

## IGBT BASED DC SOLID-STATE RELAY



- ▶ Latest high voltage IGBT technology generation.
- ▶ 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

# SCI0501200



Control voltage range	4.5-32VDC
Max transient peak voltage	1200v
Advised max. DC Mains peak voltage	(Depends on protection clamping voltage)
Max. Load Current (with heatsink)	50ADC

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 50A (with heatsink)	4.5-32VDC	4kV	M3 round tabs M5 round tabs	44.5 x 58.2 x 27 (mm)	100g

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

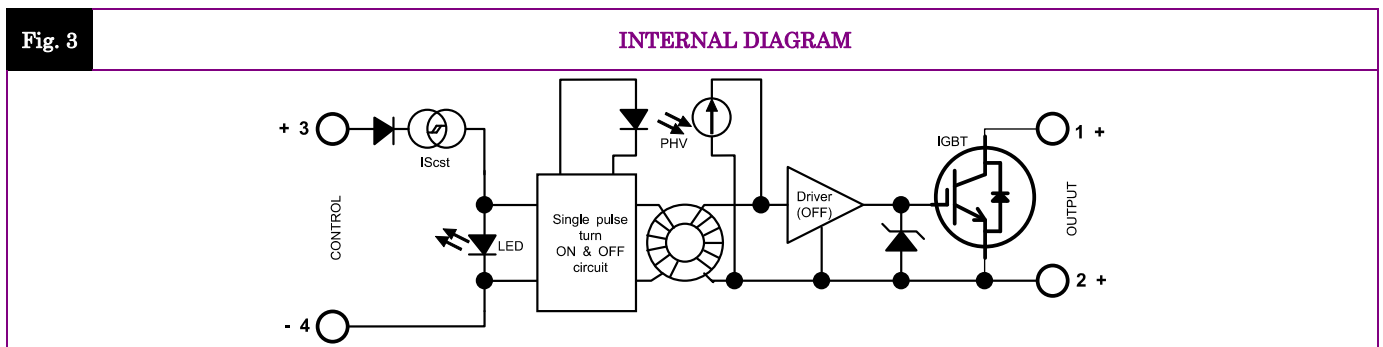
Please consult us to select the right protective components C1, D1 & D2.

**The red paths (C1/D1/D2) must be as short as possible !**

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

Please consult us to select the right protective components C1, D1 & D2.

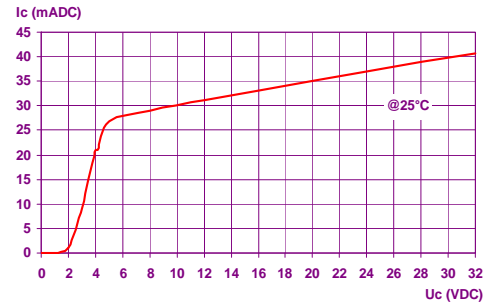
**The red paths (C1/D1/D2) must be as short as possible !**



*Proud to serve you*

**CONTROL INPUT CHARACTERISTICS**

INPUT CIRCUIT	CHARACTERISTIC	LABEL	VALUE	INFO.	Fig. 4 CONTROL CURRENT vs. CONTROL VOLTAGE
	Nom. Control voltage	<b>U<sub>cnom</sub></b>	12-24VDC		
	Nom. Control current	<b>I<sub>cnom</sub></b>	35mADC		
	Control voltage range	<b>U<sub>c</sub></b>	4.5 – 32VDC	typical=4.3V	
	Control current consumption	<b>I<sub>c</sub></b>	25 – 42mADC	See curve	
	Releasing control voltage	<b>U<sub>coffmax</sub></b>	1VDC	Typical= 3.5V	
	Max. reverse control voltage	<b>-U<sub>cmax</sub></b>	32VDC	-I <sub>cmax</sub> <100µA	
	Input impedance	<b>R<sub>in</sub></b>	Current limitation	See curve	



**TIME CHARACTERISTICS**

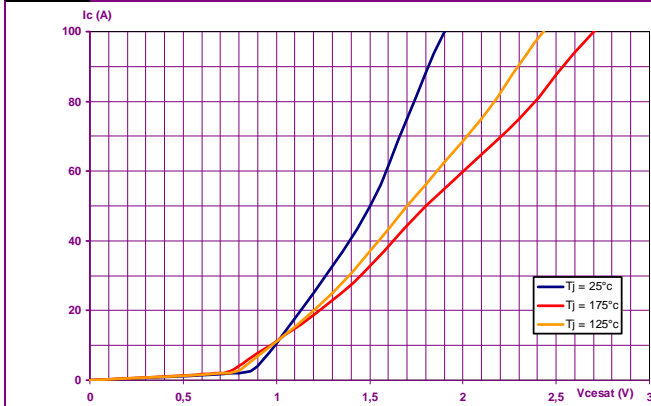
TIME CHARACT.	CHARACTERISTIC	LABEL	VALUE	Diagram	
	Turn on time	<b>ton</b>	10µs		
	Turn on delay	<b>tdon</b>	600µs		
	Turn off time	<b>toff</b>	50µs		
	Turn off delay	<b>tdoff</b>	100µs		
Max. On-Off frequency	<b>F<sub>(on-off)</sub></b>	200Hz			

**POWER OUTPUT CHARACTERISTICS**

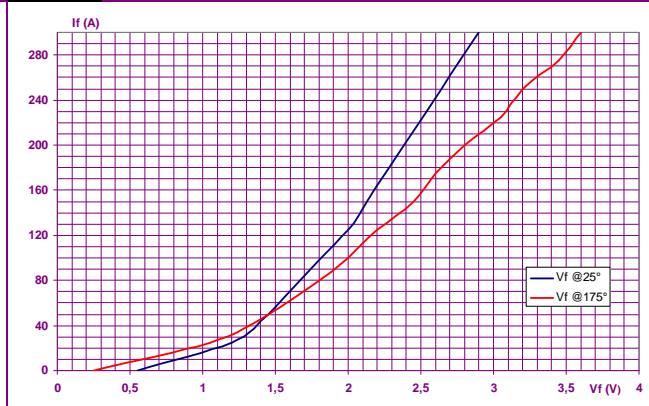
POWER CIRCUIT	CHARACTERISTIC	LABEL	VALUE	INFO.	
	Mains voltage range	<b>U<sub>t</sub></b>   <b>U<sub>e</sub></b>	<b>Min = VCEsat</b> <b>Max (Advised) = 650VDC</b>	Depends on protection clamping voltage (D1)	
	Non-repetitive peak voltage	<b>U<sub>tp</sub></b>	1200V		
	Overvoltage protection	<b>D1</b>	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)	<b>-U<sub>t</sub></b>	1.4V	@I <sub>e</sub> =50A	
	Maximum nominal currents	<b>I<sub>e max</sub></b>	<b>Resistive</b> 50A	<b>Motor</b> Please contact us	<b>See fig. 9</b>
	Max. non-repetitive non-switched peak current	<b>I<sub>epeak</sub></b>	320A	@T <sub>c</sub> =100°C @T <sub>j</sub> =175°C @U <sub>tp</sub> ( <b>See fig. 8</b> )	
	Min. load current	<b>I<sub>emin</sub></b>	0mA	@T <sub>j</sub> =25°C	
	Max. leakage current	<b>I<sub>elk max</sub></b>	1mA	@U <sub>tp</sub> @T <sub>jmax</sub>	
	Voltage drop : Resistance	<b>r<sub>t</sub></b>	9mΩ	@T <sub>j</sub> =125°C	
	Voltage drop : Voltage	<b>v<sub>t</sub></b>	0.8V	@T <sub>j</sub> =125°C	
	Max. on-state voltage (Vcesat = v <sub>t</sub> + r <sub>t</sub> . I <sub>e</sub> )	<b>VCEsat</b>	1.5V @T <sub>j</sub> =25°C	1.7V @T <sub>j</sub> =125°C	@I <sub>emax</sub>
	Typ. output capacitance	<b>C<sub>out</sub></b>	300pF	@U <sub>tp</sub>	
	Junction/case thermal resistance	<b>R<sub>thjc</sub></b>	0.365K/W		
	Built-in heatsink thermal resistance vertically mounted	<b>R<sub>thra</sub></b>	10K/W	@ΔT <sub>ra</sub> =75°C	
	Heatsink thermal time constant	<b>T<sub>thra</sub></b>	10 minutes	@ΔT <sub>ra</sub> =60°C	
	Control inputs / power outputs / case insulation voltage	<b>U<sub>imp</sub></b>	4kV		
	Isolation resistance / capacitance	<b>R<sub>io</sub> / C<sub>io</sub></b>	1GΩ / <8pF		
	Maximum junction temperature	<b>T<sub>jmax</sub></b>	Steady state = 125°C	Transient = 175°C	
	Storage ambient temperature	<b>T<sub>stg</sub></b>	-40->+100°C		
	Operating ambient temperature	<b>T<sub>amb</sub></b>	-40->+90°C	<b>See fig. 9</b>	
	Max. case temperature	<b>T<sub>c</sub></b>	100°C		

**OUTPUT SWITCH CHARACTERISTIC CURVES**

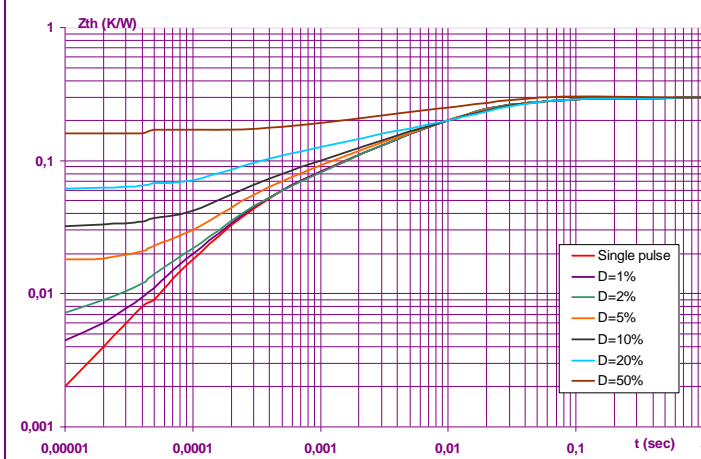
**Fig. 5 VOLTAGE DROP VS LOAD CURRENT**



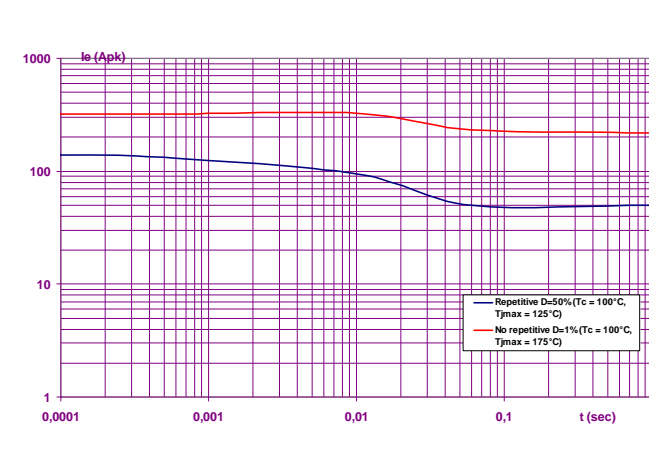
**Fig. 6 REVERSE VOLTAGE DROP VS REVERSE CURRENT**



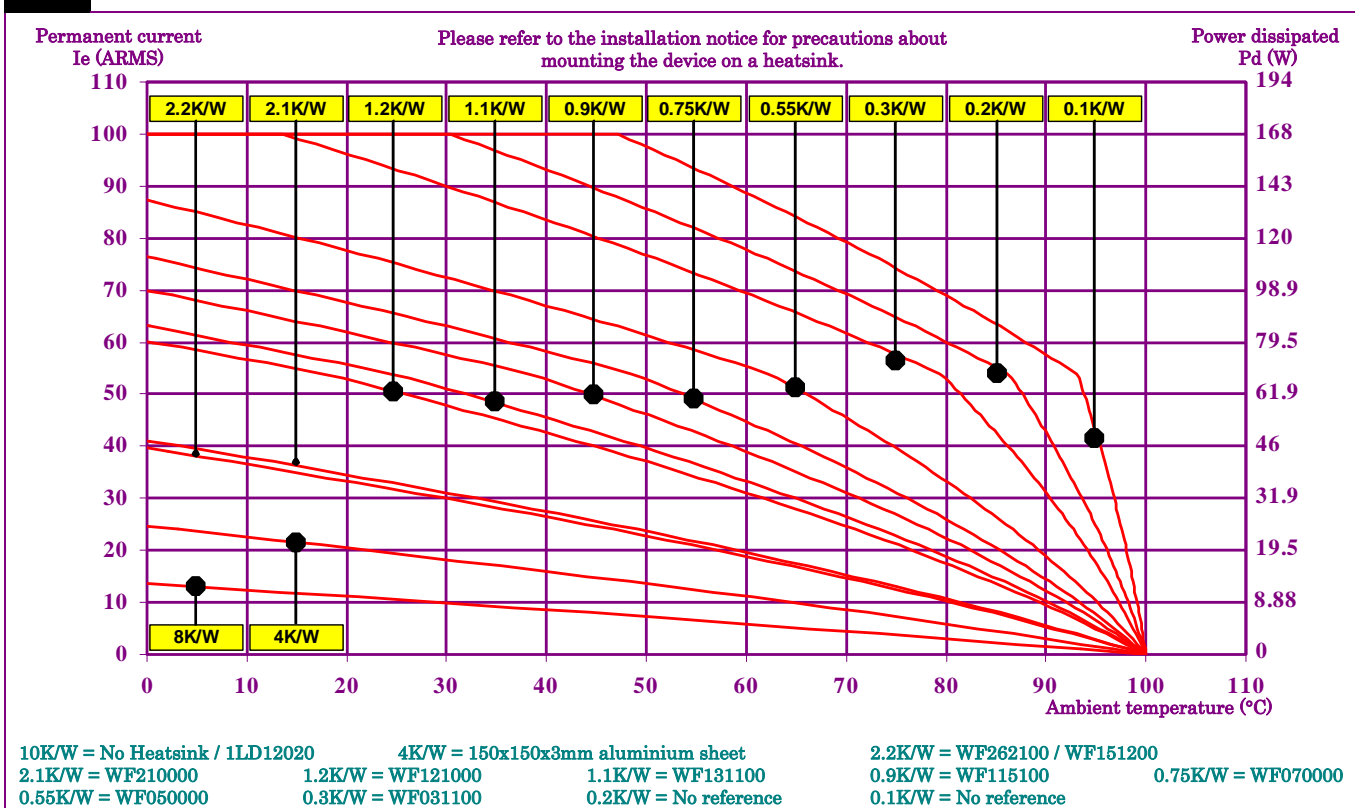
**Fig. 7 POWER ELEMENT TRANSIENT THERMAL IMPEDANCE vs. PULSE DURATION**



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



**Fig. 9 POWER DISSIPATED AND LOAD CURRENT LIMIT VS TEMPERATURE**



**GENERAL INFORMATION**

<b>CONNECTIONS</b>	<b>Connections</b>		<b>Power</b>	<b>Control</b>	
	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	

<b>MISC.</b>	<b>Display</b>		Green LED (indicates the power element is controlled)		
	<b>Housing</b>		UL94V0		
	<b>Mounting</b>		2 screws (M4x12mm)		See mounting sheet
	<b>Noise level</b>		No audible noise		
	<b>Weight</b>		100g		

**STANDARDS**

<b>GENERAL</b>	<b>Standards</b>		IEC60947-1		
	<b>Protection level</b>		IP00		
	<b>Protection against direct touch</b>		None		
	<b>CE marking</b>		Yes		
	<b>UL, cULUS</b>		Yes		

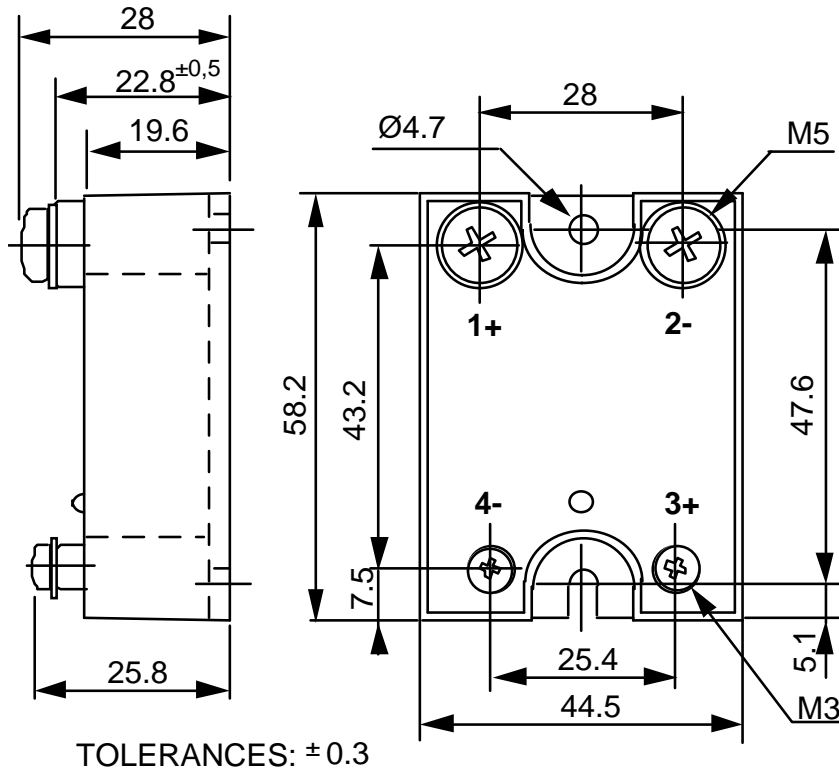
<b>E.M.C. IMMUNITY</b>	TYPE OF TEST	STANDARD	LEVEL	EFFECT
	E.S.D. (Electrostatic discharges)	EN61000-4-2	Pending	?
	Radiated electromagnetic fields	EN61000-4-3	Pending	?
	Fast transients bursts	EN61000-4-4	Pending	No effect
	Electric chocks	EN61000-4-5	Pending	?
	Voltage drop	EN61000-4-11	-	

<b>E.M.C. EMISSION</b>	<b>Radiated and conducted disturbances</b>	NFEN55011	Pending	
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**DIMENSIONS AND ACCESSORIES**

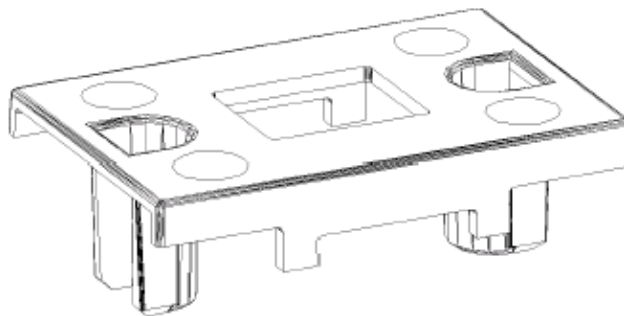
Fig. 10

DIMENSIONS (mm)



ACCESSORIES

PROTECTIVE COVER  
1K470000



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