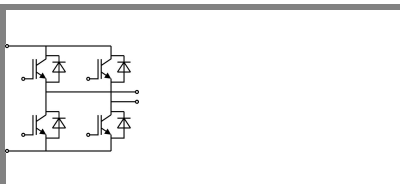# SK20GH065

SEMITOP® 2

IGBT Module

SK20GH065

Preliminary Data

Features
- Compact design
- One screw mounting
- Heat transfer and isolation through direct copper bonded aluminium oxide ceramic (DCB)
- N-channel homogeneous Silicon structure (NPT-NonPunchThrough IGBT)
- High short circuit capability
- Low tail current with low temperature dependence
- UL recognized, file no E63532

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

GH

Absolute Maximum Ratings		T_S = 25 °C, unless otherwise specified	
Symbol	Conditions	Values	Units
IGBT			
V_{CES}	T_j = 25 °C	600	V
I_C	T_j = 125 °C — T_s = 25 °C	24	A
	T_s = 80 °C	18	A
I_{CRM}	I_{CRM} = 2 x I_{Cnom}	40	A
V_{GES}		± 20	V
t_{psc}	V_{CC} = 300 V; $V_{GE} \leq$ 20 V; T_j = 125 °C V_{CES} < 600 V	10	µs
Inverse Diode			
I_F	T_j = 125 °C — T_s = 25 °C	25	A
	T_s = 80 °C	18	A
I_{FRM}	I_{FRM} = 2 x I_{Fnom}	40	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 °C, unless otherwise specified		
Symbol	Conditions	min.	typ.	max.	Units
IGBT					
$V_{GE(th)}$	V_{GE} = V_{CE}, I_C = 0,5 mA	3	4	5	V
I_{CES}	V_{GE} = 0 V, V_{CE} = V_{CES} T_j = 25 °C			0,07	mA
I_{GES}	V_{CE} = 0 V, V_{GE} = 20 V T_j = 25 °C			120	nA
V_{CE0}	T_j = 25 °C		1		V
	T_j = 125 °C		1,1		V
r_{CE}	V_{GE} = 15 V T_j = 25°C				mΩ
	T_j = 125°C		55		mΩ
$V_{CE(sat)}$	I_{Cnom} = 20 A, V_{GE} = 15 V T_j = 25°C$_{chiplev.}$		2		V
	T_j = 125°C$_{chiplev.}$		2,2		V
C_{ies}			1,1		nF
C_{oes}	V_{CE} = 25, V_{GE} = 0 V f = 1 MHz		0,107		nF
C_{res}			0,063		nF
$t_{d(on)}$			21		ns
t_r	R_{Gon} = 30 Ω V_{CC} = 300V		28		ns
E_{on}	I_C = 20A		0,6		mJ
$t_{d(off)}$	R_{Goff} = 30 Ω T_j = 125 °C		170		ns
t_f	V_{GE} = ±15V		20		ns
E_{off}			0,4		mJ
$R_{th(j-s)}$	per IGBT			1,7	K/W

SK20GH065

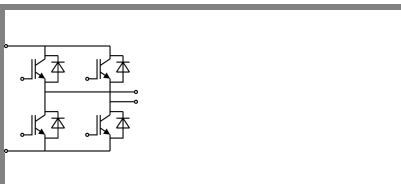## SEMITOP® 2

IGBT Module

SK20GH065

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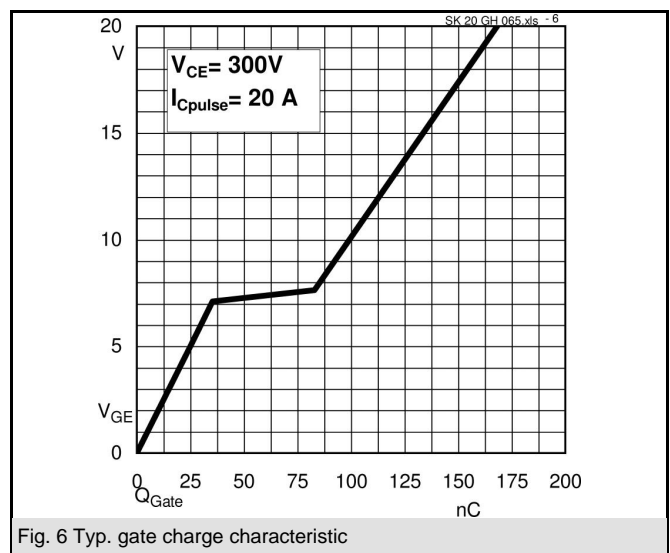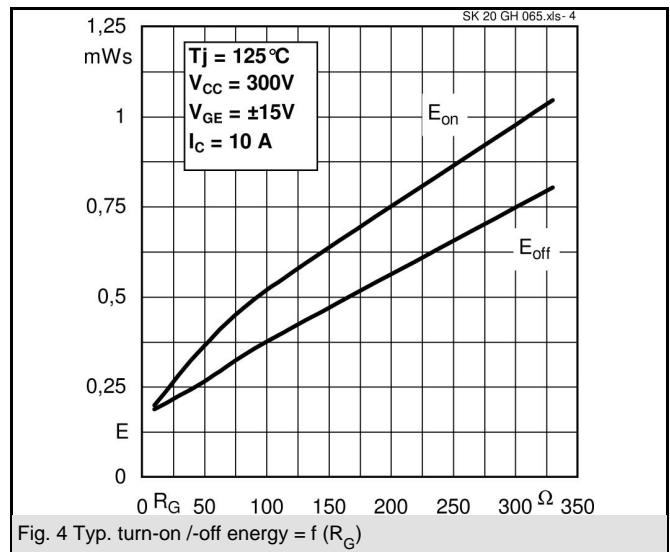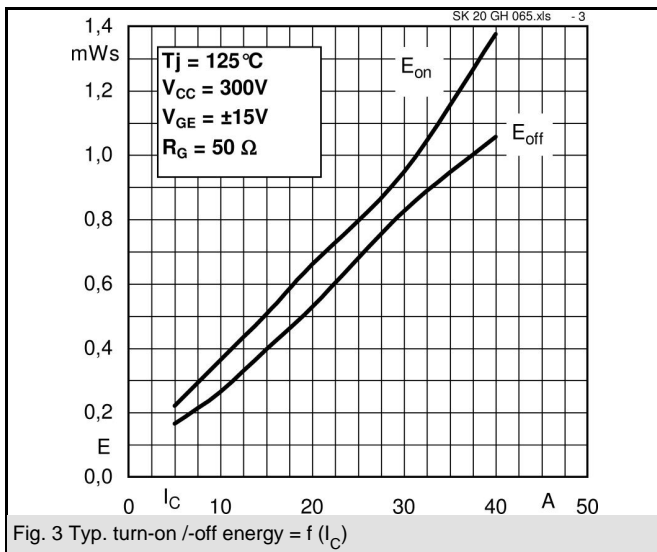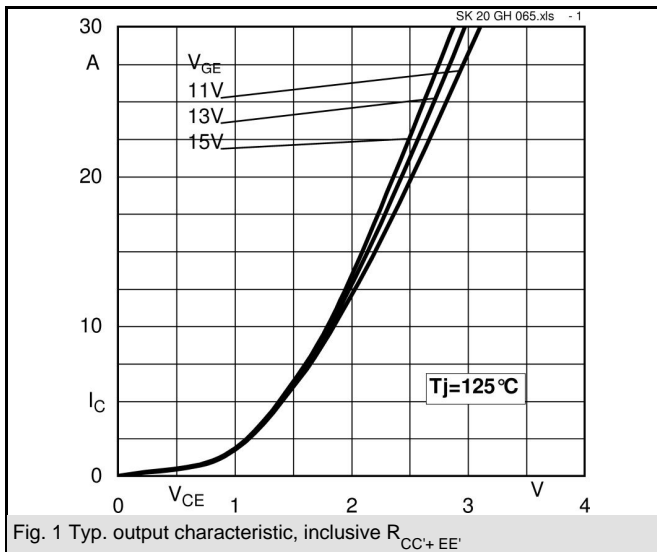- Switched mode power supplies
- UPS

GH

Characteristics					
Symbol	**Conditions**		**min.**	**typ.**	**max.**	**Units**
Inverse Diode						
$V_F = V_{EC}$	I_{Fnom} = 20 A; V_{GE} = 0 V	T_j = 25 °C$_{chiplev.}$		1,6		V
		T_j = 125 °C$_{chiplev.}$		1,6		V
V_{F0}		T_j = 25 °C				V
		T_j = 125 °C		0,9		V
r_F		T_j = 25 °C		30		mΩ
		T_j = 125 °C		33		mΩ
I_{RRM}	I_F = A	T_j = 125 °C				A
Q_{rr}						µC
E_{rr}	V_R= 300V					mJ
$R_{th(j-s)D}$	per diode				1,7	K/W
M_s	to heat sink				2	Nm
w				19		g

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.
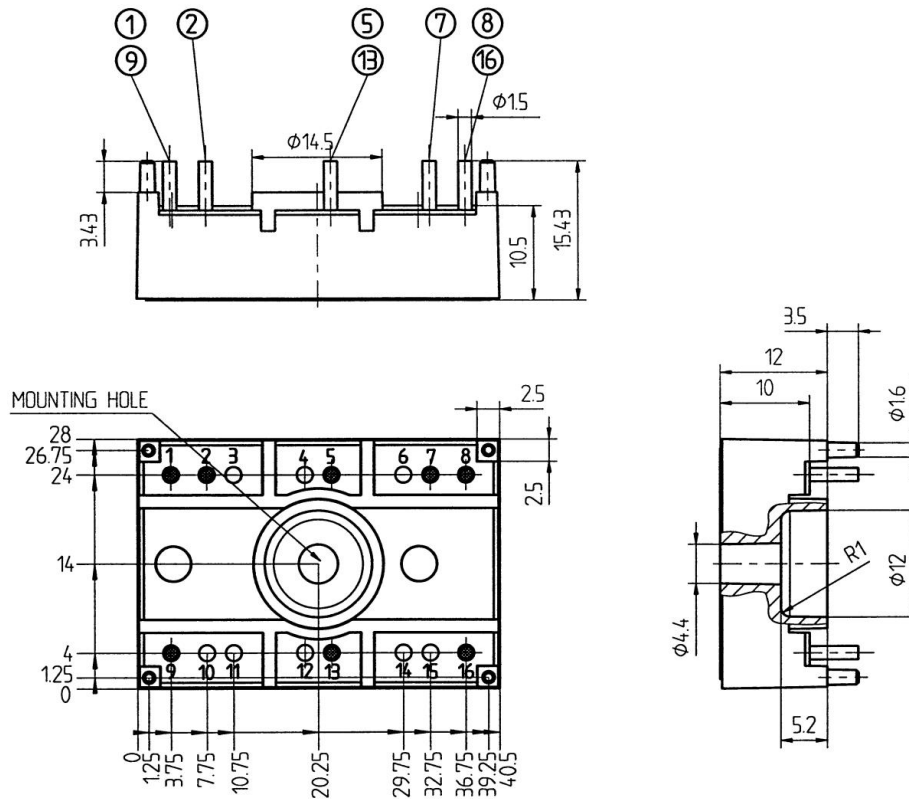
SK20GH065

Fig. 1 Typ. output characteristic, inclusive $R_{CC'+EE'}$

Fig. 3 Typ. turn-on /-off energy = f (I_C)

Fig. 4 Typ. turn-on /-off energy = f (R_G)

Fig. 6 Typ. gate charge characteristic

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Tj = 125°C   V_{CC} = 300V   V_{GE} = ±15V
R_{Goff} = Rgon = 50Ω   Induct. Load

Fig. 7 Typ. switching times vs. I_C

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Tj = 125°C   V_{CC} = 300V
V_{GE} = ±15V   I_C = 10A   Induct. Load

Fig. 8 Typ. switching times vs. gate resistor R_G

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T_j=125°C

T_j=25°C

Fig. 10 CAL diode forward characteristic
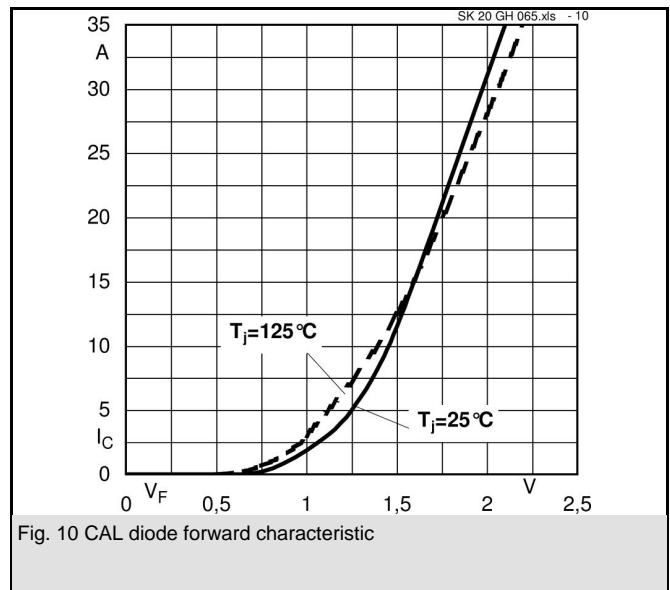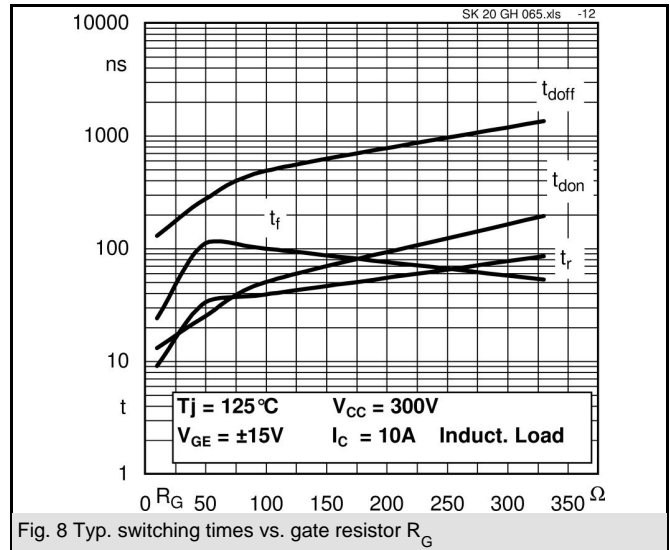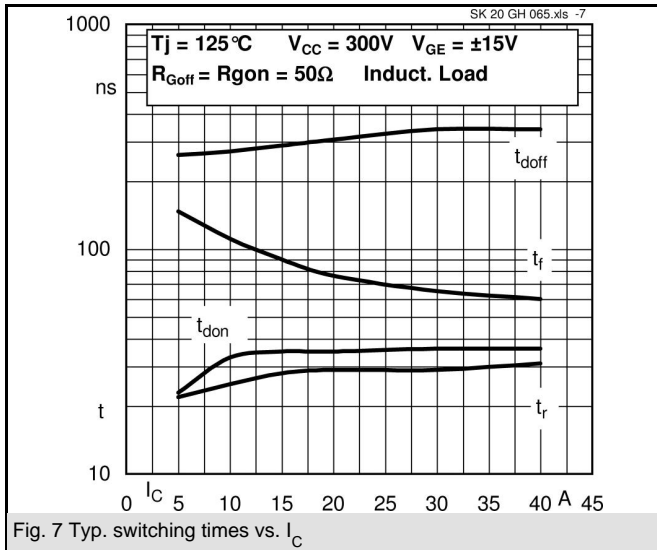
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Case T5 (Suggested hole diameter, in the PCB, for solder pins and plastic mounting pins: 2mm)

Case T 5   GH