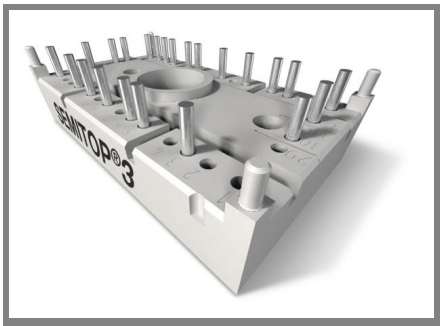
SK20GD066ET



SEMITOP® 3

IGBT Module

SK20GD066ET

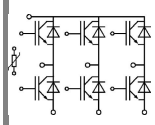
Target Data

Features

- Compact design
- One screw mounting
- Heat transfer and isolation through direct copper bonded aluminium oxide ceramic (DCB)
- Trench IGBT technology
- CAL technology FWD
- Integrated NTC temperature sensor

Typical Applications*

- Inverter up to 6,3 kVA
- Typ. motor power 4 kW



GD-ET

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 = 175 °C	T_s = 25 °C	30	A
		T_s = 70 °C	25	A
I_{CRM}	I_{CRM}= 2 x I_{Cnom}		40	A
V_{GES}			± 20	V
t_{psc}	V_{CC} = 360 V; $V_{GE} \leq$ 20 V; V_{CES} < 600 V	T_j = 150 °C	6	µs
Inverse Diode				
I_F	T_j = 175 °C	T_s = 25 °C	31	A
		T_s = 70 °C	24	A
I_{FRM}	I_{FRM}= 2 x I_{Fnom}		40	A
I_{FSM}	t_p = 10 ms; half sine wave	T_j = 150 °C	95	A
Module				
$I_{t(RMS)}$				A
T_{vj}			-40 ... +175	°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 = 0,29 mA		5	5,8	6,5	V
I_{CES}	V_{GE} = 0 V, V_{CE} = V_{CES}	T_j = 25 °C			0,0011	mA
		T_j = 125 °C				mA
I_{GES}	V_{CE} = 0 V, V_{GE} = 20 V	T_j = 25 °C			300	nA
		T_j = 125 °C				nA
V_{CE0}		T_j = 25 °C		0,9	1,1	V
		T_j = 150 °C		0,8	1	V
r_{CE}	V_{GE} = 15 V	T_j = 25°C		27,5	37,5	mΩ
		T_j = 150°C		42,5	52,5	mΩ
$V_{CE(sat)}$	I_{Cnom} = 20 A, V_{GE} = 15 V	T_j = 25°C$_{chiplev.}$		1,45	1,85	V
		T_j = 125°C$_{chiplev.}$		1,65	2,05	V
C_{ies}				1,1		nF
C_{oes}	V_{CE} = 25, V_{GE} = 0 V	f = 1 MHz		0,071		nF
C_{res}				0,032		nF
Q_G	V_{GE}= -7V...+15V			225		nC
$t_{d(on)}$				16		ns
t_r	R_{Gon} = 15 Ω	V_{CC} = 300V		15		ns
E_{on}	di/dt = 3300 A/µs	I_C= 20A		0,34		mJ
$t_{d(off)}$	R_{Goff} = 15 Ω	T_j = 150 °C		166		ns
t_f	di/dt = 3300 A/µs	V_{GE}=±15V		40		ns
E_{off}				0,63		mJ
$R_{th(j-s)}$	per IGBT			1,95		K/W

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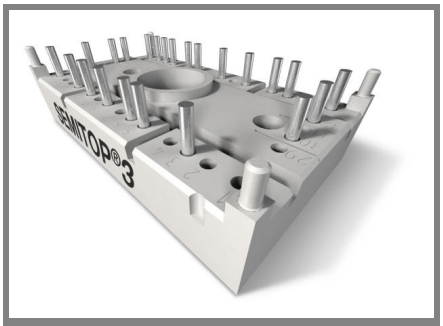

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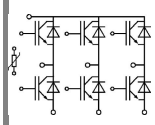

GD-ET

Characteristics						
Symbol	**Conditions**		**min.**	**typ.**	**max.**	**Units**
Inverse Diode						
$V_F = V_{EC}$	I_{Fnom} = 20 A; V_{GE} = 0 V	T_j = 25 °$C_{chiplev.}$		1,45	1,7	V
		T_j = 150 °$C_{chiplev.}$		1,45	1,7	V
V_{F0}		T_j = 25 °C		1	1,1	V
		T_j = 150 °C		0,9	1	V
r_F		T_j = 25 °C		22,5	30	mΩ
		T_j = 150 °C		27,5	35	mΩ
I_{RRM}	I_F = 30 A	T_j = 150 °C		32		A
Q_{rr}	di/dt = 3300 A/µs			2		µC
E_{rr}	V_{CC}= 300V			0,2		mJ
$R_{th(j-s)D}$	per diode			2,46		K/W
M_s	to heat sink		2,25		2,5	Nm
w				30		g
Temperature sensor						
R_{100}	T_s =100°C (R_{25}=5kΩ)			493±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.

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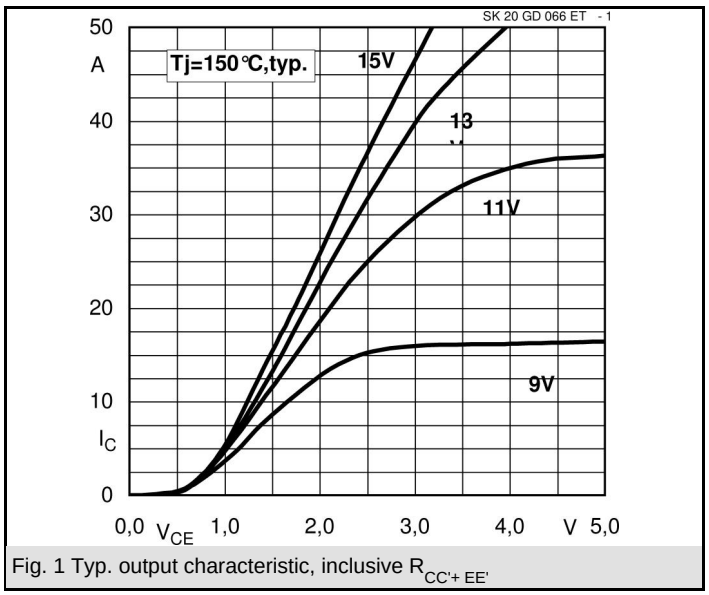

Fig. 1 Typ. output characteristic, inclusive $R_{CC'+EE'}$

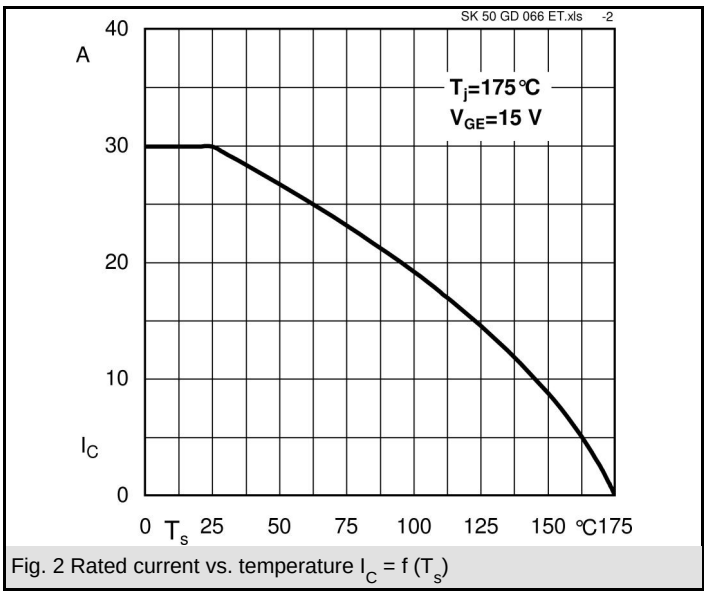

Fig. 2 Rated current vs. temperature $I_C = f(T_s)$

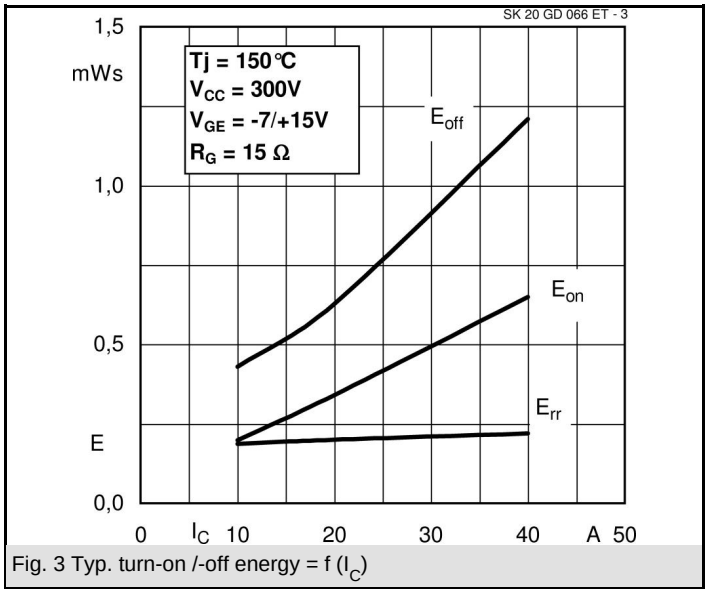

Fig. 3 Typ. turn-on /-off energy = f (I_C)

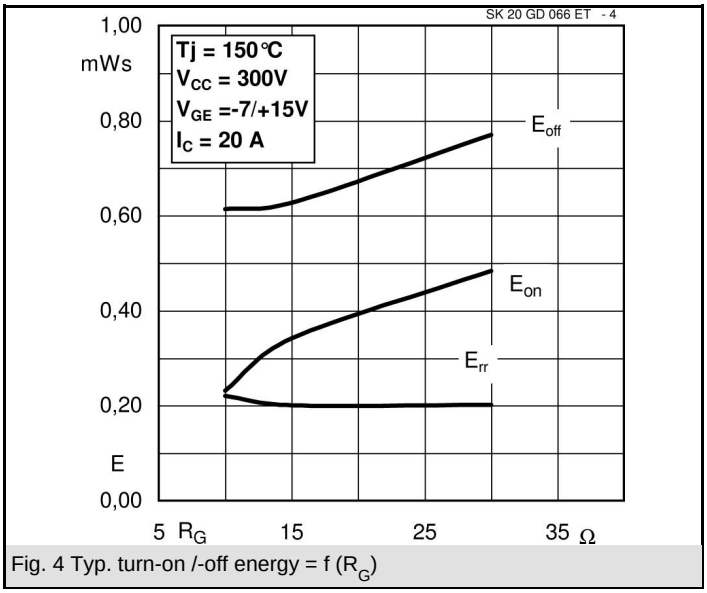

Fig. 4 Typ. turn-on /-off energy = f (R_G)

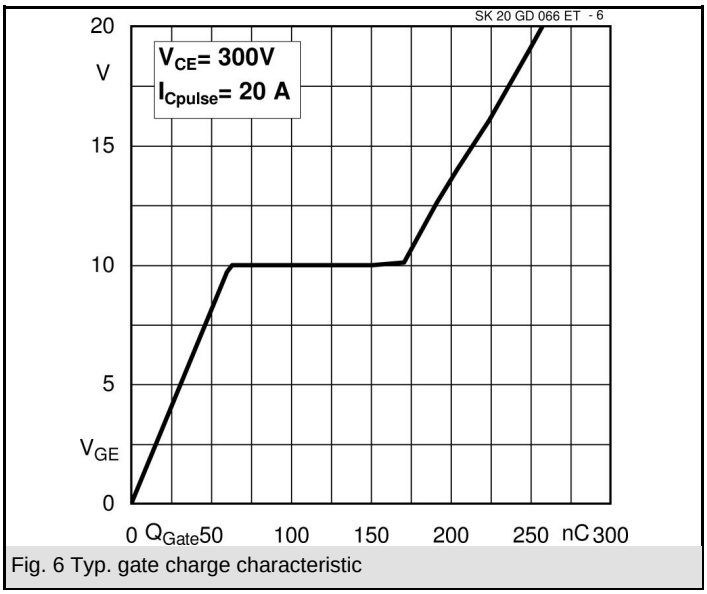

Fig. 6 Typ. gate charge characteristic

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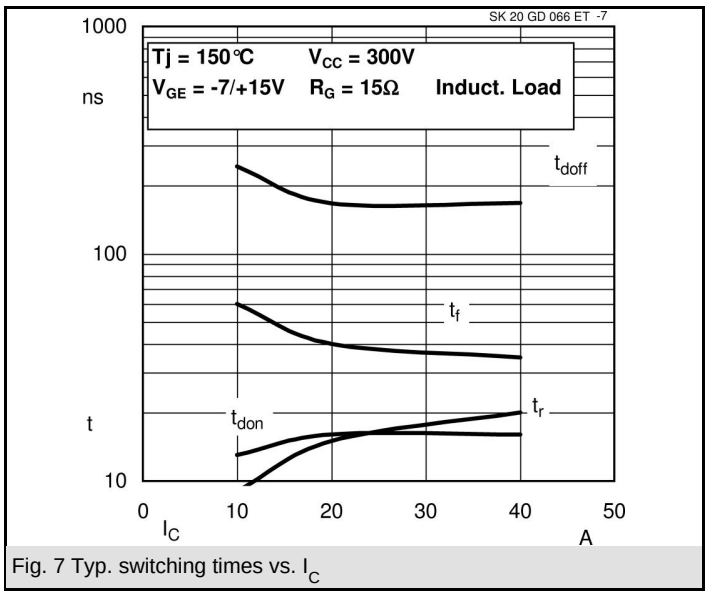

Fig. 7 Typ. switching times vs. I_C

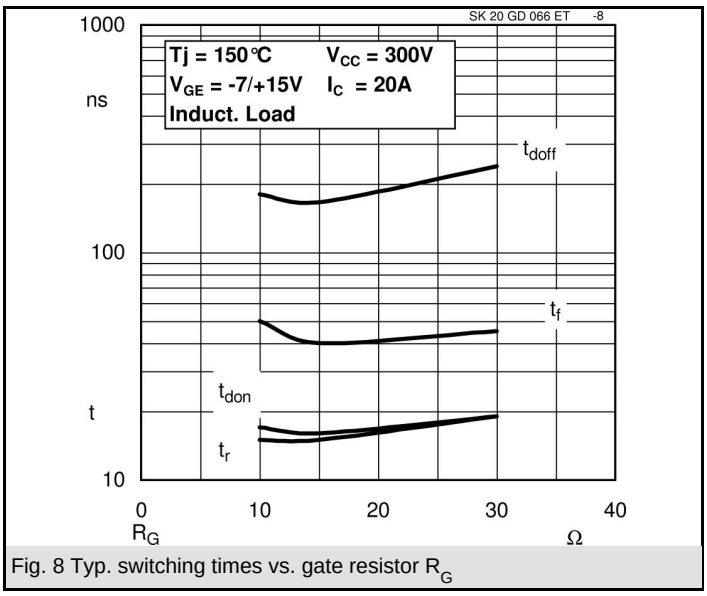

Fig. 8 Typ. switching times vs. gate resistor R_G

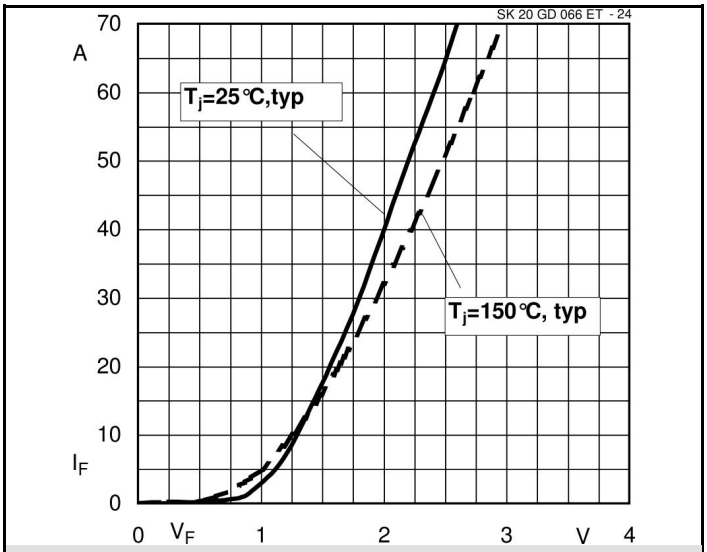

Fig. 10 CAL diode forward characteristic

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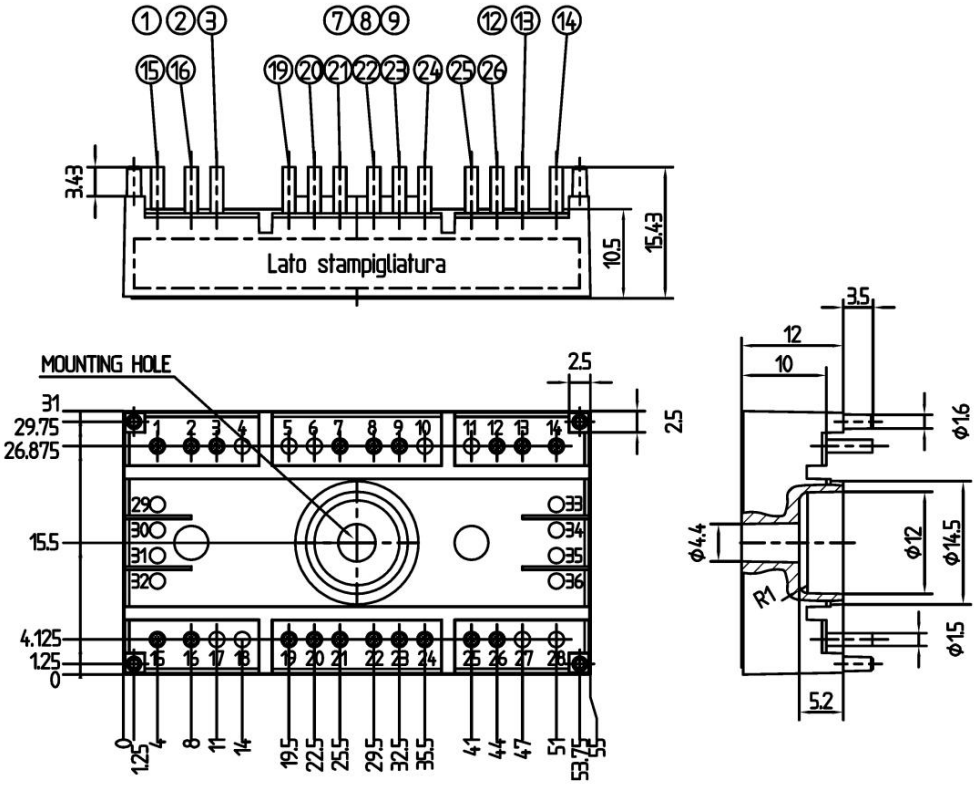
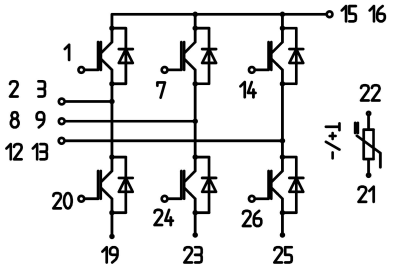


Case T52 (Suggested hole diameter, in the PCB, for solder pins and plastic mounting pins: 2mm)



Case T 52 GD-ET

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