

MOSFET BASED DC SOLID-STATE RELAY



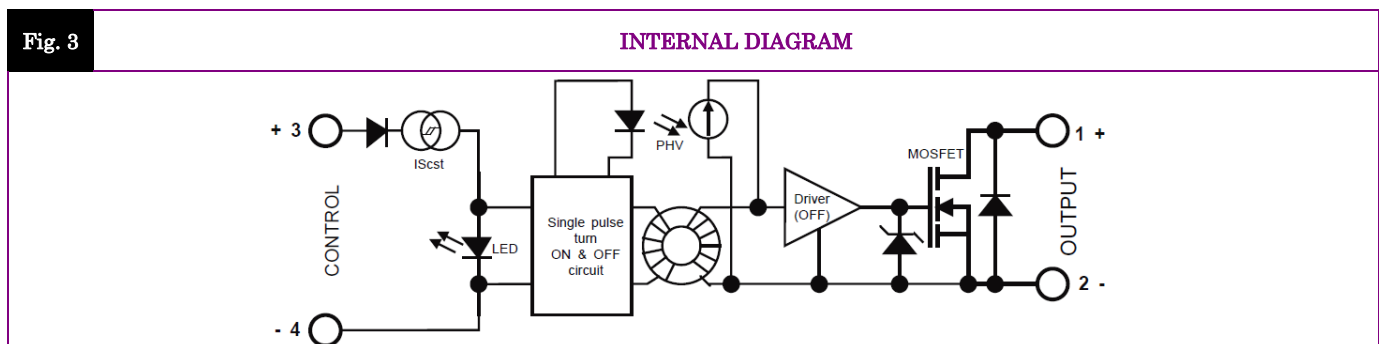
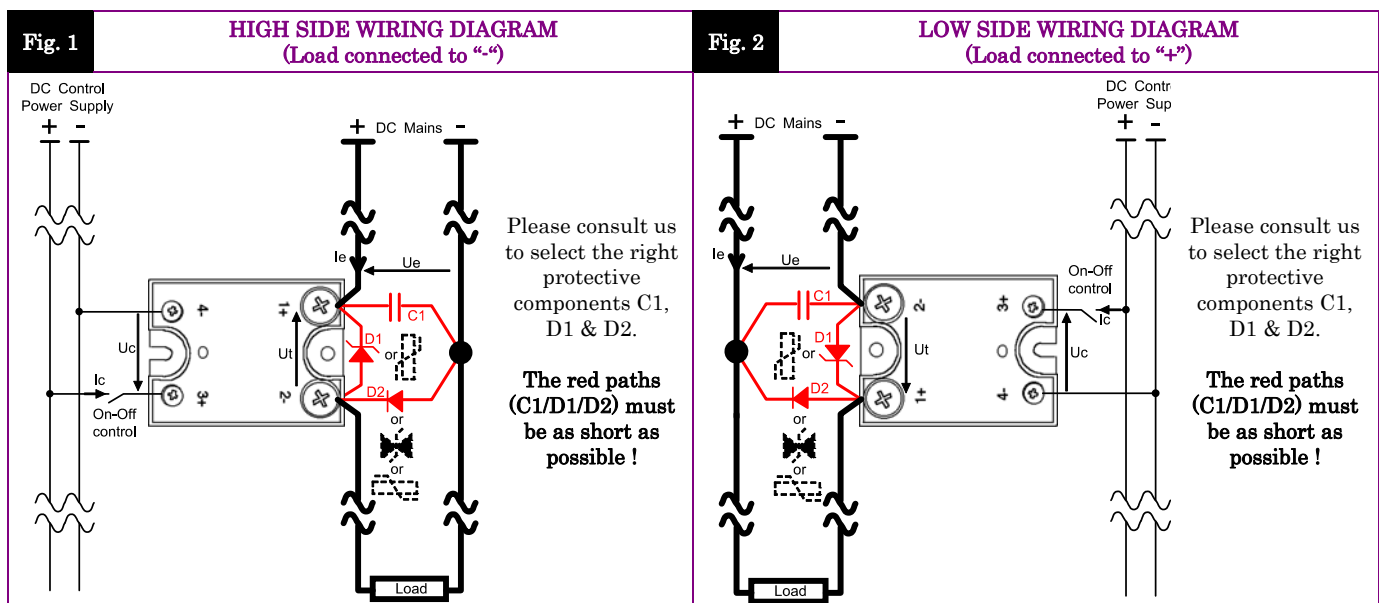
- ▶ Latest MOSFET technology generation.
- ▶ Ultra low on-state resistance.
- ▶ New innovative isolated driver ensuring fast power transistor turn on and off therefore low power transient.
- ▶ Ultra low output leakage current
- ▶ Low control current consumption
- ▶ Triggered control input to avoid linear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

SCM0150100



Control voltage range	4.5-32VDC
Max transient peak voltage	100v
Advised max. DC Mains peak voltage	Depend on the voltage protection
Max. Load Current (with heatsink)	150ADC

DC Mains voltage range	Load current range	Control input voltage range	In & case / Out Insulation	Connections	Dimensions (WxHxD)	Weight
(Depends on protection clamping voltage)	0 to 150A (with heatsink)	4.5-32VDC	4kV	M3 round tabs M5 round tabs	44.5 x 58.2 x 27 (mm)	100g

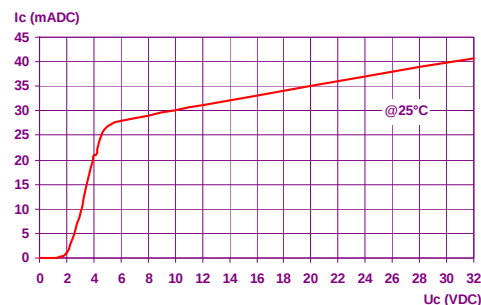


Proud to serve you

celduc®
r e l a i s

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			
	Control voltage range	U_c	4.5 – 32VDC	typical=4.3V		
	Control current consumption	I_c	25 – 42mADC	See curve		
	Releasing control voltage	$U_{Coffmax}$	1VDC	Typical= 3.5V		
	Max. reverse control voltage	$-U_{Cmax}$	32VDC	$-I_{Cmax} < 100\mu A$		
	Input impedance	R_{in}	Current limitation	See curve		


TIME CHARACTERISTICS

TIME CHARACT.	CHARACTERISTIC	LABEL	VALUE	
	Turn on time	t_{on}	10 μ s	
	Turn on delay	t_{don}	600 μ s	
	Turn off time	t_{off}	10 μ s	
	Turn off delay	t_{doft}	100 μ s	
	Max. On-Off frequency	$F_{(on-off)}$	700Hz	

POWER OUTPUT CHARACTERISTICS

POWER CIRCUIT	CHARACTERISTIC		LABEL	VALUE		INFO.
	Mains voltage range		U_t U_e	$Min = R_{DSon} \times I_e$		Depends on protection clamping voltage (D1)
	Non-repetitive peak voltage		U_{tp}	100V		
	Overvoltage protection		D1	Not integrated A voltage clamping mean must be connected across the terminals 1 & 2 (see fig 1 & 2)		Please consult us to select the right protective components
	Off-state max reverse voltage drop (internal diode)		$-U_t$	0.85V		@ $I_e=150A$ @ $U_c=0$
	Maximum nominal currents		$I_e \text{ max}$	Resistive	Motor	See fig. 9
				150A	Please contact us	
	Max. non-repetitive peak current		I_{epeak}	1000A		See fig. 8
	Min. load current		I_{emin}	0mA		
	Max. leakage current		$I_{elk \text{ max}}$	500 μ A		@ U_{tp} @ T_{jmax}
	Max. on-state resistance		R_{DSon}	1mOhms @ $T_j=25^\circ C$	1.9mOhms @ $T_j=125^\circ C$	@ I_{emax}
	Typ. output capacitance		C_{out}	2.7nF		@ U_{tp}
	Junction/case thermal resistance		R_{thjc}	0.45K/W		
	Built-in heatsink thermal resistance vertically mounted		R_{thra}	10K/W		@ $\Delta T_{ra}=75^\circ C$
	Heatsink thermal time constant		T_{thra}	10 minutes		@ $\Delta T_{ra}=60^\circ C$
	Control inputs/power outputs insulation voltage		U_{imp}	4kV		
	Inputs/case insulation voltage		U_{imp}	4kV		
	Outputs/case insulation voltage		U_{imp}	4kV		
	Isolation resistance		R_{io}	1G Ω		
	Isolation capacitance		C_{io}	<8pF		
	Maximum junction temperature		T_{jmax}	175 $^\circ C$		
	Storage ambient temperature		T_{stg}	-40 $^\circ C$ > +100 $^\circ C$		
	Operating ambient temperature		T_{amb}	-40 $^\circ C$ > +90 $^\circ C$		See fig. 9
	Max. case temperature		T_c	100 $^\circ C$		

OUTPUT SWITCH CHARACTERISTIC CURVES

Fig. 5 ON RESISTANCE VS JUNCTION TEMPERATURE

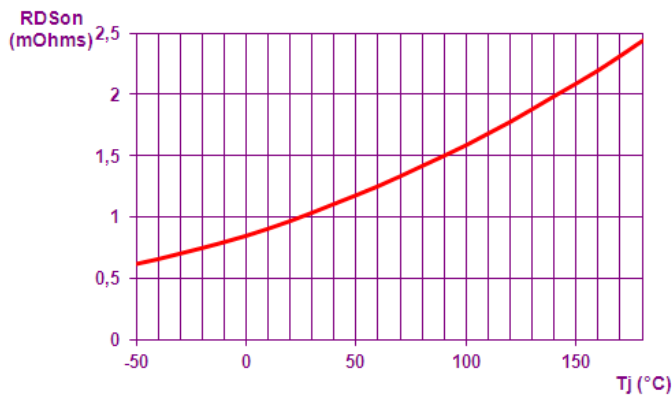


Fig. 6 REVERSE VOLTAGE DROP VS REVERSE CURRENT

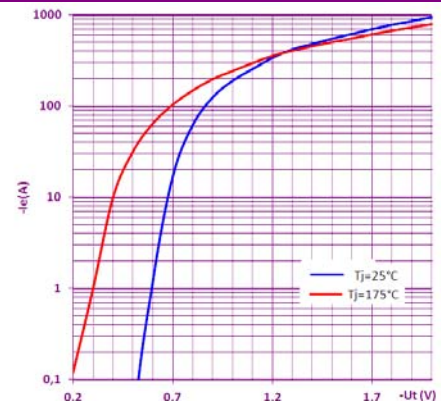


Fig. 7 POWER ELEMENT TRANSIENT THERMAL IMPEDANCE vs. PULSE DURATION

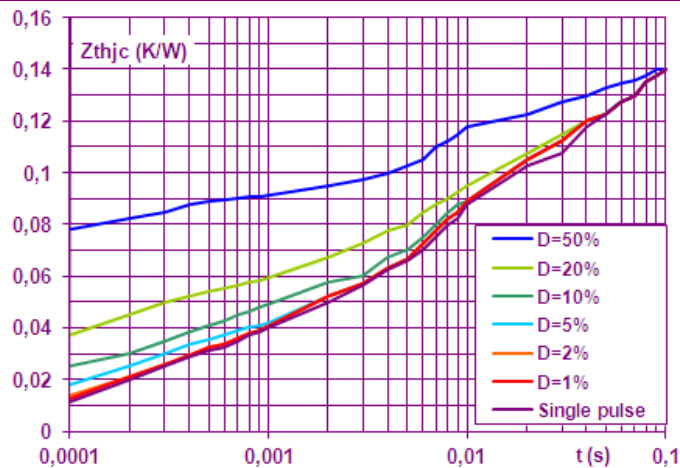


Fig. 8 ON-STATE PEAK OVERLOAD CURRENT vs. PULSE DURATION

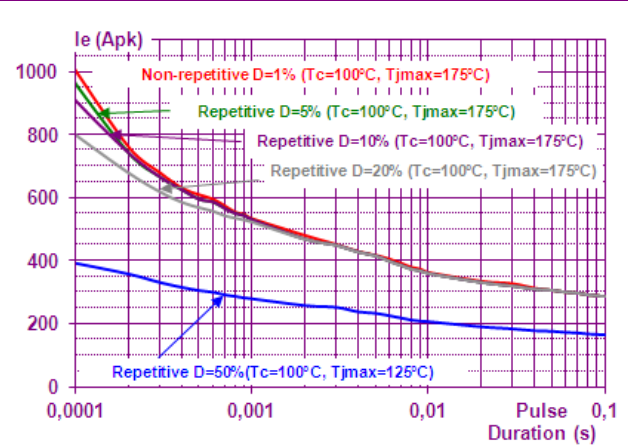
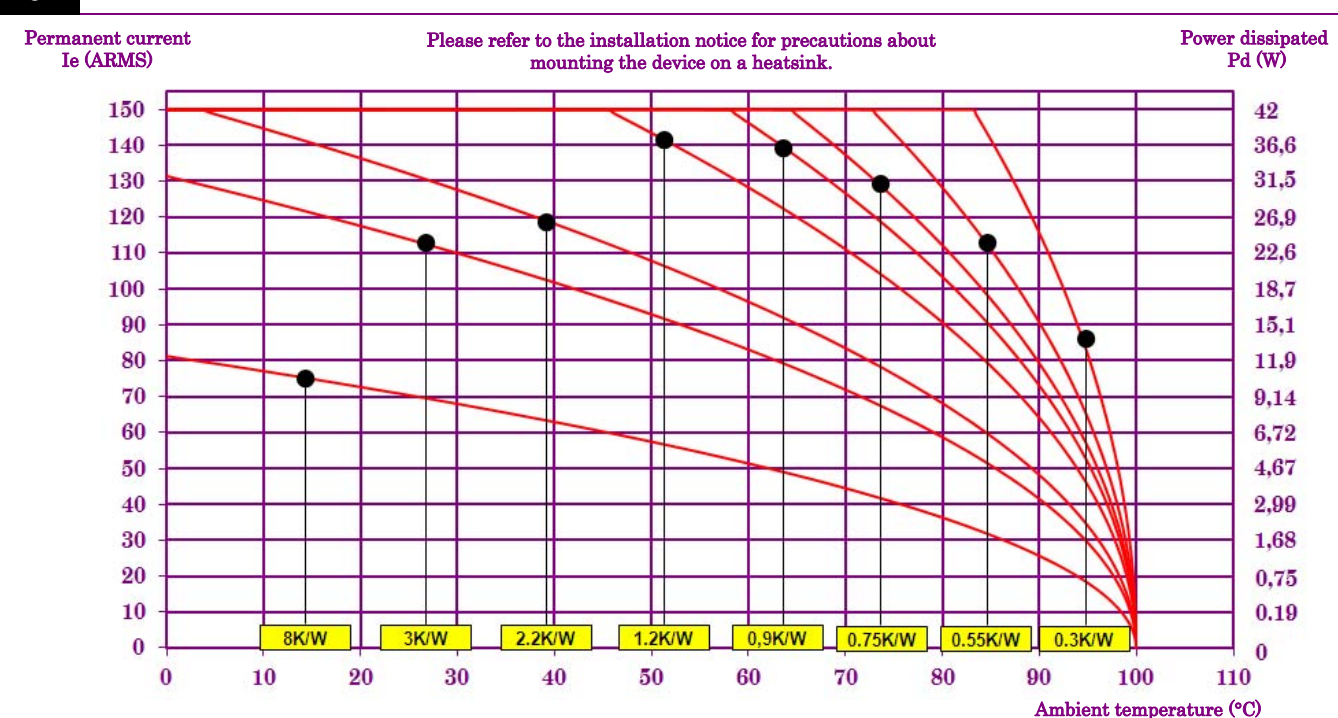


Fig. 9 POWER DISSIPATED AND LOAD CURRENT LIMIT VS TEMPERATURE



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

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 (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	

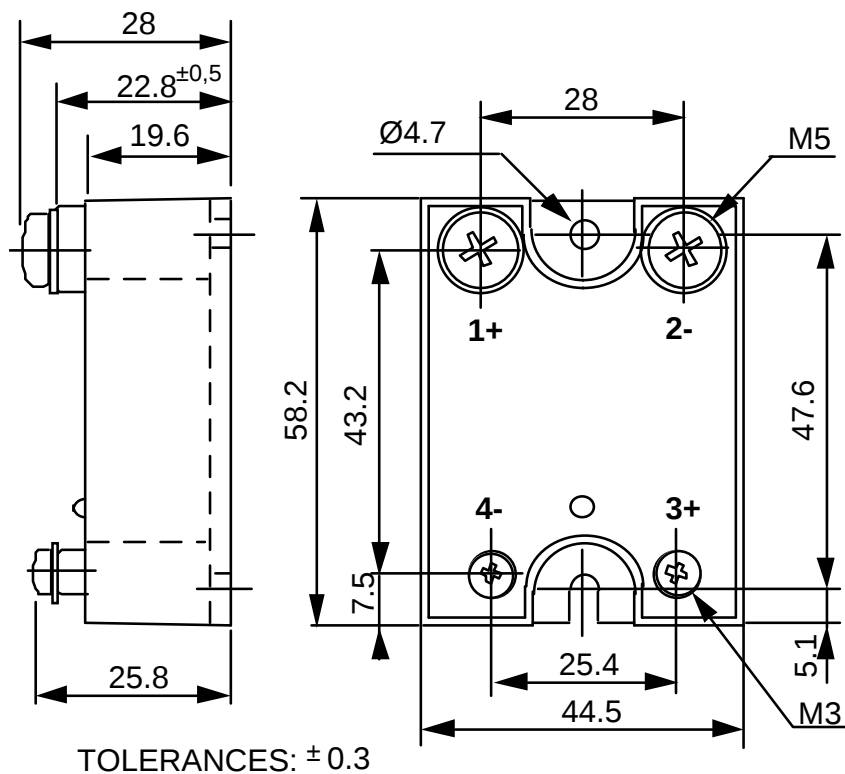
E.M.C. IMMUNITY	TYPE OF TEST	STANDARD	LEVEL	EFFECT
	E.S.D. (Electrostatic discharges)	EN61000-4-2	Pending	?
	Radiated electromagnetic fields	EN61000-4-3	Pending	?
	Fast transients bursts	EN61000-4-4	Pending	No effect
	Electric chocks	EN61000-4-5	Pending	?
	Voltage drop	EN61000-4-11	-	

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

DIMENSIONS AND ACCESSORIES

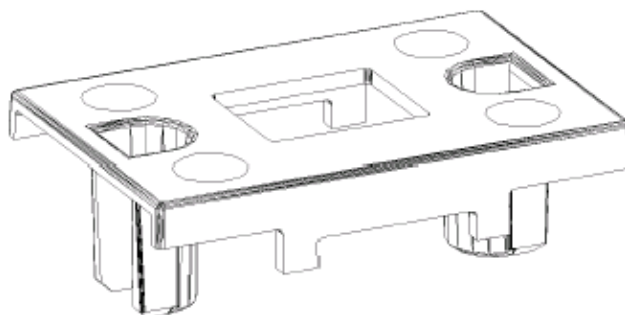
Fig.
10

DIMENSIONS (mm)



ACCESSORIES

PROTECTIVE COVER 1K470000



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