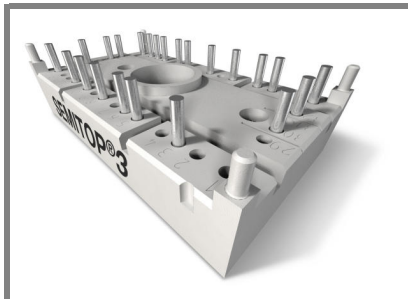


# SK50GB12T4T



SEMITOP® 3

## IGBT Module

SK50GB12T4T

### Target Data

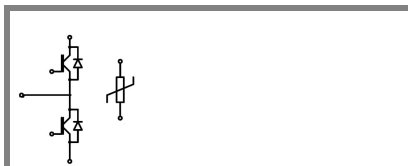
### Features

- 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

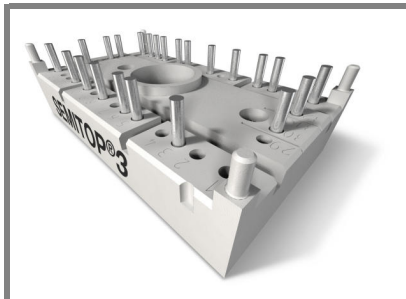


GB-T

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
$I_C$	$T_j = 175\text{ °C}$	$T_s = 25\text{ °C}$	71 A
		$T_s = 70\text{ °C}$	56 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>			
$I_F$	$T_j = 175\text{ °C}$	$T_s = 25\text{ °C}$	50 A
		$T_s = 70\text{ °C}$	40 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		$\text{m}\Omega$
		$T_j = 150\text{ °C}$	25		$\text{m}\Omega$
$V_{CE(sat)}$	$I_{Cnom} = 50\text{ A}$ , $V_{GE} = 15\text{ V}$	$T_j = 25\text{ °C}_{chiplev.}$	1,85	2,05	V
		$T_j = 150\text{ °C}_{chiplev.}$	2,25	2,45	V
$C_{ies}$	$V_{CE} = 25\text{ V}$ , $V_{GE} = 0\text{ V}$	$f = 1\text{ MHz}$	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		$\Omega$
$t_{d(on)}$	$R_{Gon} = 32\ \Omega$ $di/dt = 920\text{ A}/\mu\text{s}$	$V_{CC} = 600\text{ V}$ $I_C = 50\text{ A}$	63		ns
$t_r$			65		ns
$E_{on}$			8,3		mJ
$t_{d(off)}$	$R_{Goff} = 32\ \Omega$ $di/dt = 920\text{ A}/\mu\text{s}$	$T_j = 150\text{ °C}$ $V_{GE} = \pm 15\text{ V}$	521		ns
$t_f$			80		ns
$E_{off}$			5		mJ
$R_{th(j-s)}$	per IGBT		0,9		K/W

# SK50GB12T4T



SEMITOP® 3

## IGBT Module

SK50GB12T4T

### Target Data

### Features

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

### Typical Applications\*

### Remarks

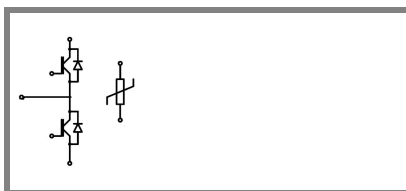
- $V_{CE,sat}$ ,  $V_F$  = chip level value

### Characteristics

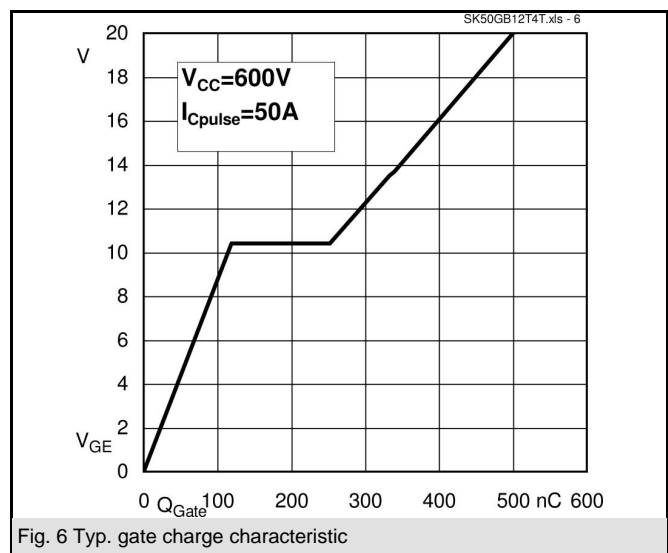
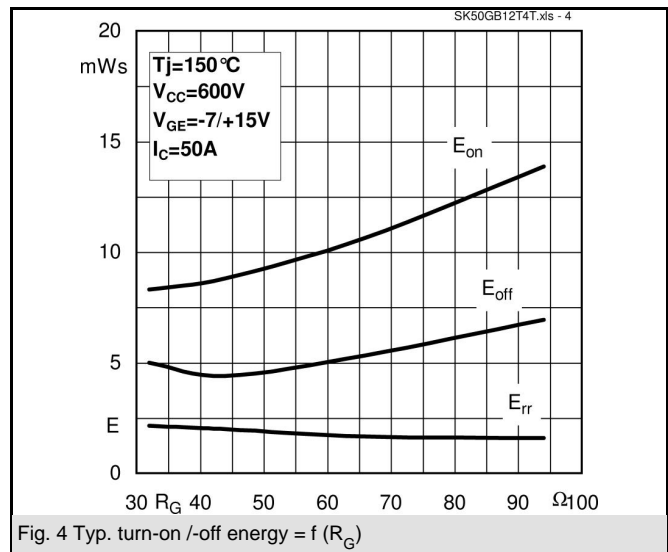
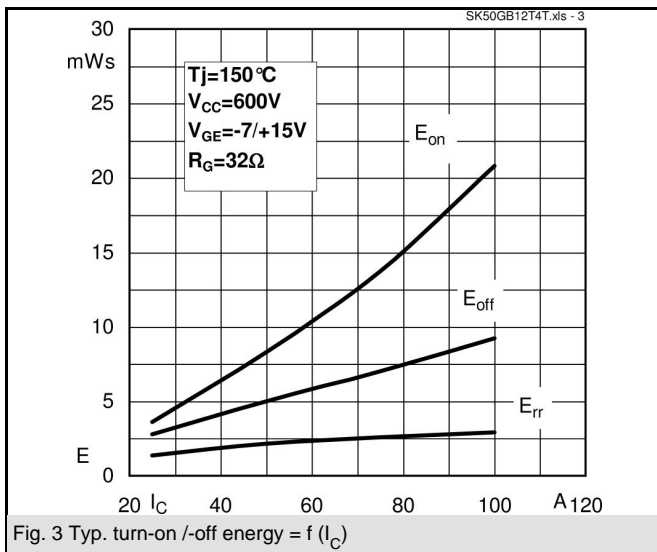
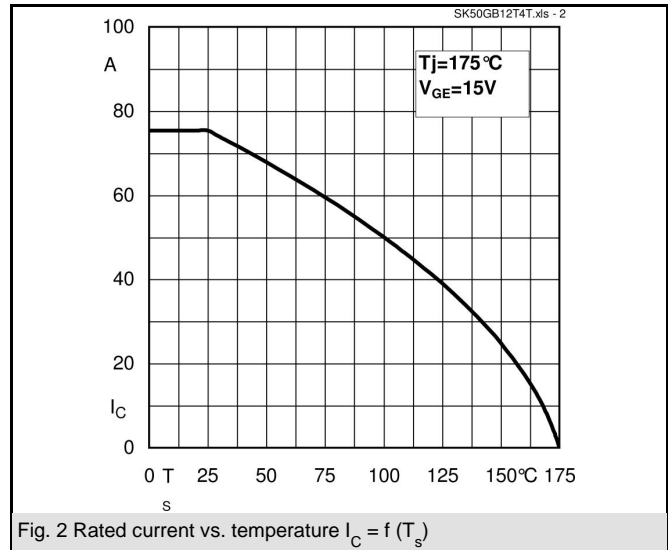
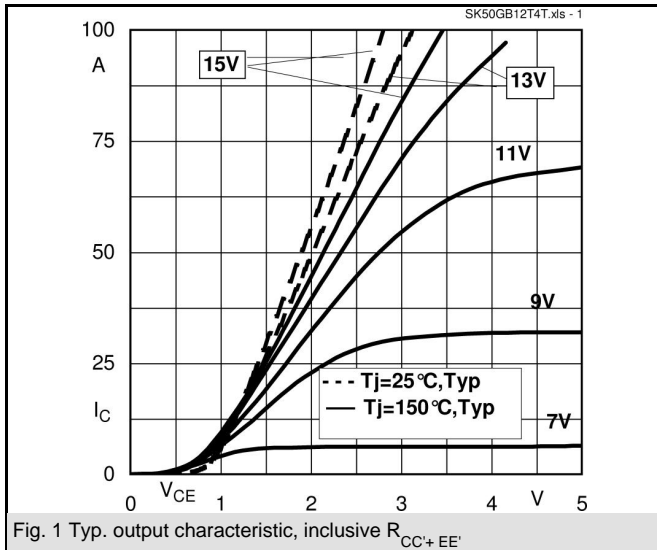
Symbol	Conditions	min.	typ.	max.	Units
<b>Inverse Diode</b>					
$V_F = V_{EC}$	$I_{Fnom} = 50 \text{ A}; V_{GE} = 0 \text{ V}$	$T_j = 25 \text{ }^\circ\text{C}_{chiplev.}$	2,2	2,55	V
		$T_j = 150 \text{ }^\circ\text{C}_{chiplev.}$	2,18	2,5	V
$V_{F0}$		$T_j = 25 \text{ }^\circ\text{C}$	1,3	1,5	V
		$T_j = 150 \text{ }^\circ\text{C}$	0,9	1,1	V
$r_F$		$T_j = 25 \text{ }^\circ\text{C}$	19	21	m $\Omega$
		$T_j = 150 \text{ }^\circ\text{C}$	26	28	m $\Omega$
$I_{RRM}$	$I_F = 50 \text{ A}$	$T_j = 150 \text{ }^\circ\text{C}$	30		A
$Q_{rr}$	$di/dt = 920 \text{ A}/\mu\text{s}$		7,2		$\mu\text{C}$
$E_{rr}$	$V_{CC} = 600\text{V}$		2,15		mJ
$R_{th(j-s)D}$	per diode		1,24		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%		$\Omega$

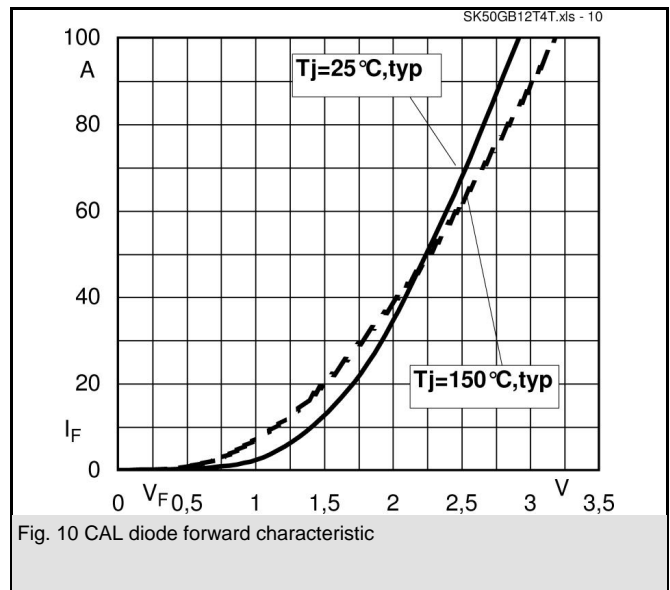
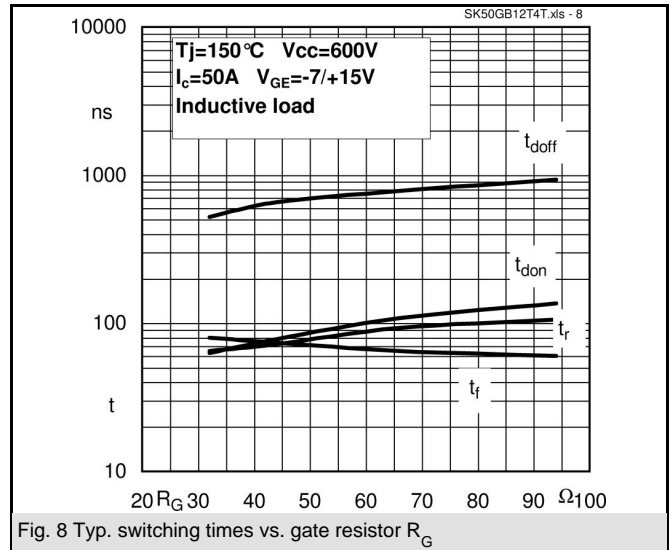
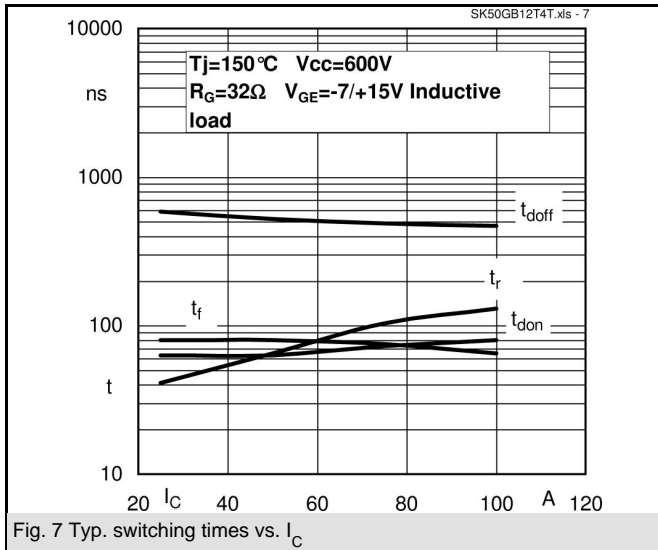
This is an electrostatic discharge sensitive device (ESDS), international standard IEC 60747-1, Chapter IX.

\* 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.

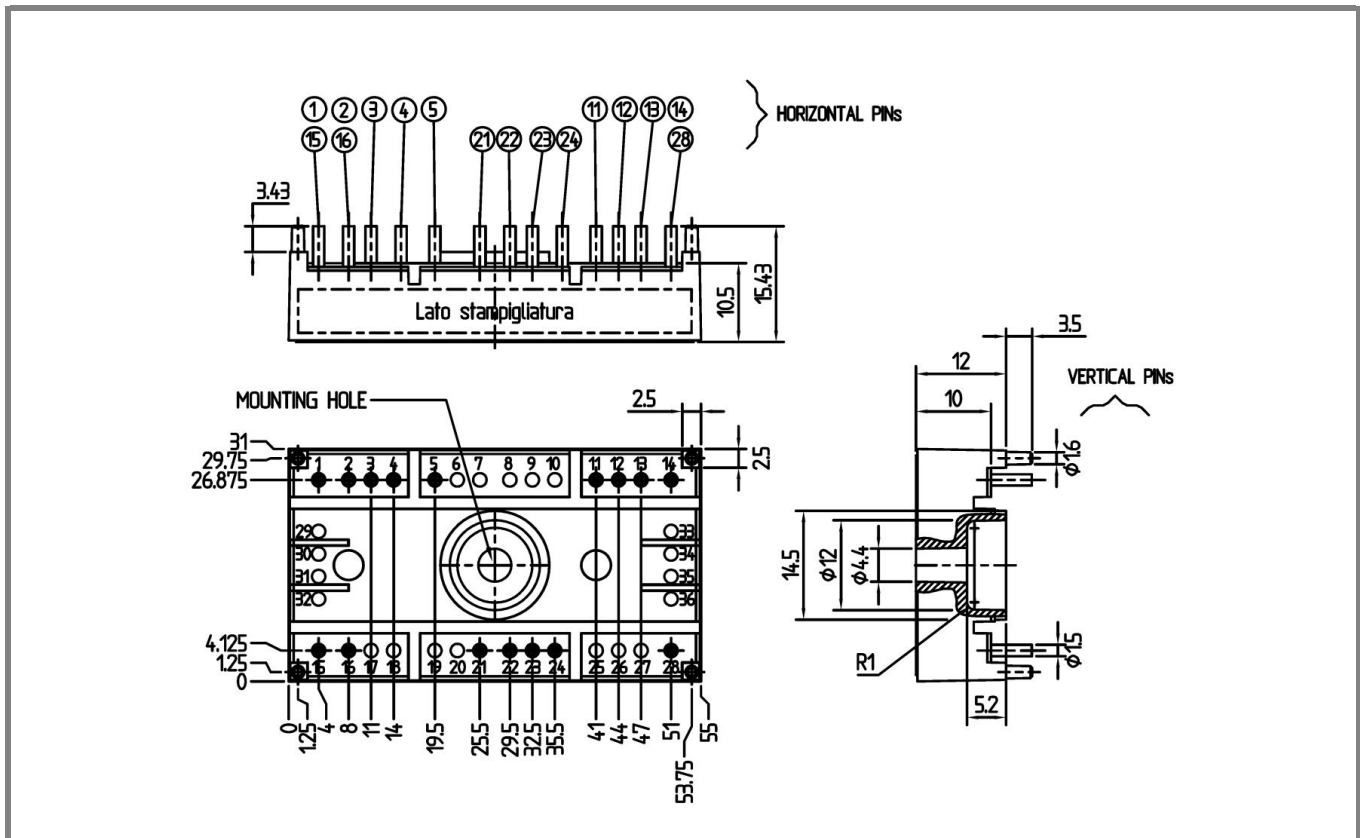


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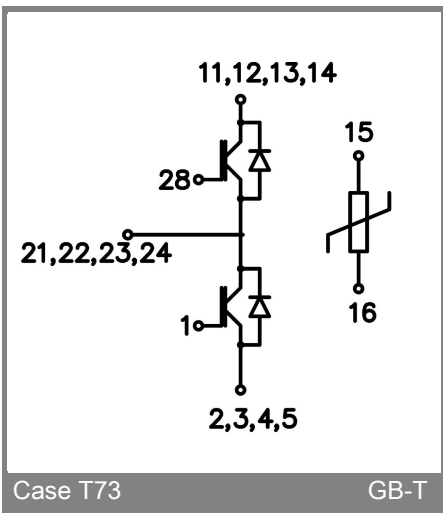




# SK50GB12T4T



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



Case T73

GB-T