

**SEMITOP<sup>®</sup> 3**

## IGBT Module

**SK10GD065ET**

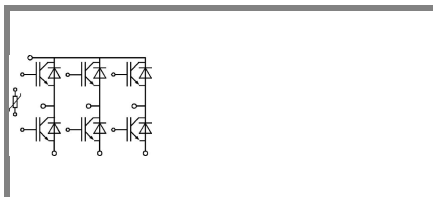
Preliminary Data

### Features

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

### Typical Applications

- Inverter

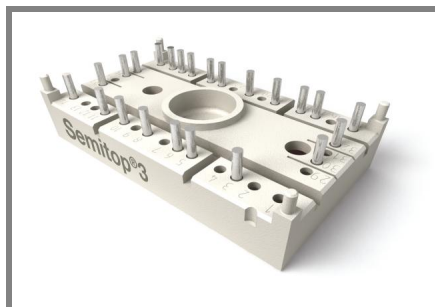


**GD-ET**

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
$I_C$	$T_j = 125\text{ °C}$	$T_s = 25\text{ °C}$	17		A
		$T_s = 80\text{ °C}$	11		A
$I_{CRM}$	$I_{CRM} = 2 \times I_{Cnom}$	20			A
$V_{GES}$		$\pm 20$			V
$t_{psc}$	$V_{CC} = 300\text{ V}; V_{GE} \leq 20\text{ V}; T_j = 125\text{ °C}$ $V_{CES} < 600\text{ V}$	10			$\mu\text{s}$
<b>Inverse Diode</b>					
$I_F$	$T_j = 150\text{ °C}$	$T_s = 25\text{ °C}$	22		A
		$T_s = 80\text{ °C}$	15		A
$I_{FRM}$	$I_{FRM} = 2 \times I_{Fnom}$	30			A
<b>Module</b>					
$I_{t(RMS)}$					A
$T_{vj}$		-40 ... +150			$^{\circ}\text{C}$
$T_{stg}$		-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>					
$V_{GE(th)}$	$V_{GE} = V_{CE}, I_C = 0,3\text{ mA}$	3	4	5	V
$I_{CES}$	$V_{GE} = 0\text{ V}, V_{CE} = V_{CES}$	$T_j = 25\text{ °C}$	0,0008		mA
		$T_j = 125\text{ °C}$			mA
$I_{GES}$	$V_{CE} = 0\text{ V}, V_{GE} = 20\text{ V}$	$T_j = 25\text{ °C}$	100		nA
		$T_j = 125\text{ °C}$			nA
$V_{CE0}$		$T_j = 25\text{ °C}$	1,2	1,3	V
		$T_j = 125\text{ °C}$	1,1	0,9	V
$r_{CE}$	$V_{GE} = 15\text{ V}$	$T_j = 25\text{ °C}$	133	200	$\text{m}\Omega$
		$T_j = 125\text{ °C}$	183		$\text{m}\Omega$
$V_{CE(sat)}$	$I_{Cnom} = 10\text{ A}, V_{GE} = 15\text{ V}$	$T_j = 25\text{ °C}_{chiplev.}$	2	2,5	V
		$T_j = 125\text{ °C}_{chiplev.}$	2,2		V
$C_{ies}$	$V_{CE} = 25, V_{GE} = 0\text{ V}$	$f = 1\text{ MHz}$	0,58		nF
$C_{oes}$			0,07		nF
$C_{res}$			0,05		nF
$t_{d(on)}$	$R_{Gon} = 210\ \Omega$	$V_{CC} = 300\text{ V}$ $I_{Cnom} = 6\text{ A}$	45		ns
$t_r$			30		ns
$E_{on}$			0,18		mJ
$t_{d(off)}$	$R_{Goff} = 210\ \Omega$	$T_j = 125\text{ °C}$ $V_{GE} = \pm 15\text{ V}$	340		ns
$t_f$			25		ns
$E_{off}$			0,13		mJ
$R_{th(j-s)}$	per IGBT	2			K/W

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## IGBT Module

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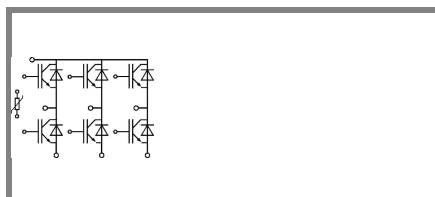
Preliminary Data

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### Typical Applications

- Inverter

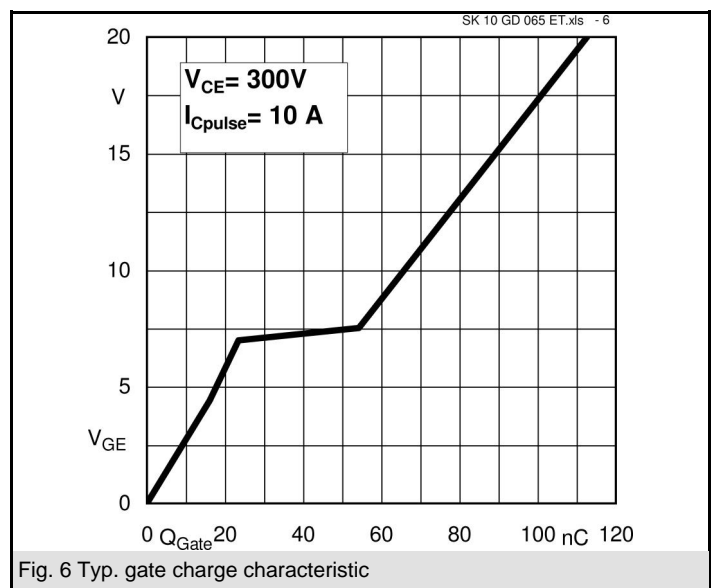
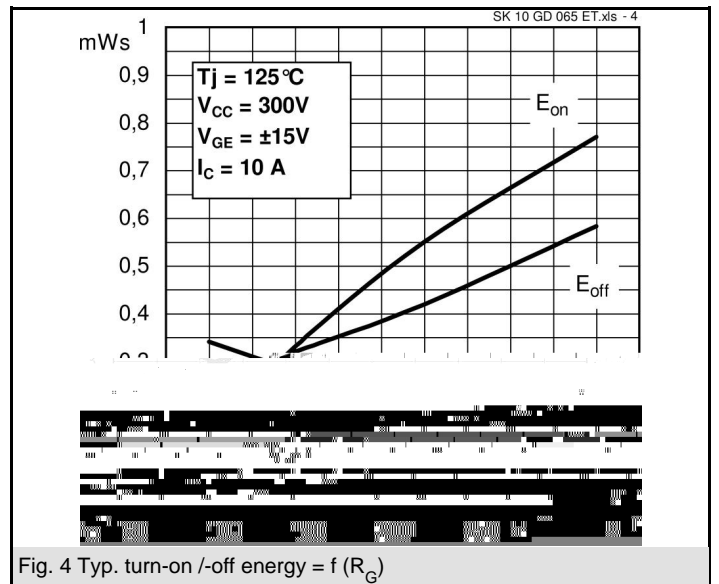
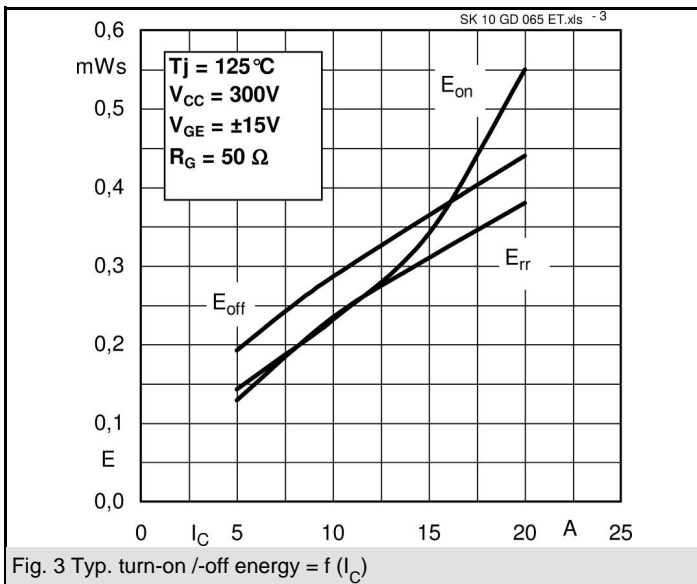
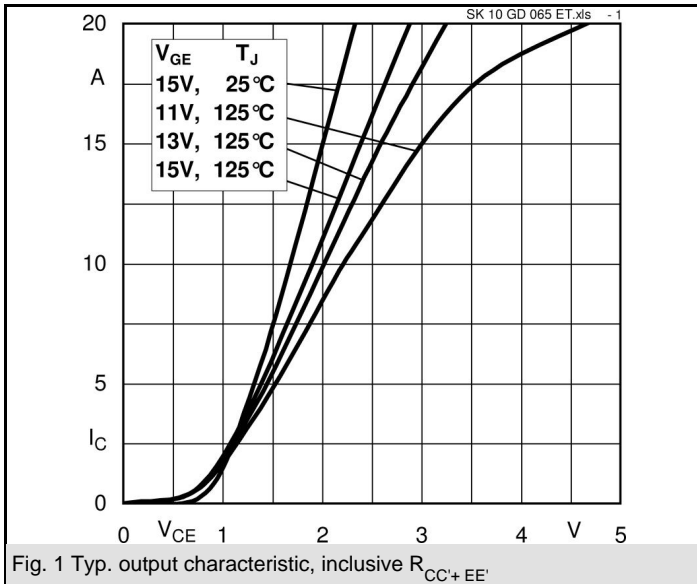


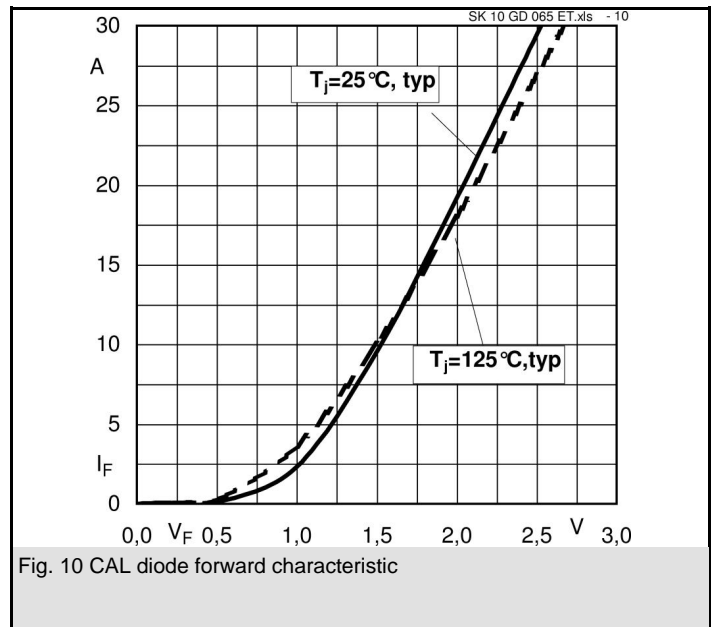
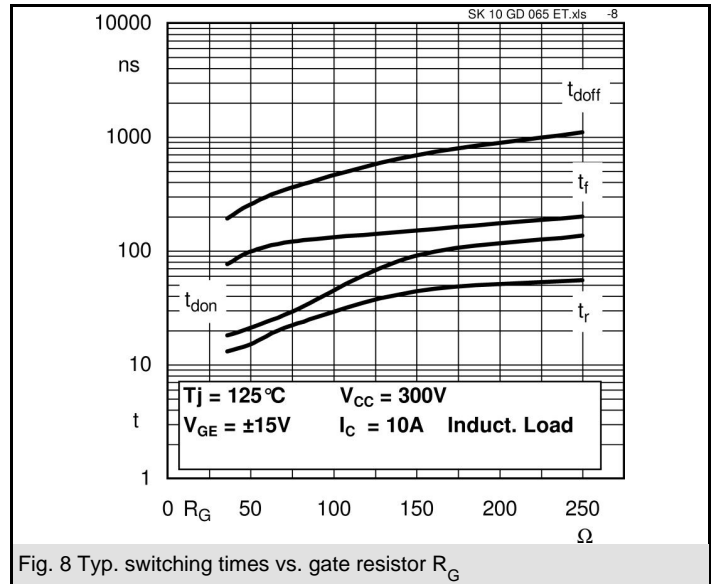
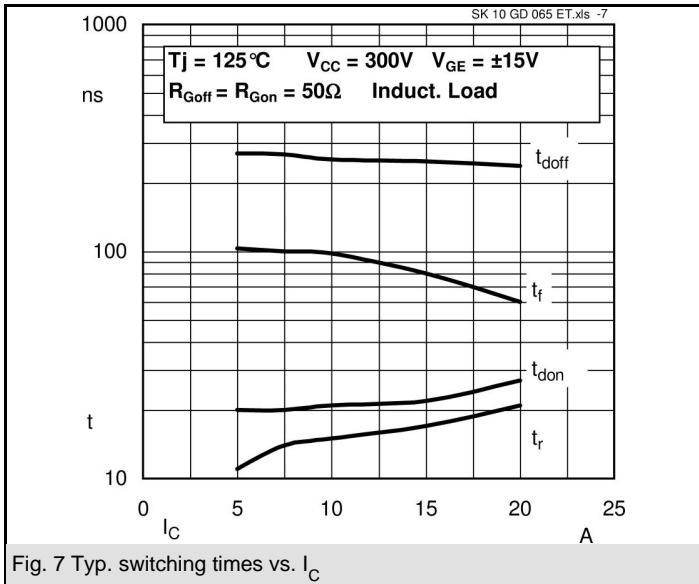
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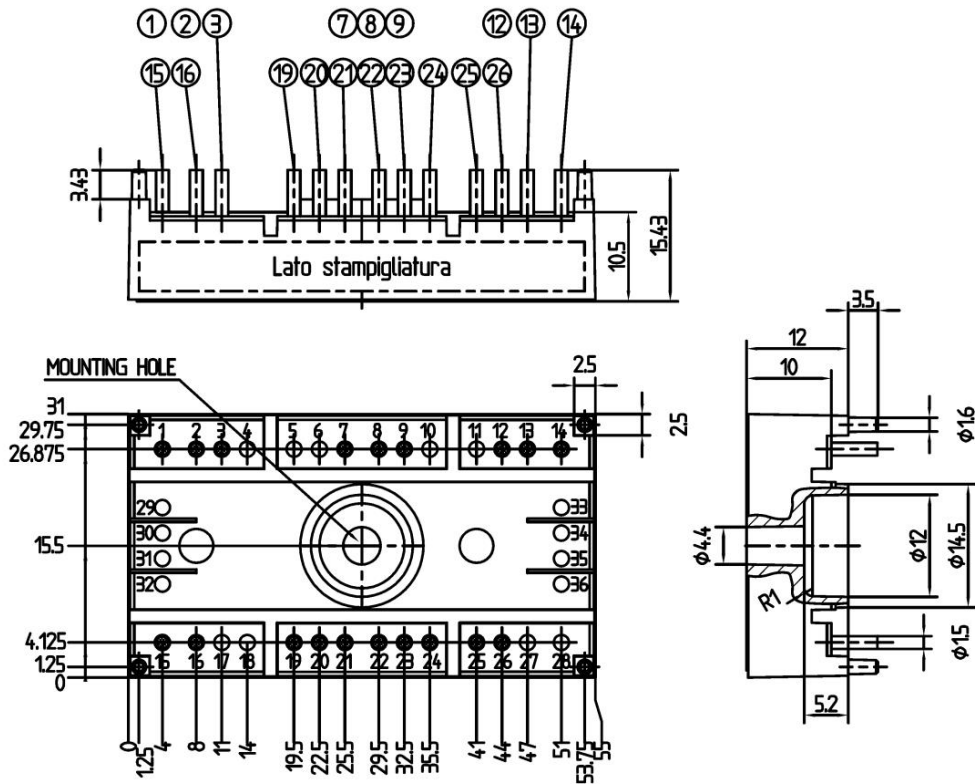
Characteristics		min.	typ.	max.	Units
<b>Inverse Diode</b>					
$V_F = V_{EC}$	$I_{Fnom} = 6 \text{ A}; V_{GE} = 0 \text{ V}$		1,3	1,5	V
			1,2		V
			1	1,1	V
			0,9		V
$V_{F0}$					
$r_F$			45	60	mΩ
			50		mΩ
$I_{RRM}$	$I_{Fnom} = 6 \text{ A}$		8,4		A
$Q_{rr}$	$di/dt = -170 \text{ A}/\mu\text{s}$		0,8		μC
$E_{rr}$	$V_{CC} = 300\text{V}$		0,18		mJ
$R_{th(j-s)D}$	per diode			2,3	K/W
$M_s$	to heat sink	2,25		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±5%		Ω

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

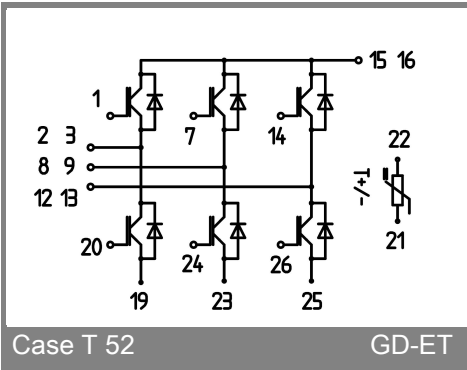
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Case T52 (Suggested hole diameter, in the PCB, for solder pins and plastic mounting pins: 2mm)



Case T 52

GD-ET