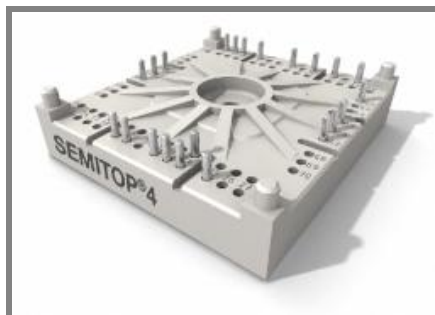


SK50DGDL12T4T



SEMITOP®4

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

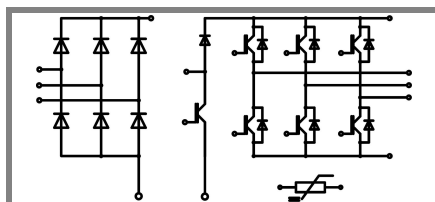
SK 50 DGDL 12T4 T

Target Data

Features

- One screw mounting module
- Fully compatible with SEMITOP®1,2,3
- Improved thermal performances by aluminium oxide substrate
- Trench4 IGBT technology
- CAL4 technology free-wheeling diode
- Integrated NTC temperature sensor

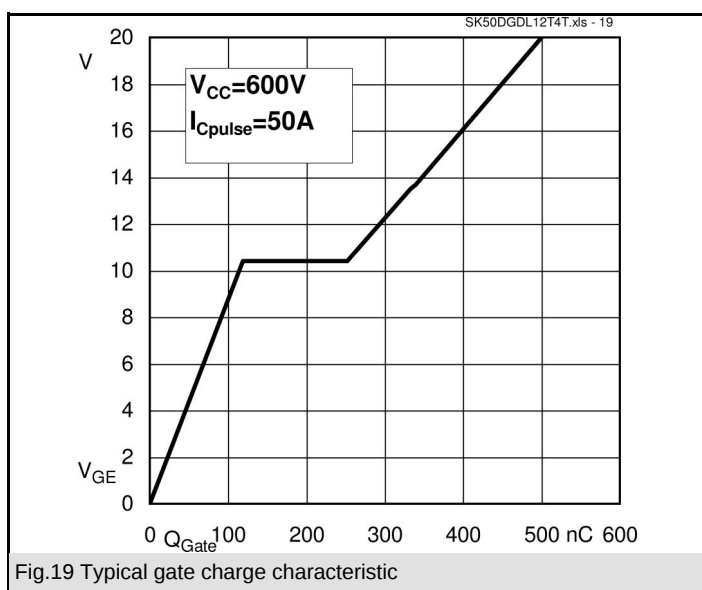
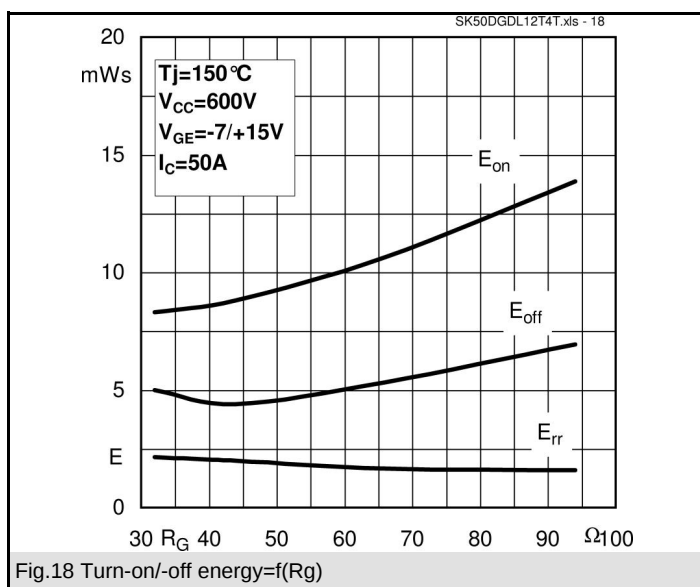
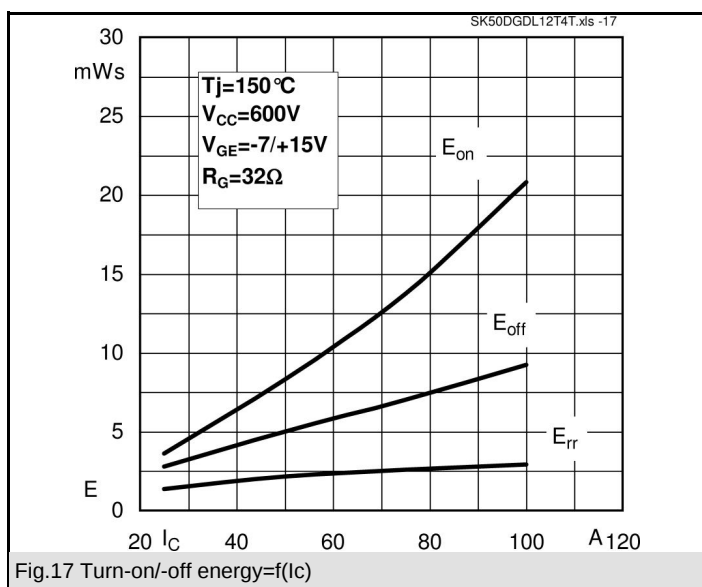
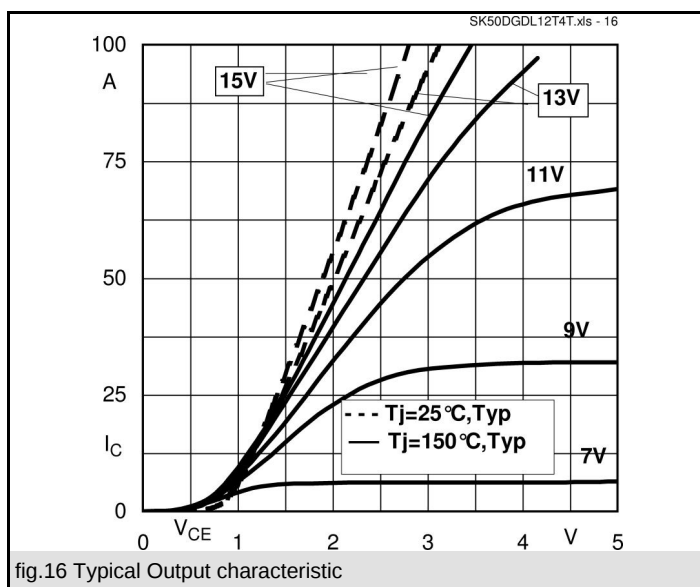
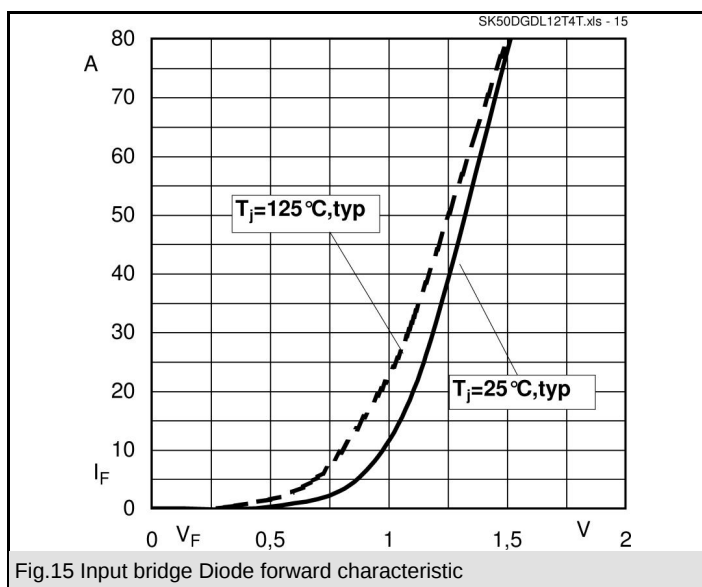
1) $V_{CE,sat}$, V_F = chip level value

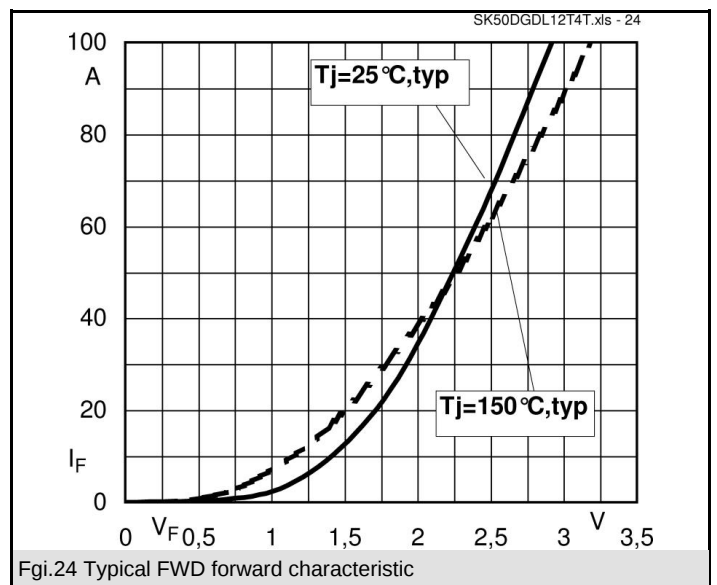
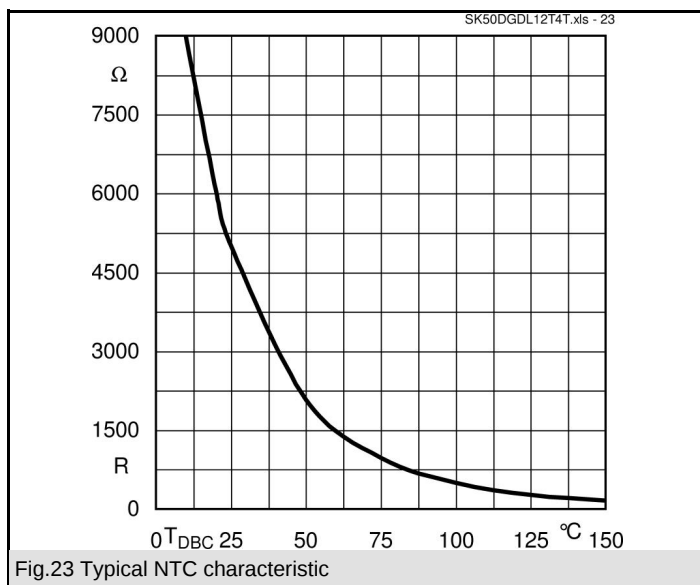
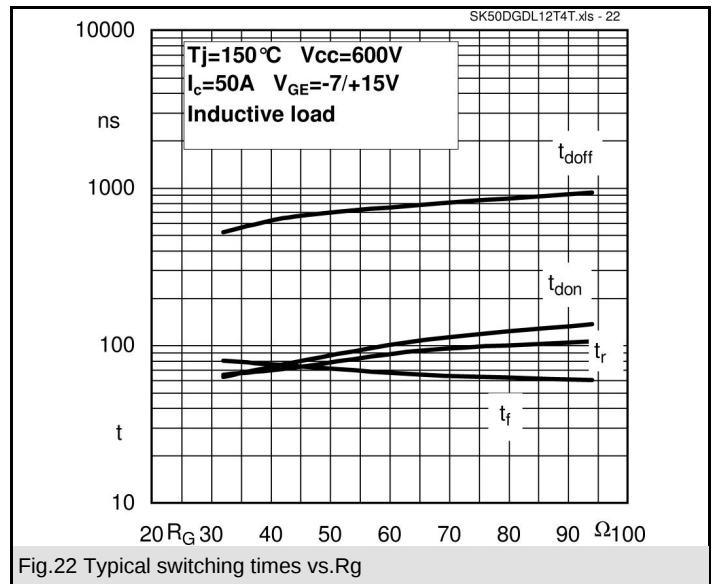
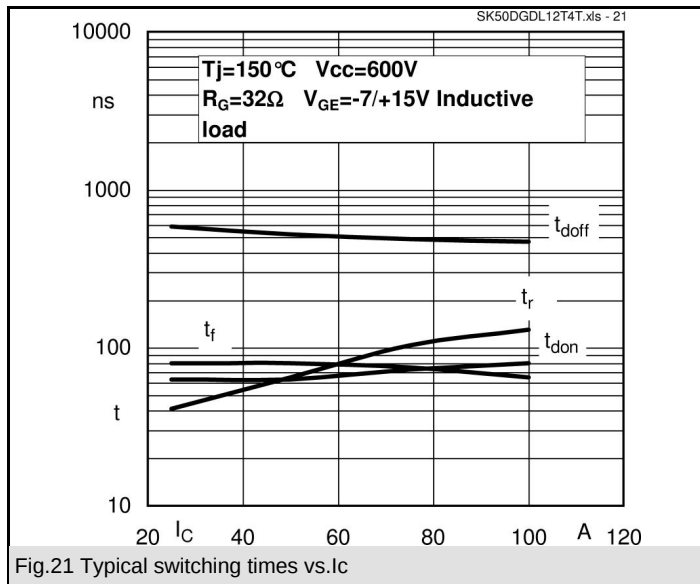


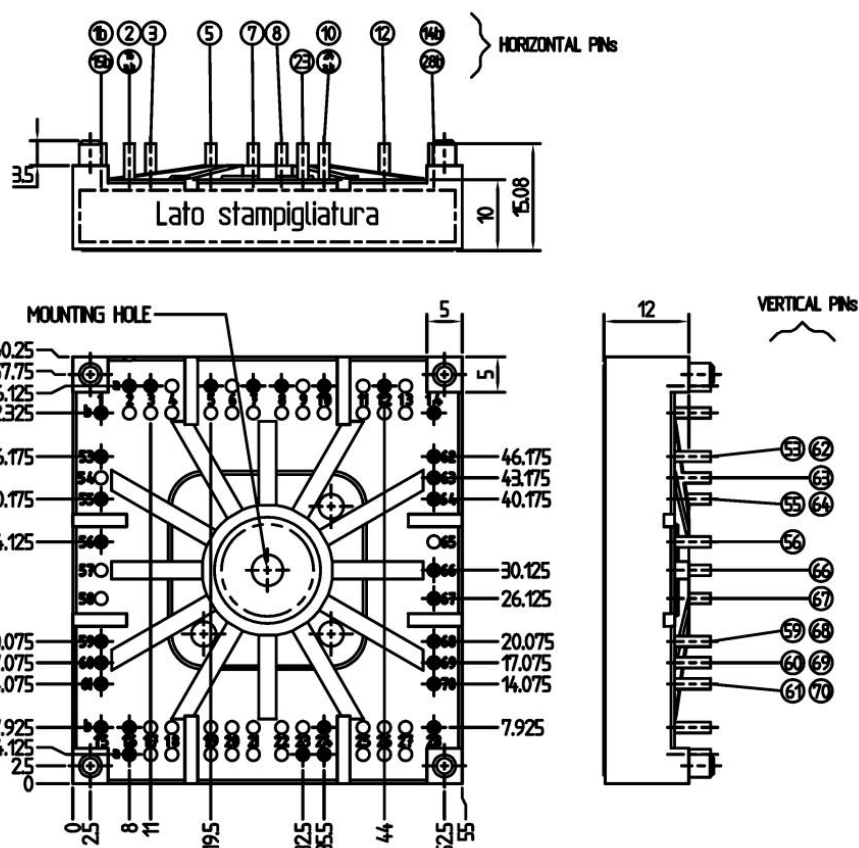
DGDL - T

Absolute Maximum Ratings		Ts = 25 °C, unless otherwise specified	
Symbol	Conditions	Values	Units
IGBT - Inverter. For IGBT chopper maximum ratings, please refer to SK35DGDL12T4T			
V_{CES}		1200	V
I_C	$T_s = 25 (70) ^\circ C$	75 (60)	A
I_{CRM}	$I_{CRM} = 3 \times I_{Cnom}$, $t_p = 1 \text{ ms}$	150	A
V_{GES}		± 20	V
T_j		-40 ... +175	$^\circ C$
Diode - Inverter, Chopper			
I_F	$T_s = 25 (70) ^\circ C$	60 (45)	A
I_{FRM}	$I_{FRM} = 2 \times I_{Fnom}$, $t_p = 1 \text{ ms}$	150	A
T_j		-40 ... +150	$^\circ C$
Rectifier			
V_{RRM}		1600	V
I_F	$T_s = 70 ^\circ C$	61	A
I_{FSM} / I_{TSM}	$t_p = 10 \text{ ms}$, $\sin 180 ^\circ$, $T_j = 25 ^\circ C$	700	A
I_t^2	$t_p = 10 \text{ ms}$, $\sin 180 ^\circ$, $T_j = 25 ^\circ C$	2400	A ² s
T_j		-40 ... +175	$^\circ C$
T_{sol}	Terminals, 10 s	260	$^\circ C$
T_{stg}		-40 ... +125	$^\circ C$
V_{isol}	AC, 1 min. / 1 s	2500 / 3000	V

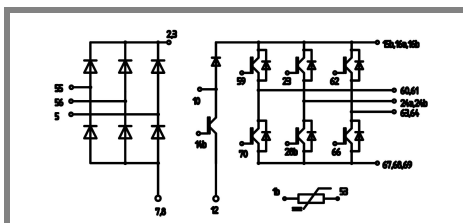
Characteristics		Ts = 25 °C, unless otherwise specified		
Symbol	Conditions	min.	typ.	max.
IGBT - Inverter. For IGBT chopper electrical characteristics, please refer to SK35DGDL12T4T				
V_{CEsat}	$I_C = 50 \text{ A}$, $T_j = 25 (150) ^\circ C$		1,85 (2,2)	2,05 (2,45)
$V_{GE(th)}$	$V_{GE} = V_{CE}$, $I_C = 1,7 \text{ mA}$	5	5,8	6,5
$V_{CE(TO)}$	$T_j = 25 ^\circ C (150) ^\circ C$		1,1 (1)	1,3 (1,2)
r_T	$T_j = 25 ^\circ C (150) ^\circ C$		15 (24)	
C_{ies}	$V_{CE} = 25 \text{ V}$, $V_{GE} = 0 \text{ V}$, $f = 1 \text{ MHz}$		2,77	
C_{oes}	$V_{CE} = 25 \text{ V}$, $V_{GE} = 0 \text{ V}$, $f = 1 \text{ MHz}$		0,2	
C_{res}	$V_{CE} = 25 \text{ V}$, $V_{GE} = 0 \text{ V}$, $f = 1 \text{ MHz}$		0,16	
$R_{th(j-s)}$	per IGBT		0,65	
$t_{d(on)}$	under following conditions		63	
t_r	$V_{CC} = 600 \text{ V}$, $V_{GE} = \pm 15 \text{ V}$		65	
$t_{d(off)}$	$I_C = 50 \text{ A}$, $T_j = 150 ^\circ C$		521	
t_f	$R_{Gon} = R_{Goff} = 32 \Omega$		80	
E_{on}	inductive load		8,3	
E_{off}			5	
Diode - Inverter, Chopper				
$V_F = V_{EC}$	$I_F = 50 \text{ A}$, $T_j = 25(150) ^\circ C$		2,22 (2,18)	2,54 (2,5)
$V_{(TO)}$	$T_j = 25 ^\circ C (150) ^\circ C$		1,3 (0,9)	1,5 (1,1)
r_T	$T_j = 25 ^\circ C (150) ^\circ C$		18,4 (25,6)	20,8 (28)
$R_{th(j-s)}$	per diode		0,97	
I_{RRM}	under following conditions		30	
Q_{rr}	$I_F = 50 \text{ A}$, $V_R = 300 \text{ V}$		7,2	
E_{rr}	$V_{GE} = 0 \text{ V}$, $T_j = 150 ^\circ C$		2,15	
	$di_F/dt = 920 \text{ A}/\mu s$			
Diode - Rectifier				
V_F	$I_F = 50 \text{ A}$, $T_j = 25(150) ^\circ C$		1,1	
$V_{(TO)}$	$T_j = 150 ^\circ C$		0,8	
r_T	$T_j = 150 ^\circ C$		6	
$R_{th(j-s)}$	per diode		0,9	
Temperatur sensor				
R_{ts}	5 %, $T_r = 25 (100) ^\circ C$		5000(493)	Ω
Mechanical data				
w			60	g
M_s	Mounting torque		3,5	Nm







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.