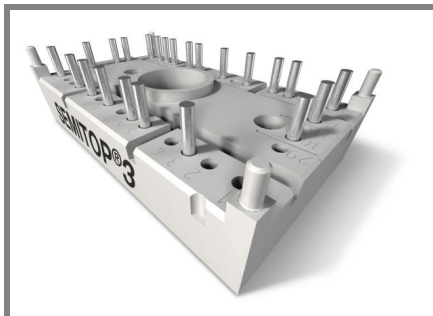


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SEMITOP® 3

IGBT Module

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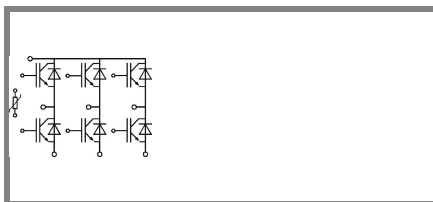
Preliminary Data

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

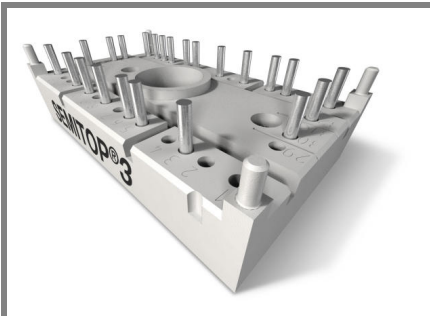


GD-ET

Absolute Maximum Ratings		$T_s = 25\text{ °C}$, unless otherwise specified			
Symbol	Conditions	Values			Units
IGBT					
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}		± 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			µs
Inverse Diode					
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
Module					
$I_{t(RMS)}$					A
T_{vj}		-40 ... +150			°C
T_{stg}		-40 ... +125			°C
V_{isol}	AC, 1 min.	2500			V

Characteristics		$T_s = 25\text{ °C}$, unless otherwise specified			
Symbol	Conditions	min.	typ.	max.	Units
IGBT					
$V_{GE(th)}$	$V_{GE} = V_{CE}, I_C = 0,3\text{ mA}$	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	mΩ
		$T_j = 125\text{ °C}$	183		mΩ
$V_{CE(sat)}$	$I_{Cnom} = 10\text{ A}, V_{GE} = 15\text{ V}$	$T_j = 25\text{ °C}_{chiplev.}$	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
$t_{d(on)}$	$R_{Gon} = 210\text{ }\Omega$	$V_{CC} = 300\text{ V}$ $I_C = 6\text{ A}$	45		ns
t_r			30		ns
E_{on}			0,18		mJ
$t_{d(off)}$	$R_{Goff} = 210\text{ }\Omega$	$T_j = 125\text{ °C}$ $V_{GE} = \pm 15\text{ V}$	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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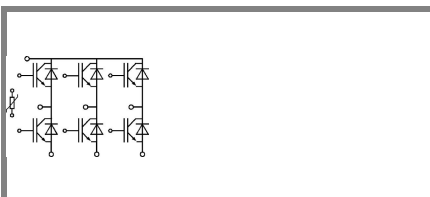
Preliminary Data

Features

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Typical Applications*

- Inverter

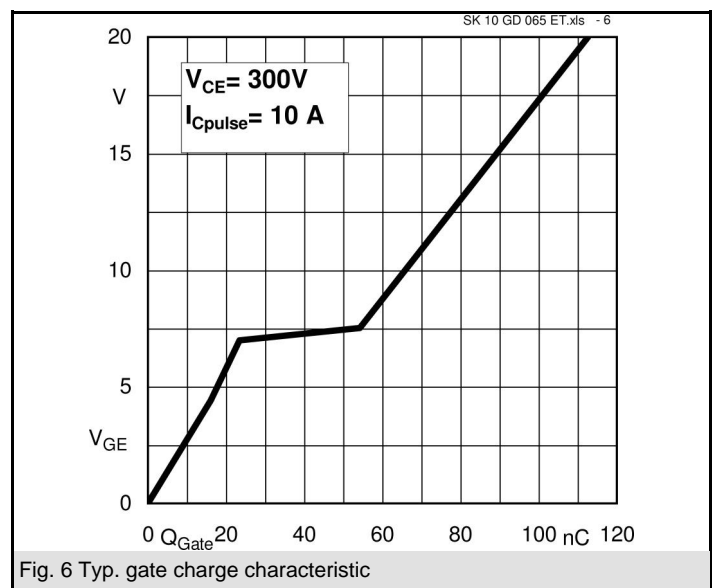
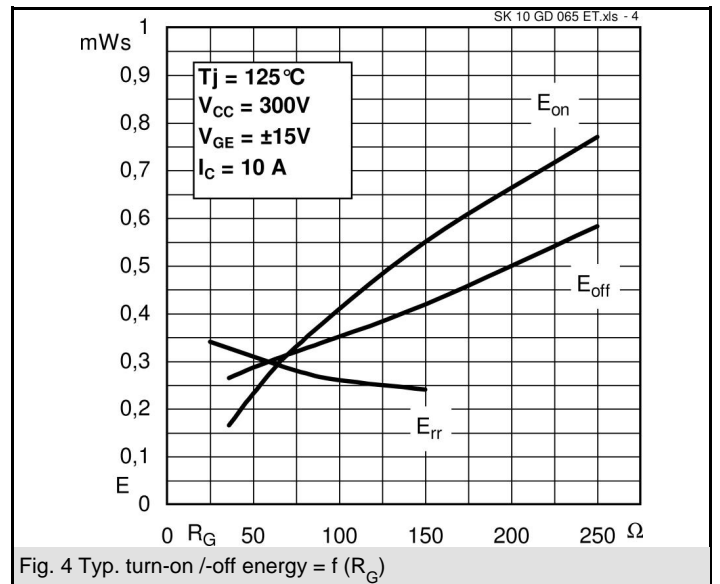
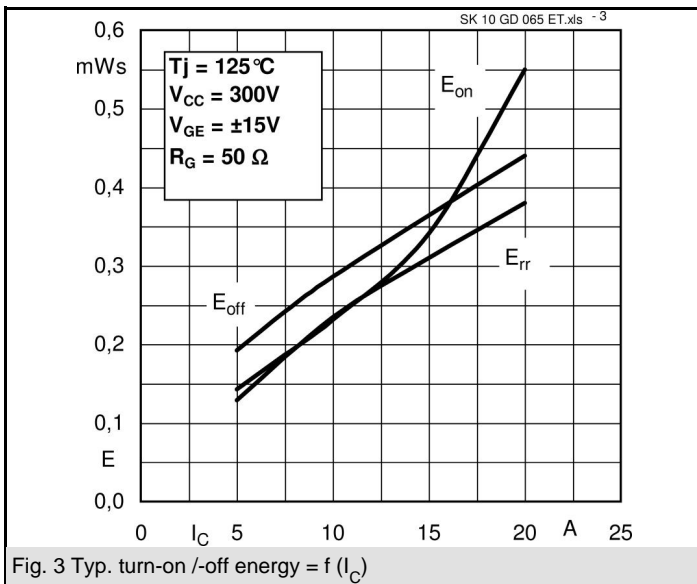
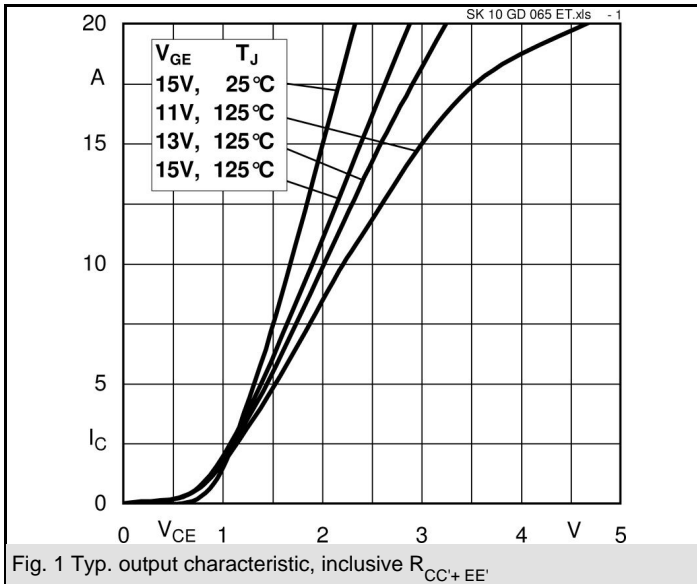


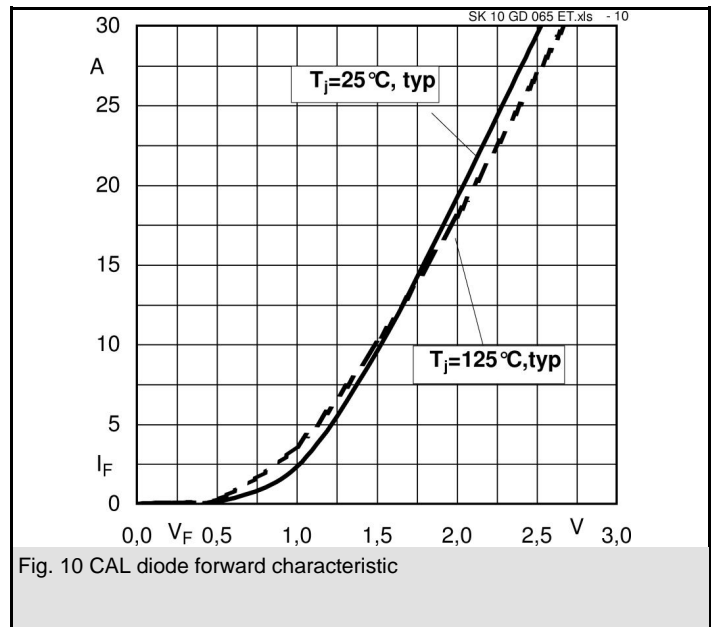
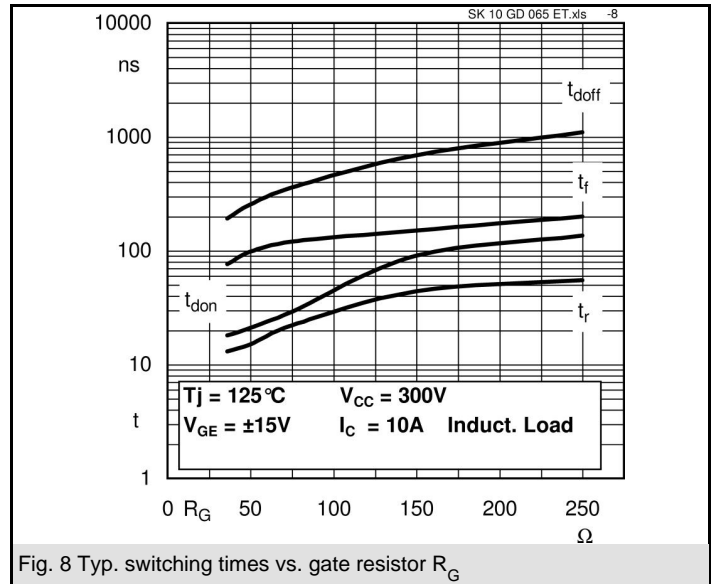
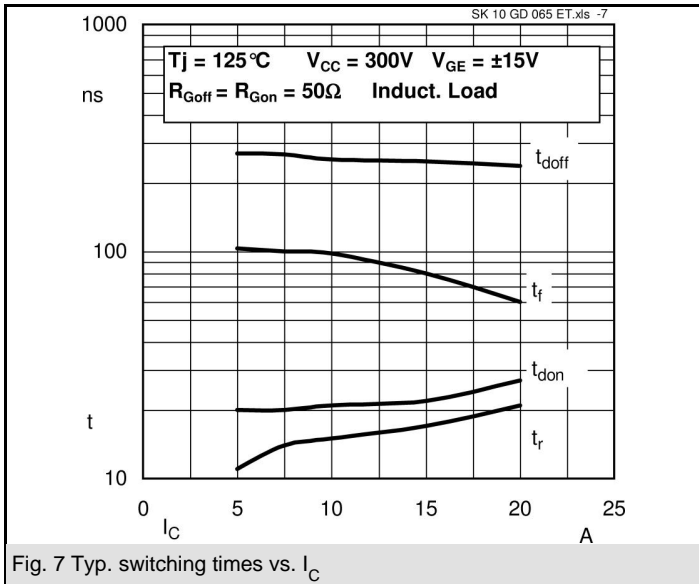
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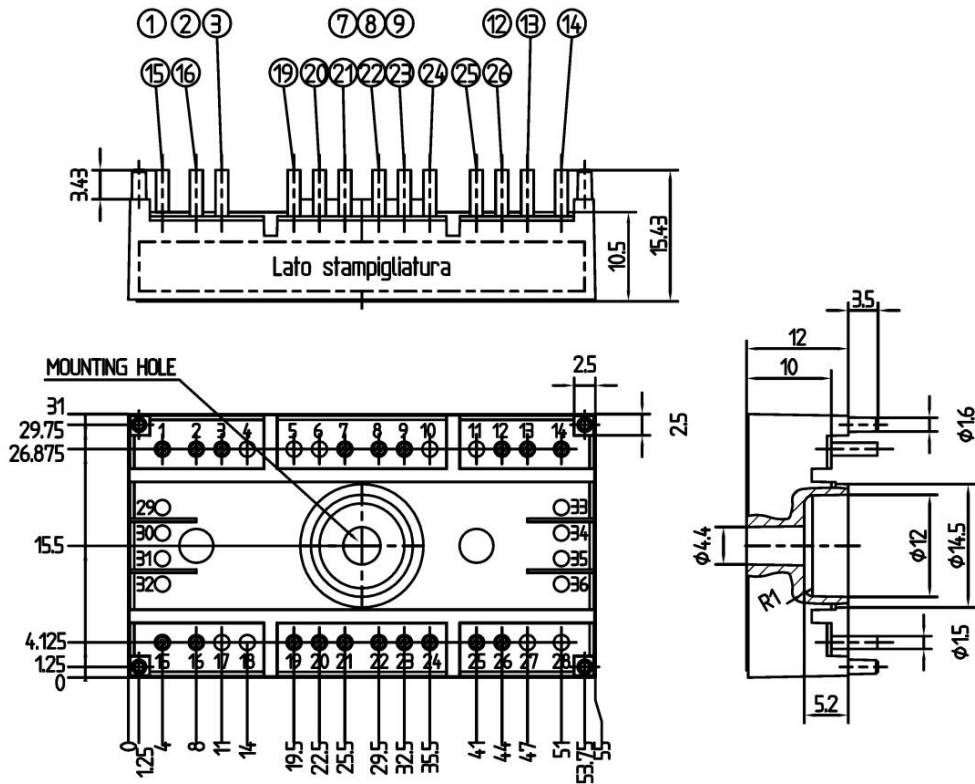
Characteristics		min.	typ.	max.	Units
Inverse Diode					
$V_F = V_{EC}$	$I_{Fnom} = 6 \text{ A}; V_{GE} = 0 \text{ V}$		1,3	1,5	V
	$T_j = 25 \text{ }^\circ\text{C}_{\text{chiplev.}}$				
	$T_j = 125 \text{ }^\circ\text{C}_{\text{chiplev.}}$		1,2		V
V_{F0}			1	1,1	V
	$T_j = 25 \text{ }^\circ\text{C}$				
	$T_j = 125 \text{ }^\circ\text{C}$		0,9		V
r_F			45	60	m Ω
	$T_j = 25 \text{ }^\circ\text{C}$				
	$T_j = 125 \text{ }^\circ\text{C}$		50		m Ω
I_{RRM}	$I_F = 6 \text{ A}$		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
Temperature sensor					
R_{100}	$T_s = 100^\circ\text{C}$ ($R_{25} = 5\text{k}\Omega$)		493 \pm 5%		Ω

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

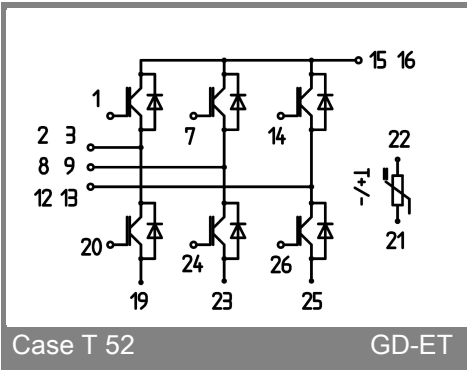
* The specifications of our components may not be considered as an assurance of component characteristics. Components have to be tested for the respective application. Adjustments may be necessary. The use of SEMIKRON products in life support appliances and systems is subject to prior specification and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







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



Case T 52

GD-ET