IGBT BASED DC SOLID-STATE RELAY

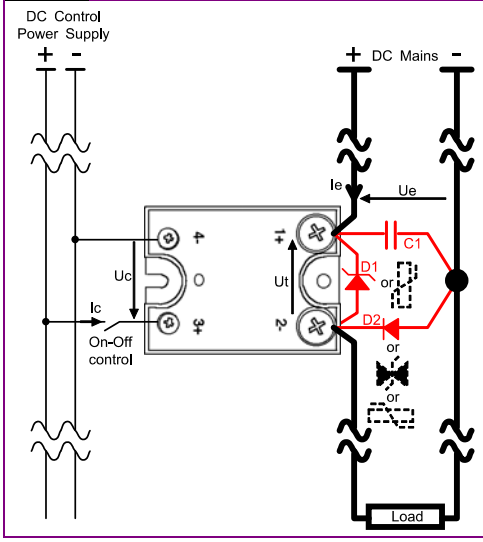
SCI0501200

- 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

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

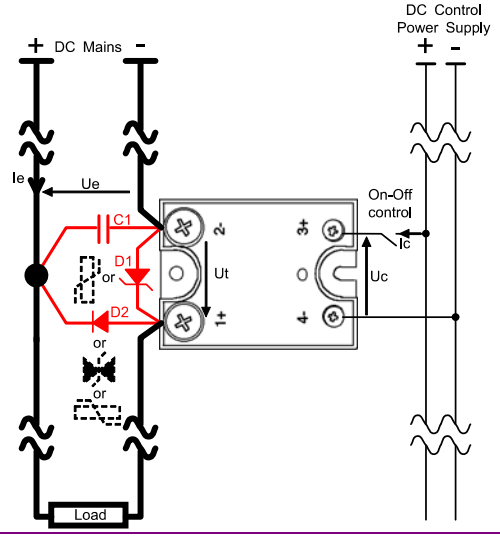
Fig. 1 HIGH SIDE WIRING DIAGRAM (Load connected to "-")



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

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

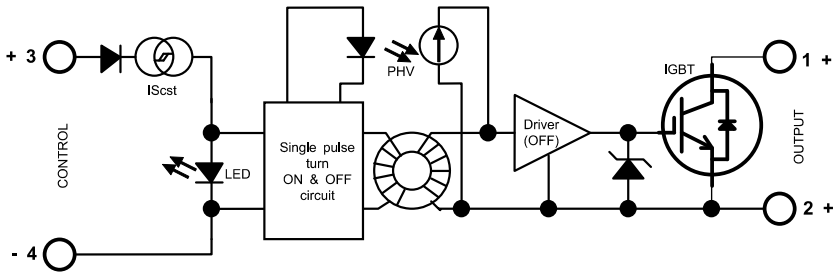
Fig. 2 LOW SIDE WIRING DIAGRAM (Load connected to "+")



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

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

Fig. 3 INTERNAL DIAGRAM



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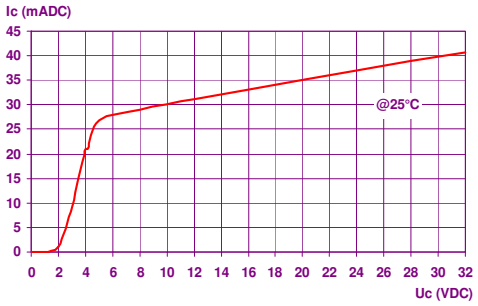
CONTROL INPUT CHARACTERISTICS

INPUT CIRCUIT

CHARACTERISTIC	LABEL	VALUE	INFO.
Nom. Control voltage	U_{cnom}	12-24VDC	
Nom. Control current	I_{cnom}	35mADC	
Control voltage range	Uc	4.5 – 32VDC	typical=4.3V
Control current consumption	Ic	25 – 42mADC	See curve
Releasing control voltage	$U_{coffmax}$	1VDC	Typical= 3.5V
Max. reverse control voltage	$-U_{cmax}$	32VDC	-Icmax <100µA
Input impedance	Rin	Current limitation	See curve

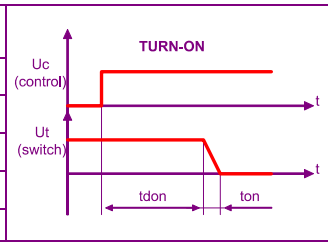
Fig. 4 CONTROL CURRENT vs. CONTROL VOLTAGE

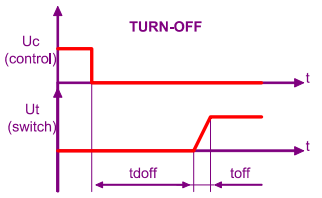


TIME CHARACTERISTICS

TIME CHARACT.

CHARACTERISTIC	LABEL	VALUE
Turn on time	ton	10µs
Turn on delay	tdon	600µs
Turn off time	toff	50µs
Turn off delay	tdoff	100µs
Max. On-Off frequency	$F_{(on-off)}$	200Hz





POWER OUTPUT CHARACTERISTICS

POWER CIRCUIT

CHARACTERISTIC	LABEL	VALUE	INFO.
Mains voltage range	Ut / Ue	**Min = VCEsat Max (Advised) = 650VDC**	Depends on protection clamping voltage (D1)
Non-repetitive peak voltage	Utp	1200V	
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)	-Ut	1.4V	@Ie=50A
Maximum nominal currents	Ie max	Resistive: 50A / Motor: Please contact us	**See fig. 9**
Max. non-repetitive non-switched peak current	Iepeak	320A	@Tc=100°C @Tj=175°C @Utp **(See fig. 8)**
Min. load current	Iemin	0mA	@Tj=25°C
Max. leakage current	Ielk max	1mA	@Utp @Tjmax
Voltage drop : Resistance	rt	9mΩ	@Tj=125°C
Voltage drop : Voltage	vt	0.8V	@Tj=125°C
Max. on-state voltage (Vcesat = vt + rt . Ie)	VCEsat	1.5V @Tj=25°C / 1.7V @Tj=125°C	@Iemax
Typ. output capacitance	Cout	300pF	@Utp
Junction/case thermal resistance	Rthjc	0.365K/W	
Built-in heatsink thermal resistance vertically mounted	Rthra	10K/W	@ΔTra=75°C
Heatsink thermal time constant	Tthra	10 minutes	@ΔTra=60°C
Control inputs / power outputs / case insulation voltage	Uimp	4kV	
Isolation resistance / capacitance	Rio / Cio	1GΩ / <8pF	
Maximum junction temperature	Tjmax	Steady state = 125°C / Transient = 175°C	
Storage ambient temperature	Tstg	-40->+100°C	
Operating ambient temperature	Tamb	**-40->+90°C**	**See fig. 9**
Max. case temperature	Tc	**100°C**	

OUTPUT SWITCH CHARACTERISTIC CURVES

Fig. 5 VOLTAGE DROP VS LOAD CURRENT

Fig. 6 REVERSE VOLTAGE DROP VS REVERSE CURRENT

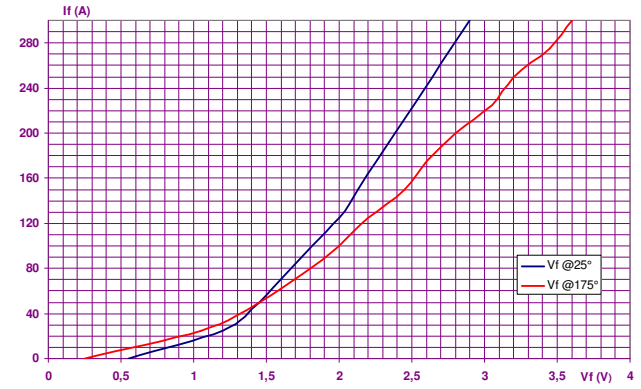


Fig. 7 POWER ELEMENT TRANSIENT THERMAL IMPEDANCE vs. PULSE DURATION

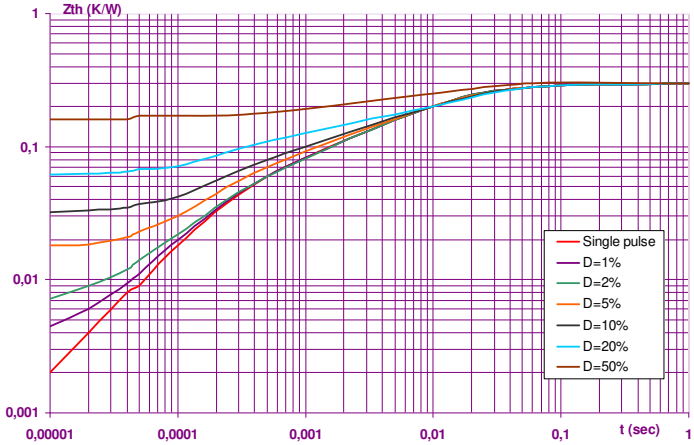


Fig. 8 ON-STATE PEAK OVERLOAD CURRENT vs. PULSE DURATION

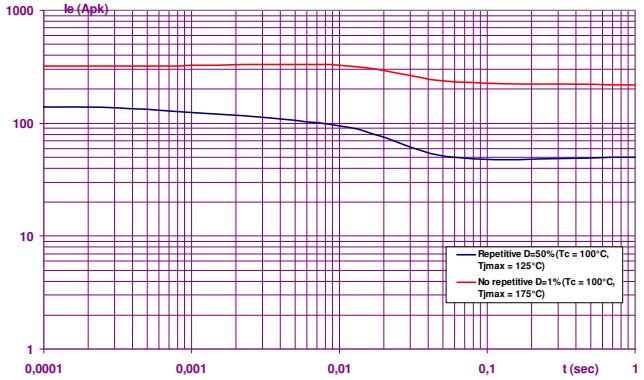
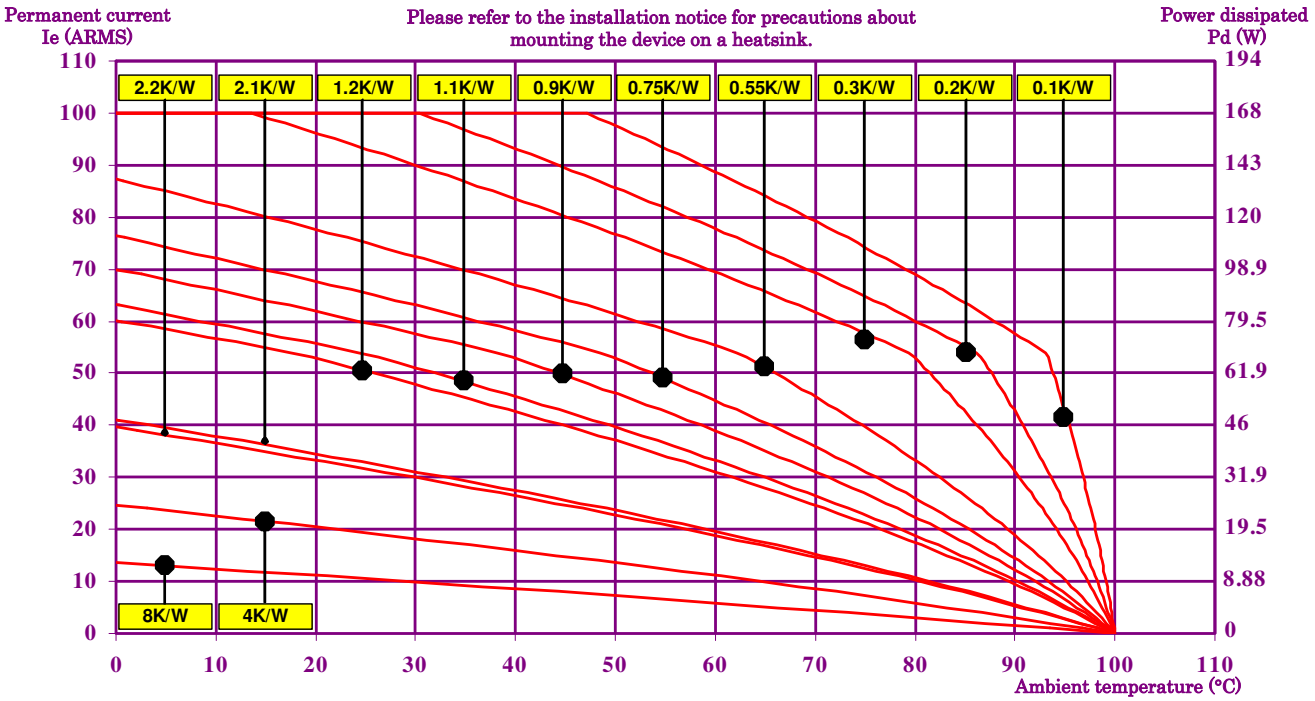


Fig. 9 POWER DISSIPATED AND LOAD CURRENT LIMIT VS TEMPERATURE



10K/W = No Heatsink / 1LD12020 — 4K/W = 150x150x3mm aluminium sheet — 2.2K/W = WF262100 / WF151200
2.1K/W = WF210000 — 1.2K/W = WF121000 — 1.1K/W = WF131100 — 0.9K/W = WF115100 — 0.75K/W = WF070000
0.55K/W = WF050000 — 0.3K/W = WF031100 — 0.2K/W = No reference — 0.1K/W = No reference

GENERAL INFORMATION

CONNEC-TIONS	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 the power element is controlled)	
	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	

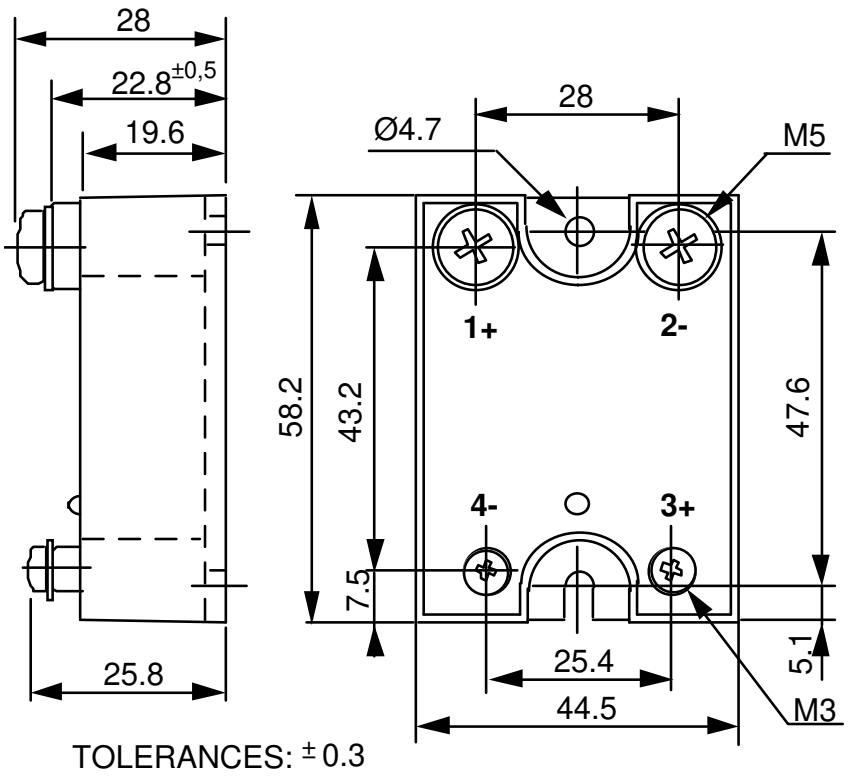
	TYPE OF TEST	STANDARD	LEVEL	EFFECT
E.M.C. IMMUNITY	E.S.D. (Electrostatic discharges)	EN61000-4-2	Pending	?
	Radiated electromagnetic fields	EN61000-4-3	Pending	?
	Fast transients bursts	EN61000-4-4	Pending	No effect
	Electric chocks	EN61000-4-5	Pending	?
	Voltage drop	EN61000-4-11	-	

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

DIMENSIONS AND ACCESSORIES

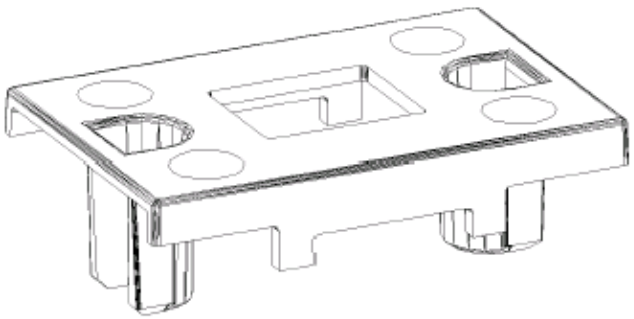
Fig. 10

DIMENSIONS (mm)



ACCESSORIES

PROTECTIVE COVER
1K470000



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

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