mains voltage range	Ue	**10-62VDC**		
	Non-repetitive peak voltage	Uep	100V		
	Overvoltage protection	D1	60V@1mA 96.8V@6.2A/1ms		See Instruction sheet for selective the right protective components
	Reverse voltage (internal diode)	-Ue	1,6V		@Ie=50A @Uc=0
	Max. repetitive avalanche current	Iep	50A		Pulse width limited by Tj max
	Max. single pulse avalanche energy	Eep	400mJ		@Ue=50V @Ie=Iep
	Max. repetitive pulse avalanche energy	Eep	-		
	Maximum nominal currents	Ie	Resistive	Motor	See fig. 7 for limits
			8A (without heatsink)	Please consult us	
	Non-repetitive peak overload current	Iepeak	200A @Ue=50VDC $L_{(parasitic + line)}$=2nHmax		See fig. 8
	Min. load current	Iemin	0.1mA		
	Max. leakage current	Ielk	0.1mADC		@Uep @Tjmax
	Max. on-state resistance	RDSon	55mΩ		@Iemax @Tjmax
	Typ. output capacitance	Cout	0.5nF		
	Junction/case thermal resistance per power element	Rthjc	1.1K/W		Total = 1 power elements
	Relay/ambient thermal resistance vertically mounted	Rthra	25.4K/W		@ΔTra=60°C
	Relay thermal time constant	Tthra	2min		@ΔTra=60°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	**-40->+90°C**		See fig. 7
	Max. case temperature	Tc	**100°C**		

TIME CHARACTERISTICS

Fig. 4 — TIME DIAGRAMS



TIME CHARACT.	CHARACTERISTIC	LABEL	VALUE	INFO.
	Turn on time	ton	15µs	
	Turn on delay	tdon	15µs	
	Turn off time	toff	150µs	
	Turn off delay	tdoff	150µs	
	Max. On-Off frequency	$F_{(on-off)}$	1Hz	Please consult us for higher frequency

GENERAL INFORMATION

MISC.				
	Max connection soldering temperature		300°C 10s	
	Housing		UL94V0	
	Mounting		PCB ; A special clip is necessary to attach a heatsink	See mounting sheet
	Noise level		No audible noise	
	Weight		15g	

STANDARDS

GENERAL				
	Standards		IEC60947-1	
	Protection level		IP00	
	Protection against direct touch		None	
	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	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)	?
	Voltage drop	EN61000-4-11	-	

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

CHARACTERISTIC CURVES

Fig. 5 INPUT CHARACTERISTIC

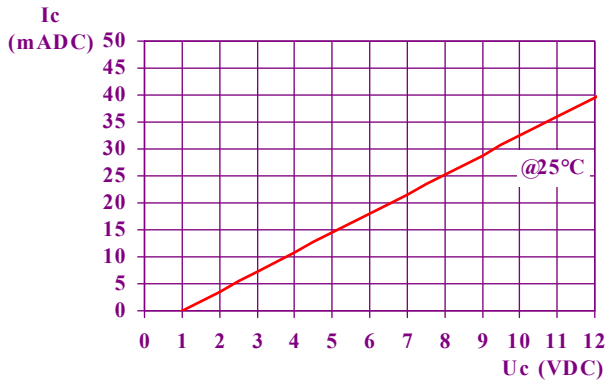


Fig. 6 ON RESISTANCE VS TEMPERATURE

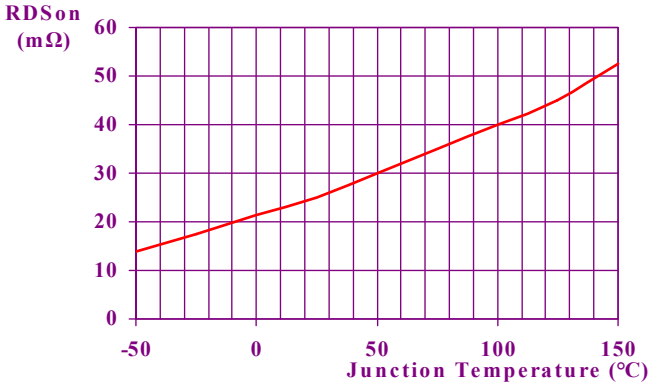


Fig. 7 POWER DISSIPATED AND LOAD CURRENT LIMIT VS TEMPERATURE

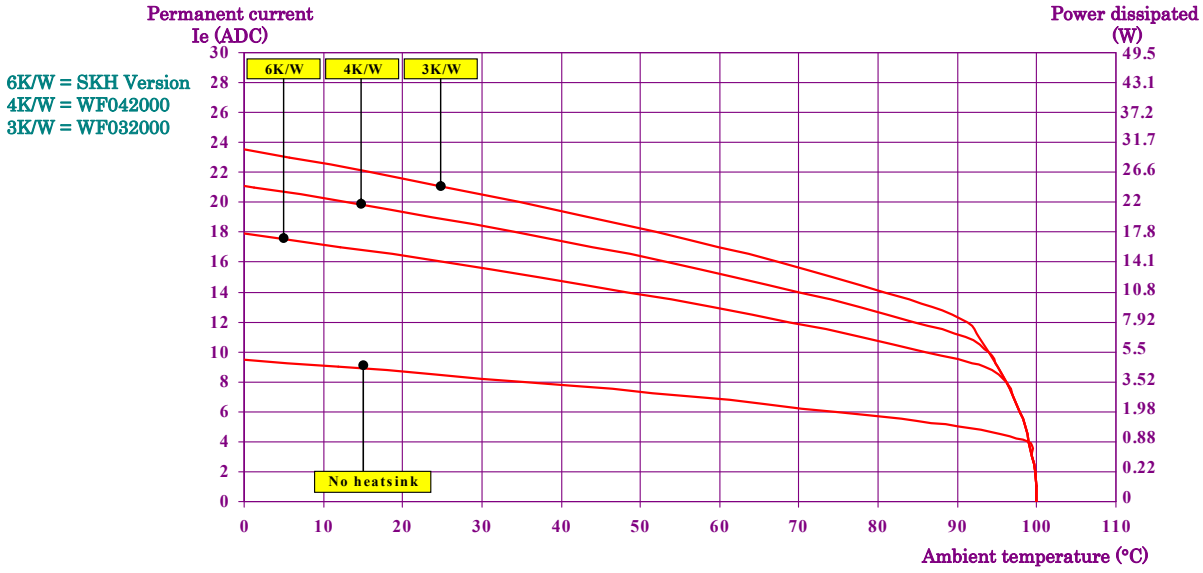
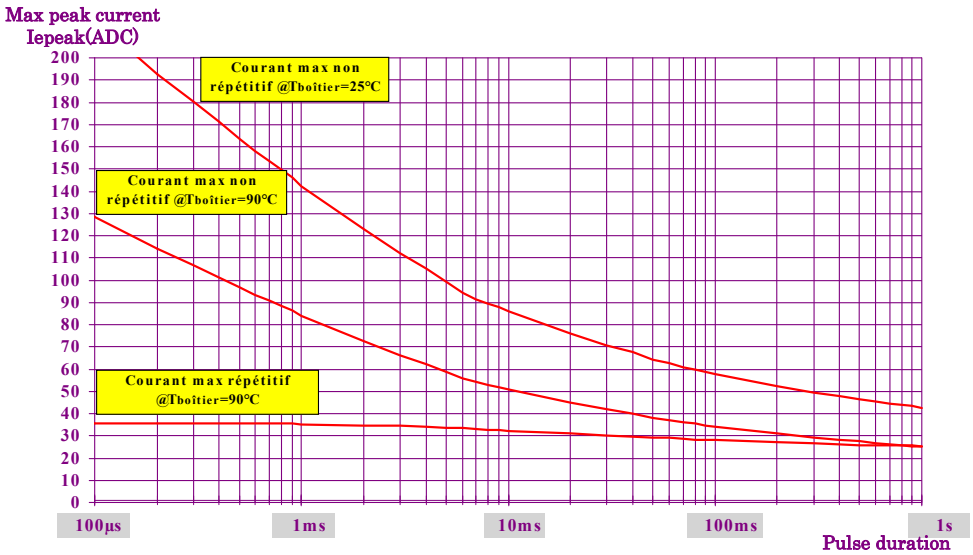


Fig. 8 CURRENT OVERLOAD CHARACTERISTIC (ITSM)



DIMENSIONS AND ACCESSORIES

Fig. 9 DIMENSIONS

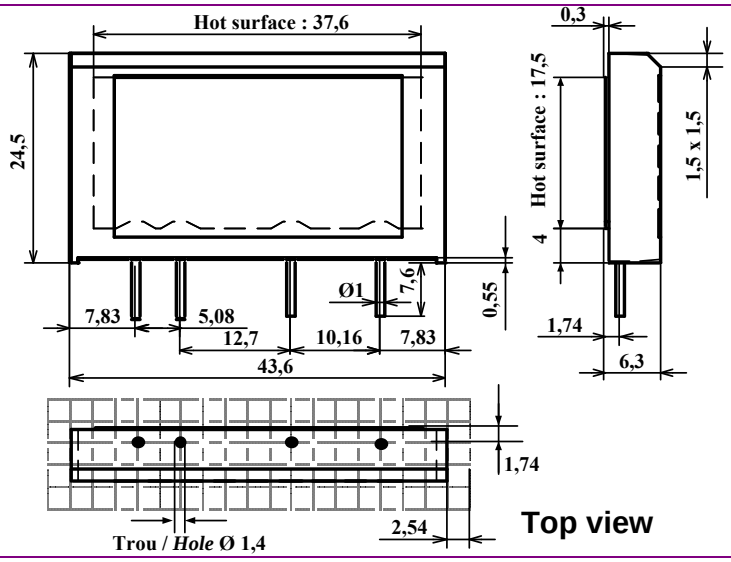
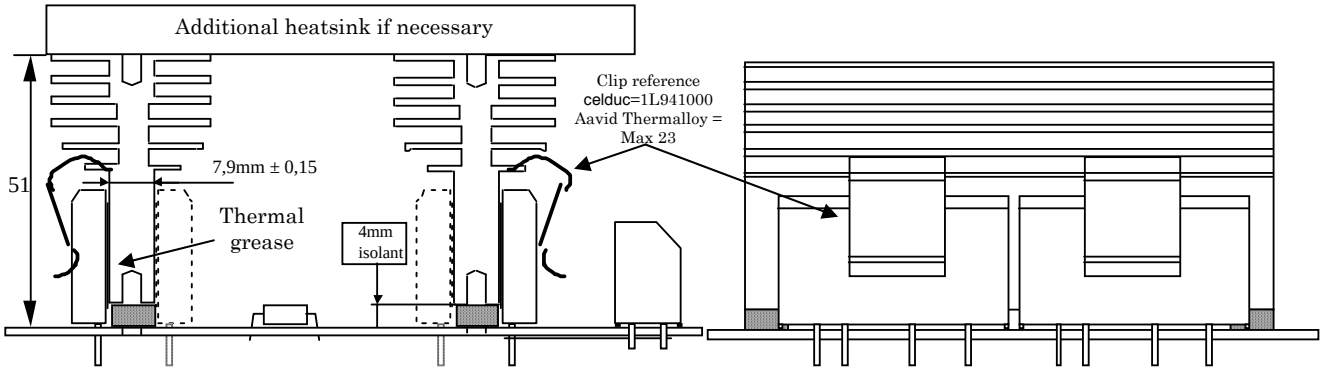


Fig. 10 ACCESSORIES

Heatsinks with mounting clips (Max Clip System(*))

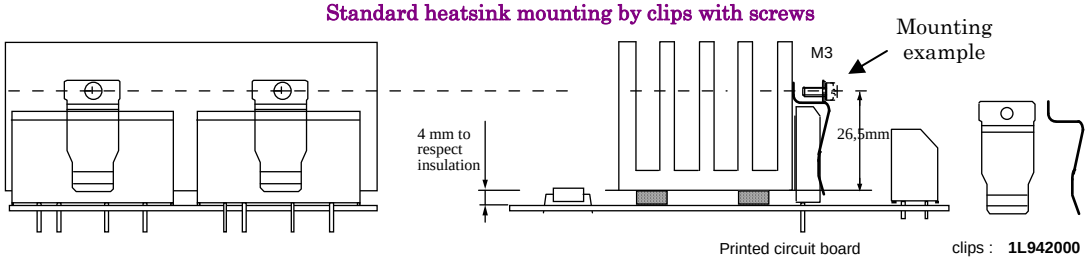
celduc heatsink references (equivalent to Aavid Thermalloy S507) :

WF042000 : L=100mm ; almost 4K/W (1SSR) without ventilation (3.6K/W with 4 SSR)
WF032000 : L=150mm ; almost 3K/W (1SSR) without ventilation (2.6K/W with 6 SSR)
Large range of heatsinks available on request.



(*) Max Clip System of Aavid Thermalloy, patended worldwide (patent Nr9805561)

Standard heatsink mounting by clips with screws



4mm thick isolated washers can be placed like shown on figures to keep a sufficient insulation between input and output on the printed circuit board (the heatsink is conductive).
Please use thermal grease to ensure a good thermal contact between the SSR and the heatsink.

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