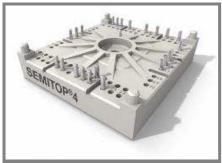
## SK50DGDL12T4T



SEMITOP®4

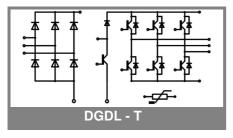
3-phase bridge rectifier + brake chopper + 3-phase bridge inverter

SK 50 DGDL 12T4 T

#### **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

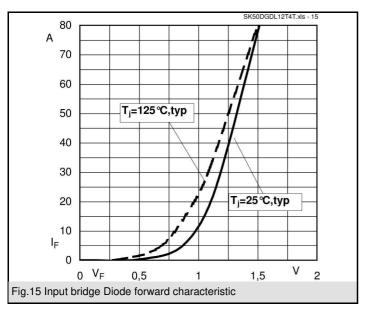
1)  $V_{CE,sat}$ ,  $V_F$  = chip level value

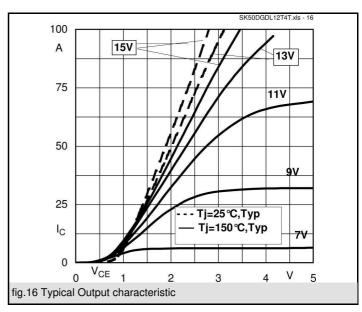


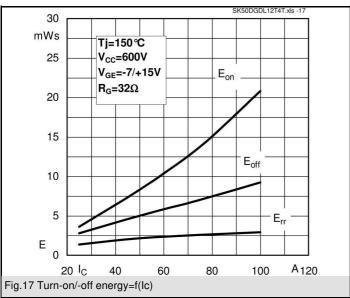
<b>Absolute Maximum Ratings</b> Ts = 25 °C, unless otherwise specified								
Symbol	Conditions	Values	Units					
IGBT - Inverter.For IGBT chopper maximum ratings, please refer to								
SK35DGDL12T4T								
$V_{CES}$		1200	V					
I <sub>C</sub>	T <sub>s</sub> = 25 (70) °C	75 (60)	Α					
I <sub>CRM</sub>	$I_{CRM} = 3 \times I_{Cnom}, t_p = 1 \text{ ms}$	150	Α					
$V_{GES}$		± 20	V					
T <sub>j</sub>		-40 <b>+</b> 175	°C					
Diode - Inverter, Chopper								
I <sub>F</sub>	$T_s = 25 (70) ^{\circ}C$	60 (45)	Α					
I <sub>FRM</sub>	$I_{FRM} = 2xI_{Fnom}, t_p = 1 \text{ ms}$	150	Α					
T <sub>j</sub>		-40 <b>+</b> 150	°C					
Rectifier								
$V_{RRM}$		1600	V					
I <sub>F</sub>	T <sub>s</sub> = 70 °C	61	Α					
I <sub>FSM</sub> / I <sub>TSM</sub>	$t_p = 10 \text{ ms}$ , sin 180 ° , $T_j = 25 \text{ °C}$	700	Α					
I <sup>2</sup> t	t <sub>p</sub> = 10 ms , sin 180 ° ,T <sub>j</sub> = 25 °C	2400	A²s					
T <sub>j</sub>		-40 <b>+</b> 175	°C					
T <sub>sol</sub>	Terminals, 10 s	260	°C					
T <sub>stg</sub>		-40 <b>+</b> 125	°C					
V <sub>isol</sub>	AC, 1 min. / 1 s	2500 / 3000	V					

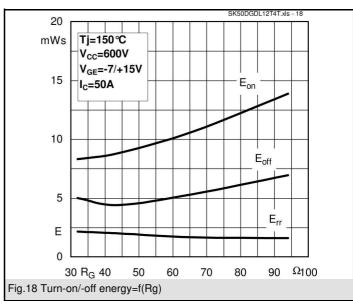
<b>Characteristics</b> Ts = 25 °C, unless otherwise specified								
Symbol	Conditions	min.	typ.	max.	Units			
IGBT - Inverter. For IGBT chopper electrical characteristics, please refer to								
SK35DGD		1		/				
V <sub>CEsat</sub>	I <sub>C</sub> = 50 A, T <sub>j</sub> = 25 (150) °C	_		2,05 (2,45)	V			
V <sub>GE(th)</sub>	$V_{GE} = V_{CE}, I_{C} = 1,7 \text{ mA}$	5	5,8	6,5	V			
V <sub>CE(TO)</sub>	T <sub>j</sub> = 25 °C (150) °C		1,1 (1)	1,3 (1,2)	٧			
r <sub>T</sub>	$T_{j} = 25 ^{\circ}\text{C} (150) ^{\circ}\text{C}$		15 (24)		mΩ			
C <sub>ies</sub>	$V_{CE} = 25 V_{GE} = 0 V, f = 1 MHz$		2,77 0,2		nF nF			
Coes	$V_{CE} = 25 V_{GE} = 0 V, f = 1 MHz$				nF			
C <sub>res</sub>	$V_{CE} = 25 V_{GE} = 0 V, f = 1 MHz$		0,16					
$R_{th(j-s)}$	per IGBT		0,65		K/W			
$t_{d(on)}$	under following conditions		63		ns			
t <sub>r</sub>	$V_{CC} = 600 \text{ V}, V_{GE} = \pm 15 \text{ V}$		65		ns			
t <sub>d(off)</sub>	$I_C = 50 \text{ A}, T_j = 150 ^{\circ}\text{C}$		521		ns			
t <sub>f</sub>	$R_{Gon} = R_{Goff} = 32 \Omega$		80		ns			
E <sub>on</sub>	inductive load		8,3		mJ			
E <sub>off</sub>			5		mJ			
Diode - Inv	verter,Chopper							
$V_F = V_{EC}$	I <sub>F</sub> = 50 A, T <sub>i</sub> = 25(150) °C		2,22 (2,18)	2,54 (2,5)	V			
$V_{(TO)}$	T <sub>i</sub> = 25 °C (150) °C		1,3 (0,9)	1,5 (1,1)	V			
r <sub>T</sub>	T <sub>j</sub> = 25 °C (150) °C		18,4 (25,6)	20,8 (28)	mΩ			
$R_{th(j-s)}$	per diode		0,97		K/W			
I <sub>RRM</sub>	under following conditions		30		Α			
$Q_{rr}$	I <sub>F</sub> = 50 A, V <sub>R</sub> = 300 V		7,2		μC			
E <sub>rr</sub>	V <sub>GE</sub> = 0 V, T <sub>j</sub> = 150 °C		2,15		mJ			
	di <sub>F/dt</sub> = 920 A/μs							
Diode - Re	ectifier	•						
$V_{F}$	I <sub>F</sub> = 50 A, T <sub>i</sub> = 25(150) °C		1,1		V			
V <sub>(TO)</sub>	T <sub>i</sub> = 150 °C		0,8		V			
r <sub>T</sub>	T <sub>i</sub> = 150 °C		6		mΩ			
$R_{th(j-s)}$	per diode		0,9		K/W			
Temperatur sensor								
R <sub>ts</sub>	5 %, T <sub>r</sub> = 25 (100 ) °C		5000(493)		Ω			
Mechanical data								
w			60		g			
M <sub>s</sub>	Mounting torque		2,6		Nm			

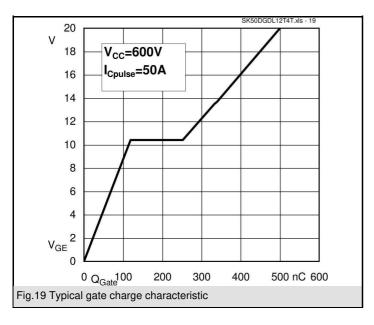
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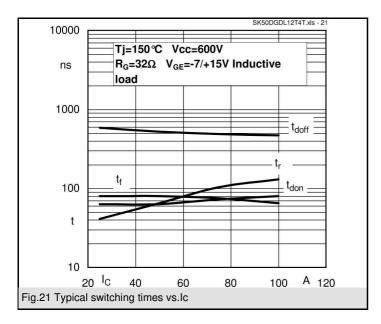


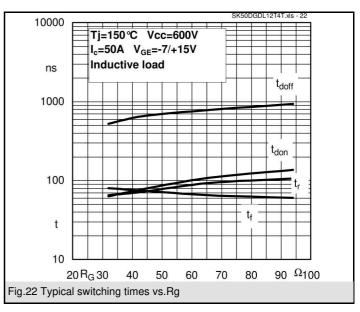


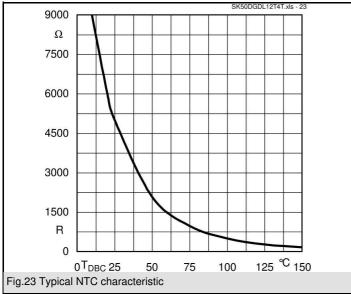


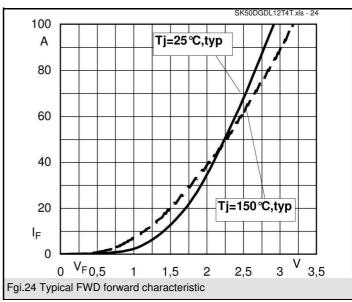


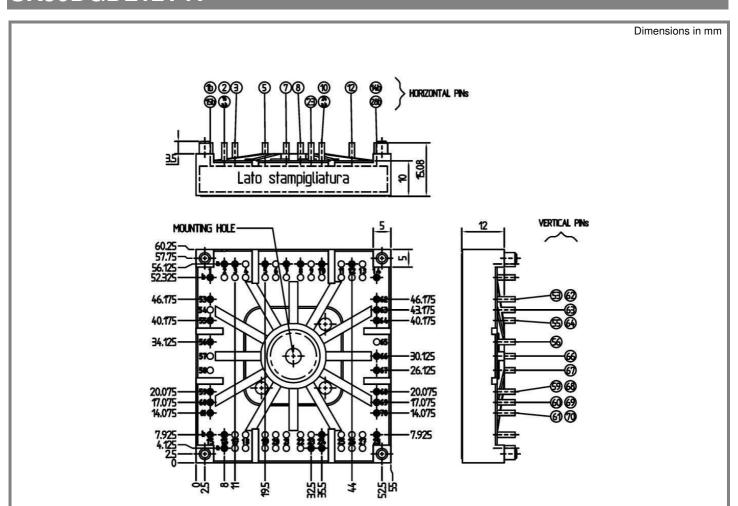
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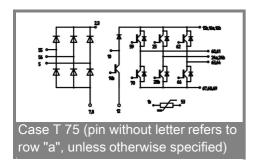








Case T 75 (Suggested hole diameter for the solder pins in the circuit board: 2mm. Suggested hole diameter for the mounting pins in the circuit board: 3,6mm)



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

#### \*IMPORTANT INFORMATION AND WARNINGS

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