

**SEMITOP<sup>®</sup> 3**

## IGBT Module

**SK15GD065ET**

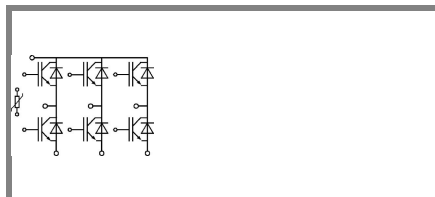
Preliminary Data

### 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

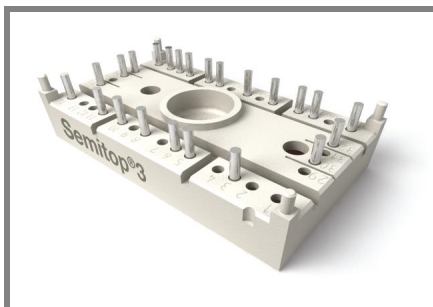


**GD-ET**

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
$I_C$	$T_j = 125\text{ °C}$	$T_s = 25\text{ °C}$	20
		$T_s = 80\text{ °C}$	14
$I_{CRM}$	$I_{CRM} = 2 \times I_{Cnom}$	30	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
		$T_s = 80\text{ °C}$	15
$I_{FRM}$	$I_{FRM} = 2 \times I_{Fnom}$	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>					
$V_{GE(th)}$	$V_{GE} = V_{CE}, I_C = 0,4\text{ mA}$	3	4	5	V
$I_{CES}$	$V_{GE} = 0\text{ V}, V_{CE} = V_{CES}$	$T_j = 25\text{ °C}$		0,07	mA
		$T_j = 125\text{ °C}$			mA
$I_{GES}$	$V_{CE} = 0\text{ V}, V_{GE} = 20\text{ V}$	$T_j = 25\text{ °C}$		120	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
$r_{CE}$	$V_{GE} = 15\text{ V}$	$T_j = 25\text{ °C}$	80	120	$\text{m}\Omega$
		$T_j = 125\text{ °C}$	110		$\text{m}\Omega$
$V_{CE(sat)}$	$I_{Cnom} = 15\text{ A}, V_{GE} = 15\text{ V}$	$T_j = 25\text{ °C}_{chiplev.}$	2	2,5	V
		$T_j = 125\text{ °C}_{chiplev.}$	2,2		V
$C_{ies}$	$V_{CE} = 25, V_{GE} = 0\text{ V}$	$f = 1\text{ MHz}$	0,8		nF
$C_{oes}$			0,084		nF
$C_{res}$			0,052		nF
$t_{d(on)}$	$R_{Gon} = 125\ \Omega$	$V_{CC} = 300\text{ V}$ $I_{Cnom} = 10\text{ A}$	45		ns
$t_r$			40		ns
$E_{on}$	$R_{Goff} = 125\ \Omega$	$T_j = 125\text{ °C}$ $V_{GE} = \pm 15\text{ V}$	0,3		mJ
$t_{d(off)}$			340		ns
$t_f$			90		ns
$E_{off}$			0,22		mJ
$R_{th(j-s)}$	per IGBT			1,9	K/W

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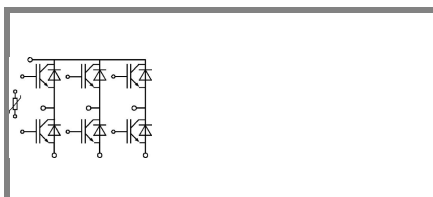
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### Typical Applications

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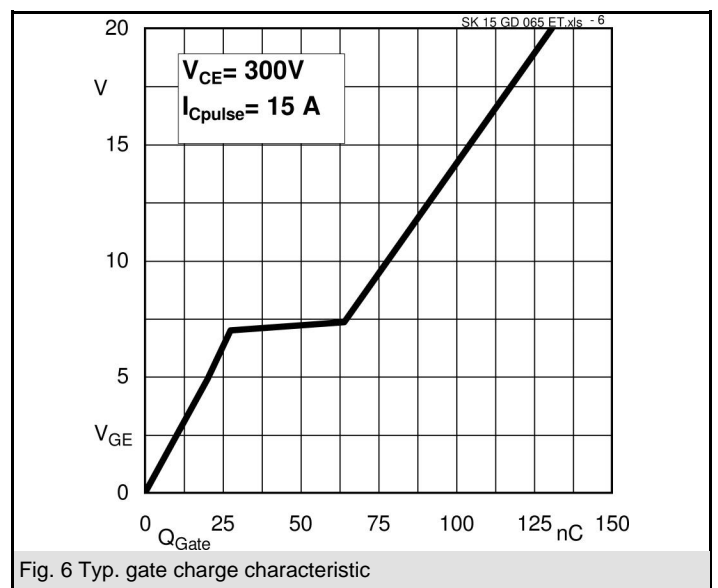
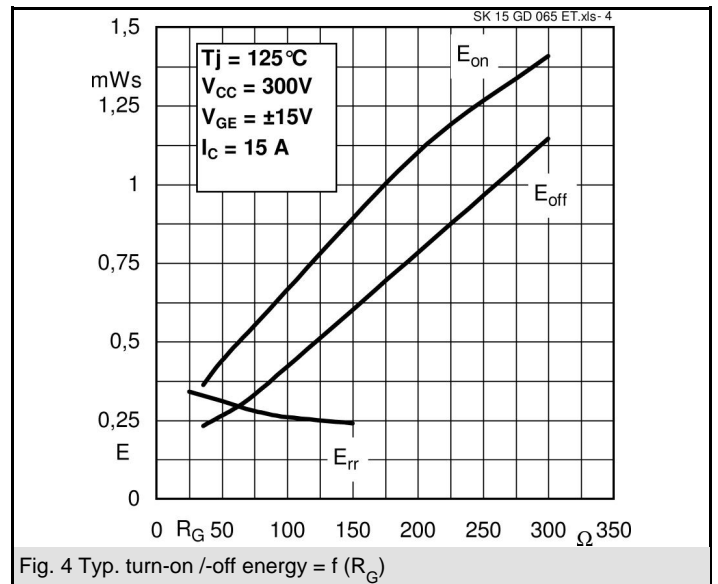
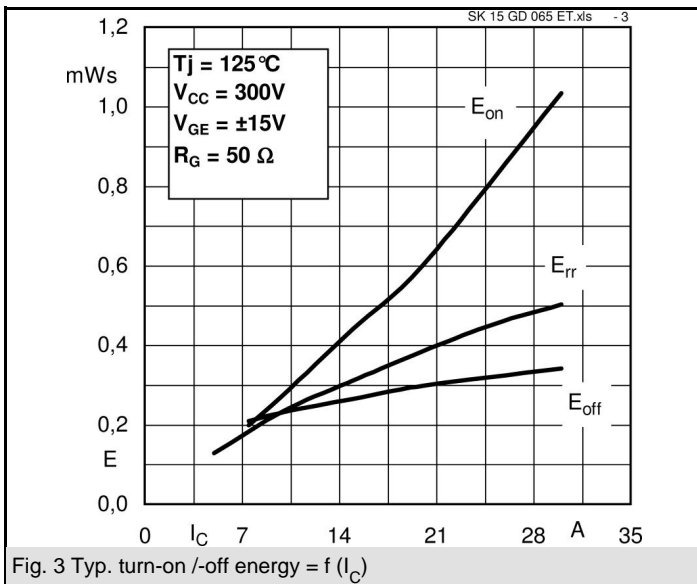
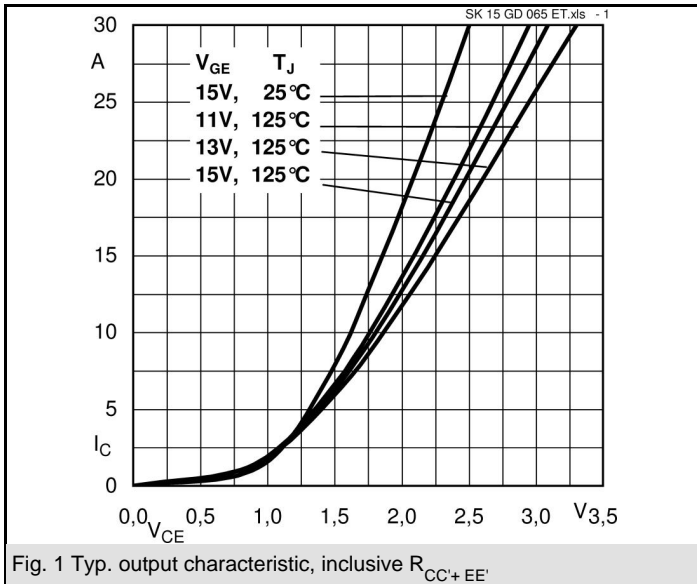


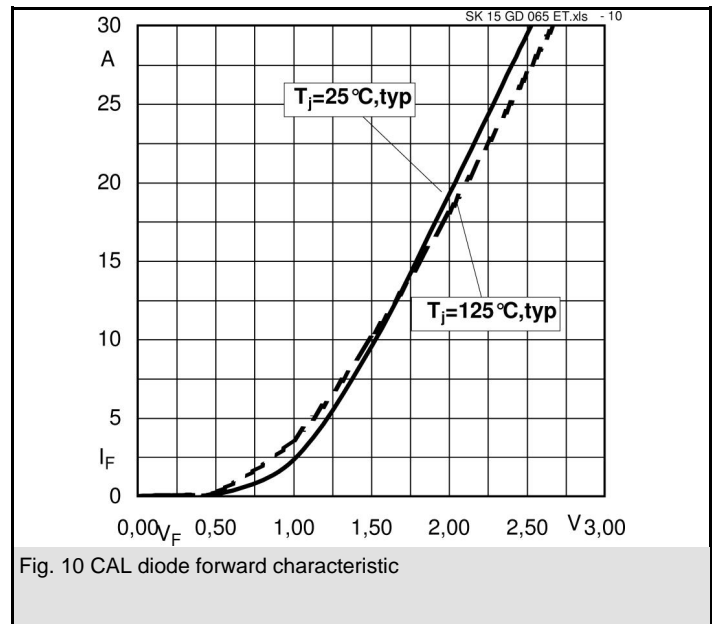
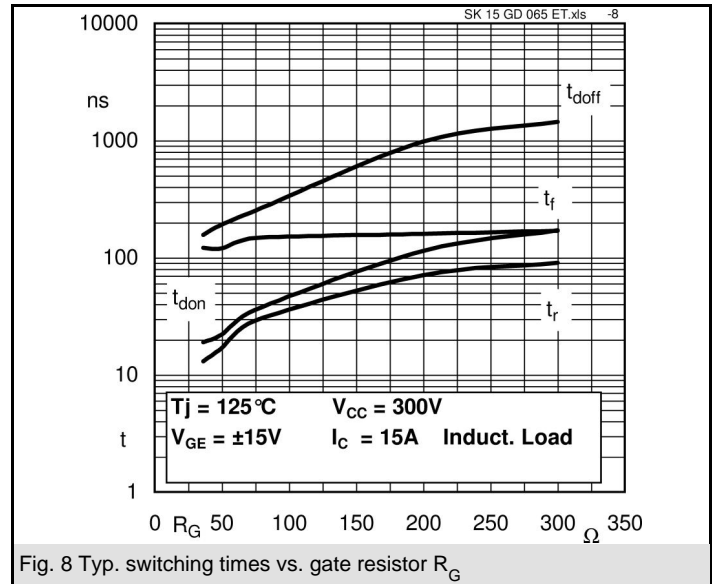
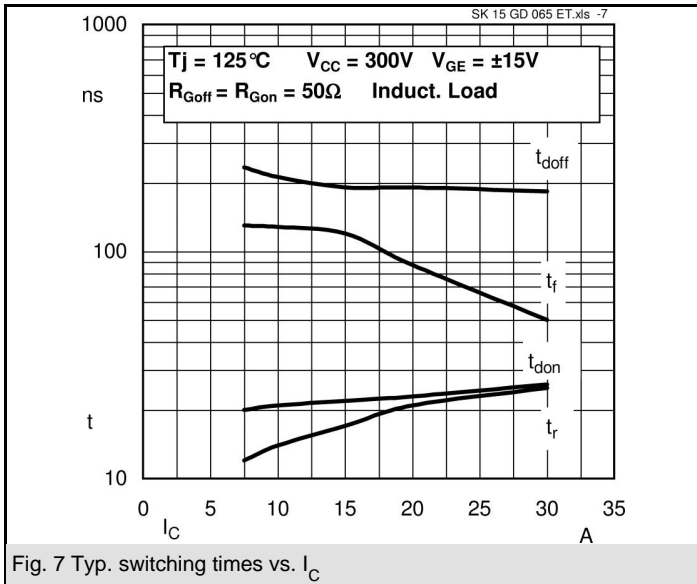
**GD-ET**

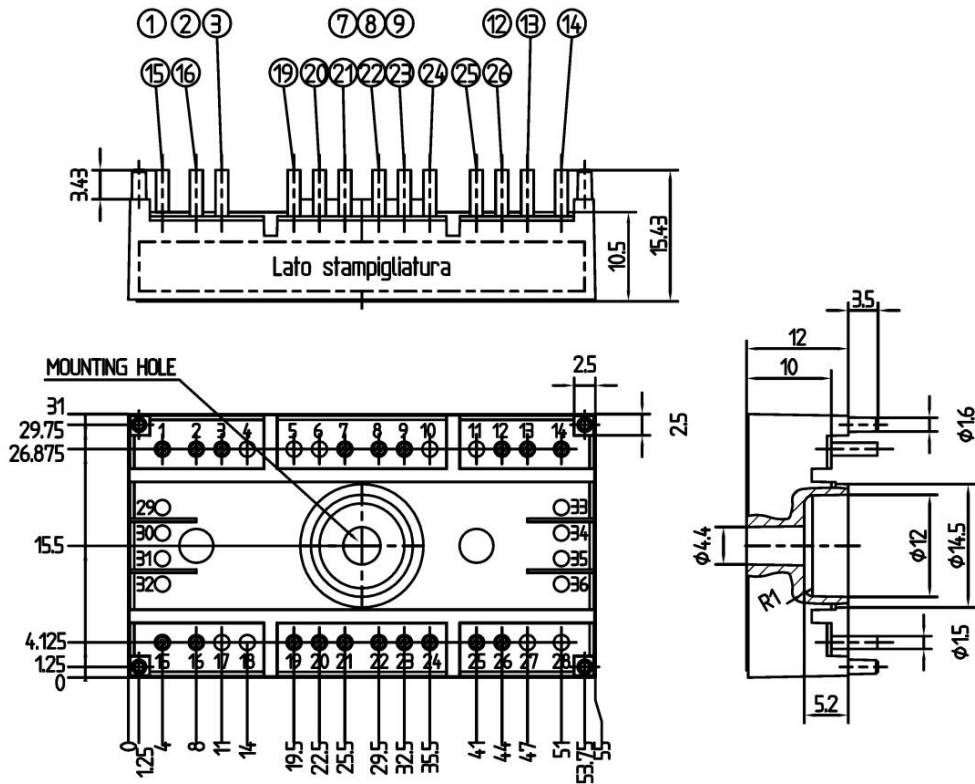
Characteristics			min.	typ.	max.	Units
Symbol	Conditions					
<b>Inverse Diode</b>						
$V_F = V_{EC}$	$I_{Fnom} = 10 \text{ A}; V_{GE} = 0 \text{ V}$	$T_j = 25 \text{ }^\circ\text{C}_{\text{chiplev.}}$		1,4	1,7	V
		$T_j = 125 \text{ }^\circ\text{C}_{\text{chiplev.}}$		1,4		V
$V_{F0}$		$T_j = 25 \text{ }^\circ\text{C}$		1	1,1	V
		$T_j = 125 \text{ }^\circ\text{C}$		0,9		V
$r_F$		$T_j = 25 \text{ }^\circ\text{C}$		45	60	mΩ
		$T_j = 125 \text{ }^\circ\text{C}$		50		mΩ
$I_{RRM}$	$I_{Fnom} = 10 \text{ A}$	$T_j = 125 \text{ }^\circ\text{C}$		11		A
$Q_{rr}$	$di/dt = -290 \text{ A}/\mu\text{s}$			1,1		μC
$E_{rr}$	$V_{CC} = 300\text{V}$			0,24		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.

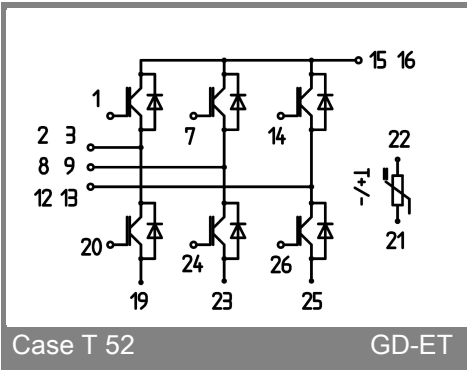
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Case T52 (Suggested hole diameter, in the PCB, for solder pins and plastic mounting pins: 2mm)



Case T 52

GD-ET