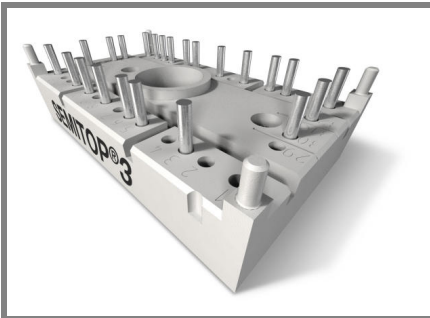


# SK15DGDL12T4ET



**SEMITOP<sup>®</sup>3**

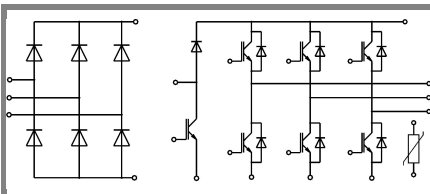
**3-phase bridge rectifier +  
brake chopper + 3-phase  
bridge inverter**  
**SK 15 DGDL 12T4 ET**

Target Data

## Features

- One screw mounting module
- Trench4 IGBT technology
- CAL4 technology FWD
- Integrated NTC temperature sensor

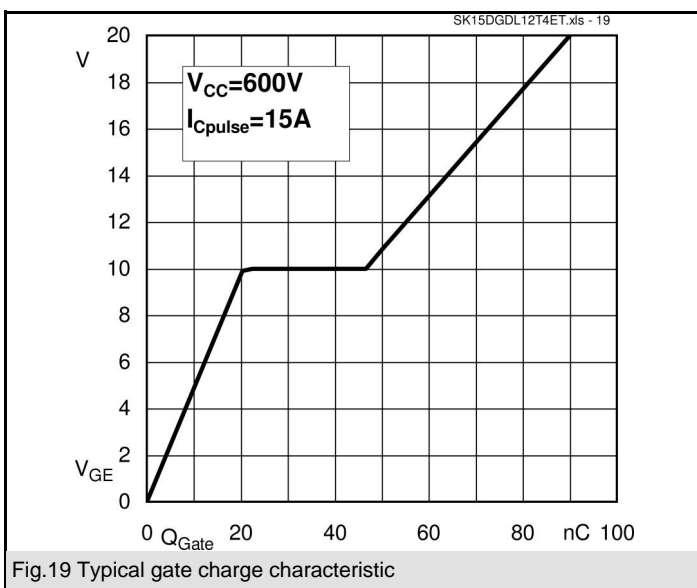
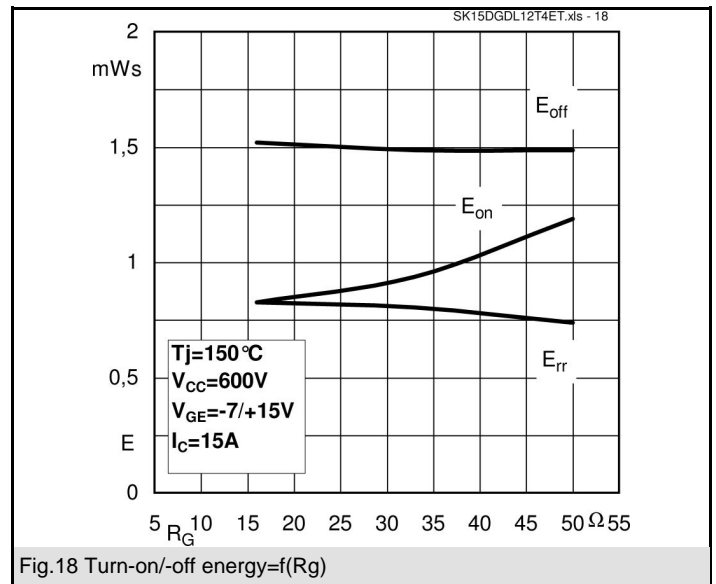
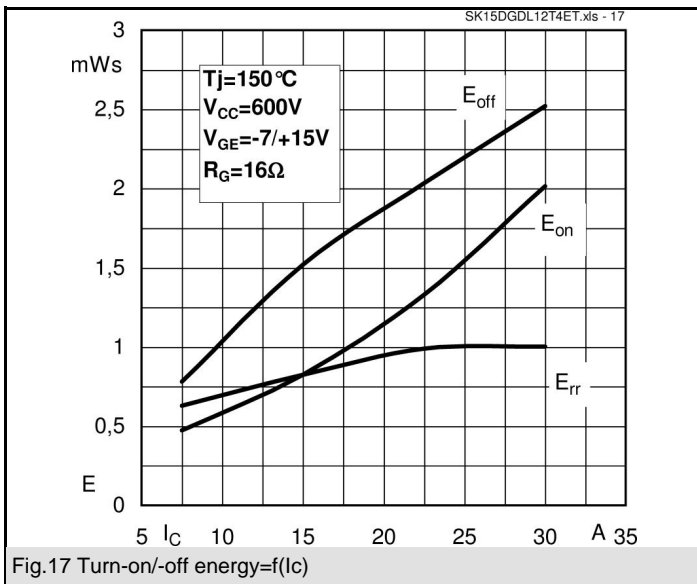
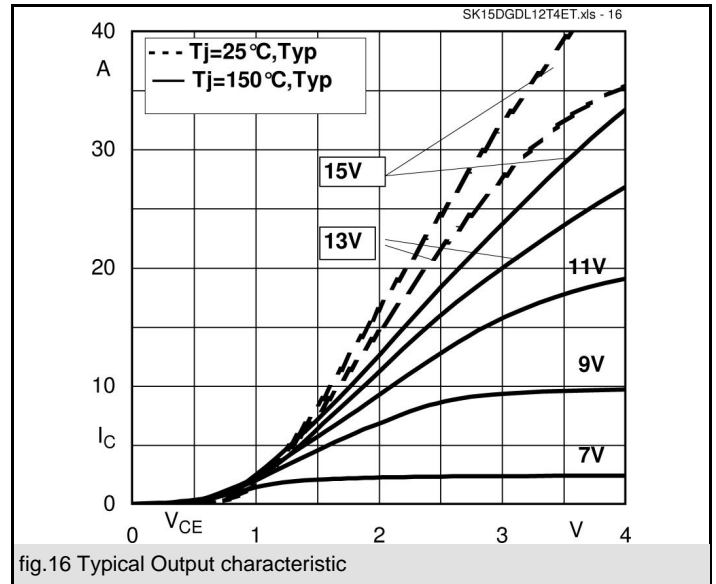
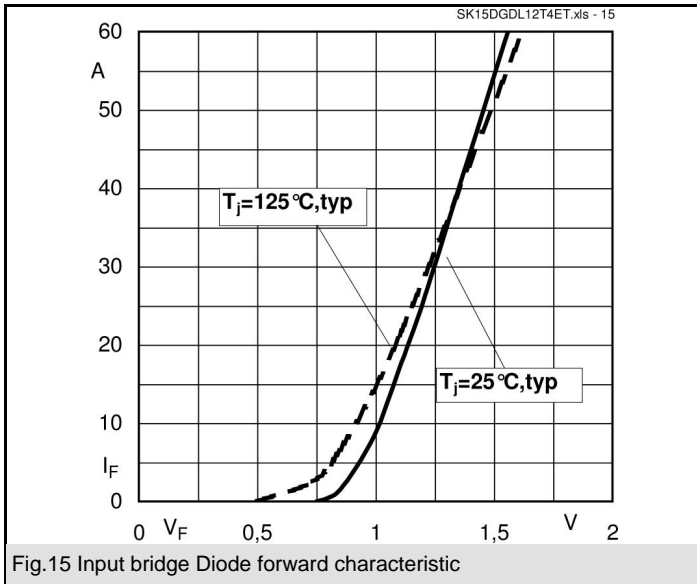
1)  $V_{CE,sat}$ ,  $V_F$  = chip level value

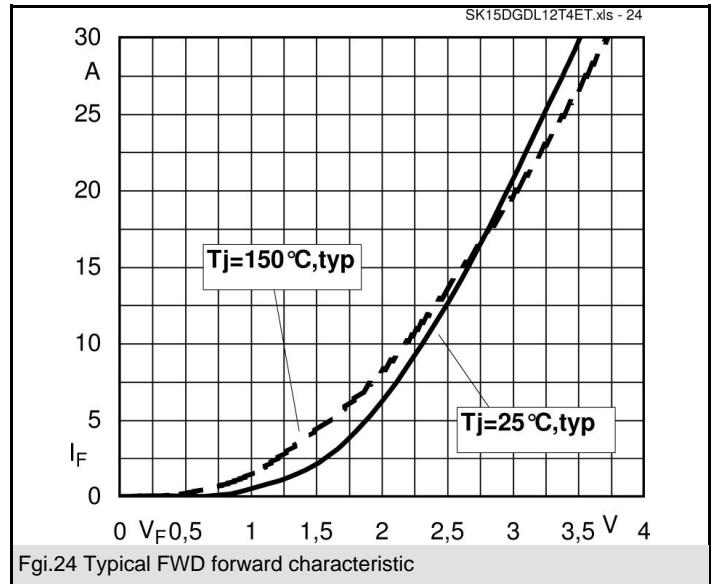
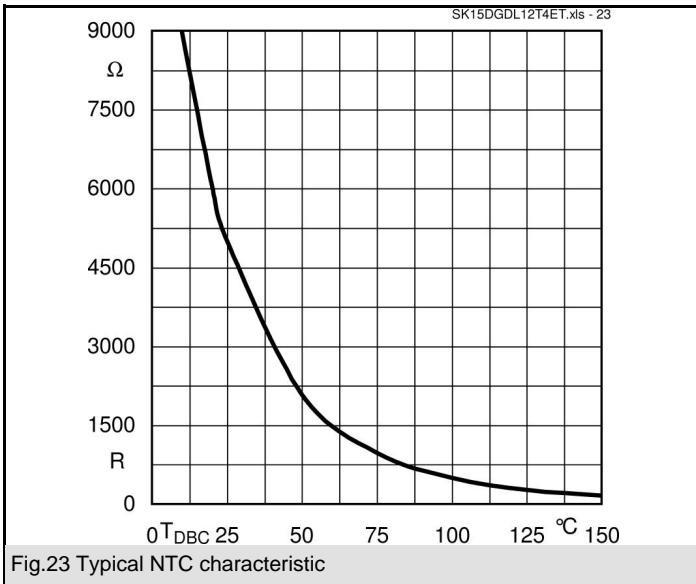
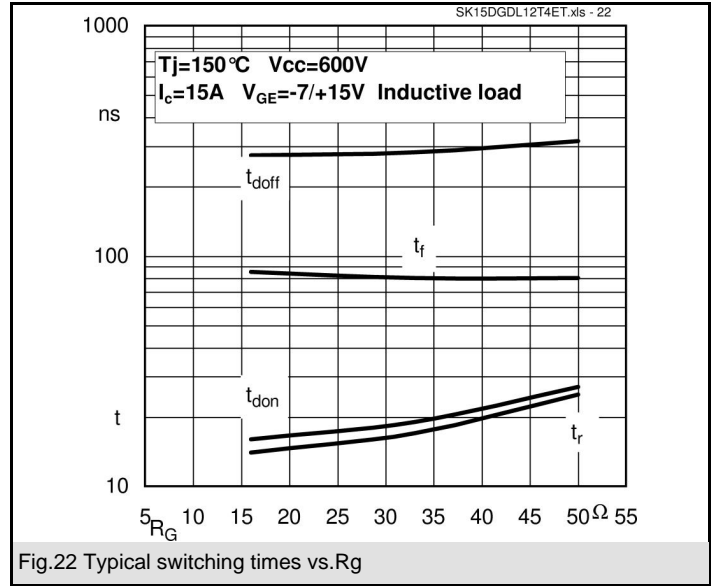
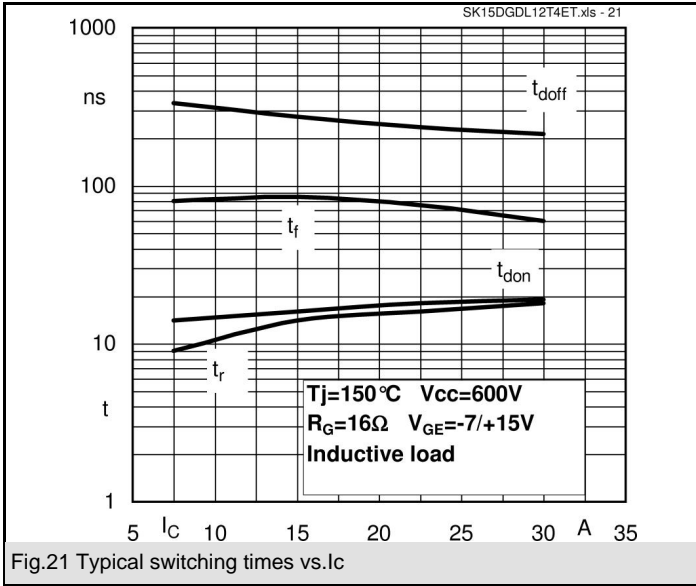


**DGDL - ET**

Absolute Maximum Ratings		Ts = 25 °C, unless otherwise specified	
Symbol	Conditions	Values	Units
<b>IGBT - Inverter,Chopper</b>			
$V_{CES}$		1200	V
$I_C$	$T_s = 25 (70) ^\circ C$	27 (21)	A
$I_{CRM}$	$I_{CRM} = 3 \times I_{Cnom}$ , $t_p = 1 \text{ ms}$	45	A
$V_{GES}$		$\pm 20$	V
$T_j$		-40 ... +175	$^\circ C$
<b>Diode - Inverter,Chopper</b>			
$I_F$	$T_s = 25 (70) ^\circ C$	21 (17)	A
$I_{FRM}$	$I_{FRM} = 2 \times I_{Fnom}$ , $t_p = 1 \text{ ms}$	45	A
$T_j$		-40 ... +150	$^\circ C$
<b>Rectifier</b>			
$V_{RRM}$		1600	V
$I_F$	$T_s = 70 ^\circ C$	28	A
$I_{FSM} / I_{TSM}$	$t_p = 10 \text{ ms}$ , $\sin 180^\circ$ , $T_j = 25 ^\circ C$	220	A
$I_t^2$	$t_p = 10 \text{ ms}$ , $\sin 180^\circ$ , $T_j = 25 ^\circ C$	240	A <sup>2</sup> 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

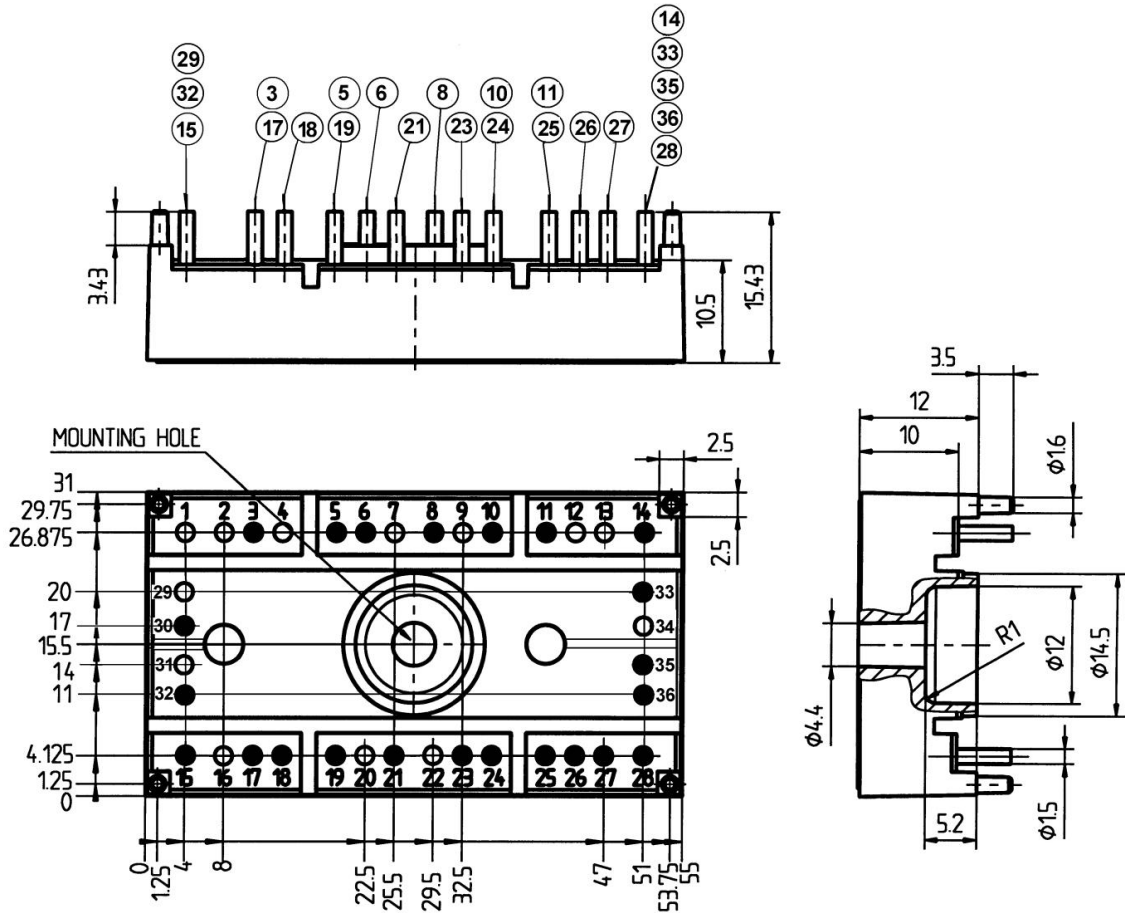
Characteristics		Ts = 25 °C, unless otherwise specified			
Symbol	Conditions	min.	typ.	max.	Units
<b>IGBT - Inverter</b>					
$V_{CEsat}$	$I_C = 15 \text{ A}$ , $T_j = 25 (150) ^\circ C$		1,85 (2,25)	2,05 (2,45)	V
$V_{GE(th)}$	$V_{GE} = V_{CE}$ , $I_C = 0,5 \text{ mA}$	5	5,8	6,5	V
$V_{CE(TO)}$	$T_j = 25 ^\circ C (150) ^\circ C$		1,1 (1)	1,3 (1,2)	V
$r_T$	$T_j = 25 ^\circ C (150) ^\circ C$		50 (83,3)		m $\Omega$
$C_{ies}$	$V_{CE} = 25 \text{ V}$ , $V_{GE} = 0 \text{ V}$ , $f = 1 \text{ MHz}$		0,9		nF
$C_{oes}$	$V_{CE} = 25 \text{ V}$ , $V_{GE} = 0 \text{ V}$ , $f = 1 \text{ MHz}$		0,08		nF
$C_{res}$	$V_{CE} = 25 \text{ V}$ , $V_{GE} = 0 \text{ V}$ , $f = 1 \text{ MHz}$		0,055		nF
$R_{th(j-s)}$	per IGBT		1,65		K/W
$t_{d(on)}$	under following conditions		16		ns
$t_r$	$V_{CC} = 600 \text{ V}$ , $V_{GE} = \pm 15 \text{ V}$		14		ns
$t_{d(off)}$	$I_C = 15 \text{ A}$ , $T_j = 150 ^\circ C$		273		ns
$t_f$	$R_{Gon} = R_{Goff} = 16 \Omega$		85		ns
$E_{on}$	inductive load		0,82		mJ
$E_{off}$			1,52		mJ
<b>Diode - Inverter,Chopper</b>					
$V_F = V_{EC}$	$I_F = 15 \text{ A}$ , $T_j = 25 (150) ^\circ C$		2,38 (2,44)	2,71 (2,77)	V
$V_{(TO)}$	$T_j = 25 ^\circ C (150) ^\circ C$		1,3 (0,9)	1,5 (1,1)	V
$r_T$	$T_j = 25 ^\circ C (150) ^\circ C$		72 (102,7)	80,6 (111,3)	m $\Omega$
$R_{th(j-s)}$	per diode		2,34		K/W
$I_{RRM}$	under following conditions		28		A
$Q_{rr}$	$I_F = 15 \text{ A}$ , $V_R = V$		0,3		$\mu C$
$E_{rr}$	$V_{GE} = 0 \text{ V}$ , $T_j = 150 ^\circ C$		0,82		mJ
	$di_{F/dt} = 2750 \text{ A}/\mu s$				
<b>Diode - Rectifier</b>					
$V_F$	$I_F = 15 \text{ A}$ , $T_j = 25 ( ) ^\circ C$		1,1		V
$V_{(TO)}$	$T_j = 150 ^\circ C$		0,9		V
$r_T$	$T_j = 150 ^\circ C$		20		m $\Omega$
$R_{th(j-s)}$	per diode		2		K/W
<b>Temperatur sensor</b>					
$R_{ts}$	5 %, $T_r = 25 (100) ^\circ C$		5000(493)		$\Omega$
<b>Mechanical data</b>					
w			30		g
$M_s$	Mounting torque	2,25		2,5	Nm



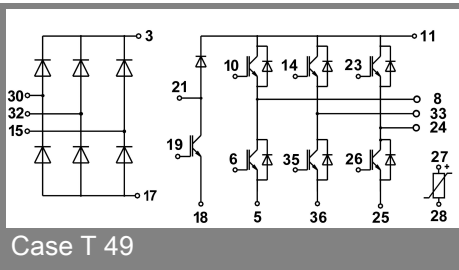


# SK15DGD12T4ET

Dimensions in mm



Case T 49 (Suggested hole diameter for solder pins and for mounting plastic pins: 2mm)



Case T 49

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.