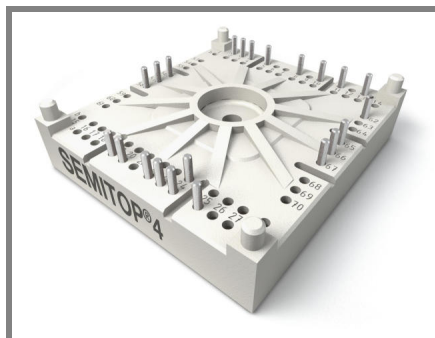


# SK50GD12T4T



SEMITOP® 4

## IGBT Module

SK50GD12T4T

### Target Data

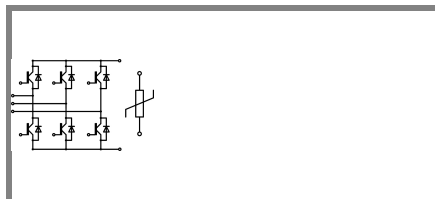
### Features

- 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

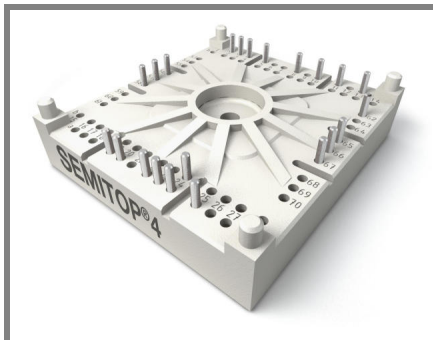


GD-T

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
		$T_s = 70\text{ °C}$	60
$I_{CRM}$	$I_{CRM} = 3 \times I_{Cnom}$	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
		$T_s = 70\text{ °C}$	45
$I_{FRM}$	$I_{FRM} = 3 \times I_{Fnom}$	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

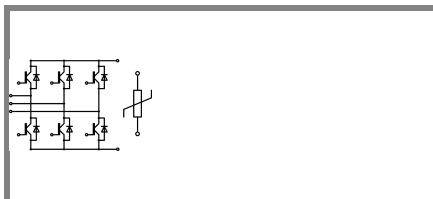
#### Features

- 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



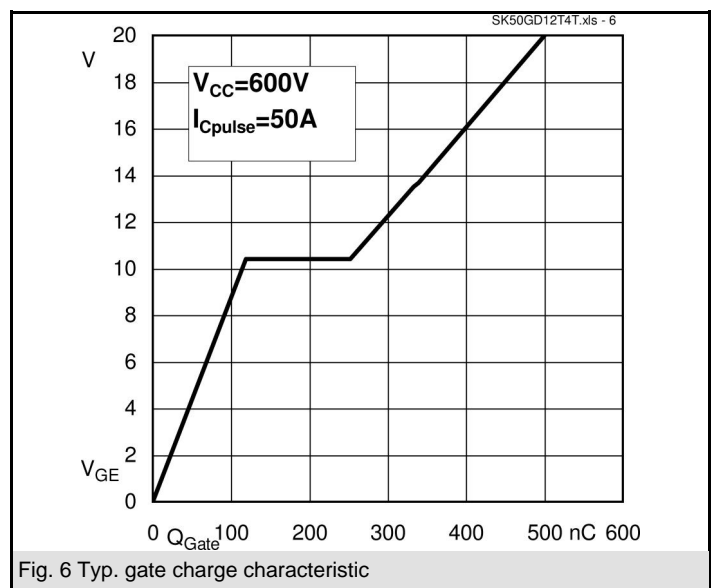
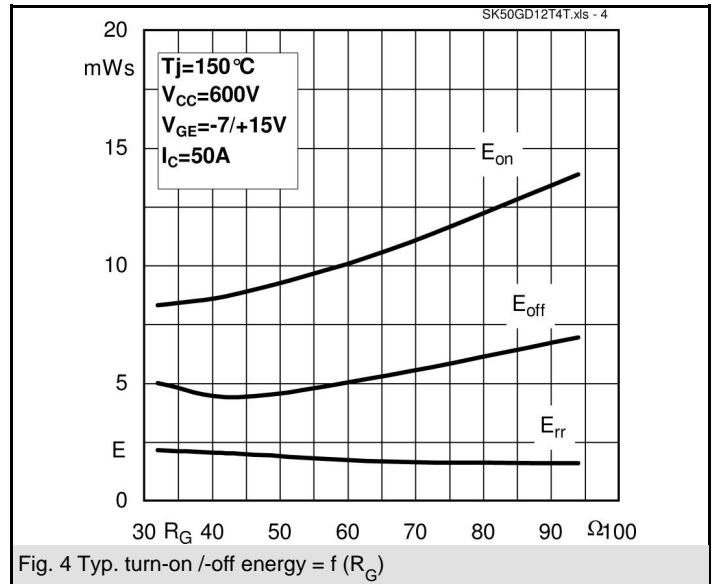
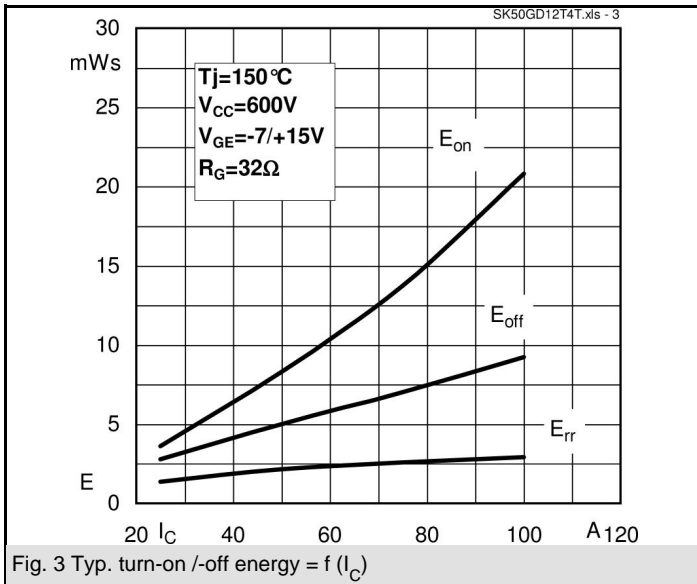
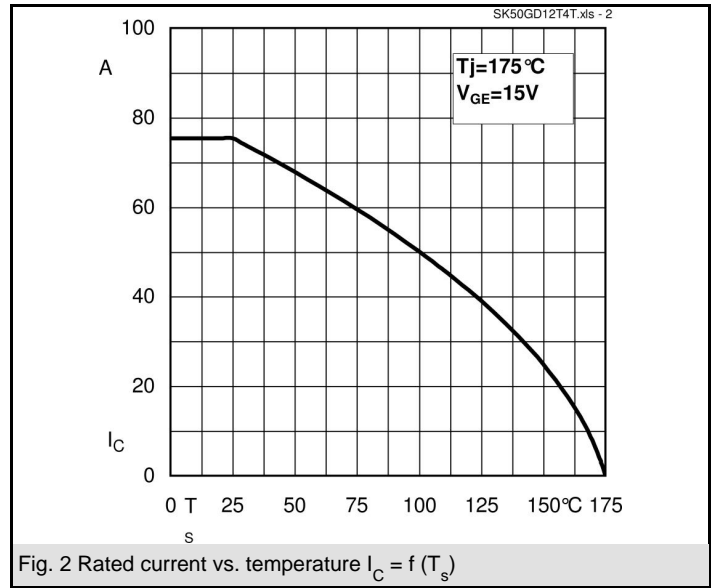
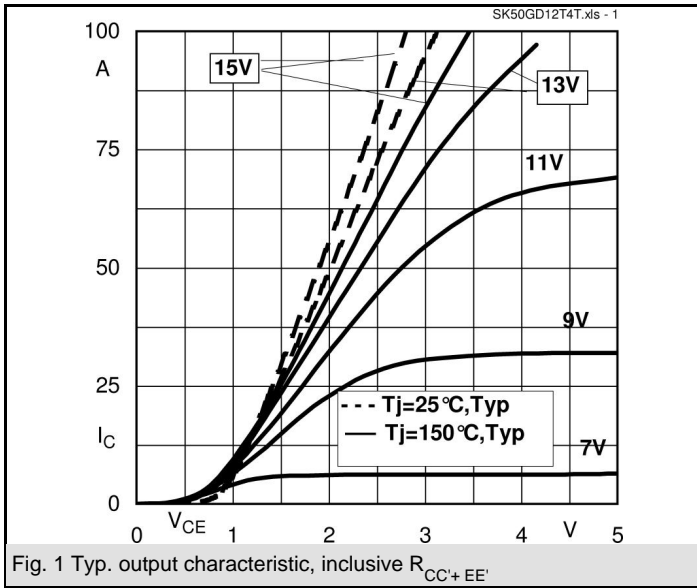
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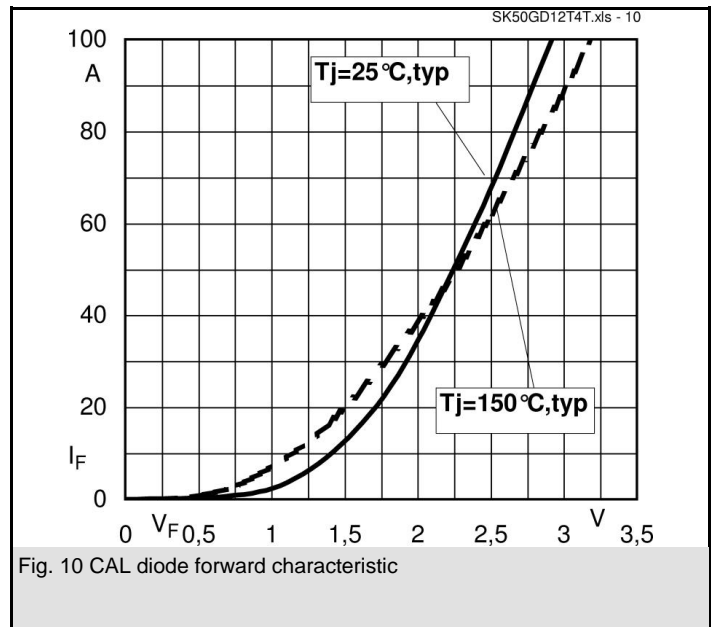
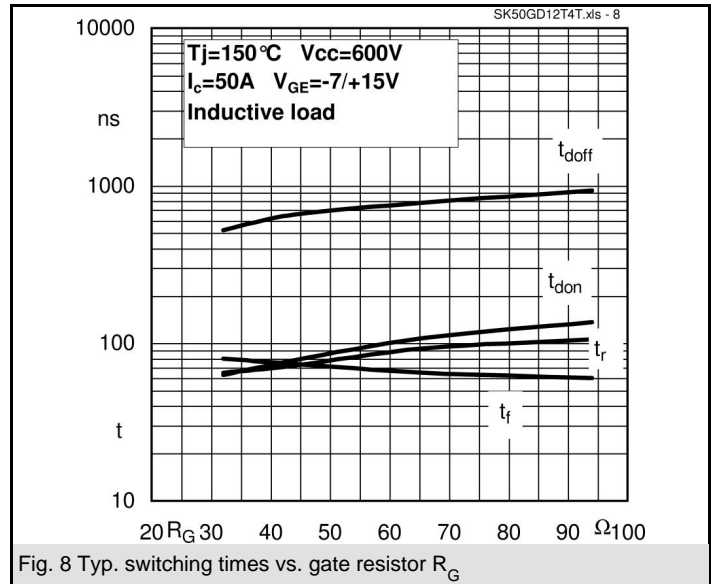
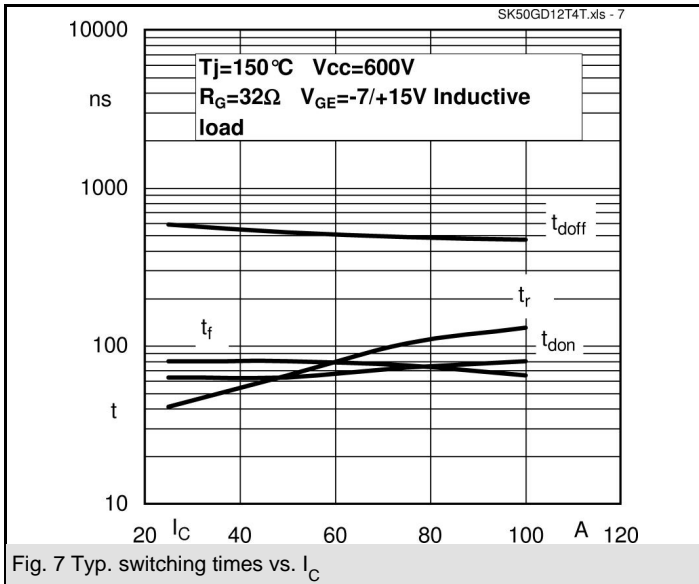
#### Characteristics

Symbol	Conditions	min.	typ.	max.	Units
<b>Inverse Diode</b>					
$V_F = V_{EC}$	$I_{Fnom} = 50 \text{ A}; V_{GE} = 0 \text{ V}$	$T_j = 25 \text{ }^\circ\text{C}_{\text{chiplev.}}$	2,2	2,55	V
		$T_j = 150 \text{ }^\circ\text{C}_{\text{chiplev.}}$	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
$I_{RRM}$	$I_F = 50 \text{ A}$		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

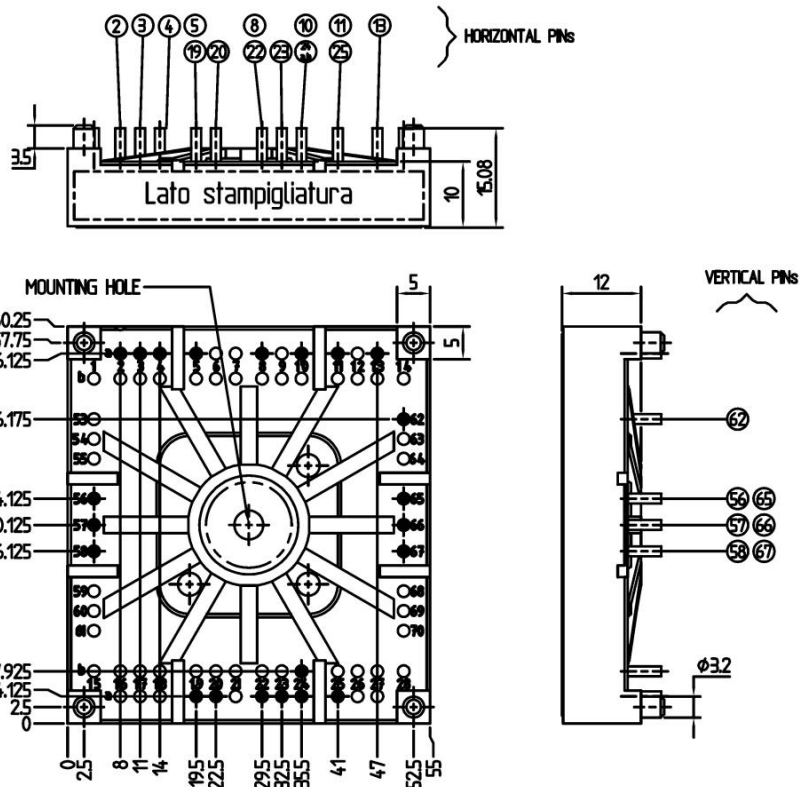
This is an electrostatic discharge sensitive device (ESDS), international standard IEC 60747-1, Chapter IX.

This technical information specifies semiconductor devices but promises no characteristics. No warranty or guarantee expressed or implied is made regarding delivery, performance or suitability.

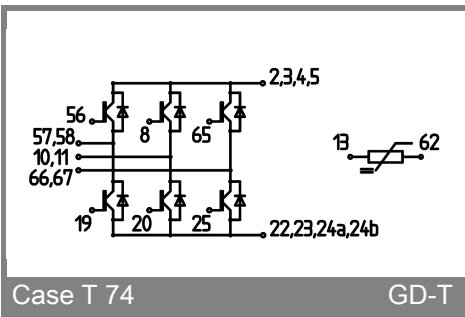




# SK50GD12T4T



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