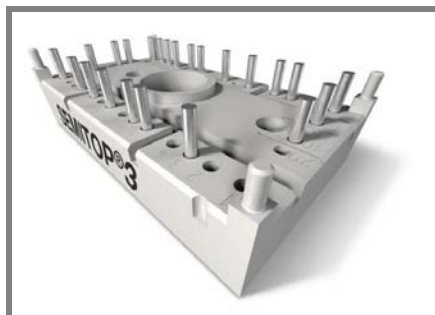


# SK100GB12T4T



SEMITOP® 3

## IGBT Module

SK100GB12T4 T

### Target Data

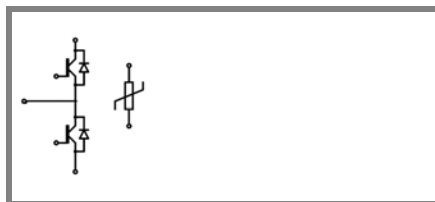
### Features

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

### Typical Applications\*

### Remarks

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

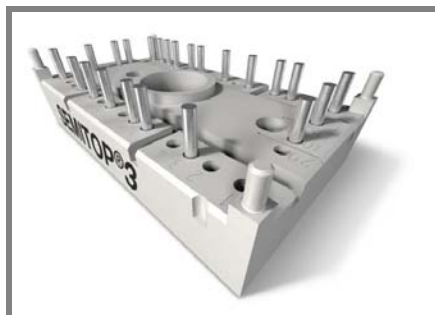


GB-T

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
$I_C$	$T_j = 175\text{ °C}$	$T_s = 25\text{ °C}$	100	A
		$T_s = 70\text{ °C}$	80	A
$I_{CRM}$	$I_{CRM} = 3 \times I_{Cnom}$	300		A
$V_{GES}$		± 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		µs
<b>Inverse Diode</b>				
$I_F$	$T_j = 175\text{ °C}$	$T_s = 25\text{ °C}$	85	A
		$T_s = 70\text{ °C}$	65	A
$I_{FRM}$	$I_{FRM} = 3 \times I_{Fnom}$	300		A
$I_{FSM}$	$t_p = 10\text{ ms}$ ; half sine wave $T_j = 150\text{ °C}$	715		A
<b>Module</b>				
$I_{t(RMS)}$				A
$T_{vj}$		-40 ... +175		°C
$T_{stg}$		-40 ... +125		°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>					
$V_{GE(th)}$	$V_{GE} = V_{CE}$ , $I_C = 3,4\text{ mA}$	5	5,8	6,5	V
$I_{CES}$	$V_{GE} = 0\text{ V}$ , $V_{CE} = V_{CES}$	$T_j = 25\text{ °C}$	0,02		mA
		$T_j = 125\text{ °C}$			mA
$I_{GES}$	$V_{CE} = 0\text{ V}$ , $V_{GE} = 20\text{ V}$	$T_j = 25\text{ °C}$	1200		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
$r_{CE}$	$V_{GE} = 15\text{ V}$	$T_j = 25\text{ °C}$	7,5		mΩ
		$T_j = 150\text{ °C}$	12,5		mΩ
$V_{CE(sat)}$	$I_{Cnom} = 100\text{ A}$ , $V_{GE} = 15\text{ V}$	$T_j = 25\text{ °C}_{chiplev.}$	1,85	2,05	V
		$T_j = 150\text{ °C}_{chiplev.}$	2,25	2,45	V
$C_{ies}$	$V_{CE} = 25$ , $V_{GE} = 0\text{ V}$	5,54		nF	
$C_{oes}$		0,41		nF	
$C_{res}$		0,32		nF	
$Q_G$	$V_{GE} = -7V...+15V$	750		nC	
$R_{Gint}$	$T_j = 25\text{ °C}$	2		Ω	
$t_{d(on)}$	$R_{Gon} = 16\text{ Ω}$ $di/dt = 1800\text{ A/μs}$	63		ns	
$t_r$		65		ns	
$E_{on}$		$V_{CC} = 600V$ $I_C = 100A$	16,6		mJ
$t_{d(off)}$	$R_{Goff} = 16\text{ Ω}$ $di/dt = 1800\text{ A/μs}$	$T_j = 150\text{ °C}$	521		ns
		$V_{GE} = \pm 15\text{ V}$	80		ns
$E_{off}$		10		mJ	
$R_{th(j-s)}$	per IGBT	0,6		K/W	

# SK100GB12T4T



**SEMITOP<sup>®</sup> 3**

## IGBT Module

**SK100GB12T4 T**

Target Data

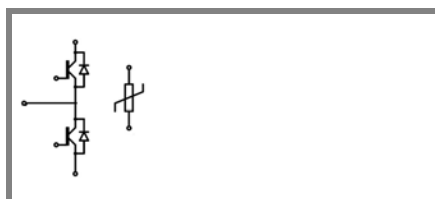
### Features

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

### Typical Applications\*

### Remarks

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

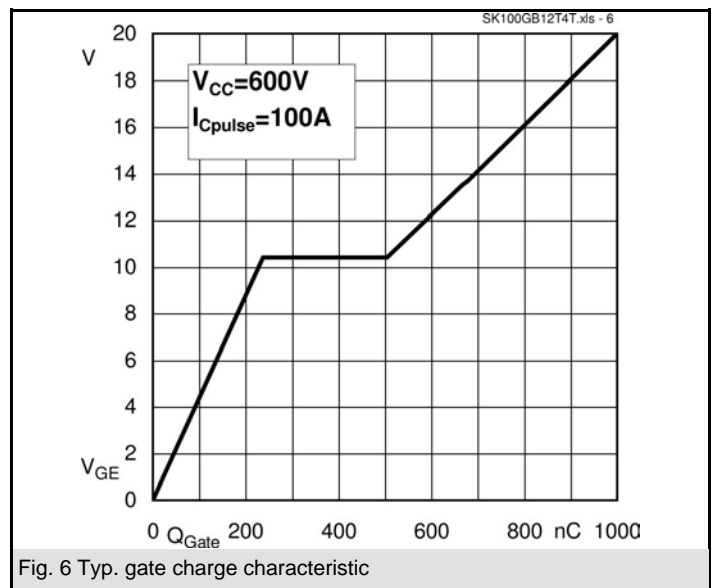
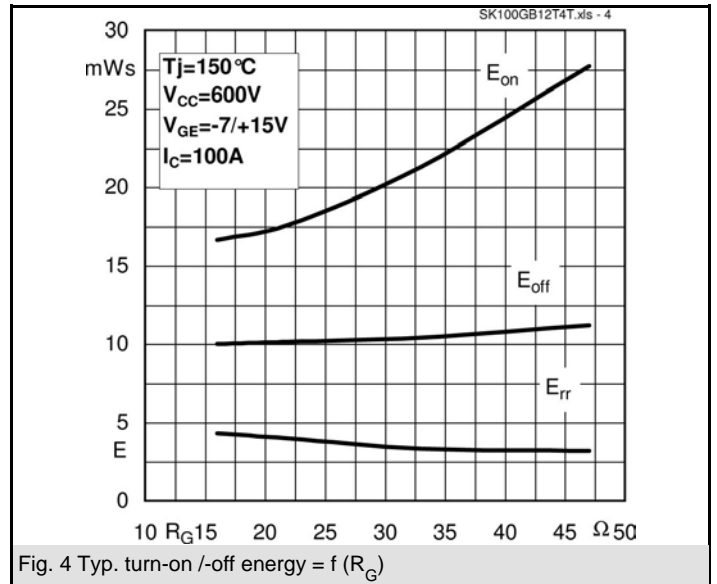
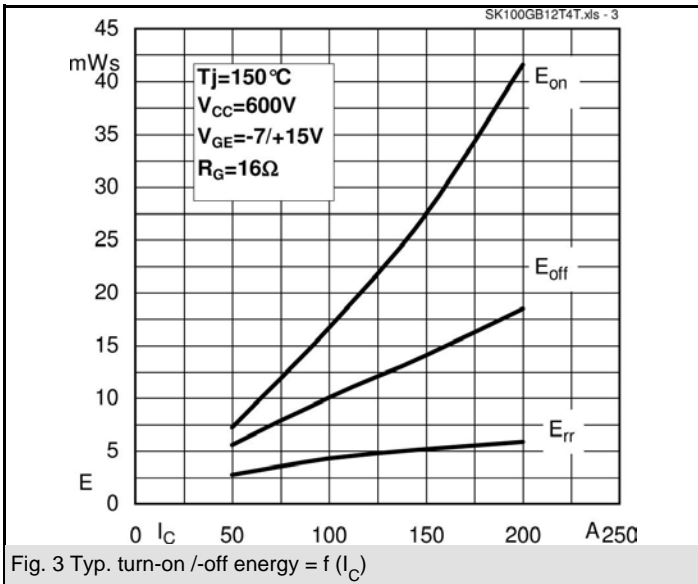
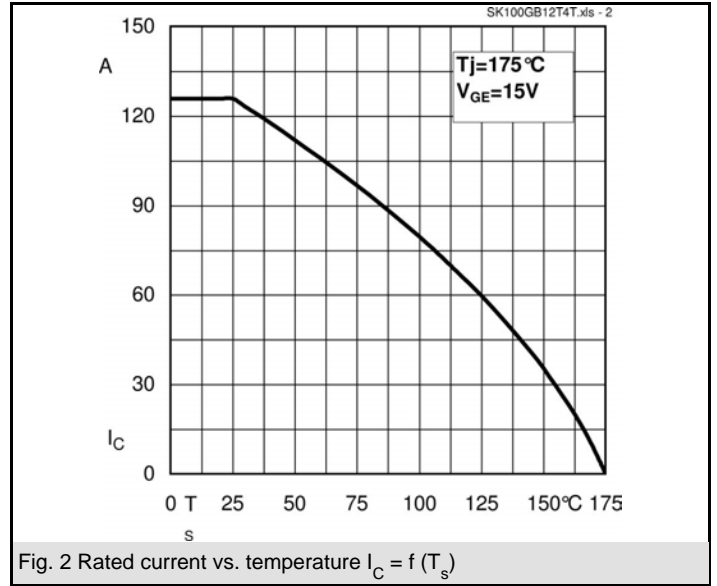
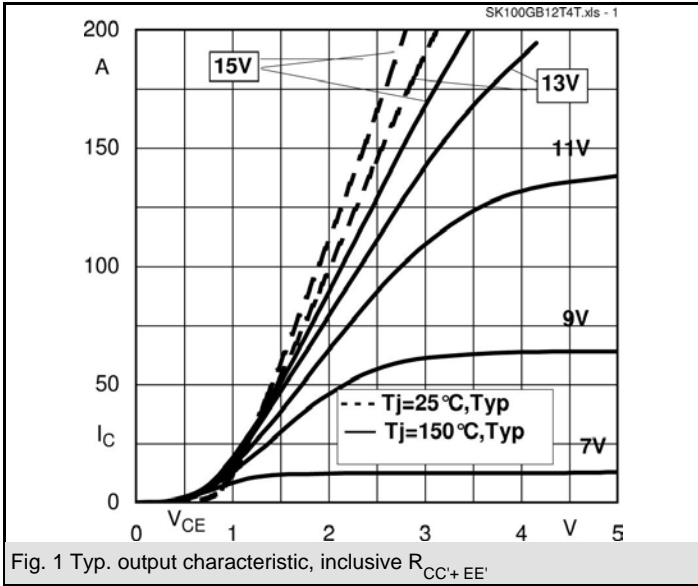


**GB-T**

Characteristics				min.	typ.	max.	Units	
Symbol	Conditions							
<b>Inverse Diode</b>								
$V_F = V_{EC}$	$I_{Fnom} = 100 \text{ A}; V_{GE} = 0 \text{ V}$	$T_j = 25 \text{ }^\circ\text{C}_{\text{chiplev.}}$		2,25		2,55	V	
		$T_j = 150 \text{ }^\circ\text{C}_{\text{chiplev.}}$		2,2		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
$r_F$			$T_j = 25 \text{ }^\circ\text{C}$		9,5		10,5	m $\Omega$
			$T_j = 150 \text{ }^\circ\text{C}$		13		14	m $\Omega$
$I_{RRM}$	$I_F = 100 \text{ A}$	$T_j = 150 \text{ }^\circ\text{C}$		52			A	
$Q_{rr}$	$di/dt = 1800 \text{ A}/\mu\text{s}$			14			$\mu\text{C}$	
$E_{rr}$	$V_{CC} = 600\text{V}$			5,2			mJ	
$R_{th(j-s)D}$	per diode			0,87			K/W	
$M_s$	to heat sink					2,5	Nm	
w				30			g	
<b>Temperature sensor</b>								
$R_{100}$	$T_s = 100^\circ\text{C}$ ( $R_{25} = 5\text{k}\Omega$ )			493 $\pm$ 5%			$\Omega$	

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.



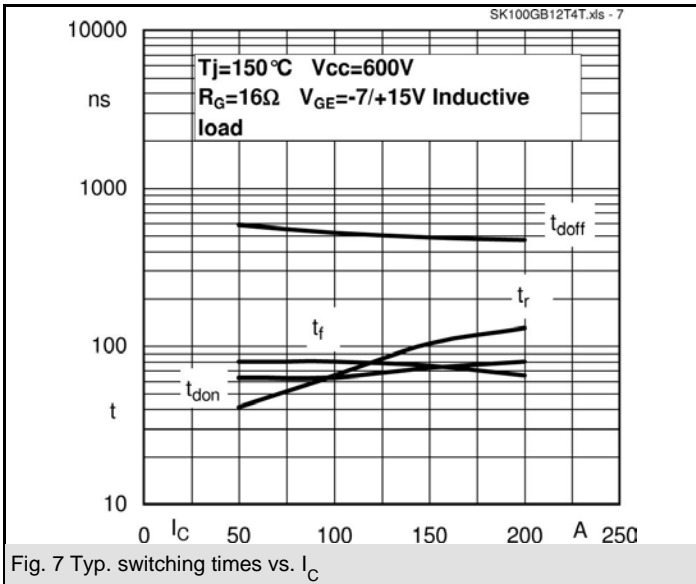


Fig. 7 Typ. switching times vs.  $I_C$

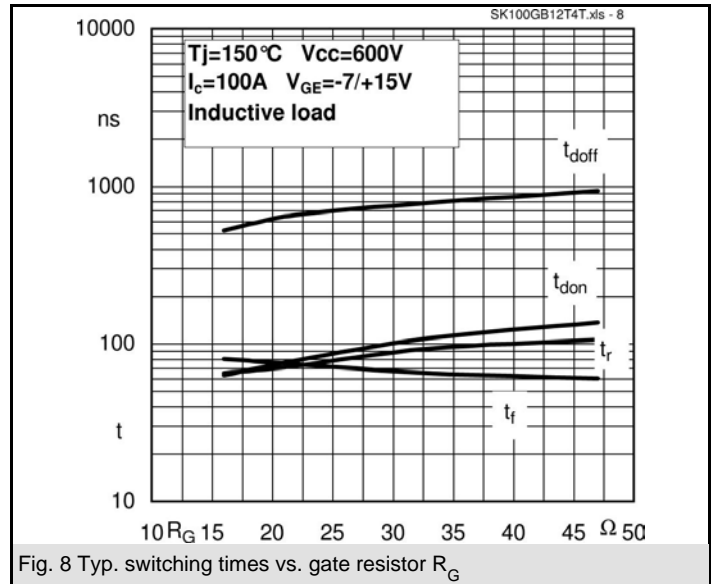


Fig. 8 Typ. switching times vs. gate resistor  $R_G$

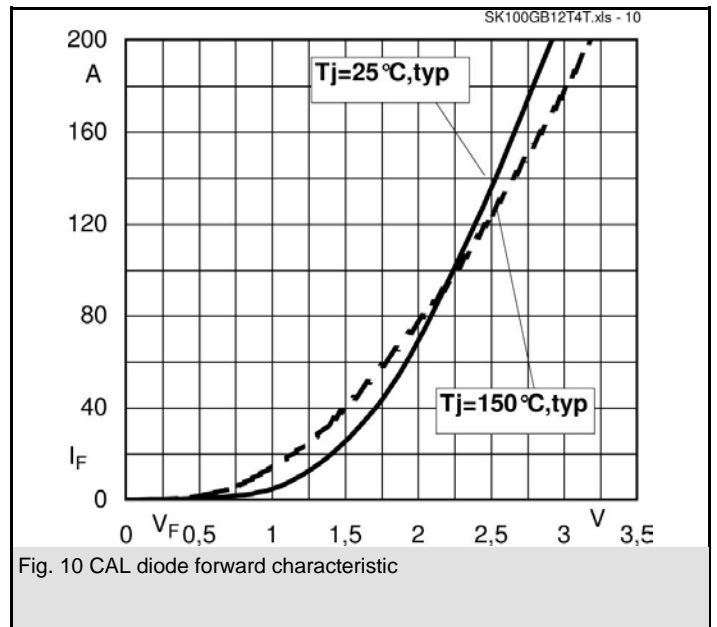
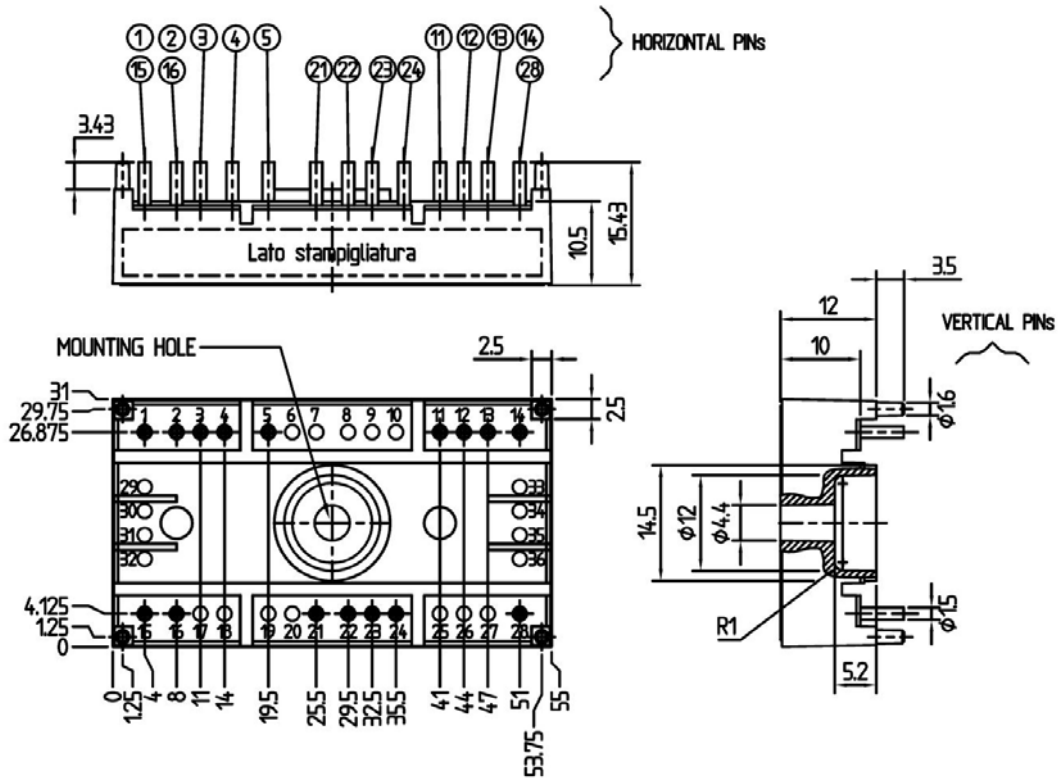
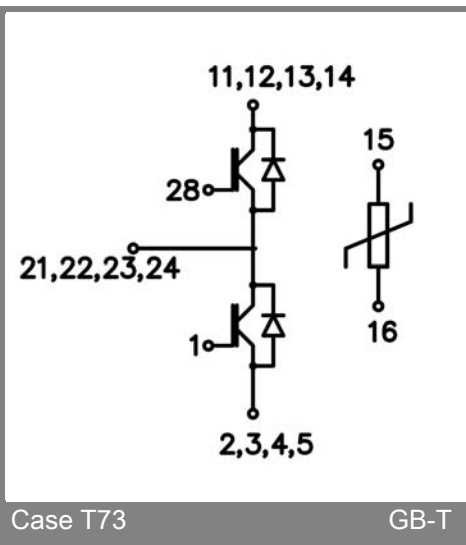


Fig. 10 CAL diode forward characteristic

# SK100GB12T4T



Case T73 (Suggested hole diameter for the solder pins and mounting plastic pins: 2mm)



Case T73

GB-T