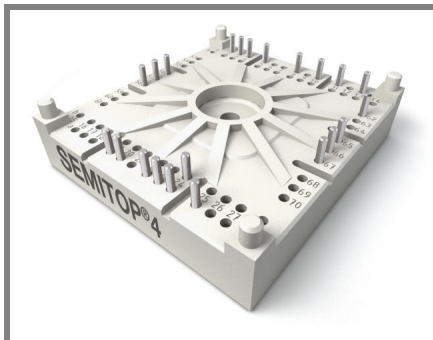


# SK50GH12T4T



**SEMITOP®4**

IGBT module

SK50GH12T4T

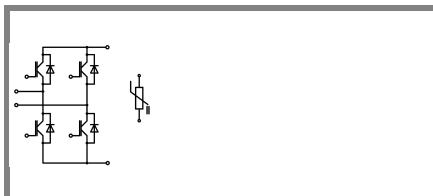
Target Data

## Features

- One screw mounting module
- Fully compatible with SEMITOP®1,2,3
- Improved thermal performances by aluminium oxide substrate
- New IGBT4 Technology
- CAL 4 technology FWD
- Integrated NTC Temperature sensor

## Typical Applications\*

- Voltage regulator

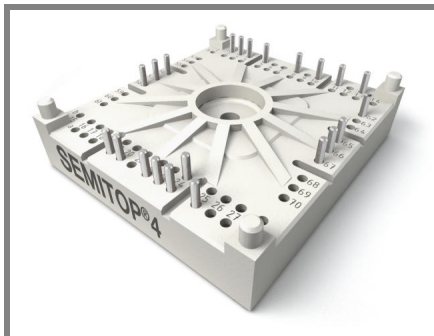


GH-T

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
		$T_s = 70\text{ °C}$	60
$I_{CRM}$	$I_{CRM} = 3 \times I_{Cnom}$ , $t_p \leq 1\text{ ms}$	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>			
$I_F$	$T_j = 175\text{ °C}$	$T_s = 25\text{ °C}$	56
		$T_s = 70\text{ °C}$	45
$I_{FRM}$	$I_{FRM} = 3 \times I_{Fnom}$ , $t_p \leq 1\text{ ms}$	150	A
$I_{FSM}$	$t_p = 10\text{ ms}$ ; half sine wave $T_j = 150\text{ °C}$	335	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		$T_c = 25\text{ °C}$ , 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
		$T_j = 125\text{ °C}$		0,4	mA
$I_{GES}$	$V_{CE} = 0\text{ V}$ , $V_{GE} = 20\text{ V}$			600	nA
$V_{CE0}$		$T_j = 25\text{ °C}$	0,8	0,9	V
		$T_j = 150\text{ °C}$	0,7	0,8	V
$r_{CE}$	$V_{GE} = 15\text{ V}$	$T_j = 25\text{ °C}$	20		m $\Omega$
		$T_j = 150\text{ °C}$	30		m $\Omega$
$V_{CE(sat)}$	$I_{Cnom} = 50\text{ A}$ , $V_{GE} = 15\text{ V}$	$T_j = 25\text{ °C}_{chiplev.}$	1,8	2	V
		$T_j = 150\text{ °C}_{chiplev.}$	2,2	2,4	V
$C_{ies}$	$V_{CE} = 25$ , $V_{GE} = 0\text{ V}$	$f = 1\text{ MHz}$	5,54		nF
$C_{oes}$			0,41		nF
$C_{res}$			0,32		nF
$Q_G$	$V_{GE} = -7\text{ V} \dots +15\text{ V}$		375		nC
$R_{Gint}$	$T_j = 25\text{ °C}$		4		$\Omega$
$t_{d(on)}$	$R_{Gon} = 32\ \Omega$ $di/dt = 920\text{ A}/\mu\text{s}$	$V_{CC} = 600\text{ V}$ $I_C = 50\text{ A}$	63		ns
$t_r$			65		ns
$E_{on}$			8,3		mJ
$t_{d(off)}$	$R_{Goff} = 32\ \Omega$	$T_j = 150\text{ °C}$	521		ns
$t_f$			80		ns
$E_{off}$			5		mJ
$R_{th(j-s)}$	per IGBT		0,65		K/W

# SK50GH12T4T



**SEMITOP® 4**

## IGBT module

**SK50GH12T4T**

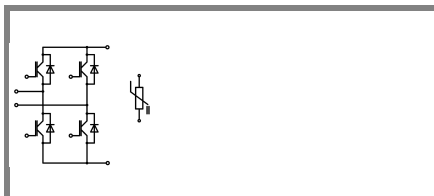
### Target Data

### Features

- One screw mounting module
- Fully compatible with SEMITOP®1,2,3
- Improved thermal performances by aluminium oxide substrate
- New IGBT4 Technology
- CAL 4 technology FWD
- Integrated NTC Temperature sensor

### Typical Applications\*

- Voltage regulator

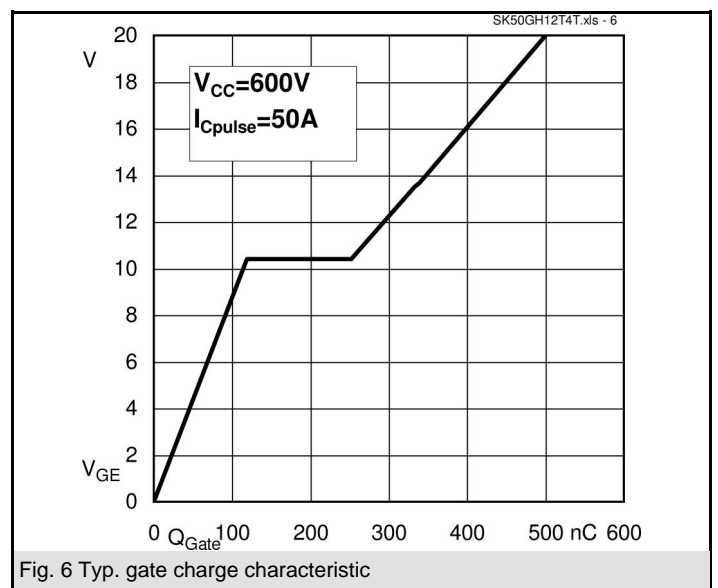
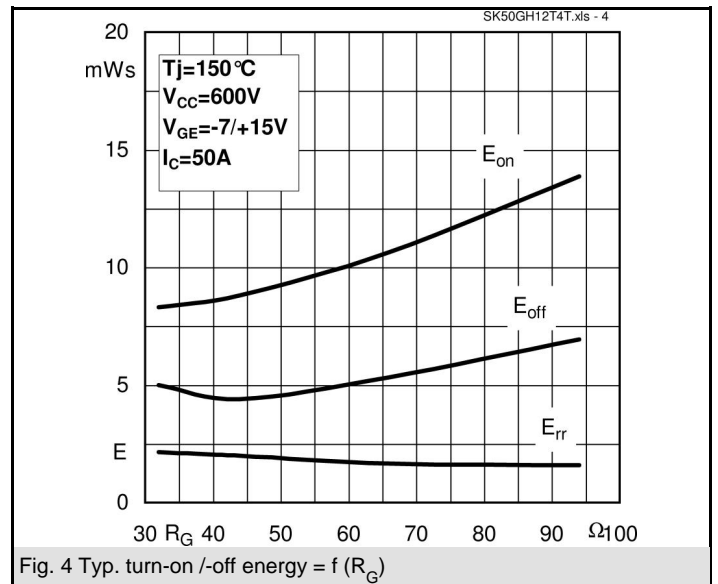
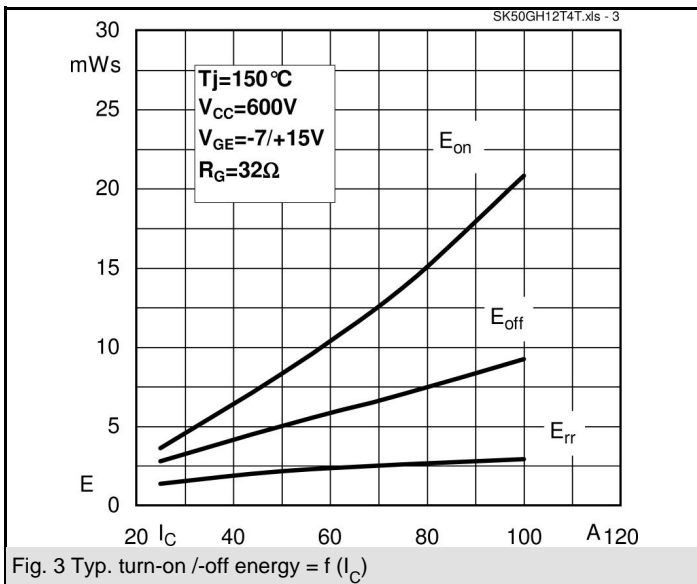
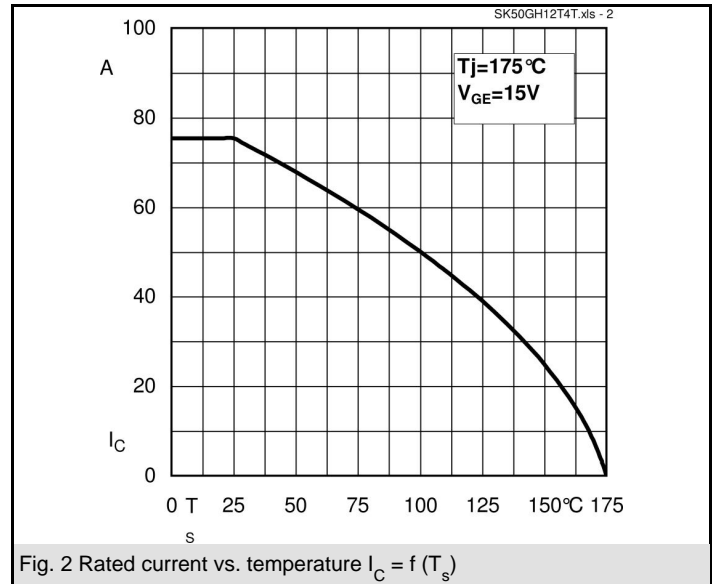
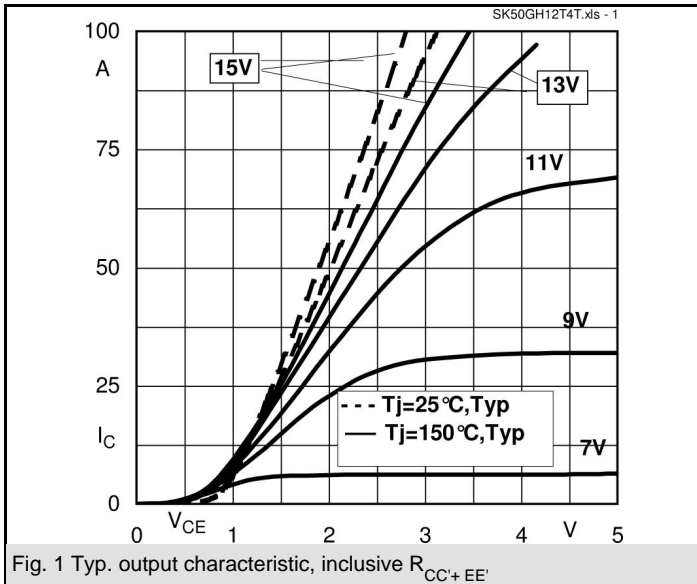


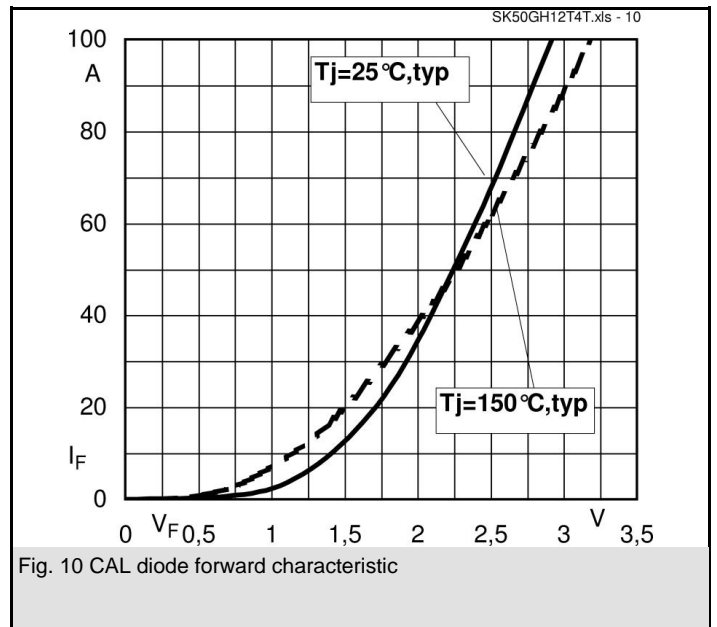
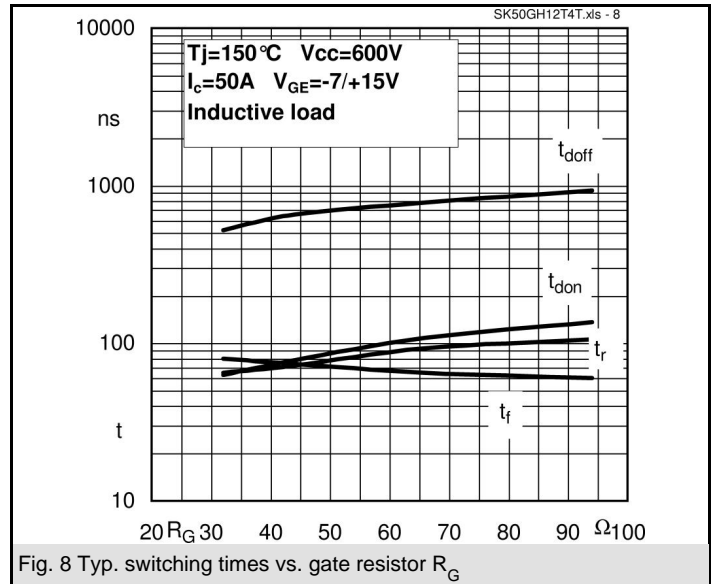
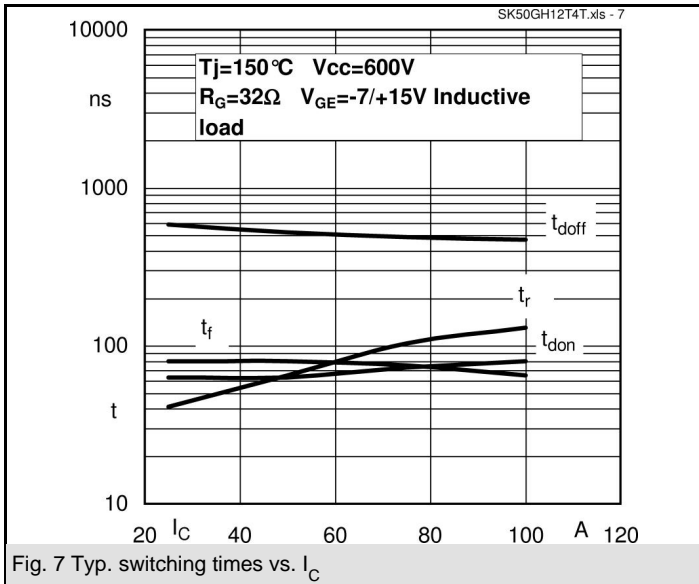
**GH-T**

Characteristics			min.	typ.	max.	Units
Symbol	Conditions					
<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	2,5	V
		$T_j = 150 \text{ }^\circ\text{C}_{chiplev.}$		2,1	2,45	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
$r_F$		$T_j = 25 \text{ }^\circ\text{C}$		18		mΩ
		$T_j = 150 \text{ }^\circ\text{C}$		24		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			1,05		K/W
<b>Freewheeling Diode</b>						
$V_F = V_{EC}$	$I_{Fnom} = \text{A}; V_{GE} = \text{V}$	$T_j = \text{ }^\circ\text{C}_{chiplev.}$				V
$V_{F0}$		$T_j = \text{ }^\circ\text{C}$				V
$r_F$		$T_j = \text{ }^\circ\text{C}$				V
$I_{RRM}$	$I_F = \text{A}$	$T_j = \text{ }^\circ\text{C}$				A
$Q_{rr}$						μC
$E_{rr}$						mJ
	per diode					K/W
$M_s$	to heat sink			2,5	2,75	Nm
w				60		g
<b>Temperature sensor</b>						
$R_{100}$	$T_s = 100 \text{ }^\circ\text{C} (R_{25} = 5 \text{ k}\Omega)$			493±5%		Ω

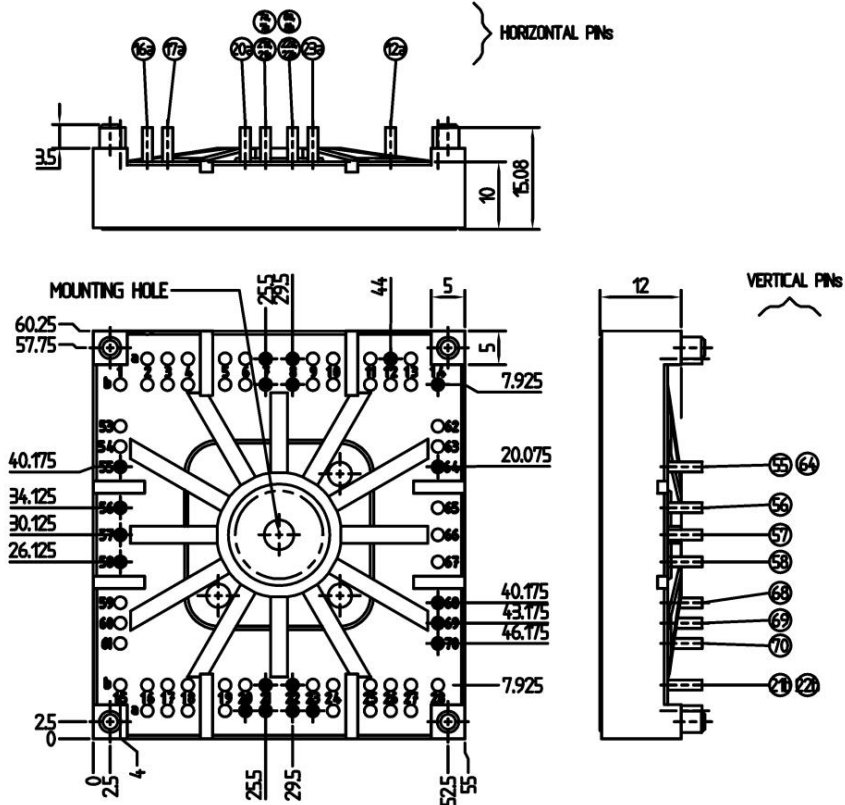
This is an electrostatic discharge sensitive device (ESDS), international standard IEC 60747-1, Chapter IX.

\* 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.





# SK50GH12T4T



Case T84 (Suggested hole diameter, in the PCB, for solder pins and plastic mounting pins: 2mm)

