

**SEMITOP® 3**

## IGBT Module

SK75GB066T

### Target Data

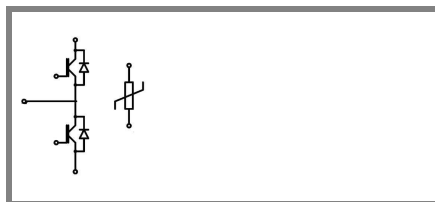
### Features

- Compact design
- One screw mounting
- Heat transfer and isolation through direct copper bonded aluminium oxide ceramic (DCB)
- Trench IGBT technology
- CAL HD technology FWD
- Integrated NTC temperature sensor

### Typical Applications\*

### Remarks

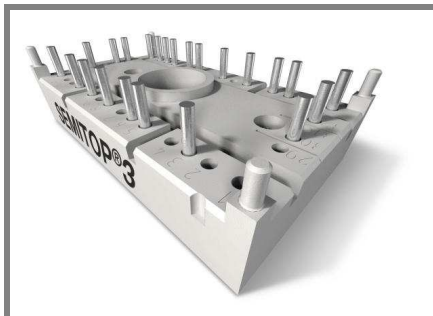
- $V_{isol} = 3000V$  AC, 50Hz, 1s



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Absolute Maximum Ratings		$T_s = 25\text{ °C}$ , unless otherwise specified	
Symbol	Conditions	Values	Units
<b>IGBT</b>			
$V_{CES}$	$T_j = 25\text{ °C}$	600	V
$I_C$	$T_j = 175\text{ °C}$	$T_s = 25\text{ °C}$	77 A
		$T_s = 70\text{ °C}$	60 A
$I_{CRM}$	$I_{CRM} = 2 \times I_{Cnom}$	150	A
$V_{GES}$		$\pm 20$	V
$t_{psc}$	$V_{CC} = 360\text{ V}$ ; $V_{GE} \leq 20\text{ V}$ ; $T_j = 150\text{ °C}$ $V_{CES} < 600\text{ V}$	6	$\mu\text{s}$
<b>Inverse Diode</b>			
$I_F$	$T_j = 175\text{ °C}$	$T_s = 25\text{ °C}$	62 A
		$T_s = 70\text{ °C}$	47 A
$I_{FRM}$	$I_{FRM} = 2 \times I_{Fnom}$	150	A
$I_{FSM}$	$t_p = 10\text{ ms}$ ; half sine wave $T_j = 150\text{ °C}$	395	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>					
$V_{GE(th)}$	$V_{GE} = V_{CE}$ , $I_C = 1,2\text{ mA}$	5	5,8	6,5	V
$I_{CES}$	$V_{GE} = 0\text{ V}$ , $V_{CE} = V_{CES}$	$T_j = 25\text{ °C}$		0,0038	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
$V_{CE0}$		$T_j = 25\text{ °C}$	0,8	1,1	V
		$T_j = 150\text{ °C}$	0,7	1	V
$r_{CE}$	$V_{GE} = 15\text{ V}$	$T_j = 25\text{ °C}$	8	10	$\text{m}\Omega$
		$T_j = 150\text{ °C}$	12,7	14	$\text{m}\Omega$
$V_{CE(sat)}$	$I_{Cnom} = 75\text{ A}$ , $V_{GE} = 15\text{ V}$	$T_j = 25\text{ °C}_{chiplev.}$	1,45	1,85	V
		$T_j = 150\text{ °C}_{chiplev.}$	1,65	2,05	V
$C_{ies}$	$V_{CE} = 25$ , $V_{GE} = 0\text{ V}$	$f = 1\text{ MHz}$	4,7		nF
$C_{oes}$			0,3		nF
$C_{res}$			0,145		nF
$Q_G$	$V_{GE} = -7V...+15V$		700		nC
$t_{d(on)}$	$R_{Gon} = 16\ \Omega$ $di/dt = 2250\text{ A}/\mu\text{s}$	$V_{CC} = 300V$ $I_C = 75A$	95		ns
$t_r$			50		ns
$E_{on}$			3,1		mJ
$t_{d(off)}$	$R_{Goff} = 16\ \Omega$ $di/dt = 2250\text{ A}/\mu\text{s}$	$T_j = 150\text{ °C}$ $V_{GE} = -7/+15\text{ V}$	541		ns
$t_f$			70		ns
$E_{off}$			2,8		mJ
$R_{th(j-s)}$	per IGBT		0,94		K/W



**SEMITOP® 3**

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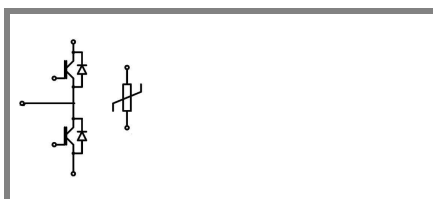
### Features

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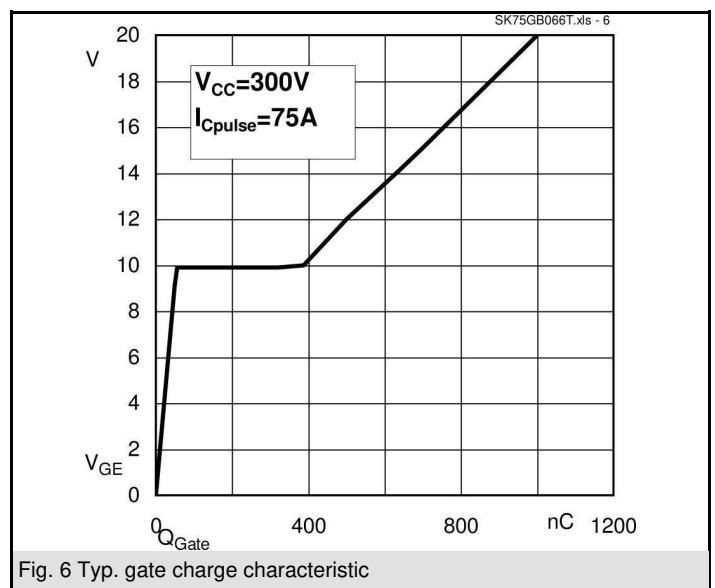
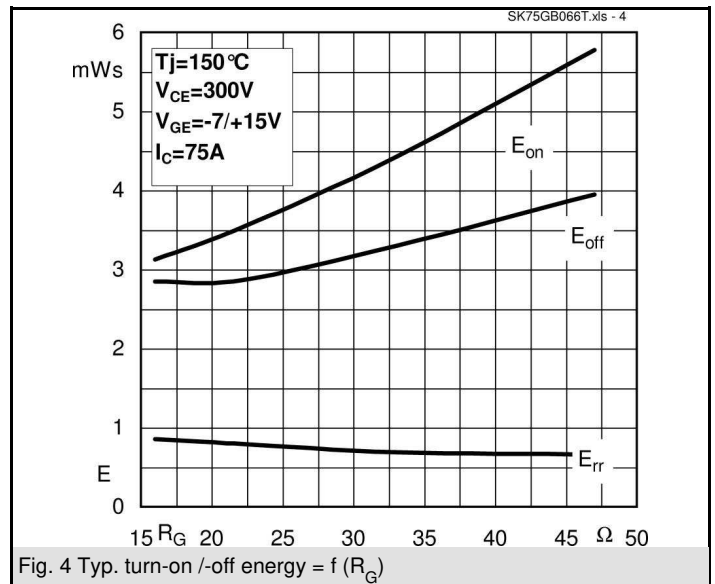
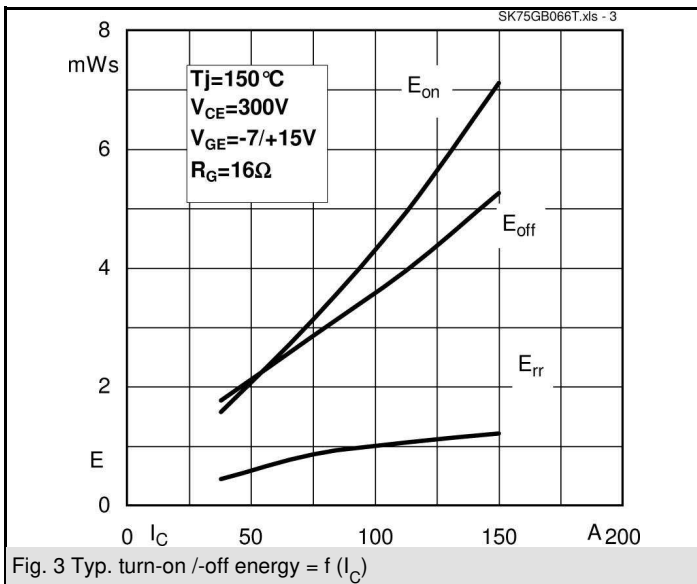
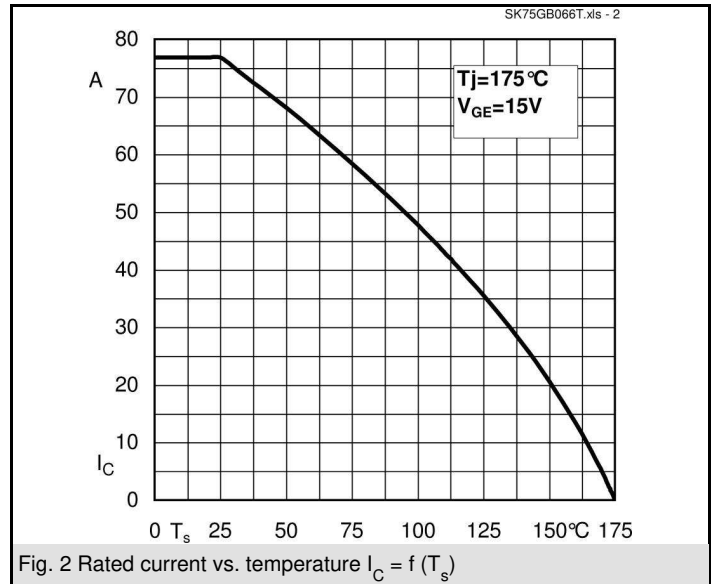
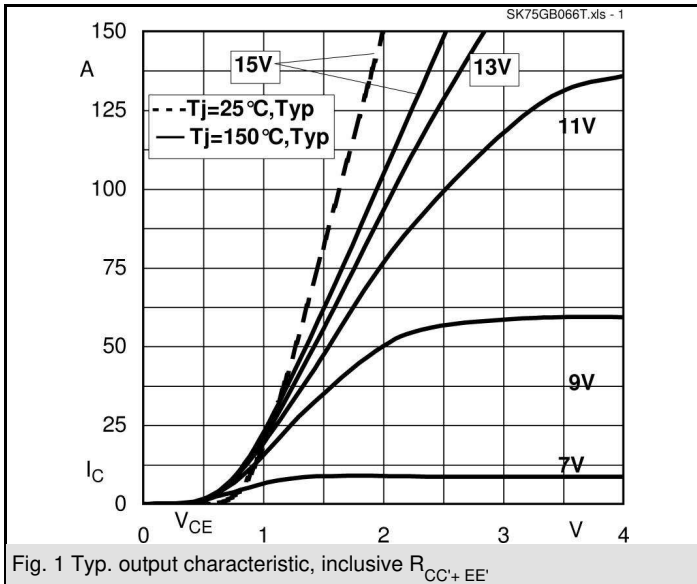
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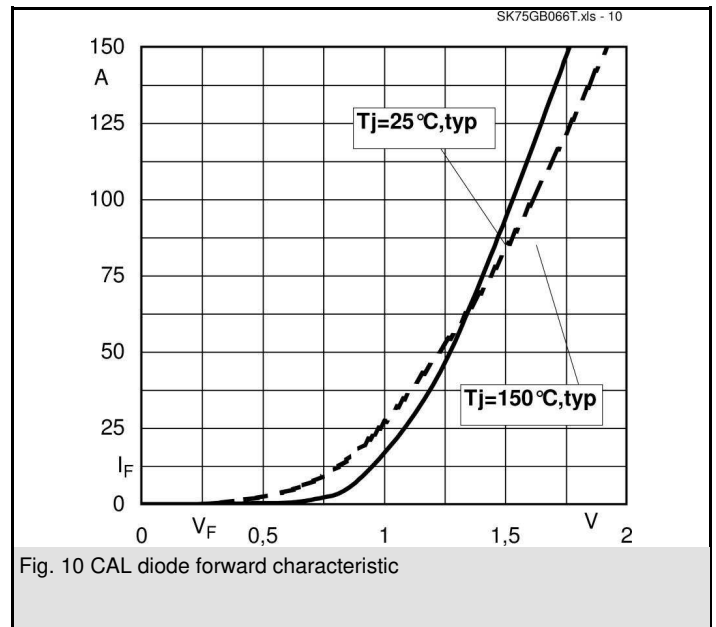
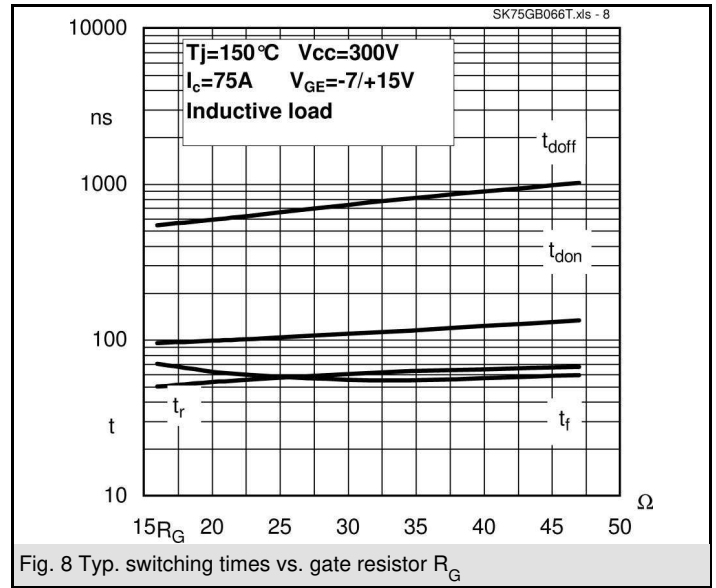
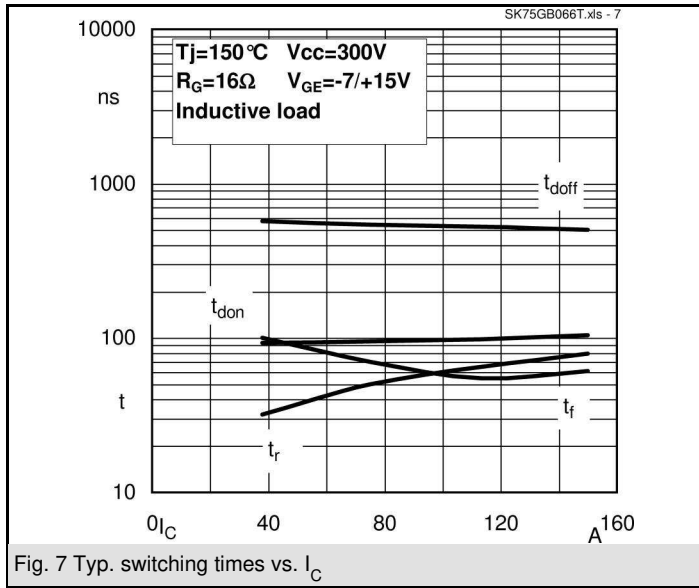
### Characteristics

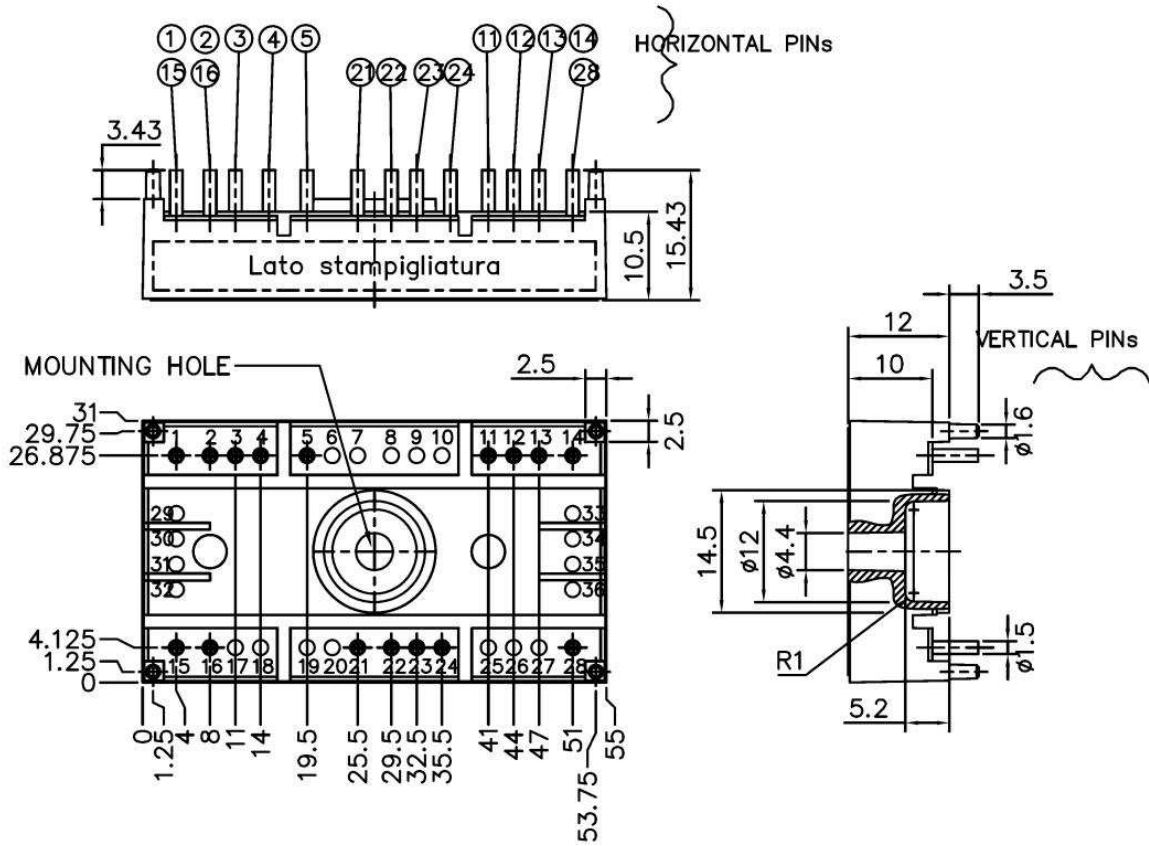
Symbol	Conditions	min.	typ.	max.	Units
<b>Inverse Diode</b>					
$V_F = V_{EC}$	$I_{Fnom} = 75 A; V_{GE} = 0 V$	$T_j = 25 ^\circ C_{chiplev.}$	1,35		V
		$T_j = 150 ^\circ C_{chiplev.}$	1,31		V
$V_{F0}$		$T_j = 25 ^\circ C$			V
		$T_j = 150 ^\circ C$	0,85		V
$r_F$		$T_j = 25 ^\circ C$			mΩ
		$T_j = 150 ^\circ C$	7,8		mΩ
$I_{RRM}$	$I_F = 75 A$	$T_j = 150 ^\circ C$	60		A
$Q_{rr}$	$di/dt = 2250 A/\mu s$		6		μC
$E_{rr}$	$V_{CC} = 300V$		0,85		mJ
$R_{th(j-s)D}$	per diode		1,55		K/W
$M_s$	to heat sink	2,5		2,75	Nm
w			60		g
<b>Temperature sensor</b>					
$R_{100}$	$T_s = 100 ^\circ C (R_{25} = 5k\Omega)$		493±5%		Ω

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

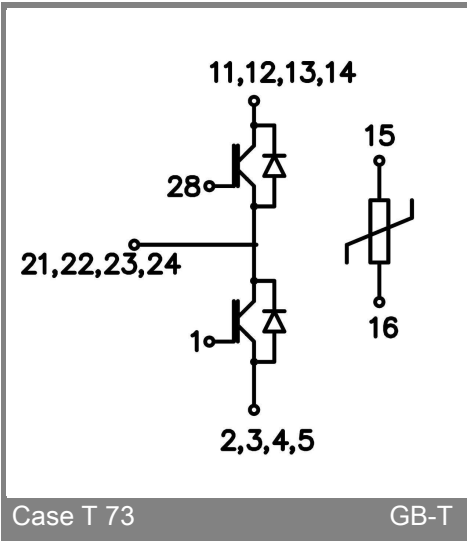
\* The specifications of our components may not be considered as an assurance of component characteristics. Components have to be tested for the respective application. Adjustments may be necessary. The use of SEMIKRON products in life support appliances and systems is subject to prior specification and written approval by SEMIKRON. We therefore strongly recommend prior consultation of our personal.







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



Case T 73

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