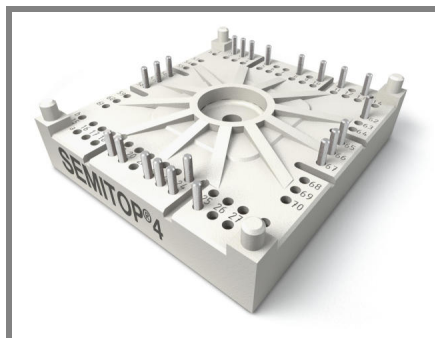


# SK50GD12T4T



**SEMITOP® 4**

## IGBT Module

**SK50GD12T4T**

### Target Data

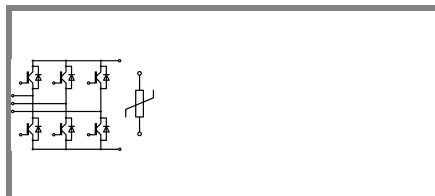
### Features

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

### Typical Applications\*

### Remarks

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

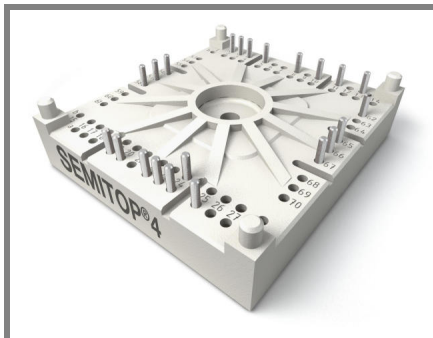


**GD-T**

Absolute Maximum Ratings		$T_s = 25\text{ °C}$ , unless otherwise specified	
Symbol	Conditions	Values	Units
<b>IGBT</b>			
$V_{CES}$	$T_j = 25\text{ °C}$	1200	V
$I_C$	$T_j = 175\text{ °C}$	$T_s = 25\text{ °C}$	75 A
		$T_s = 70\text{ °C}$	60 A
$I_{CRM}$	$I_{CRM} = 3 \times I_{Cnom}$	150	A
$V_{GES}$		$\pm 20$	V
$t_{psc}$	$V_{CC} = 800\text{ V}$ ; $V_{GE} \leq 15\text{ V}$ ; $T_j = 150\text{ °C}$ $V_{CES} < 1200\text{ V}$	10	$\mu\text{s}$
<b>Inverse Diode</b>			
$I_F$	$T_j = 175\text{ °C}$	$T_s = 25\text{ °C}$	60 A
		$T_s = 70\text{ °C}$	45 A
$I_{FRM}$	$I_{FRM} = 3 \times I_{Fnom}$	150	A
$I_{FSM}$	$t_p = 10\text{ ms}$ ; half sine wave $T_j = 150\text{ °C}$	265	A
<b>Module</b>			
$I_{t(RMS)}$			A
$T_{vj}$		-40 ... +175	$^{\circ}\text{C}$
$T_{stg}$		-40 ... +125	$^{\circ}\text{C}$
$V_{isol}$	AC, 1 min.	2500	V

Characteristics		$T_s = 25\text{ °C}$ , unless otherwise specified			
Symbol	Conditions	min.	typ.	max.	Units
<b>IGBT</b>					
$V_{GE(th)}$	$V_{GE} = V_{CE}$ , $I_C = 1,7\text{ mA}$	5	5,8	6,5	V
$I_{CES}$	$V_{GE} = 0\text{ V}$ , $V_{CE} = V_{CES}$	$T_j = 25\text{ °C}$		0,01	mA
		$T_j = 125\text{ °C}$			mA
$I_{GES}$	$V_{CE} = 0\text{ V}$ , $V_{GE} = 20\text{ V}$	$T_j = 25\text{ °C}$		600	nA
		$T_j = 125\text{ °C}$			nA
$V_{CE0}$		$T_j = 25\text{ °C}$	1,1	1,3	V
		$T_j = 150\text{ °C}$	1	1,2	V
$r_{CE}$	$V_{GE} = 15\text{ V}$	$T_j = 25\text{ °C}$	15		m $\Omega$
		$T_j = 150\text{ °C}$	25		m $\Omega$
$V_{CE(sat)}$	$I_{Cnom} = 50\text{ A}$ , $V_{GE} = 15\text{ V}$	$T_j = 25\text{ °C}_{chiplev.}$	1,85	2,05	V
		$T_j = 150\text{ °C}_{chiplev.}$	2,25	2,45	V
$C_{ies}$	$V_{CE} = 25$ , $V_{GE} = 0\text{ V}$		2,77		nF
$C_{oes}$			0,2		nF
$C_{res}$			0,16		nF
$Q_G$	$V_{GE} = -7\text{ V} \dots +15\text{ V}$		375		nC
$R_{Gint}$	$T_j = 25\text{ °C}$		4		$\Omega$
$t_{d(on)}$	$R_{Gon} = 32\text{ }\Omega$ $di/dt = 920\text{ A}/\mu\text{s}$	$V_{CC} = 600\text{ V}$ $I_C = 50\text{ A}$	63		ns
$t_r$			65		ns
$E_{on}$			8,3		mJ
$t_{d(off)}$	$R_{Goff} = 32\text{ }\Omega$ $di/dt = 920\text{ A}/\mu\text{s}$	$T_j = 150\text{ °C}$ $V_{GE} = \pm 15\text{ V}$	521		ns
$t_f$			80		ns
$E_{off}$			5		mJ
$R_{th(j-s)}$	per IGBT		0,65		K/W

# SK50GD12T4T



**SEMITOP® 4**

## IGBT Module

### SK50GD12T4T

#### Target Data

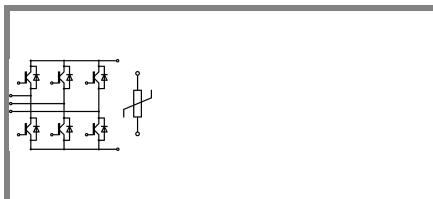
#### Features

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

#### Typical Applications\*

#### Remarks

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



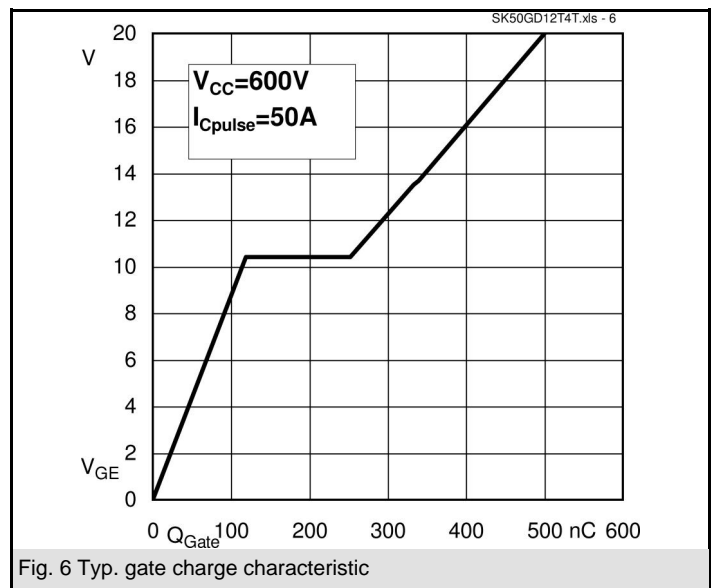
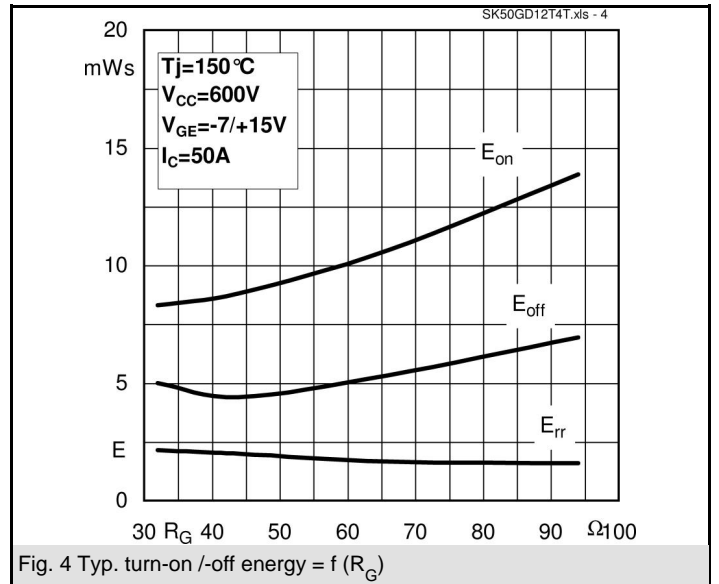
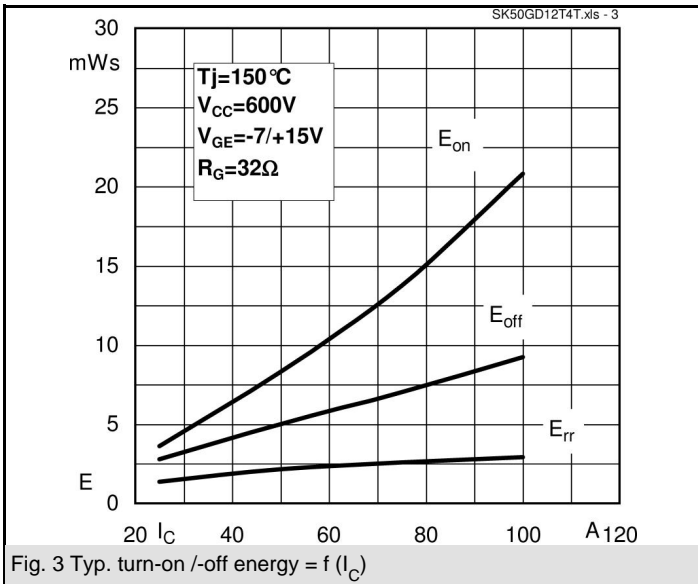
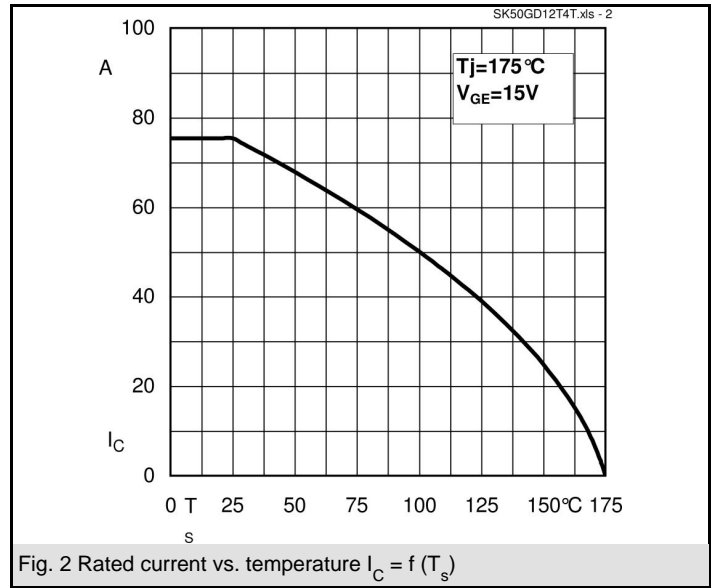
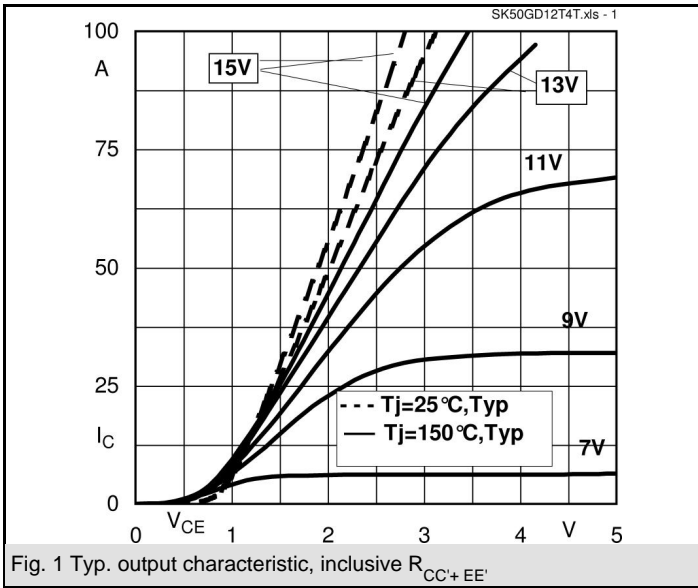
GD-T

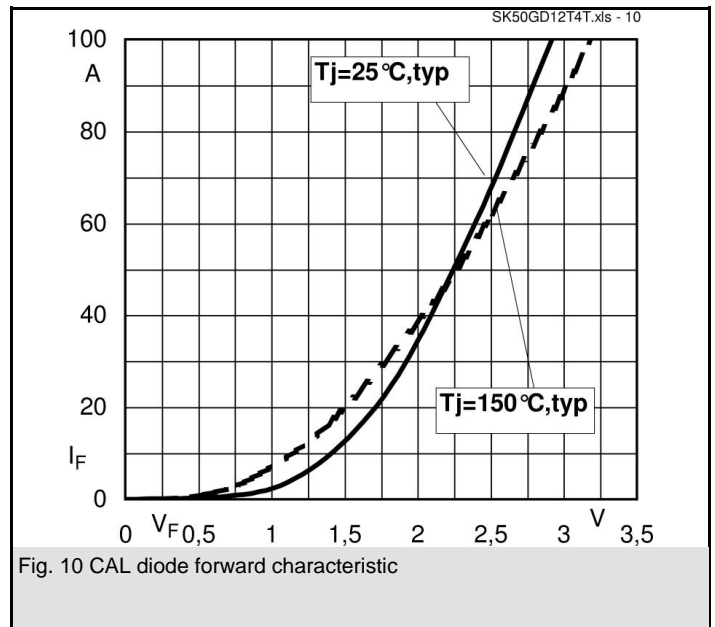
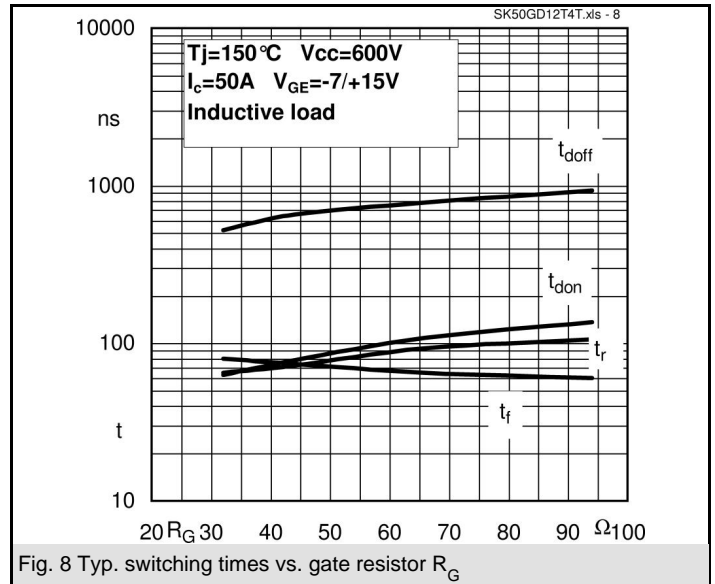
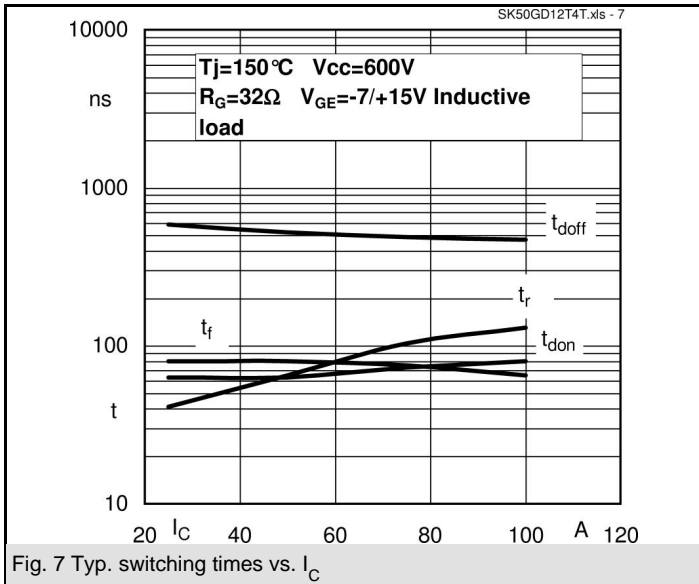
#### Characteristics

Symbol	Conditions	min.	typ.	max.	Units	
<b>Inverse Diode</b>						
$V_F = V_{EC}$	$I_{Fnom} = 50 \text{ A}; V_{GE} = 0 \text{ V}$		$T_j = 25 \text{ }^\circ\text{C}_{chiplev.}$	2,2	2,55	V
			$T_j = 150 \text{ }^\circ\text{C}_{chiplev.}$	2,18	2,5	V
$V_{F0}$			$T_j = 25 \text{ }^\circ\text{C}$	1,3	1,5	V
			$T_j = 150 \text{ }^\circ\text{C}$	0,9	1,1	V
$r_F$			$T_j = 25 \text{ }^\circ\text{C}$	19	21	mΩ
			$T_j = 150 \text{ }^\circ\text{C}$	26	28	mΩ
$I_{RRM}$	$I_F = 50 \text{ A}$		$T_j = 150 \text{ }^\circ\text{C}$	30	A	
$Q_{rr}$	$di/dt = 920 \text{ A}/\mu\text{s}$			7,2	μC	
$E_{rr}$	$V_{CC} = 600\text{V}$			2,15	mJ	
$R_{th(j-s)D}$	per diode			0,97	K/W	
$M_s$	to heat sink	2,5		2,75	Nm	
w			60		g	
<b>Temperature sensor</b>						
$R_{100}$	$T_s = 100^\circ\text{C}$ ( $R_{25} = 5\text{k}\Omega$ )		493±5%		Ω	

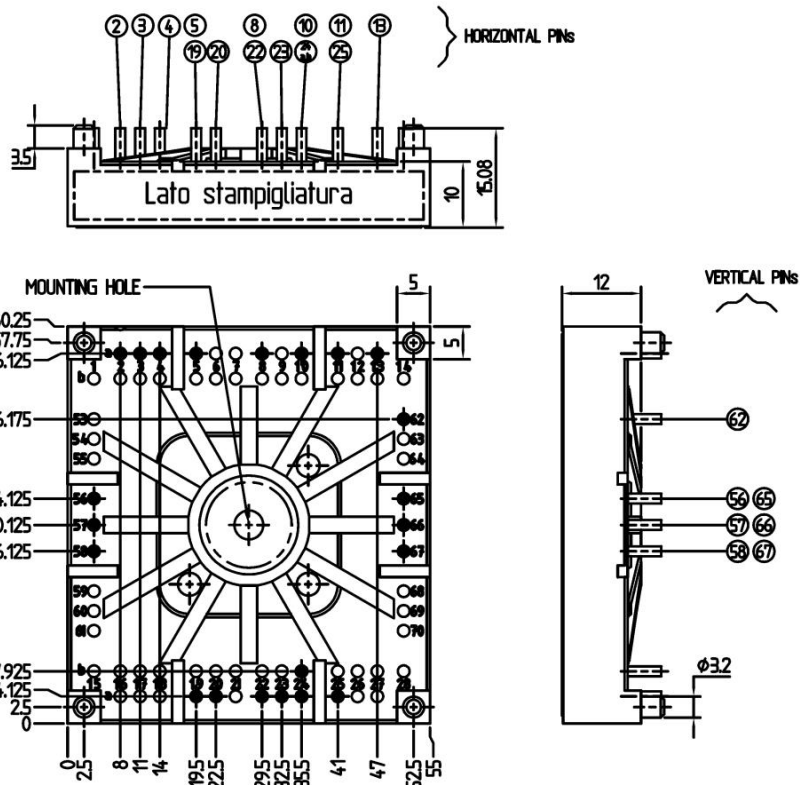
This is an electrostatic discharge sensitive device (ESDS), international standard IEC 60747-1, Chapter IX.

\* 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.

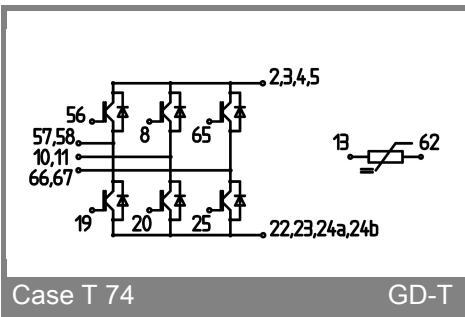




# SK50GD12T4T



Case T74 (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 74

GD-T