SK 50 DGDL 066 T

SEMITOP®4

3-phase bridge rectifier + brake chopper + 3-phase bridge inverter

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Target Data

Features

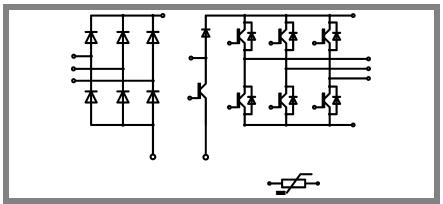
- One screw mounting module
- Fully compatible with SEMITOP®1,2,3
- Improved thermal performances by aluminium oxide substrate
- Trench IGBT technology
- CAL technology free-wheeling diode
- Integrated NTC temperatur sensor

Typical Applications

- Inverter up to 12,5 kVA
- Typical motor power 5,5 kW

Remarks

- $V_{CE,sat}$, V_F = chip level value



DGDL - T

Absolute Maximum Ratings		T_s= 25°C, unless otherwise specified	
Symbol	**Conditions**	**Values**	**Units**
IGBT - Inverter, Chopper			
V_{CES}		600	V
I_C	T_s = 25 (70) °C, T_j = 175 °C	69 (55)	A
I_C	T_s = 25 (70) °C, T_j = 150 °C	62 (47)	A
I_{CRM}	I_{CRM}= 2 x I_{Cnom}, t_p = 1 ms	100	A
V_{GES}		± 20	V
T_j		-40 ... + 175	°C
Diode - Inverter, Chopper			
I_F	T_s = 25 (70) °C, T_j = 150 °C	48 (35)	A
I_F	T_s = 25 (70) °C, T_j = 175 °C	54 (42)	A
I_{FRM}	I_{FRM} = 2xI_{Fnom}, t_p = 1 ms		56
Diode - Rectifier			
V_{RRM}		800	V
I_F	T_s = 70 °C	46	A
I_{FSM}	t_p = 10 ms, sin 180 °, T_j = 25 °C	370	A
i^2t	t_p = 10 ms, sin 180 °, T_j = 25 °C	680	A^2s
T_j		-40 ... + 175	°C
T_{sol}	Terminals, 10 s	260	°C
T_{stg}		-40 ... + 125	°C
V_{isol}	AC, 1 min.	2500	V

Characteristics		T_s= 25°C, unless otherwise specified			
Symbol	**Conditions**	**min.**	**typ.**	**max.**	**Units**
IGBT - Inverter, Chopper					
$V_{CE(sat)}$	I_{Cnom} = 50 A, T_j = 25 (150) °C	1,05	1,45 (1,65)	1,85 (2,05)	V
$V_{GE(th)}$	V_{GE} = V_{CE}, I_C = 0,8 mA	5	5,8	6,5	V
$V_{CE(TO)}$	T_j = 25 (150) °C		0,9 (0,8)	1,1 (1)	V
r_{CE}	T_j = 25 (150) °C		11 (17)	15 (21)	mΩ
C_{ies}	V_{CE} = 25 V, V_{GE} = 0 V, f = 1 MHz		3,1		nF
C_{oes}	V_{CE} = 25 V, V_{GE} = 0 V, f = 1 MHz		0,2		nF
C_{res}	V_{CE} = 25 V, V_{GE} = 0 V, f = 1 MHz		0,093		nF
$R_{th(j-s)}$	per IGBT		0,95		K/W
$t_{d(on)}$	under following conditions		21		ns
t_r	V_{CC} = 300 V, V_{GE} = - 7 / + 15 V		32		ns
$t_{d(off)}$	I_{Cnom} = 50 A, T_j = 125 °C		360		ns
t_f	R_{Gon} = R_{Goff} = 16 Ω		57		ns
E_{on} (E_{off})	inductive load		1,87 (1,6)		mJ
Diode - Inverter, Chopper					
V_F = V_{EC}	I_F = 37 A, T_j = 25 (150) °C		1,35 (1,31)		V
$V_{(TO)}$	T_j = 25 (150) °C		(0,85)		V
r_T	T_j = 25 (150) °C		(12,6)		mΩ
$R_{th(j-s)}$	per diode		1,6		K/W
I_{RRM}	under following conditions		40		A
Q_{rr}	I_{Fnom} = 50 A, V_R = 300 V		5,6		µC
E_{rr}	V_{GE} = 0 V, T_j = 125°C		0,73		mJ
	di_F/dt = 1300 A/µs				
Diode - Rectifier					
V_F	I_{Fnom} = 25 A, T_j = 25 °C		1,1		V
$V_{(TO)}$	T_j = 150 °C		0,8		V
r_T	T_j = 150 °C		13		mΩ
$R_{th(j-s)}$	per diode		1,5		K/W
Temperature Sensor					
R_{ts}	5 %, T_r = 25 (100) °C		5000(493)		Ω
Mechanical Data					
w			60		g
M_s	Mounting torque		3,5		Nm

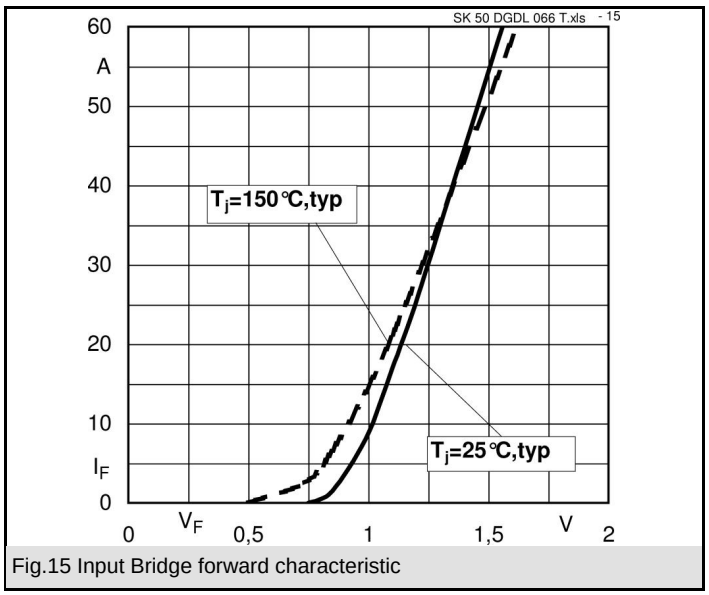


Fig.15 Input Bridge forward characteristic

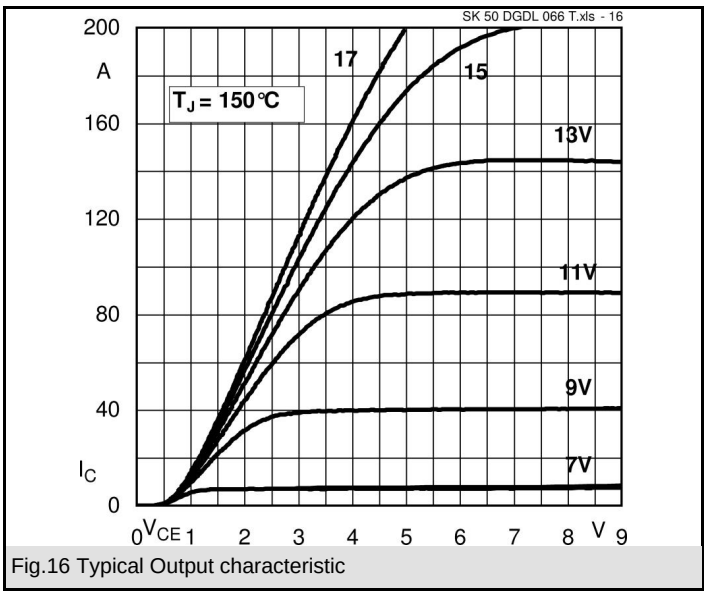


Fig.16 Typical Output characteristic

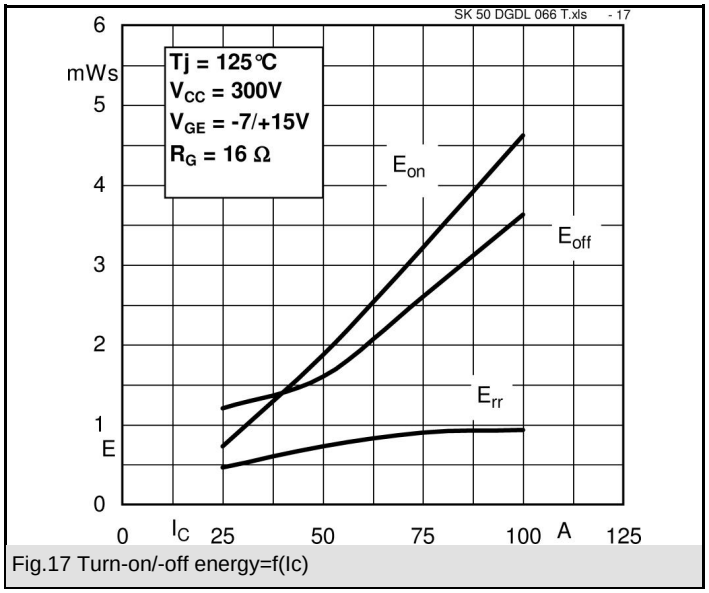


Fig.17 Turn-on/-off energy=f(Ic)

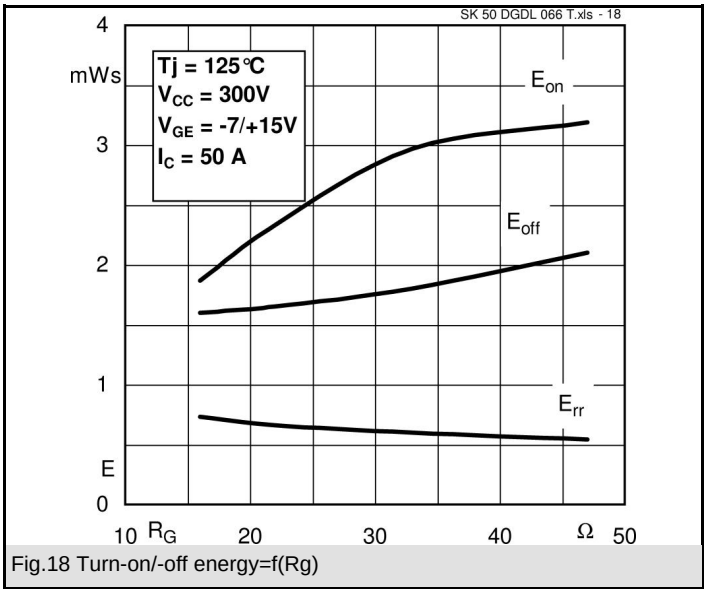


Fig.18 Turn-on/-off energy=f(Rg)

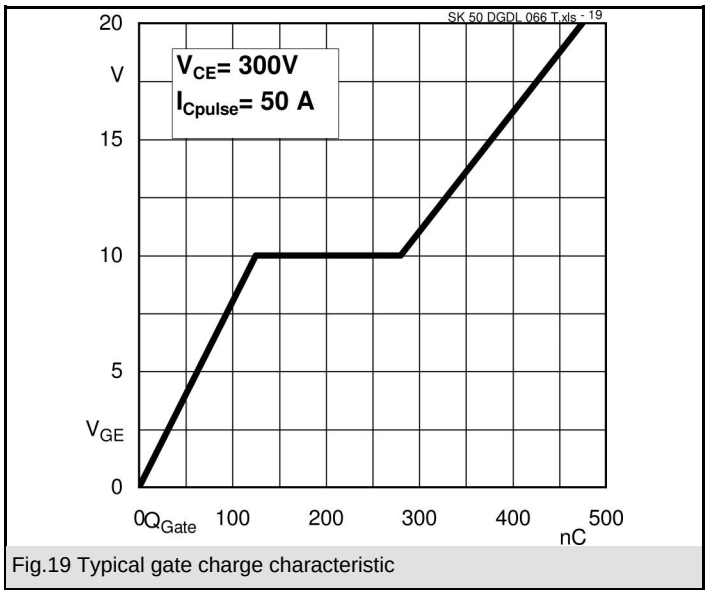


Fig.19 Typical gate charge characteristic

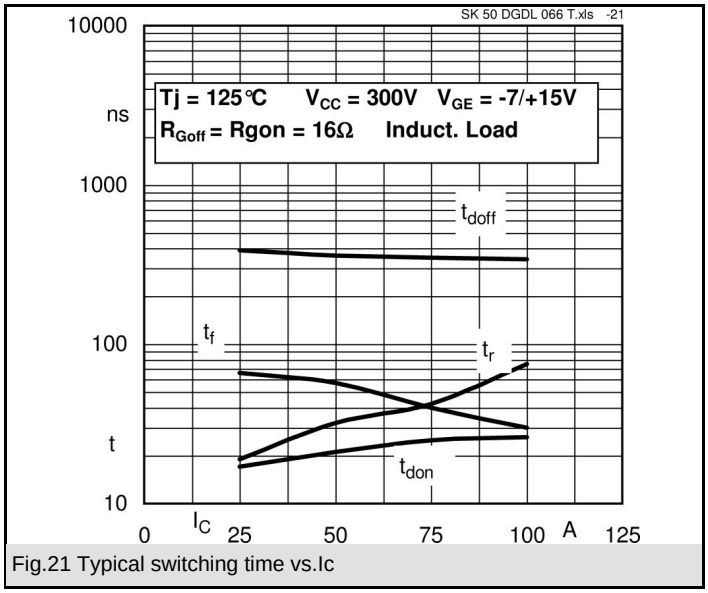


Fig.21 Typical switching time vs.Ic

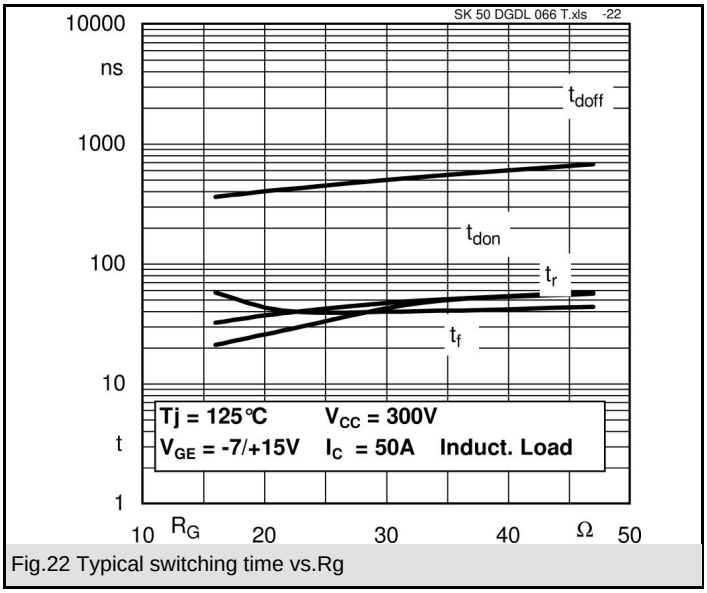
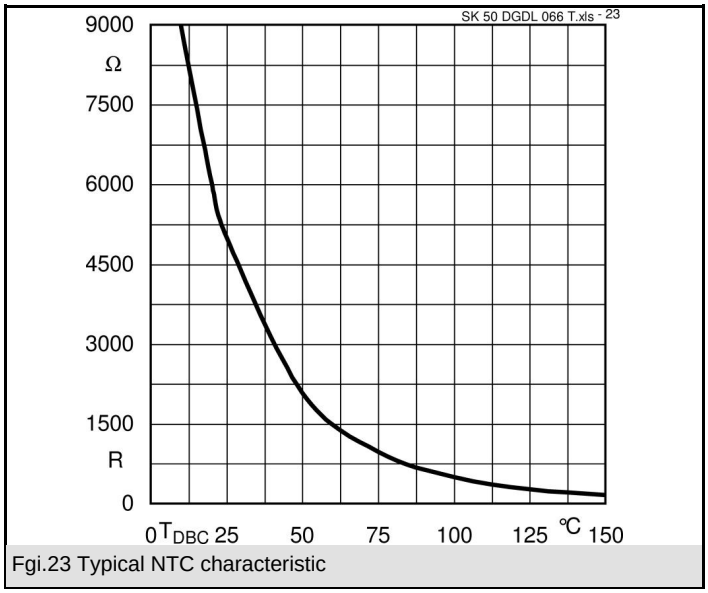


Fig.22 Typical switching time vs.Rg



Fgi.23 Typical NTC characteristic

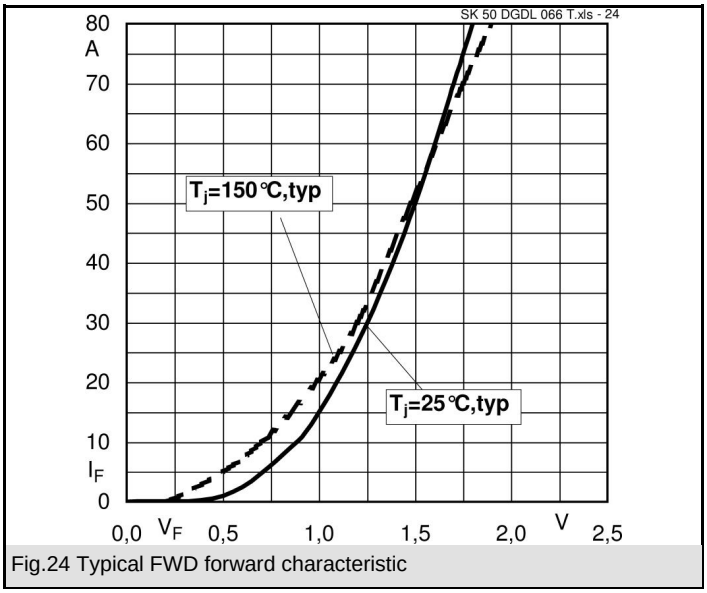
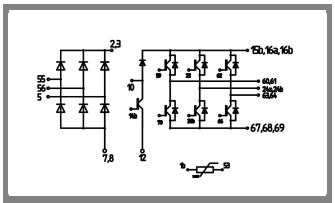
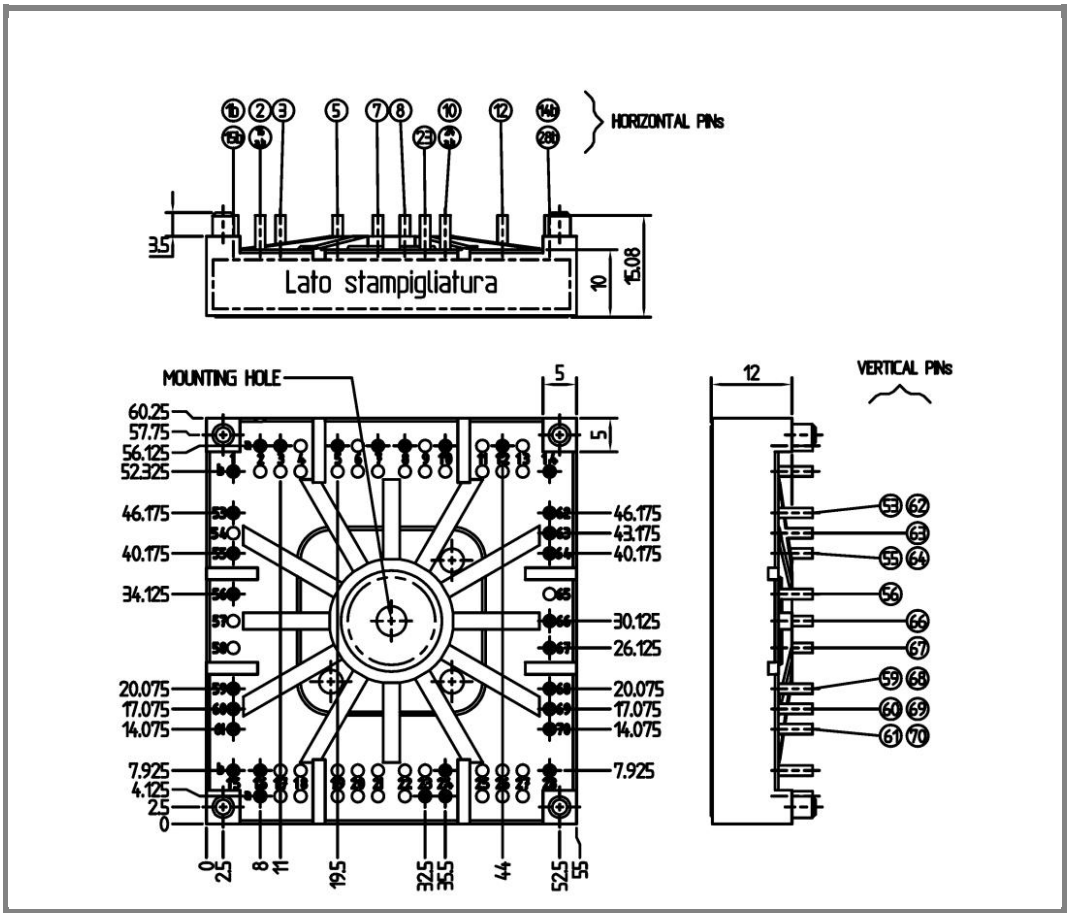


Fig.24 Typical FWD forward characteristic



Case T 75 (pin without letter refers to row "a", unless otherwise specified)



Case T 75 (Suggested hole diameter for the solder pins in the circuit board: 2mm. Suggested hole diameter for the mounting pins in the circuit board: 3,6mm)

This is an electrostatic discharge sensitive device (ESDS), international standard IEC 60747-1, Chapter IX.

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