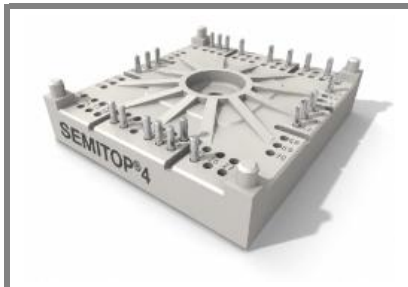


# SK 50 DGDL 066 T



SEMITOP®4

3-phase bridge rectifier +  
brake chopper + 3-phase  
bridge inverter  
SK 50 DGDL 066 T

Target Data

## Features

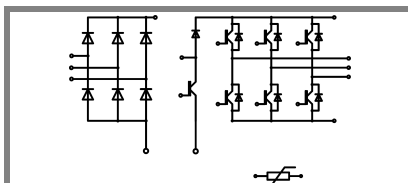
- One screw mounting module
- Fully compatible with SEMITOP®1,2,3
- Improved thermal performances by aluminium oxide substrate
- Trench IGBT technology
- CAL technology free-wheeling diode
- Integrated NTC temperature sensor

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

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

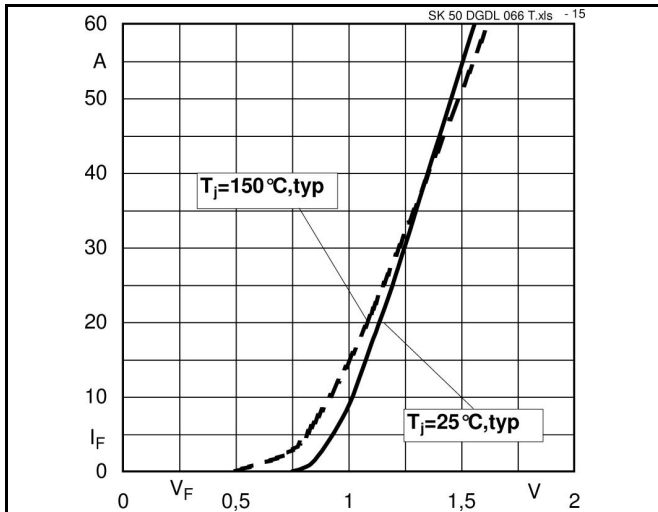


Fig.15 Input Bridge forward characteristic

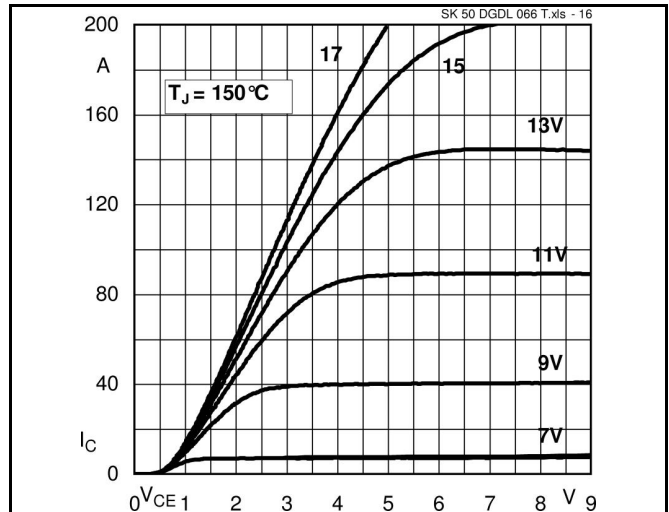


Fig.16 Typical Output characteristic

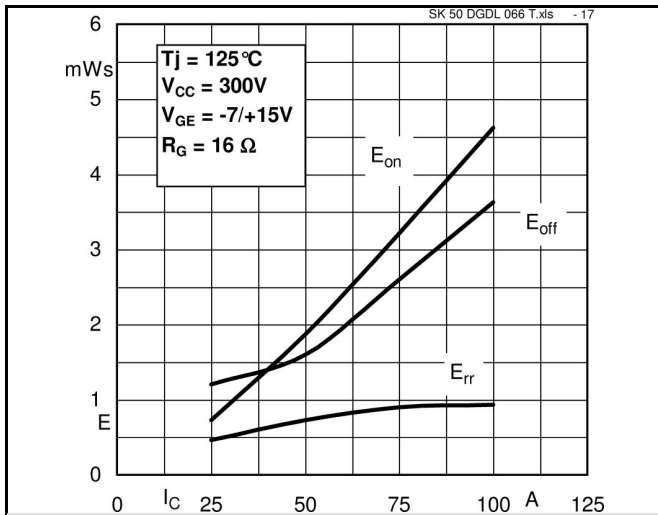


Fig.17 Turn-on/-off energy=f(I<sub>C</sub>)

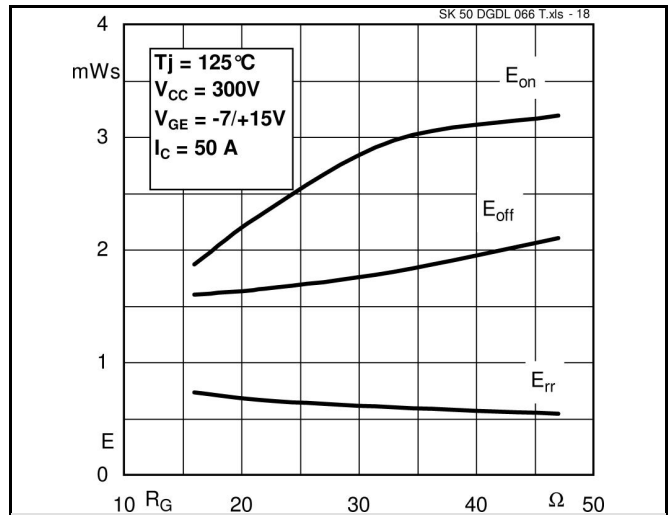


Fig.18 Turn-on/-off energy=f(R<sub>G</sub>)

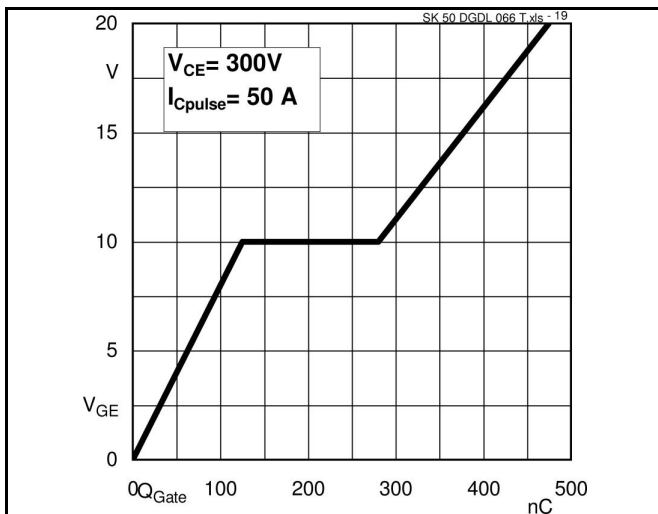
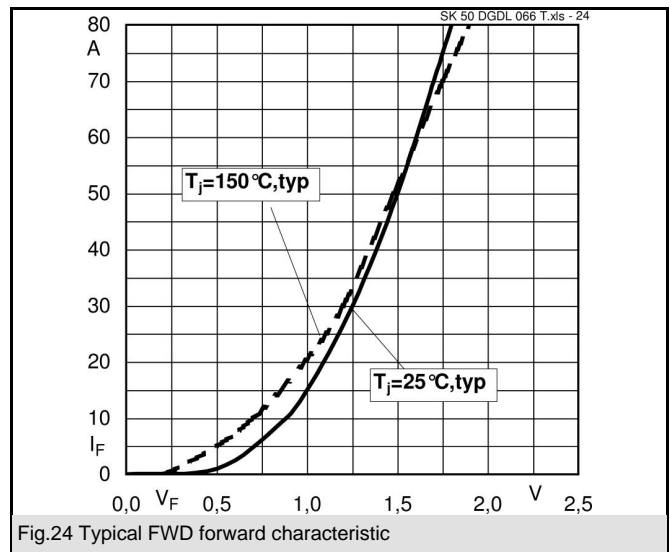
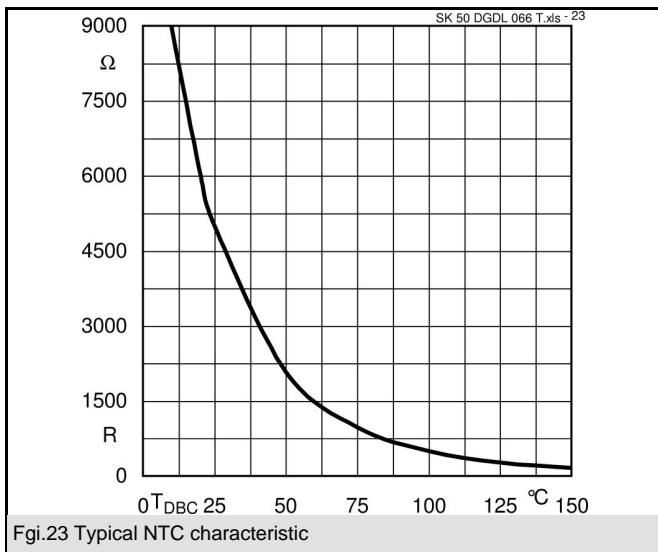
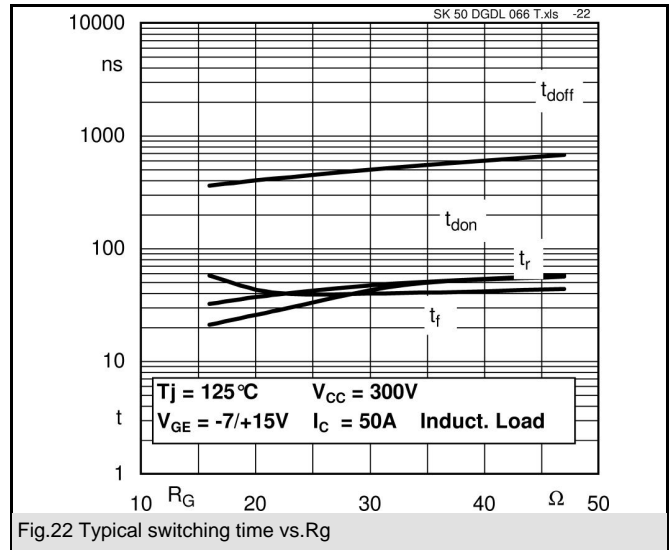
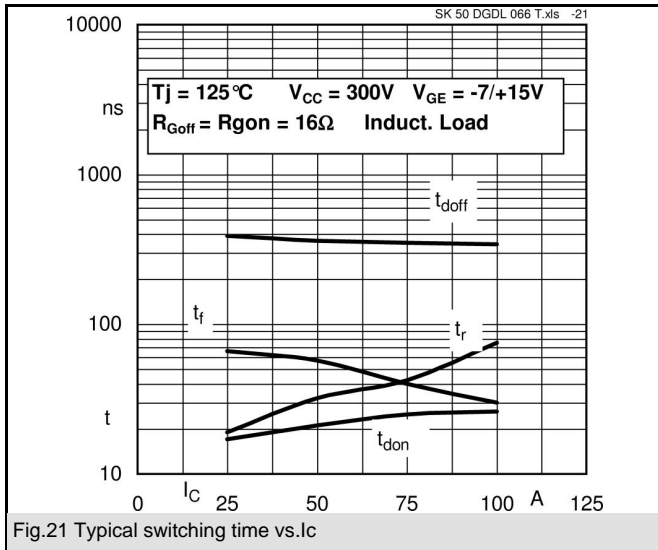
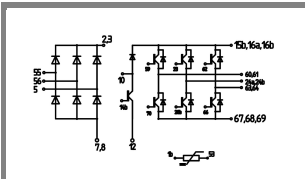


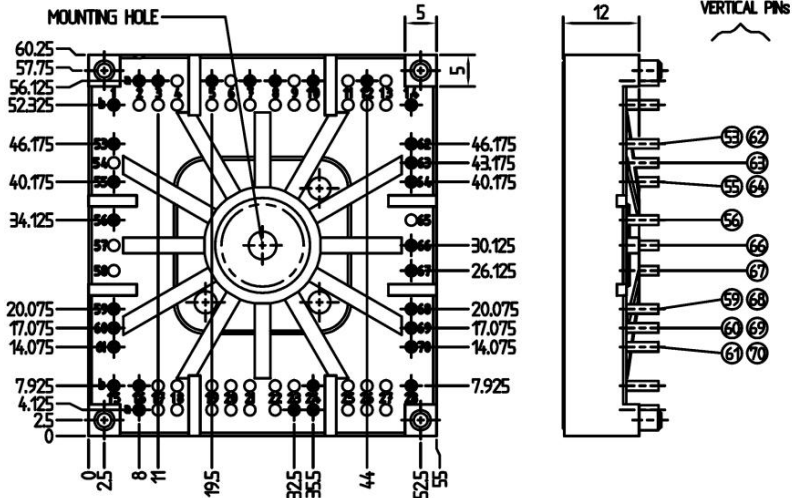
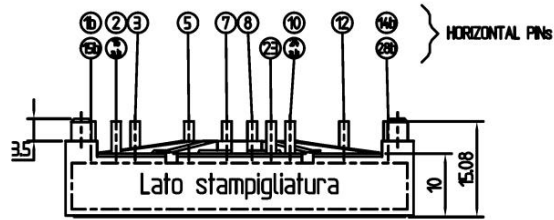
Fig.19 Typical gate charge characteristic



# SK 50 DGDL 066 T



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.

This technical information specifies semiconductor devices but promises no characteristics. No warranty or guarantee expressed or implied is made regarding delivery, performance or suitability.