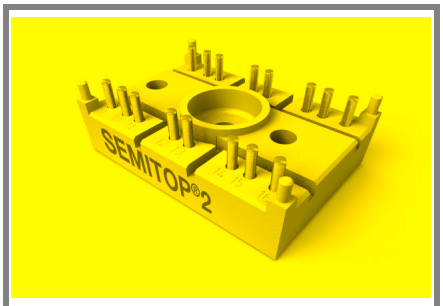


SEMITOP® 2

IGBT Module

SK20GD065

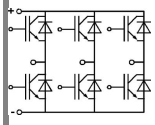
Preliminary Data

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*

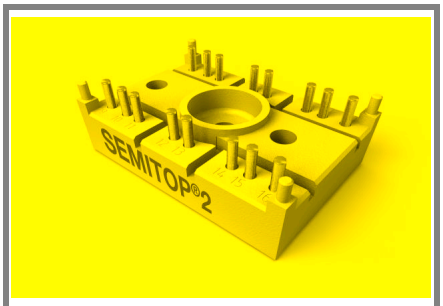
- Switching (not for linear use)
- Inverter
- Switched mode power supplies
- UPS



GD

Absolute Maximum Ratings			T_s = 25 °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	17	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; V_{CES} < 600 V	T_j = 125 °C	10	µs
Inverse Diode				
I_F	T_j = 125 °C	T_s = 25 °C	22	A
		T_s = 80 °C	15	A
I_{FRM}	I_{FRM}= 2 x 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 °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
		T_j = 125 °C				mA
I_{GES}	V_{CE} = 0 V, V_{GE} = 20 V	T_j = 25 °C			120	nA
		T_j = 125 °C				nA
V_{CE0}		T_j = 25 °C		1,2	1,3	V
		T_j = 125 °C		1,1	0,9	V
r_{CE}	V_{GE} = 15 V	T_j = 25°C		40		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}	V_{CE} = 25, V_{GE} = 0 V	f = 1 MHz		1,1		nF
C_{oes}				0,11		nF
C_{res}				0,063		nF
$t_{d(on)}$	R_{Gon} = 30 Ω	V_{CC} = 300V		36		ns
t_r		I_C= 20A		30		ns
E_{on}		T_j = 125 °C		0,7		mJ
$t_{d(off)}$	R_{Goff} = 30 Ω	V_{GE}=±15V		250		ns
t_f				60		ns
E_{off}				0,4		mJ
$R_{th(j-s)}$	per IGBT				1,7	K/W



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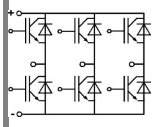


GD

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	1,9	V
		T_j = 125 °$C_{chiplev.}$		1,9	1,9	V
V_{F0}		T_j = 25 °C		1	1,1	V
		T_j = 125 °C		0,9	1	V
r_F		T_j = 25 °C		30	40	mΩ
		T_j = 125 °C		33	47	mΩ
I_{RRM}	I_F = 20 A	T_j = 125 °C		27		A
Q_{rr}	di/dt = -1350 A/µs			2,3		µC
E_{rr}	V_{CC}= 300V			0,4		mJ
$R_{th(j-s)D}$	per diode				2,3	K/W
M_s	to heat sink				2	Nm
w				21		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.

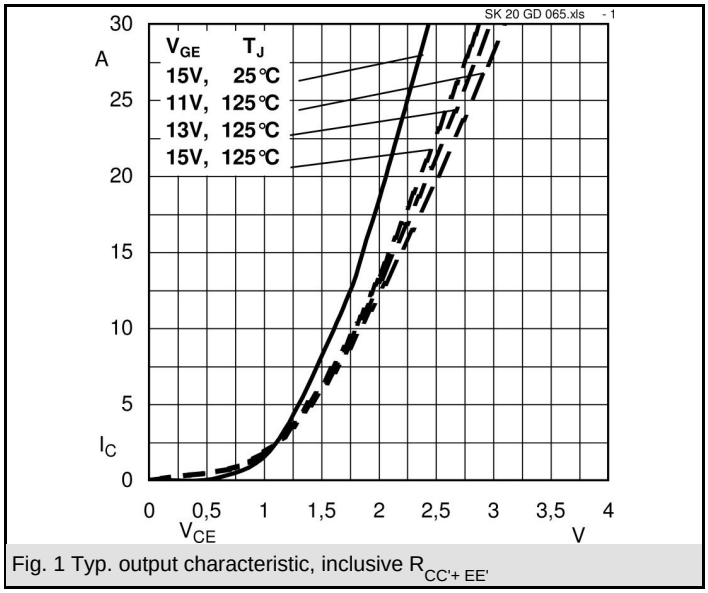


Fig. 1 Typ. output characteristic, inclusive $R_{CC'+EE'}$

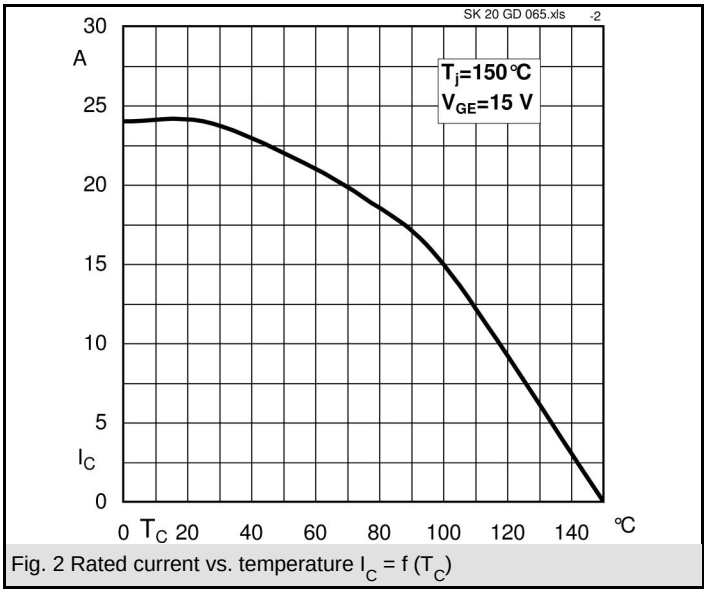


Fig. 2 Rated current vs. temperature $I_C = f(T_C)$

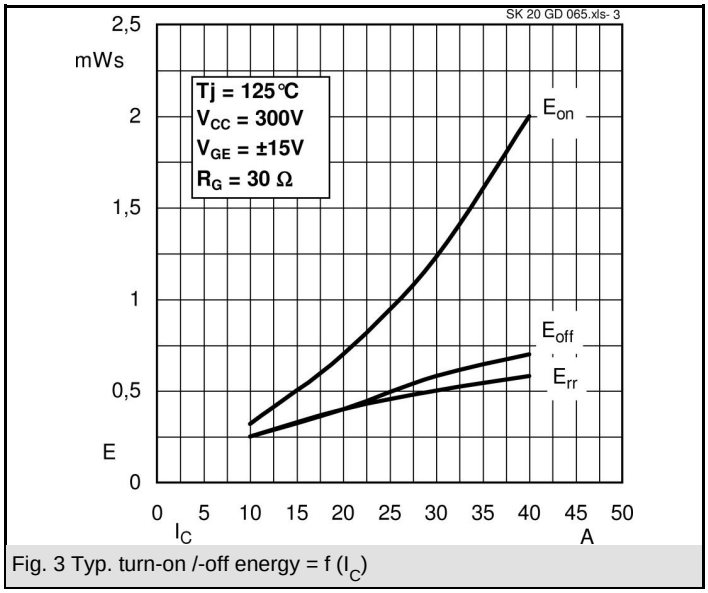


Fig. 3 Typ. turn-on /-off energy = f (I_C)

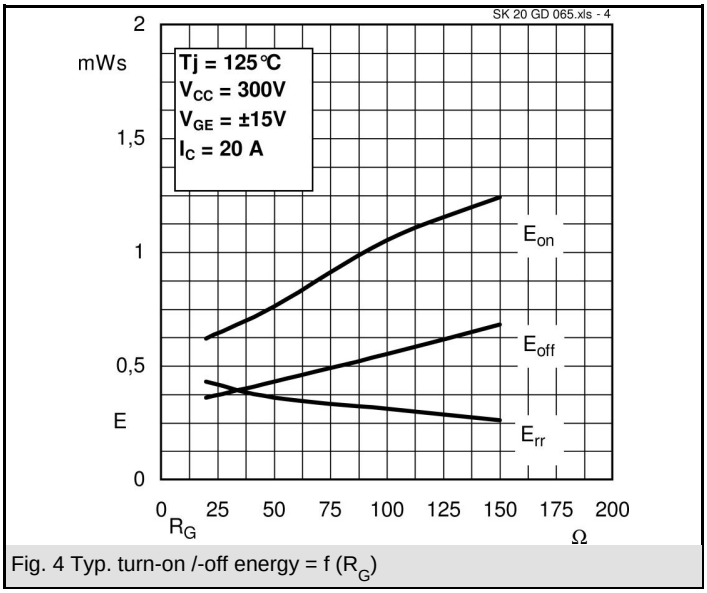


Fig. 4 Typ. turn-on /-off energy = f (R_G)

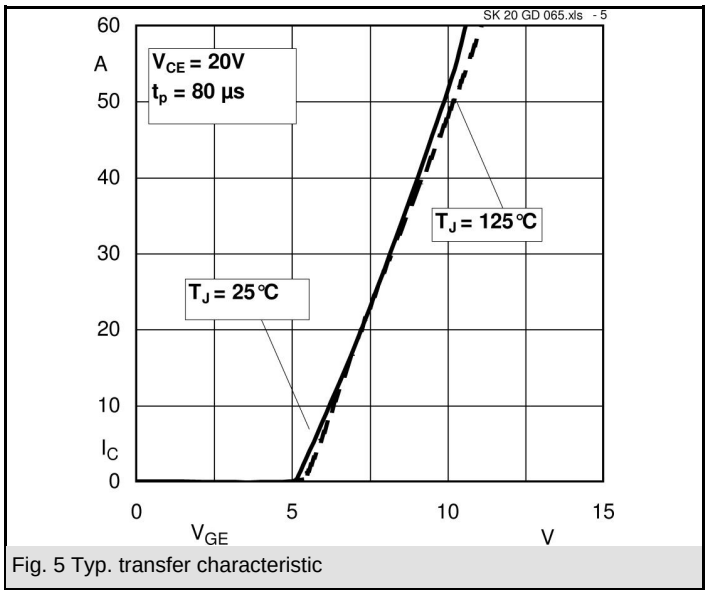


Fig. 5 Typ. transfer characteristic

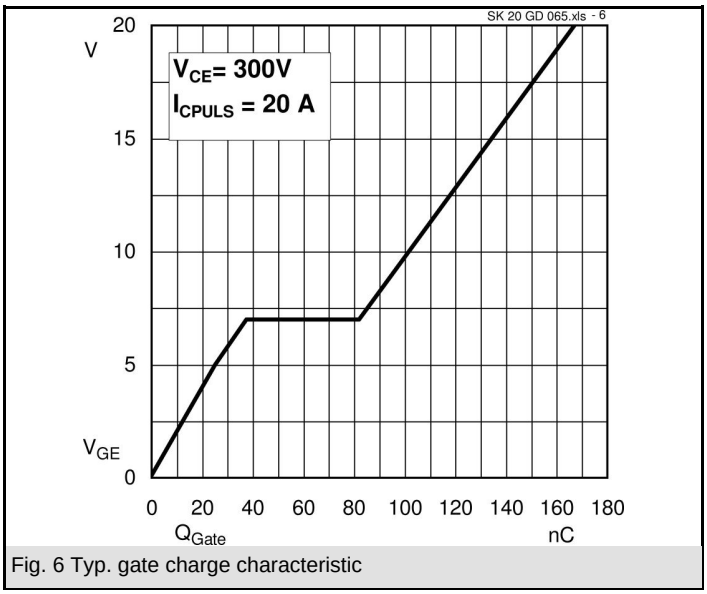


Fig. 6 Typ. gate charge characteristic

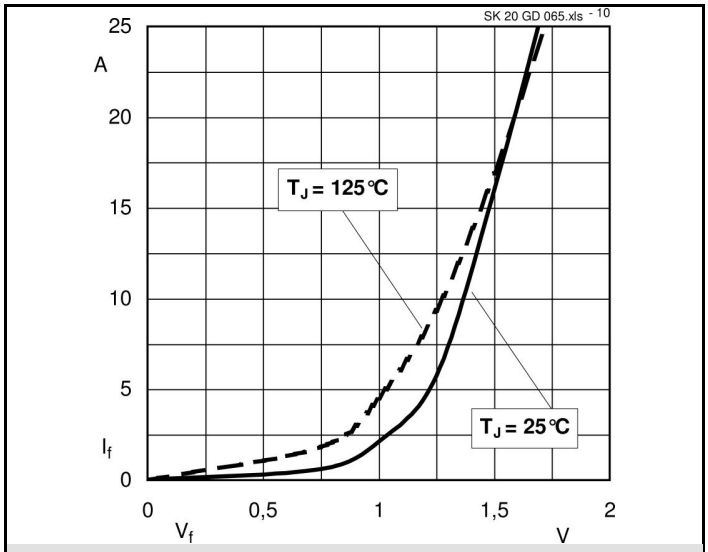
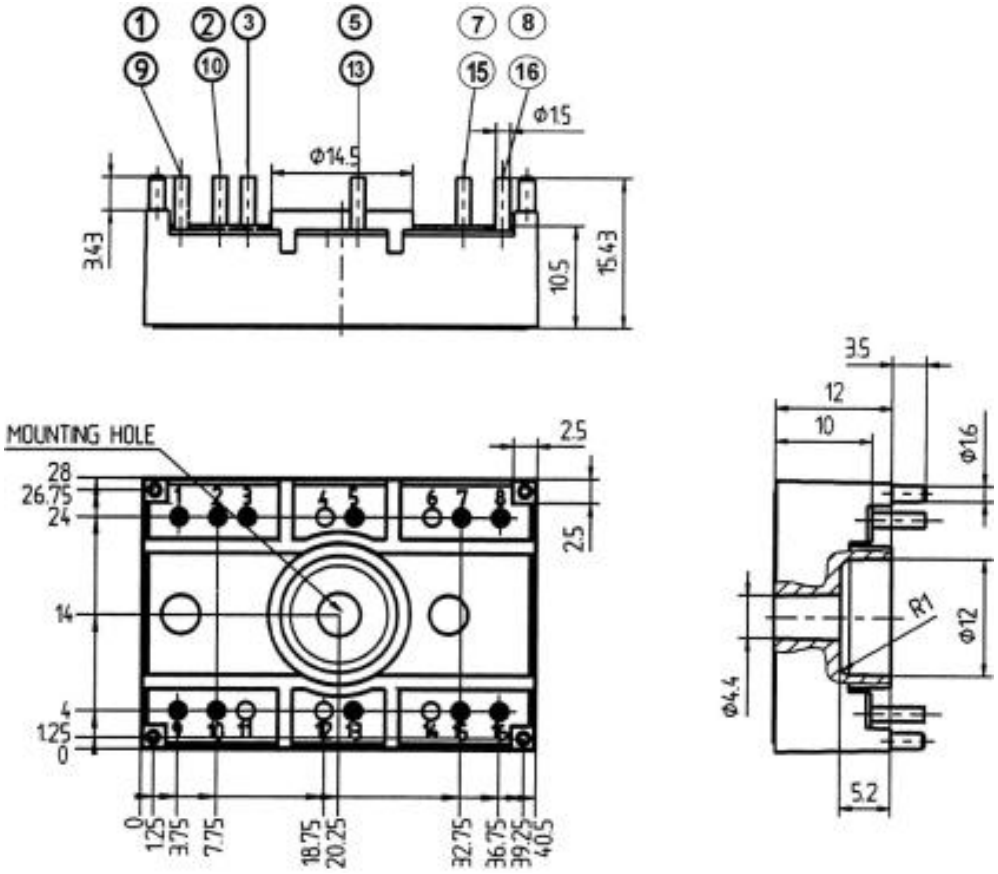
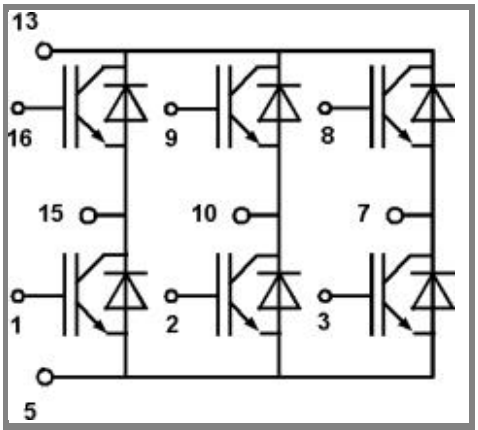


Fig. 10 CAL diode forward characteristic

UL recognized file no. E 63 532



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



Case T 47 GD

