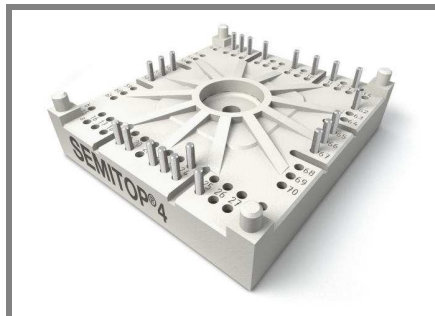


SK 25 DGDL 126 T



SEMITOP®4

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

SK 25 DGDL 126 T

Preliminary Data

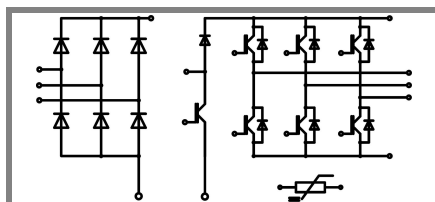
Features

- 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 temperature sensor

Typical Applications*

- Inverter up to 16 kVA
- Typ. motor power 7,5 kW

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



DGDL - T

Absolute Maximum Ratings		Ts = 25 °C, unless otherwise specified	
Symbol	Conditions	Values	Units
IGBT - Inverter,Chopper			
V_{CES}	$T_s = 25 (70) ^\circ C$ $I_{CRM} = 2 \times I_{Cnom}$, $t_p = 1 \text{ ms}$	1200	V
I_C		41 (31)	A
I_{CRM}		50	A
V_{GES}		± 20	V
T_j		-40 ... +150	$^\circ C$
Diode - Inverter,Chopper			
I_F	$T_s = 25 (70) ^\circ C$	30 (22)	A
I_{FRM}	$I_{FRM} = 2 \times I_{Fnom}$, $t_p = 1 \text{ ms}$	50	A
T_j		-40 ... +150	$^\circ C$
Rectifier			
V_{RRM}	$T_s = 70 ^\circ C$ $t_p = 10 \text{ ms}$, $\sin 180 ^\circ$, $T_j = 25 ^\circ C$ $t_p = 10 \text{ ms}$, $\sin 180 ^\circ$, $T_j = 25 ^\circ C$	1600	V
I_F		35	A
I_{FSM} / I_{TSM}		370	A
I_t^2		680	A ² s
T_j		-40 ... +150	$^\circ C$
T_{sol}	Terminals, 10 s	260	$^\circ C$
T_{stg}		-40 ... +125	$^\circ C$
V_{isol}	AC, 1 min. / 1 s	2500 / 3000	V

Characteristics		Ts = 25 °C, unless otherwise specified			
Symbol	Conditions	min.	typ.	max.	Units
IGBT - Inverter					
V_{CEsat}	$I_C = 25 \text{ A}$, $T_j = 25 (125) ^\circ C$		1,7 (2)	2,1 (2,4)	V
$V_{GE(th)}$	$V_{GE} = V_{CE}$, $I_C = 1 \text{ mA}$	5	5,8	6,5	V
$V_{CE(TO)}$	$T_j = 25 ^\circ C (125) ^\circ C$		1 (0,9)	1,2 (1,1)	V
r_T	$T_j = 25 ^\circ C (125) ^\circ C$		28 (44)	36 (52)	m Ω
C_{ies}	$V_{CE} = 25 \text{ V}$, $V_{GE} = 0 \text{ V}$, $f = 1 \text{ MHz}$		1,8		nF
C_{oes}	$V_{CE} = 25 \text{ V}$, $V_{GE} = 0 \text{ V}$, $f = 1 \text{ MHz}$		0,095		nF
C_{res}	$V_{CE} = 25 \text{ V}$, $V_{GE} = 0 \text{ V}$, $f = 1 \text{ MHz}$		0,082		nF
$R_{th(j-s)}$	per IGBT		0,9		K/W
$t_{d(on)}$	under following conditions		82		ns
t_r	$V_{CC} = 600 \text{ V}$, $V_{GE} = \pm 15 \text{ V}$		21		ns
$t_{d(off)}$	$I_C = 25 \text{ A}$, $T_j = 125 ^\circ C$		426		ns
t_f	$R_{Gon} = R_{Goff} = 16 \Omega$		78		ns
E_{on}	inductive load		2,8		mJ
E_{off}			3,1		mJ
Diode - Inverter,Chopper					
$V_F = V_{EC}$	$I_F = 20 \text{ A}$, $T_j = 25 (125) ^\circ C$		1,5 (1,55)	1,65 (1,7)	V
$V_{(TO)}$	$T_j = 25 ^\circ C (125) ^\circ C$		1,15 (1,1)	1,25 (1,2)	V
r_T	$T_j = 25 ^\circ C (125) ^\circ C$		17,5 (22,5)	20 (25)	m Ω
$R_{th(j-s)}$	per diode		1,7		K/W
I_{RRM}	under following conditions		25		A
Q_{rr}	$I_F = 25 \text{ A}$, $V_R = 300 \text{ V}$		5		μC
E_{rr}	$V_{GE} = 0 \text{ V}$, $T_j = 125 ^\circ C$		2		mJ
	$di_F/dt = 2100 \text{ A}/\mu s$				
Diode - Rectifier					
V_F	$I_F = 25 \text{ A}$, $T_j = 25 () ^\circ C$		1,1		V
$V_{(TO)}$	$T_j = 150 ^\circ C$		0,8		V
r_T	$T_j = 150 ^\circ C$		13		m Ω
$R_{th(j-s)}$	per diode		1,5		K/W
Temperatur sensor					
R_{ts}	5 %, $T_r = 25 (100) ^\circ C$		5000(493)		Ω
Mechanical data					
w			60		g
M_s	Mounting torque	2,5		2,75	Nm

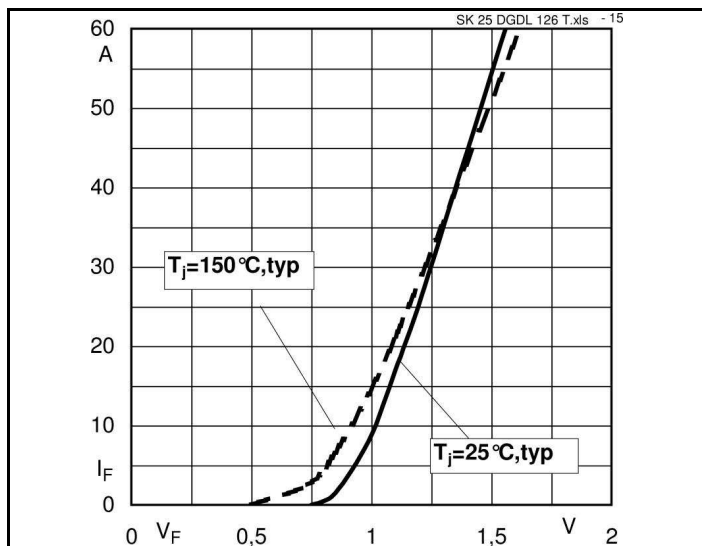


Fig.15 Input bridge Diode forward characteristic

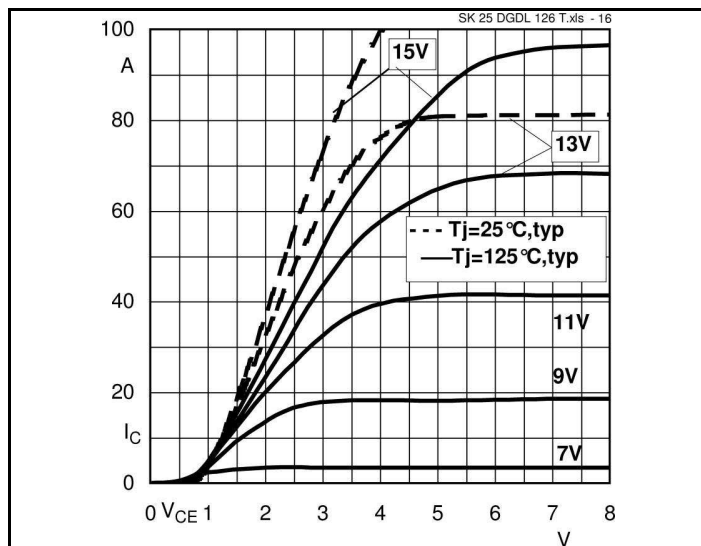


fig.16 Typical Output characteristic

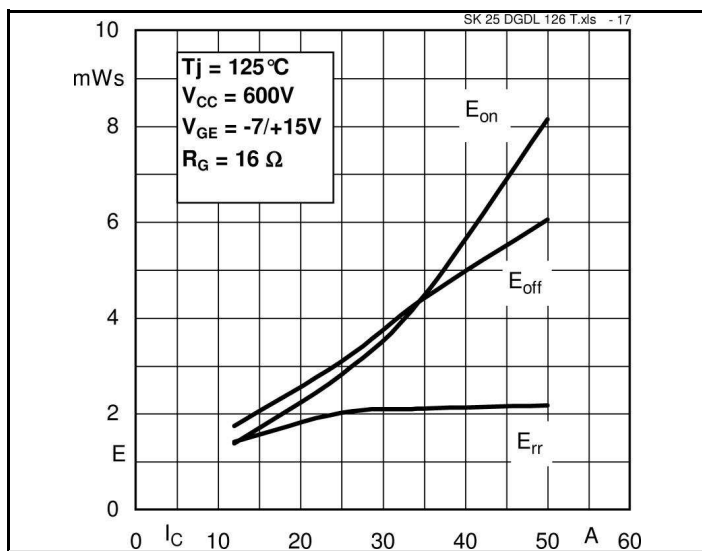


Fig.17 Turn-on/-off energy=f(I_C)

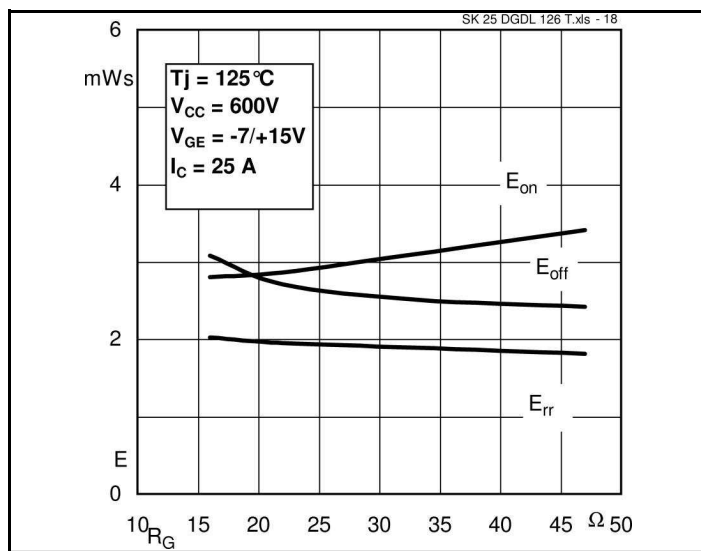


Fig.18 Turn-on/-off energy=f(R_G)

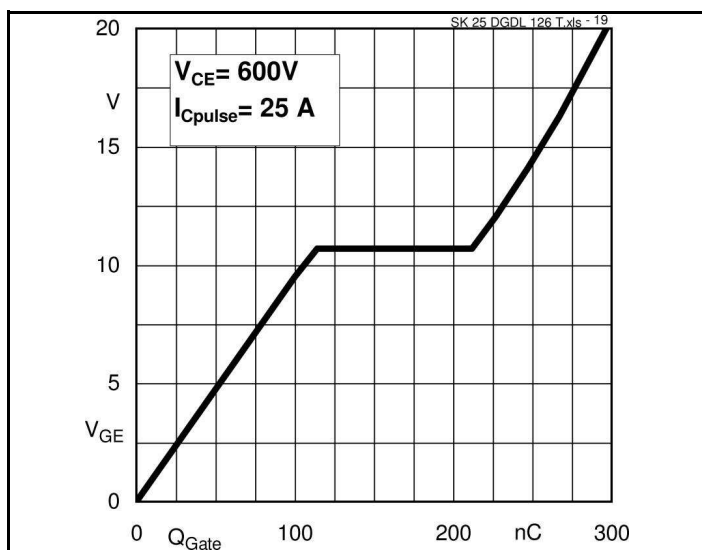
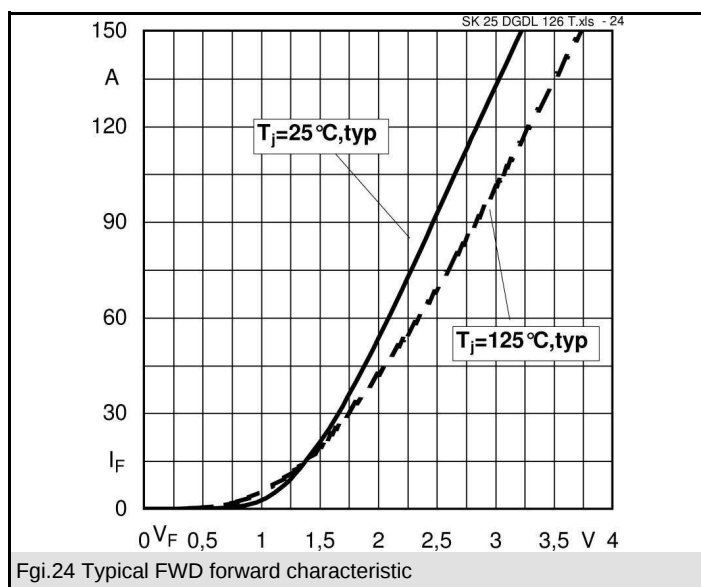
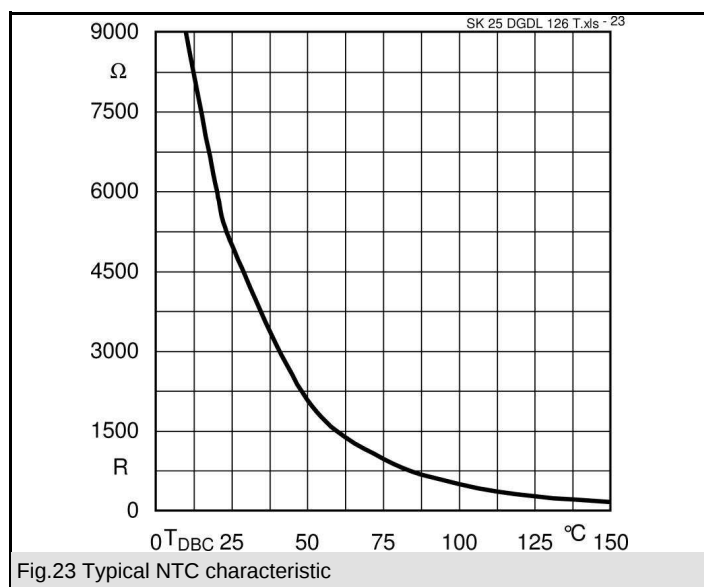
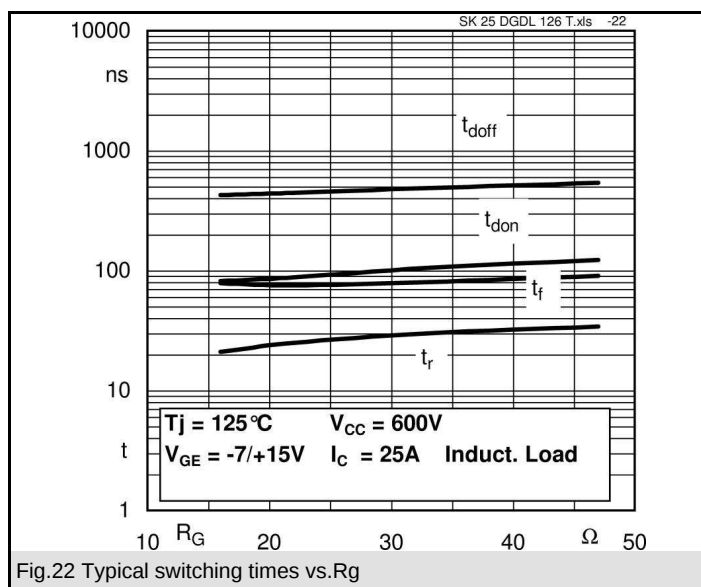
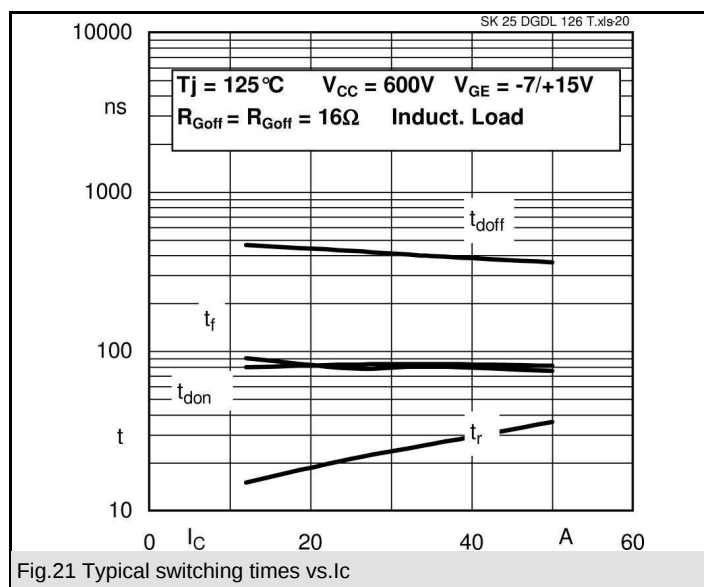
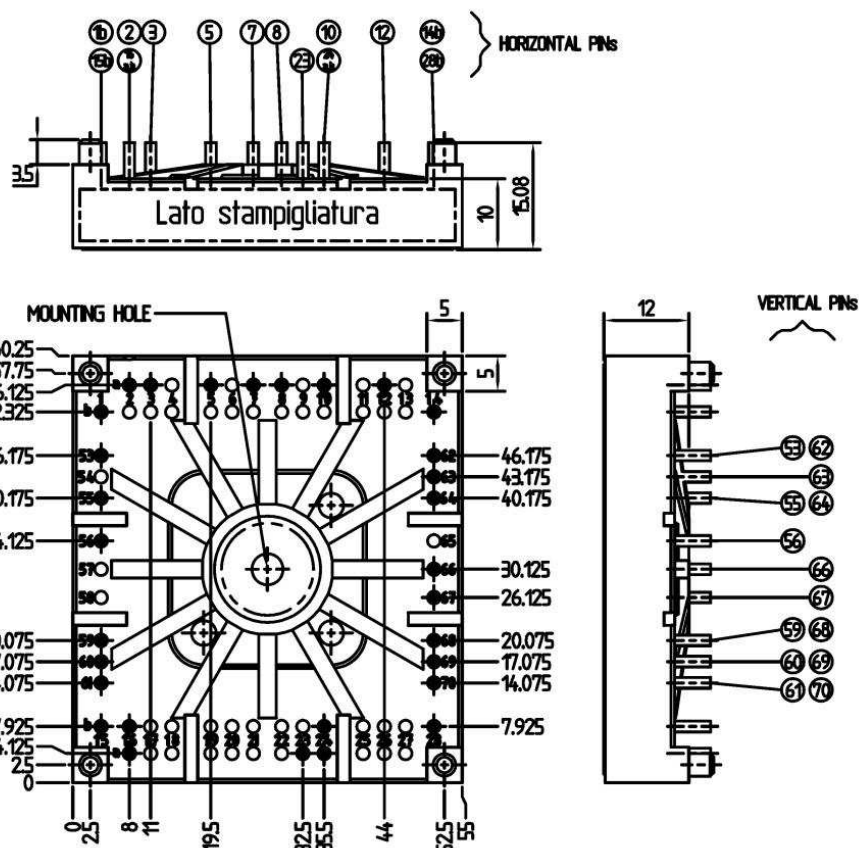
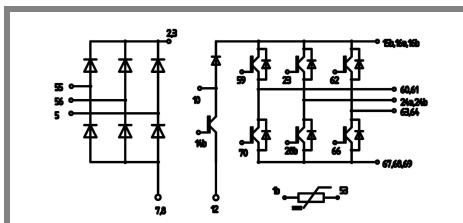


Fig.19 Typical gate charge characteristic





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)



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

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.