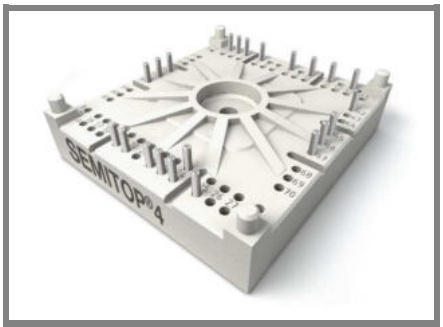


SEMITOP®4

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

SK 50 DGDL 066 T

Preliminary Data

Features

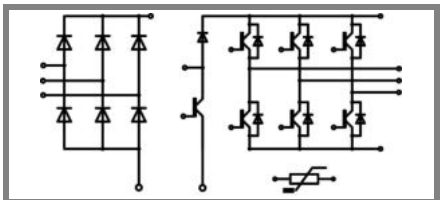
- One screw mounting module
- Fully compatible with SEMITOP®1,2,3
- Improved thermal performances by aluminium oxide substrate
- Trench IGBT technology
- CAL technology free-wheeling diode
- Integrated NTC temperatur sensor

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	A
Diode - Rectifier			
V_{RRM}		800	V
I_F	T_s = 70 °C	35	A
I_{FSM}	t_p = 10 ms, sin 180 °, T_j = 25 °C	370	A
i²t	t_p = 10 ms, sin 180 °, T_j = 25 °C	680	A²s
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		28		ns
t_r	V_{CC} = 300 V, V_{GE} = - 7 / + 15 V		32		ns
$t_{d(off)}$	I_{Cnom} = 50 A, T_j = 150 °C		301		ns
t_f	R_{Gon} = R_{Goff} = 16 Ω		45		ns
E_{on} (E_{off})	inductive load		2,2 (1,74)		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		44		A
Q_{rr}	I_{Fnom} = 50 A, V_R = 300 V		4,8		µC
E_{rr}	V_{GE} = 0 V, T_j = 150°C		0,73		mJ
	di_F/dt = 2438 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	2,5		2,75	Nm

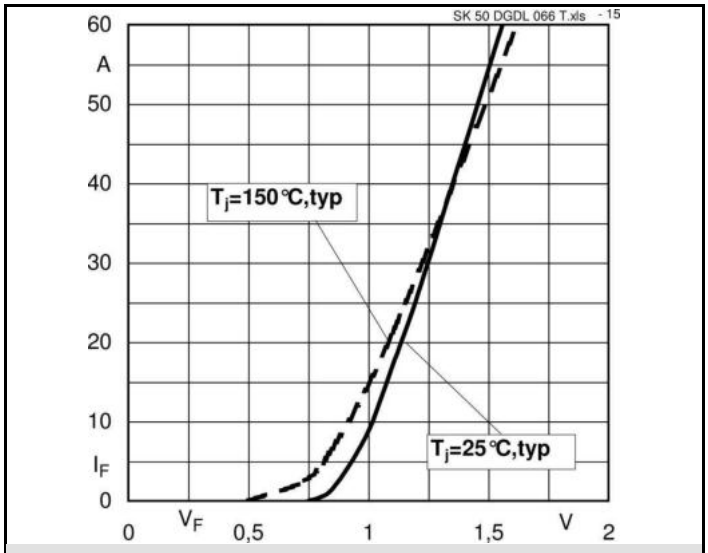


Fig.15 Input Bridge forward characteristic

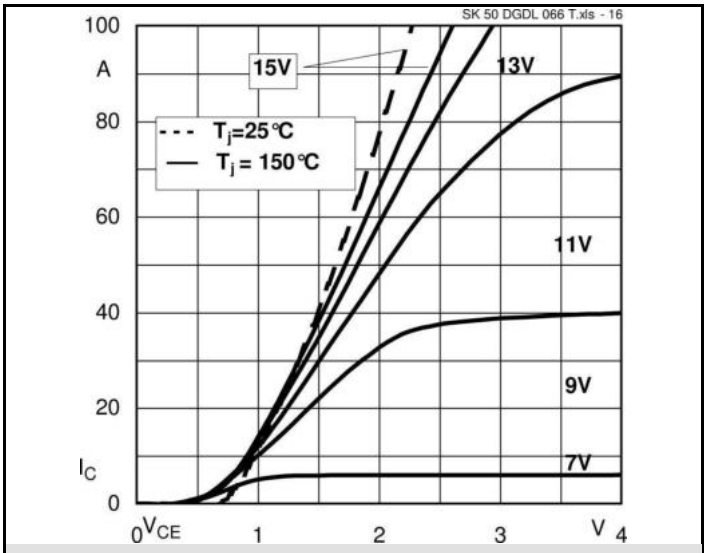


Fig.16 Typical Output characteristic

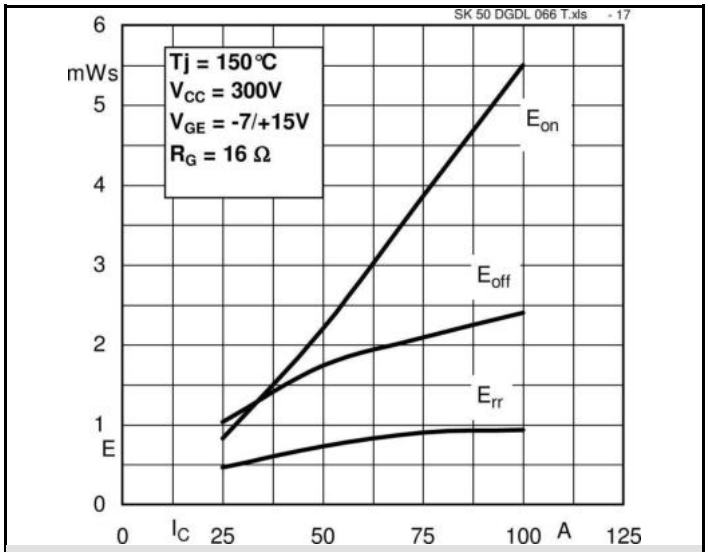


Fig.17 Turn-on/-off energy=f(Ic)

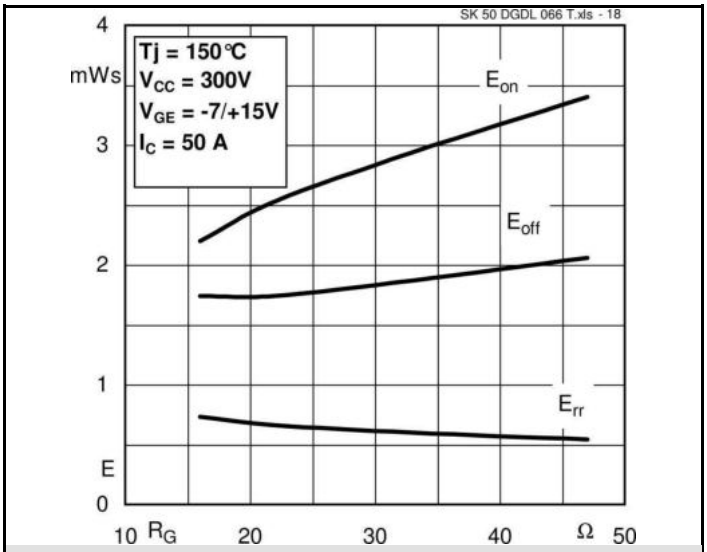


Fig.18 Turn-on/-off energy=f(Rg)

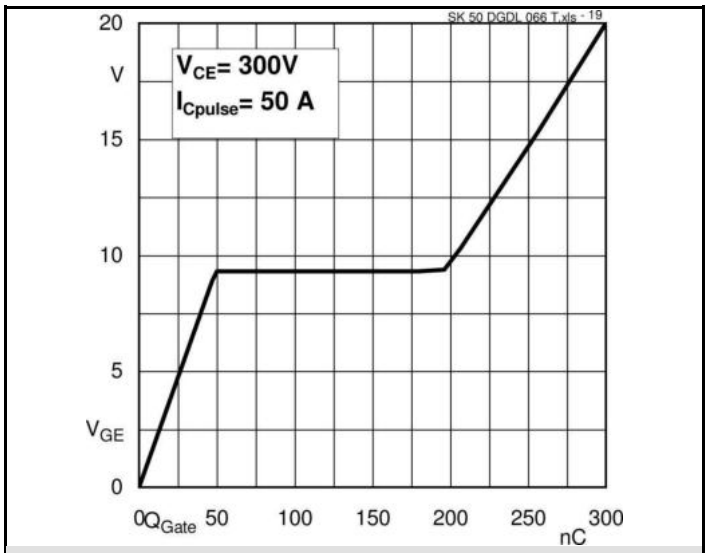


Fig.19 Typical gate charge characteristic

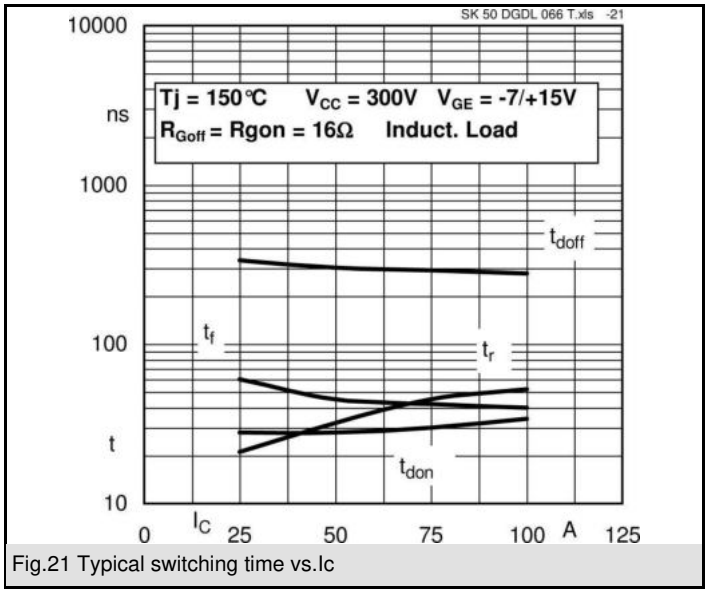


Fig.21 Typical switching time vs.Ic

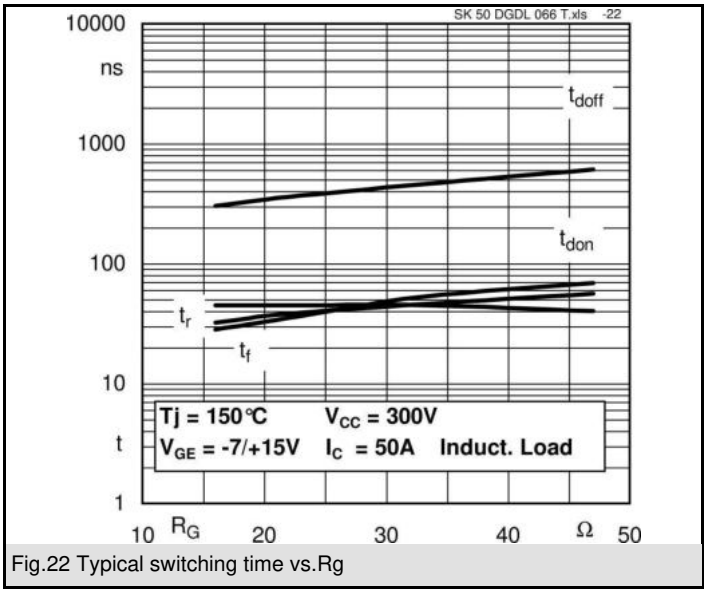
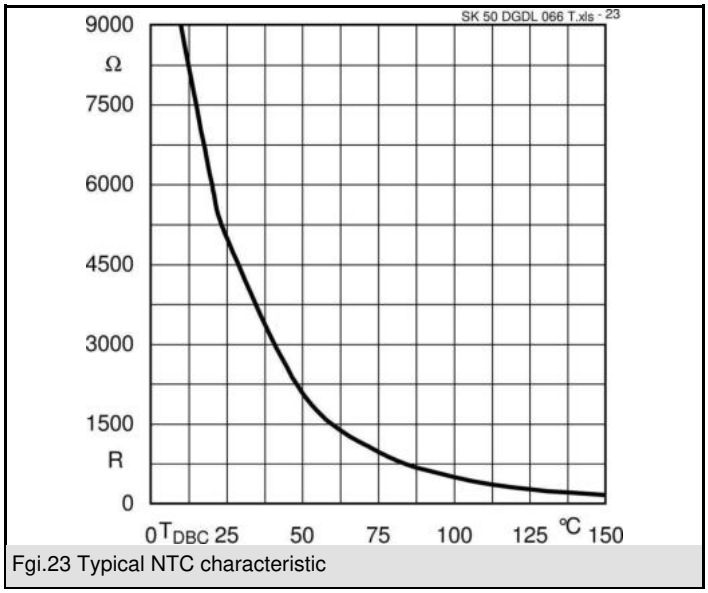


Fig.22 Typical switching time vs.Rg



Fgi.23 Typical NTC characteristic

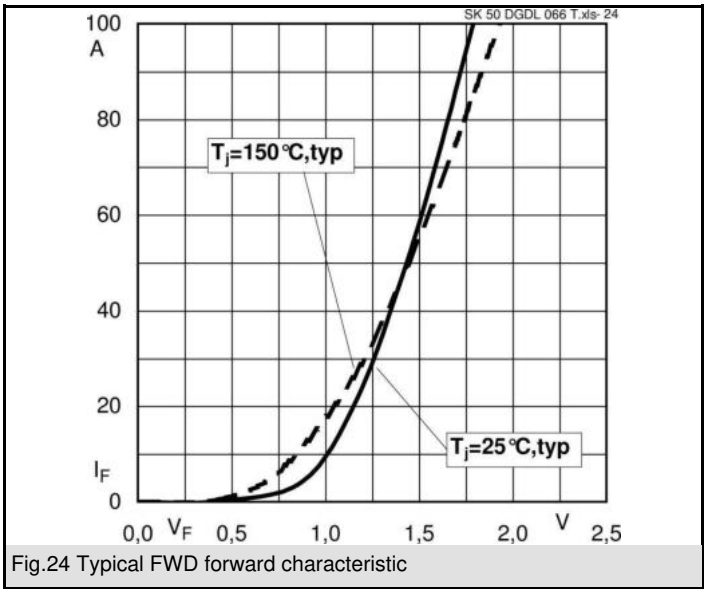
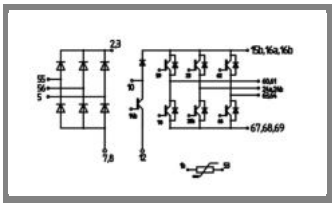
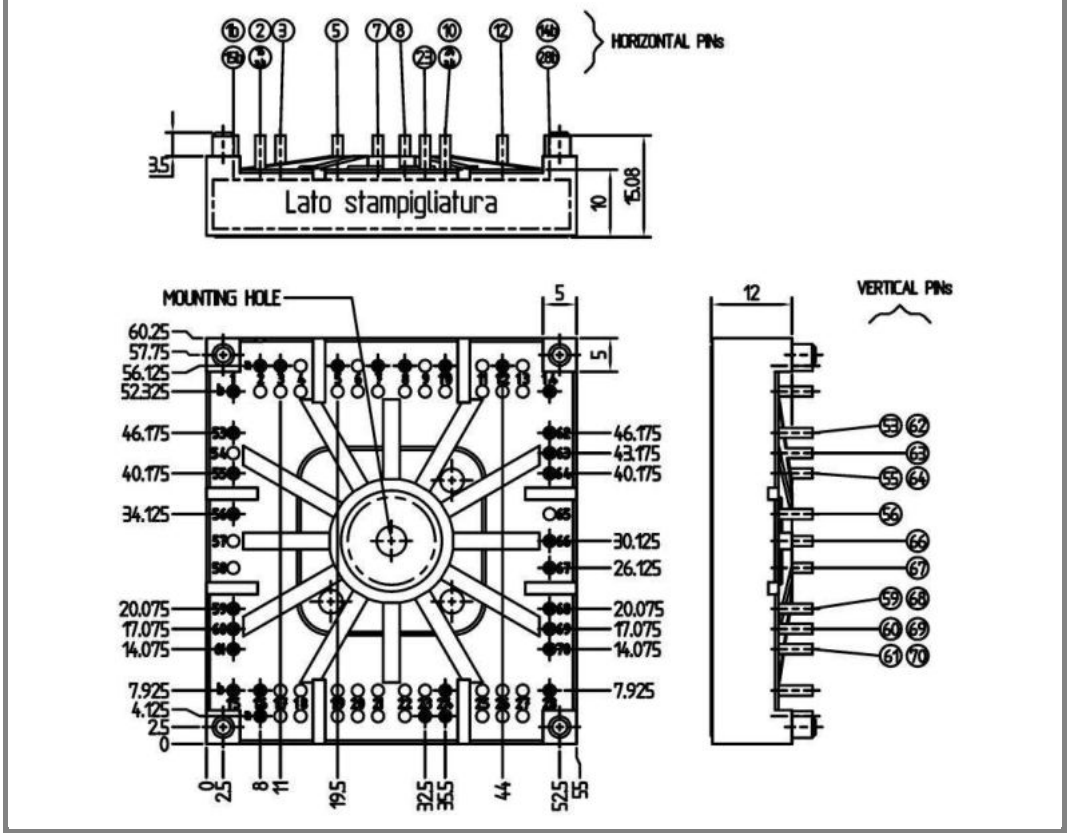


Fig.24 Typical FWD forward characteristic



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

UL recognized
file no E 63 532



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.

* The specifications of our components may not be considered as an assurance of component characteristics. Components have to be tested for the respective application. Adjustments may be necessary. The use of SEMIKRON products in life support appliances and systems is subject to prior specification and written approval by SEMIKRON. We therefore strongly recommend prior consultation of our personal.

