

## VOLTAGE PROTECTION FOR DC SOLID-STATE RELAYS

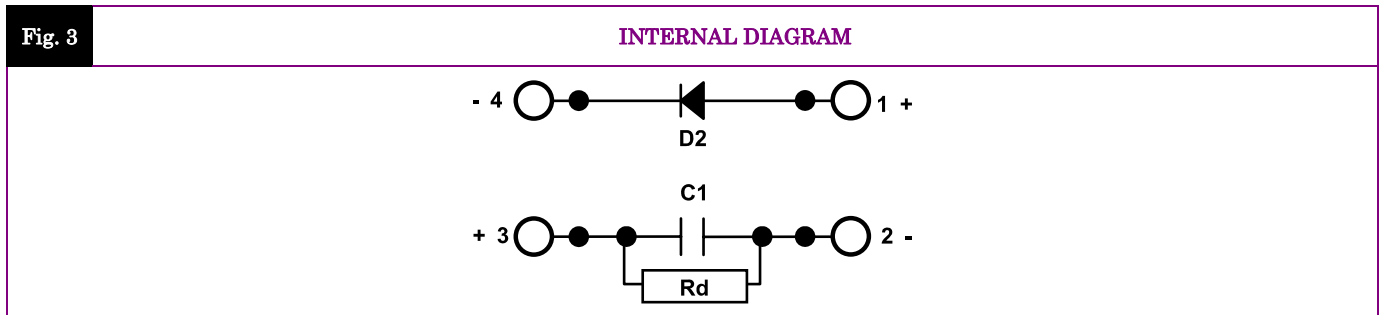
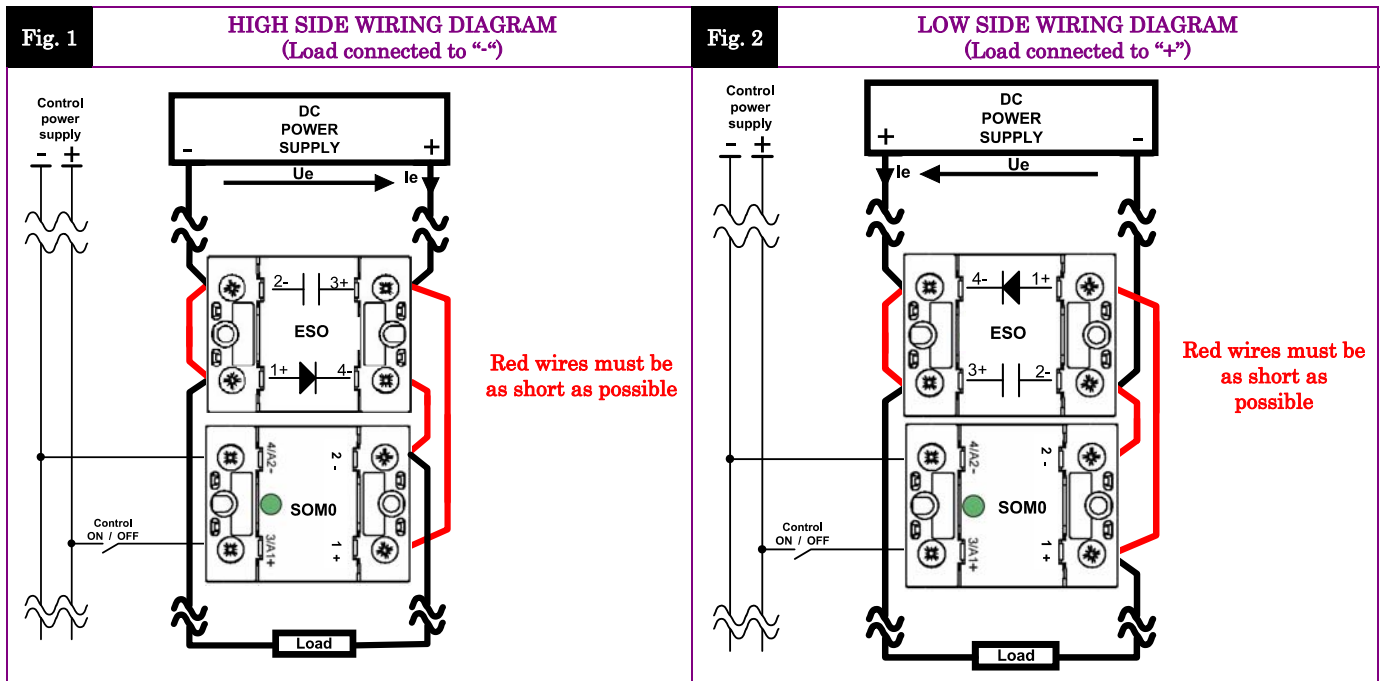
- ▶ Helps protecting solid-state relays against voltage transient due to the inductive effect of lines and loads.
- ▶ Fly wheel diode (D2), with fast response, low on-state voltage drop and connection polarity free, mounted on the metal base plate to be cooled by a heatsink for high switching frequency applications (PWM)
- ▶ Decoupling capacitor (C1), connection polarity free and non polarized (polyester) equipped with a discharging resistor
- ▶ SSR voltage clamping function (D1) not included therefore more adapted to SOM0 DC SSR range (SSR with built-in voltage protection D1)

# ESO01000



Non-repetitive peak voltage	200VDC
Max operating permanent current	80A
Clamping voltage function for DC relays (D1)	No

Operating voltage range	Current range	DC SSR clamping voltage function	Isolations	Connections	Dimensions (LxHxD)	Weight
0-130VDC	0-80A	Non	4kV	Screw terminals	45 x 58.5 x 30	80g



*Proud to serve you*

**GENERAL CHARACTERISTICS**

POWER CIRCUIT	CHARACTERISTIC	LABEL	VALUE	INFO.
	DC mains max voltage	<b>U<sub>emax</sub></b>	<b>130VDC</b>	
	Non repetitive peak voltage	<b>U<sub>ep</sub></b>	200V	
	Max voltage rise	<b>dU<sub>e</sub>/dt</b>	125V/μs	U <sub>e</sub> =U <sub>ep</sub>
	Max nominal current	<b>I<sub>e max</sub></b>	80A	
	Power output/case insulation	<b>U<sub>imp</sub></b>	4kV	
	Isolation resistance	<b>R<sub>io</sub></b>	1GΩ	
	Isolation capacitance	<b>C<sub>io</sub></b>	<8pF	
	Storage ambient temperature	<b>T<sub>stg</sub></b>	-40°C -> +100°C	
	Operating ambient temperature	<b>T<sub>amb</sub></b>	-40°C -> +90°C	
Max. case temperature	<b>T<sub>c</sub></b>	100°C		

**LINE CIRCUIT CHARACTERISTICS (C1 & Rd)**

LINE CIRCUIT	CHARACTERISTIC	LABEL	VALUE	INFO.
	Decoupling capacitor	<b>C1</b>	4.4μF ±20%	
	Technology		Polyester	
	Discharging resistor	<b>Rd</b>	1MΩ / 0.5 W	
Discharging time constant	<b>τ</b>	2s		

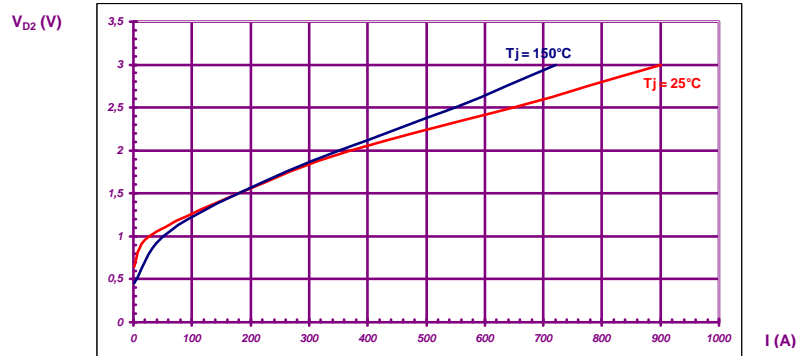
**LOAD CIRCUIT CHARACTERISTICS (D2)**

LOAD CIRCUIT	CHARACTERISTIC	LABEL	VALUE	INFO.
	Voltage drop during fly wheel	<b>U<sub>D2</sub></b> (V <sub>F</sub> )	1.2V	@I <sub>e</sub> =80A see fig. 4
	Instantaneous power dissipation	<b>P<sub>D2</sub></b>	0.96 + 0.003 x I <sub>e</sub>	
	Max nominal average current	<b>I<sub>D2av</sub></b> (I <sub>Fav</sub> )	80A	
	Max repetitive peak overload current	<b>I<sub>D2peak</sub></b> (I <sub>FRM</sub> )	500A	T <sub>pulse</sub> =25μs
	Max non repetitive peak overload current	<b>I<sub>D2peak</sub></b> (I <sub>FSM</sub> )	1000A	T <sub>pulse</sub> =25μs
	Max leakage current	<b>-I<sub>D2</sub></b> (I <sub>R</sub> )	0.1mA @ T <sub>j</sub> =25°C	17mA @ T <sub>j</sub> =T <sub>jmax</sub> @U <sub>ep</sub> @T <sub>jmax</sub>
	Recovering time	<b>t<sub>rr</sub></b>	190ns	I <sub>D2</sub> =1A, di/dt=50A/μs, T <sub>c</sub> =25°C
	Junction/case thermal resistance	<b>R<sub>thjc</sub></b>	0.35K/W	
	Housing thermal resistance vertically mounted	<b>R<sub>thra</sub></b>	10K/W	@ΔT <sub>ra</sub> =75°C
	Housing thermal time constant	<b>T<sub>thra</sub></b>	10 minutes	@ΔT <sub>ra</sub> =60°C
	Maximum junction temperature	<b>T<sub>jmax</sub></b>	125°C	

**OUTPUT CHARACTERISTIC CURVES**

**Fig. 4**

**VOLTAGE DROP VS CURRENT  
(DIODE D2 DURING FLY WHEEL)**



**Fig. 5**

**THERMAL IMPEDANCE  
(DIODE D2)**

Not available

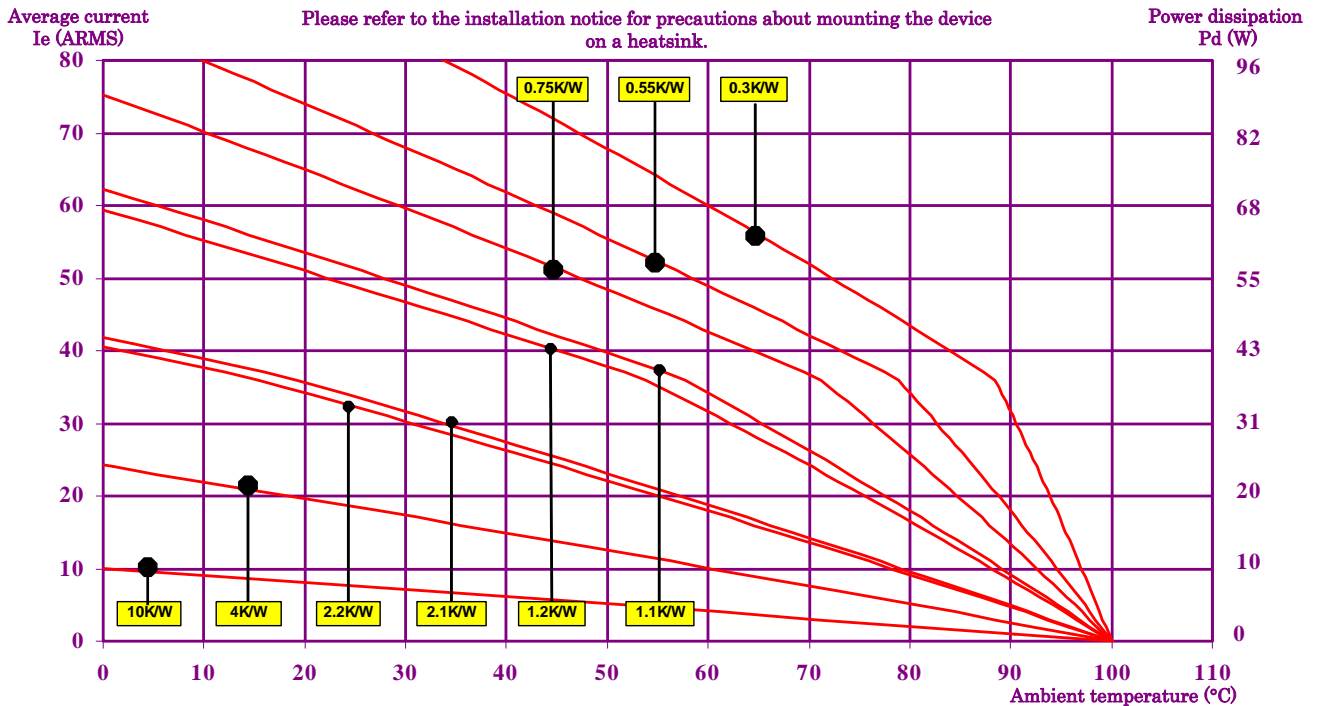
**Fig. 6**

**OVERLOAD PERMITTED DURING ON-STATE  
(DIODE D2 DURING FLY WHEEL)**

Not available

**Fig. 7**

**POWER DISSIPATION AND AVERAGE CURRENT VS AMBIENT TEMPERATURE**



10K/W = No Heatsink / 1LD12020  
2.1K/W = WF210000  
0.75K/W = WF070000

4K/W = 150x150x3mm aluminium sheet  
1.2K/W = WF121000  
0.55K/W = WF050000

2.2K/W = WF262100 / WF151200  
1.1K/W = WF131100  
0.3K/W = WF031100

**GENERAL INFORMATION**

<b>GENERAL INFORMATION</b>	Mounting	2 screws (M4x12mm ; tightening = 1.2N.m)	See mounting sheet
	Screwdriver for connections	POZIDRIV2	
	tightening torque for connections	2 N.m	
	Insulated crimp terminals (round tabs, eyelet type)	M5	
	Display	Green LED (load supplied)	
	Housing	UL94V0	
	Weight	80g	

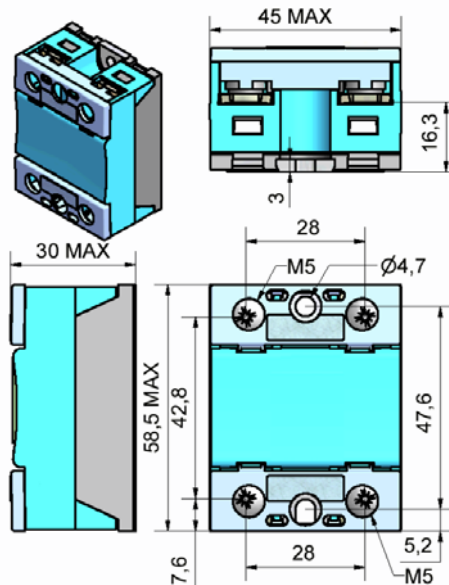
**STANDARDS**

<b>STANDARDS</b>	Standards	IEC60947-1	
	Protection level	IP20	
	Protection against direct touch	Yes	
	CE marking	Yes	
	UL, cULUS and VDE approvals	Pending	

**DIMENSIONS AND ACCESSORIES**

Fig. 8

DIMENSIONS (mm)



**ACCESSORIES**

FLAT TAB CONNECTION ADAPTORS  
1L587000



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