

**SEMITOP<sup>®</sup> 2**

## IGBT Module

**SK20GD065**

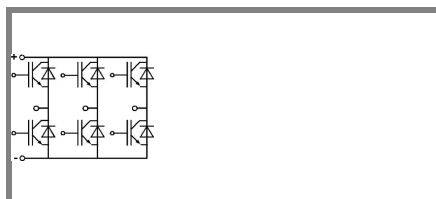
Preliminary Data

## 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
- High short circuit capability
- Low tail current with low temperature dependence

## Typical Applications

- Switching (not for linear use)
- Inverter
- Switched mode power supplies
- UPS

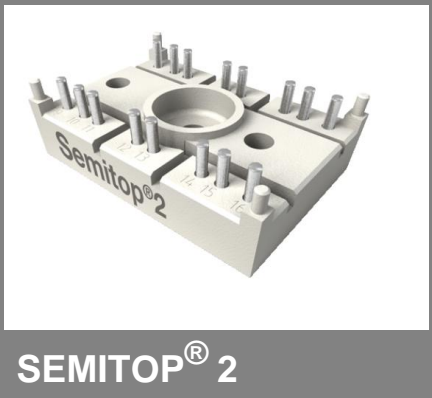


**GD**

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
$I_C$	$T_j = 125\text{ °C}$	$T_s = 25\text{ °C}$		24	A
		$T_s = 80\text{ °C}$		17	A
$I_{CRM}$	$I_{CRM} = 2 \times I_{Cnom}$			40	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>					
$I_F$	$T_j = 125\text{ °C}$	$T_s = 25\text{ °C}$		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 <sub>s</sub> = 25 °C, unless otherwise specified			
Symbol	Conditions		min.	typ.	max.	Units
IGBT						
V <sub>GE(th)</sub>	V <sub>GE</sub> = V <sub>CE</sub> , I <sub>C</sub> = 0,5 mA		3	4	5	V
I <sub>CES</sub>	V <sub>GE</sub> = 0 V, V <sub>CE</sub> = V <sub>CES</sub> T <sub>j</sub> = 25 °C T <sub>j</sub> = 125 °C				0,07	mA mA
I <sub>GES</sub>	V <sub>CE</sub> = 0 V, V <sub>GE</sub> = 20 V T <sub>j</sub> = 25 °C T <sub>j</sub> = 125 °C				120	nA nA
V <sub>CE0</sub>				1,2 1,1	1,3 0,9	V V
r <sub>CE</sub>	V <sub>GE</sub> = 15 V T <sub>j</sub> = 25°C T <sub>j</sub> = 125°C			40 55		mΩ mΩ
V <sub>CE(sat)</sub>	I <sub>Cnom</sub> = 20 A, V <sub>GE</sub> = 15 V T <sub>j</sub> = 25°C <sub>chiplev.</sub> T <sub>j</sub> = 125°C <sub>chiplev.</sub>			2 2,2		V V
C <sub>ies</sub> C <sub>oes</sub> C <sub>res</sub>	V <sub>CE</sub> = 25, V <sub>GE</sub> = 0 V f = 1 MHz			1,1 0,11 0,063		nF nF nF
t <sub>d(on)</sub> t <sub>r</sub> E <sub>on</sub>	R <sub>Gon</sub> = 30 Ω	V <sub>CC</sub> = 300V I <sub>Cnom</sub> = 20A		36 30 0,7		ns ns mJ
t <sub>d(off)</sub> t <sub>f</sub> E <sub>off</sub>	R <sub>Goff</sub> = 30 Ω	T <sub>j</sub> = 125 °C V <sub>GE</sub> =±15V		250 60 0,4		ns ns mJ
R <sub>th(j-s)</sub>	per IGBT				1,7	K/W

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IGBT Module

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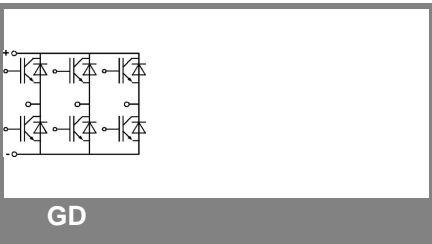
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Typical Applications

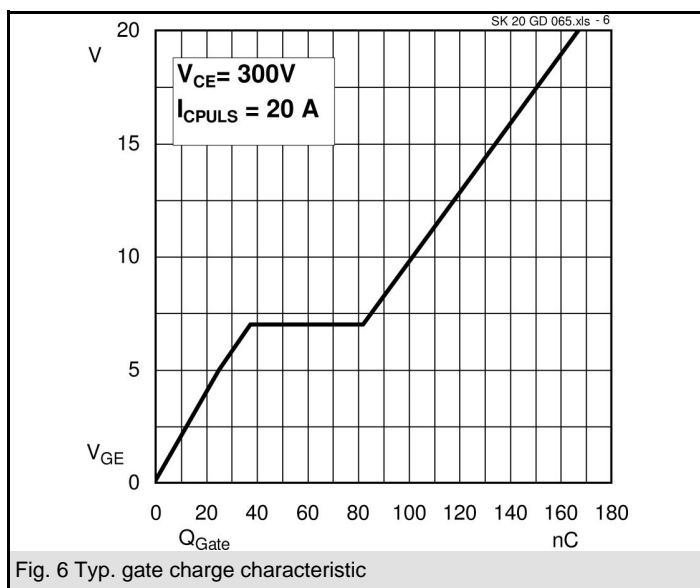
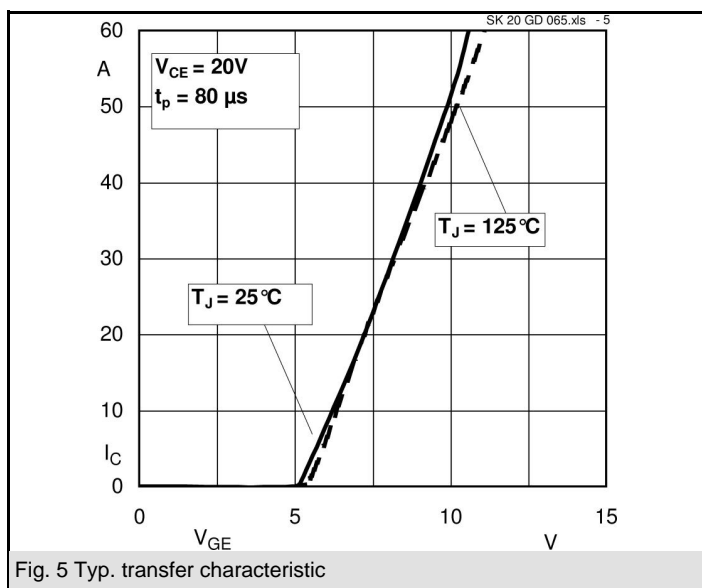
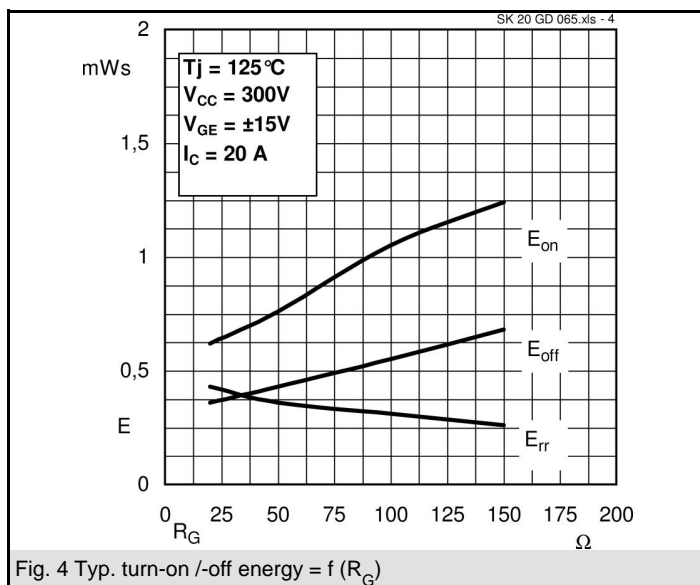
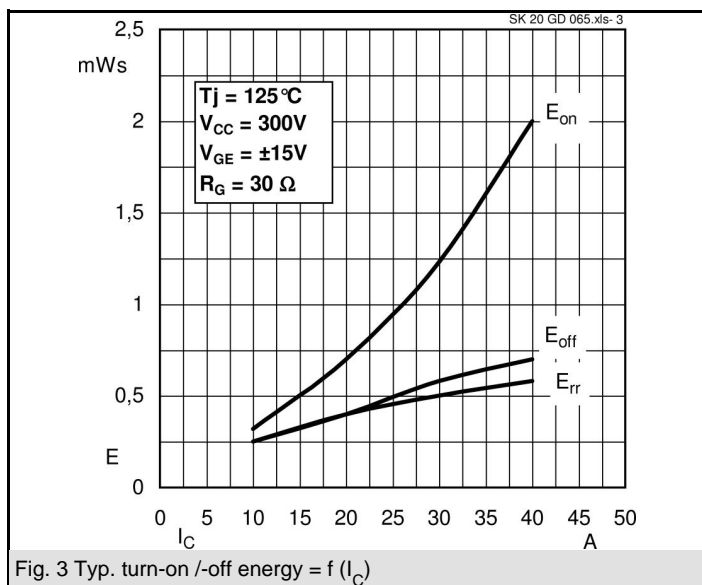
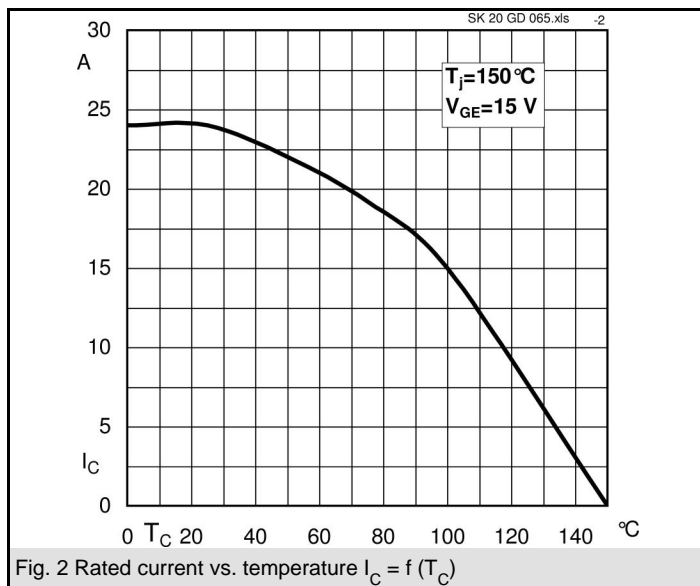
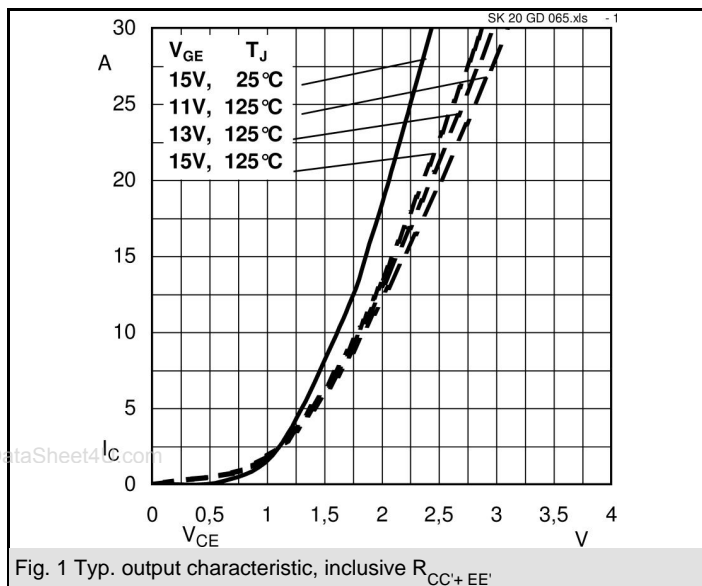
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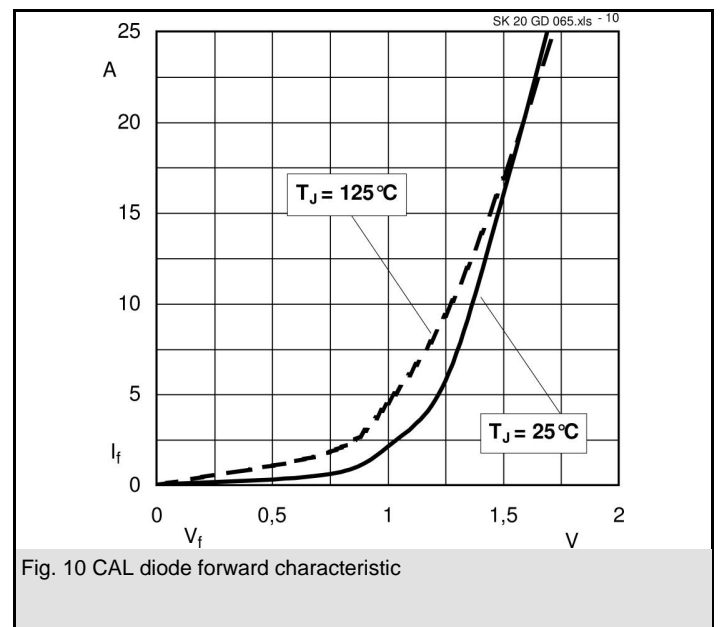


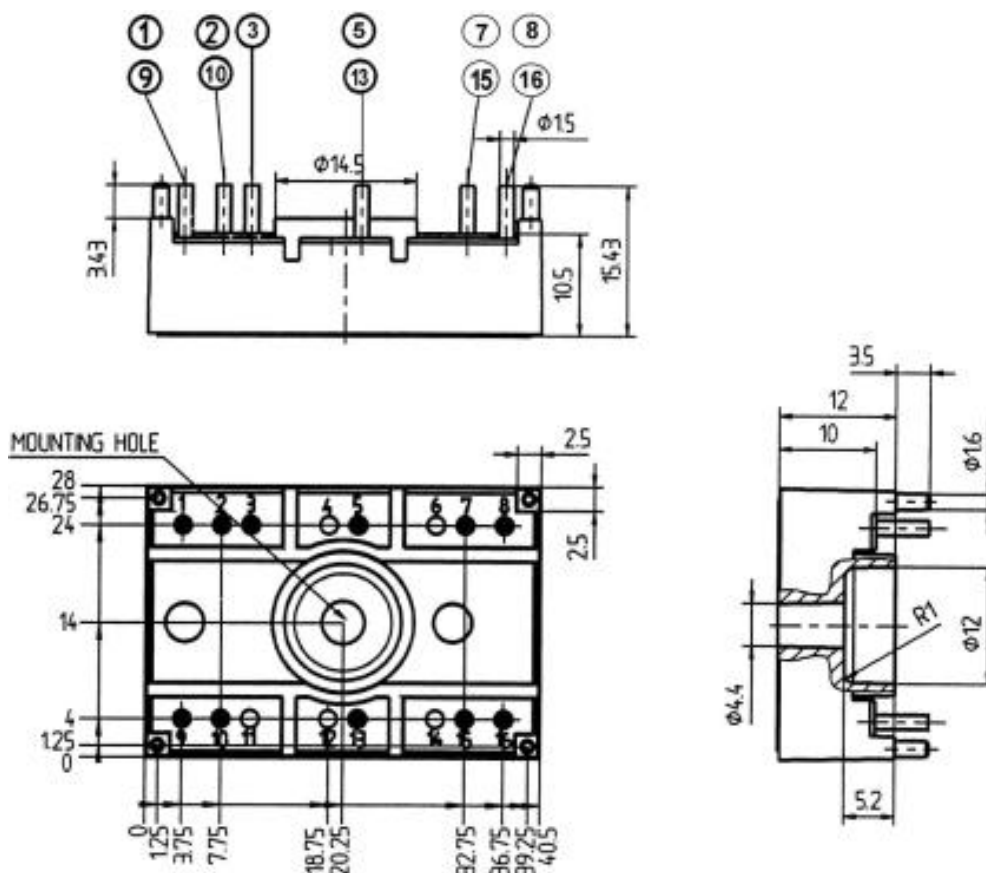
Characteristics							
Symbol	Conditions			min.	typ.	max.	Units
Inverse Diode							
V <sub>F</sub> = V <sub>EC</sub>	I <sub>Fnom</sub> = 20 A; V <sub>GE</sub> = 0 V	T <sub>j</sub> = 25 °C <sub>chiplev.</sub>			1,6	1,9	V
		T <sub>j</sub> = 125 °C <sub>chiplev.</sub>			1,9	1,9	V
V <sub>F0</sub>		T <sub>j</sub> = 25 °C			1	1,1	V
		T <sub>j</sub> = 125 °C			0,9	1	V
r <sub>F</sub>		T <sub>j</sub> = 25 °C			30	40	mΩ
		T <sub>j</sub> = 125 °C			33	47	mΩ
I <sub>RRM</sub>	I <sub>Fnom</sub> = 20 A di/dt = -1350 A/μs V <sub>CC</sub> = 300V	T <sub>j</sub> = 125 °C			27		A
Q <sub>rr</sub>					2,3		μC
E <sub>rr</sub>					0,4		mJ
R <sub>th(j-s)D</sub>	per diode					2,3	K/W
M <sub>s</sub>	to heat sink					2	Nm
w					21		g

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

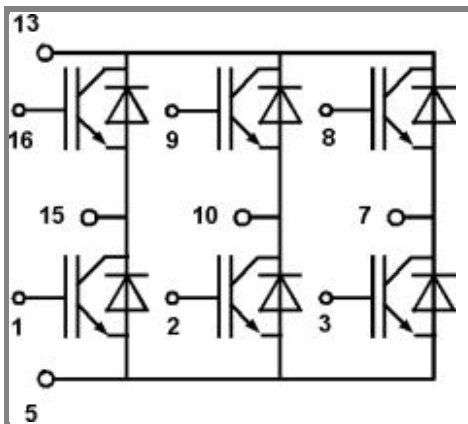
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Case T47 (Suggested hole diameter, in the PCB, for solder pins and plastic mounting pins: 2mm)



Case T 47

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