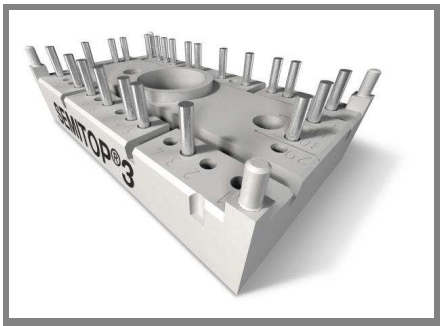
SK50GD066ET



SEMITOP® 3

IGBT Module

SK50GD066ET

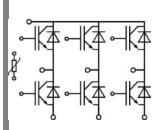
Target Data

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 12,5 kVA
- Typ. motor power 5,5 kW



GD-ET

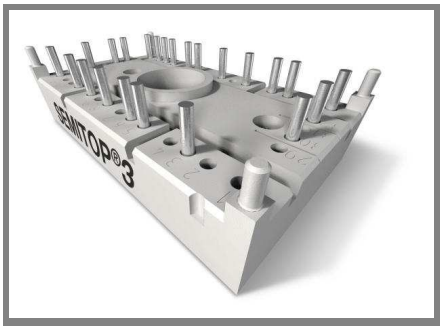
Absolute Maximum Ratings			T_s = 25 °C, unless otherwise specified	
Symbol	**Conditions**		**Values**	**Units**
IGBT				
V_{CES}	T_j = 25 °C		600	V
I_C	T_j = 175 °C	T_s = 25 °C	60	A
		T_s = 70 °C	50	A
I_{CRM}	I_{CRM}= 2 x I_{Cnom}		100	A
V_{GES}			± 20	V
t_{psc}	V_{CC} = 360 V; $V_{GE} \leq$ 20 V; V_{CES} < 600 V	T_j = 150 °C	6	µs
Inverse Diode				
I_F	T_j = 175 °C	T_s = 25 °C	56	A
		T_s = 70 °C	44	A
I_{FRM}	I_{FRM}= 2 x I_{Fnom}		60	A
I_{FSM}	t_p = 10 ms; half sine wave	T_j = 150 °C	320	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 = 0,8 mA		5	5,8	6,5	V
I_{CES}	V_{GE} = 0 V, V_{CE} = V_{CES}	T_j = 25 °C				mA
		T_j = 150 °C				mA
I_{GES}	V_{CE} = 0 V, V_{GE} = 20 V	T_j = 25 °C			600	nA
		T_j = 150 °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		11	15	mΩ
		T_j = 150°C		17	21	mΩ
$V_{CE(sat)}$	I_{Cnom} = 50 A, V_{GE} = 15 V	T_j = 25°C$_{chiplev.}$		1,45	1,85	V
		T_j = 150°C$_{chiplev.}$		1,65	2,05	V
C_{ies}	V_{CE} = 25, V_{GE} = 0 V	f = 1 MHz		3,1		nF
C_{oes}				0,2		nF
C_{res}				0,093		nF
Q_G	V_{GE}= -7V...+15V			250		nC
$t_{d(on)}$	R_{Gon} = 16 Ω di/dt = 2438 A/µs	V_{CC} = 300V I_C= 50A T_j = 150 °C V_{GE}= -7/+15V		28		ns
t_r				32		ns
E_{on}				2,2		mJ
$t_{d(off)}$	R_{Goff} = 16 Ω di/dt = 2438 A/µs			301		ns
t_f				45		ns
E_{off}				1,73		mJ
$R_{th(j-s)}$	per IGBT			1,11		K/W

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IGBT Module

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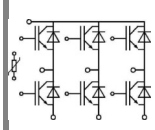
Target Data

Features

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Typical Applications*

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- Typ. motor power 5,5 kW



GD-ET

Characteristics

Symbol	Conditions		min.	typ.	max.	Units
Inverse Diode						
$V_F = V_{EC}$	I_{Fnom} = 50 A; V_{GE} = 0 V	T_j = 25 °$C_{chiplev.}$		1,5		V
		T_j = 150 °$C_{chiplev.}$		1,5		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		10	12	mΩ
		T_j = 150 °C		12	14	mΩ
I_{RRM}	I_F = 50 A	T_j = 150 °C		44		A
Q_{rr}	di/dt = 2438 A/µs			4,8		µC
E_{rr}	V_{CC}= 300V			0,72		mJ
$R_{th(j-s)D}$	per diode			1,7		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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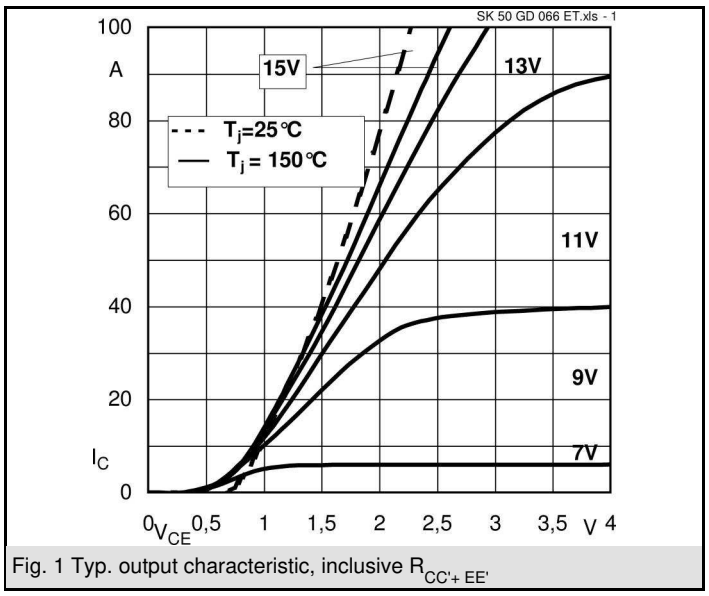


Fig. 1 Typ. output characteristic, inclusive $R_{CC'+EE'}$

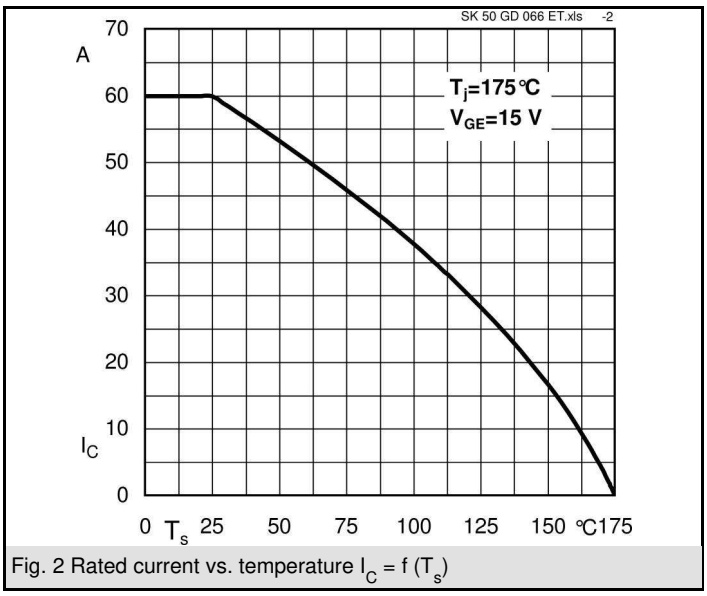


Fig. 2 Rated current vs. temperature $I_C = f(T_s)$

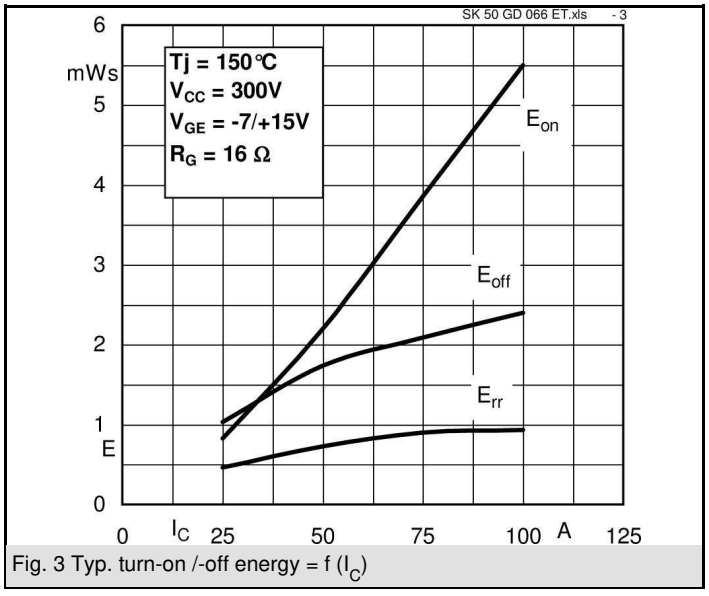


Fig. 3 Typ. turn-on /-off energy = f (I_C)

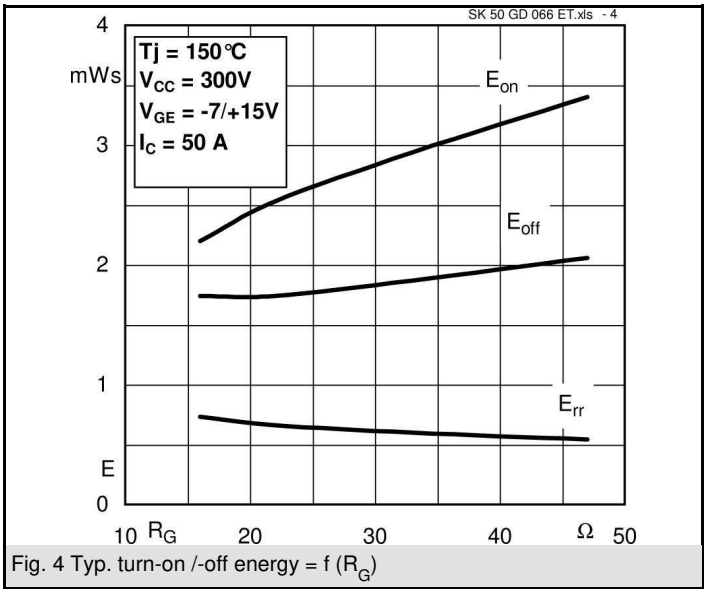


Fig. 4 Typ. turn-on /-off energy = f (R_G)

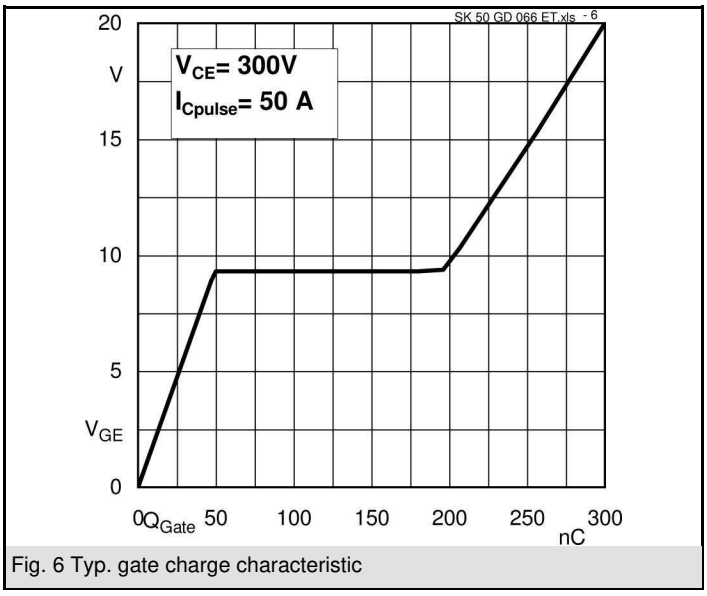


Fig. 6 Typ. gate charge characteristic

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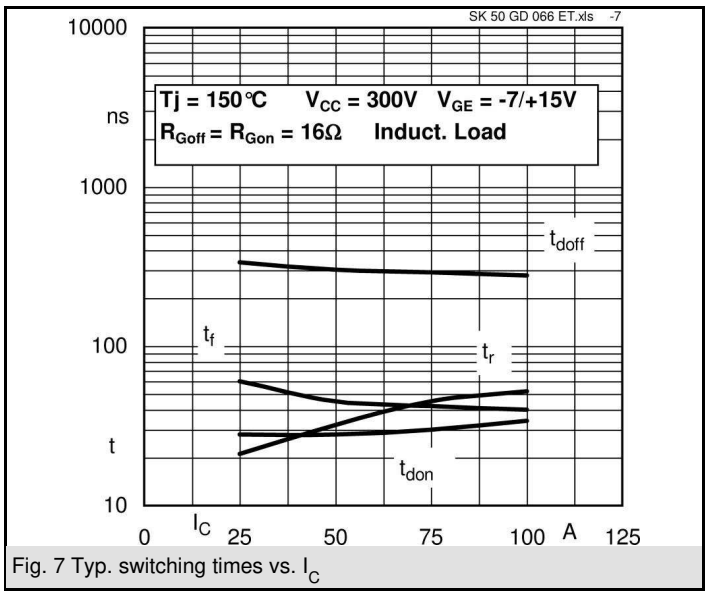


Fig. 7 Typ. switching times vs. I_C

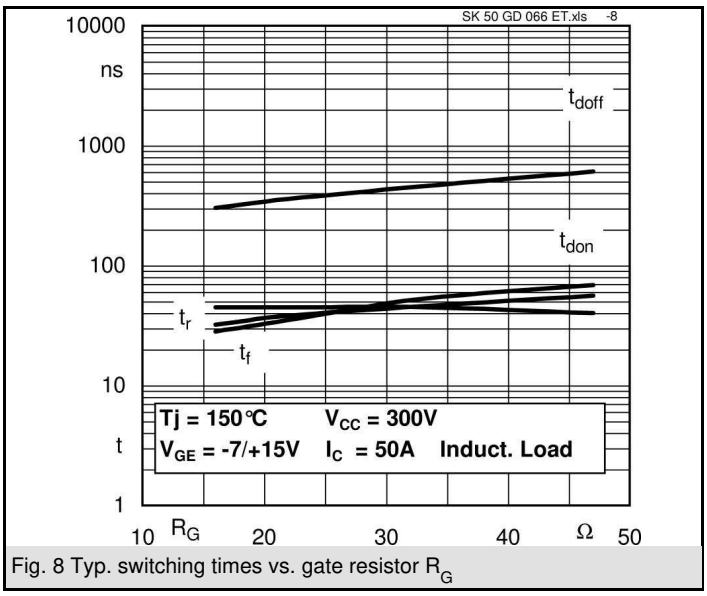


Fig. 8 Typ. switching times vs. gate resistor R_G

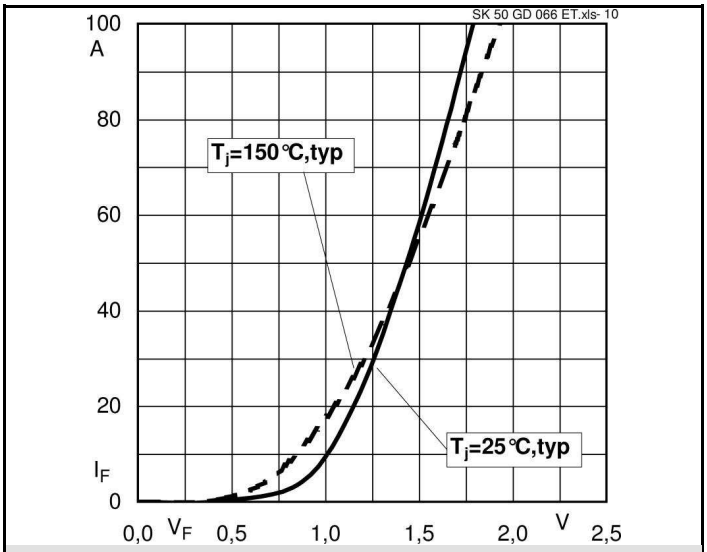
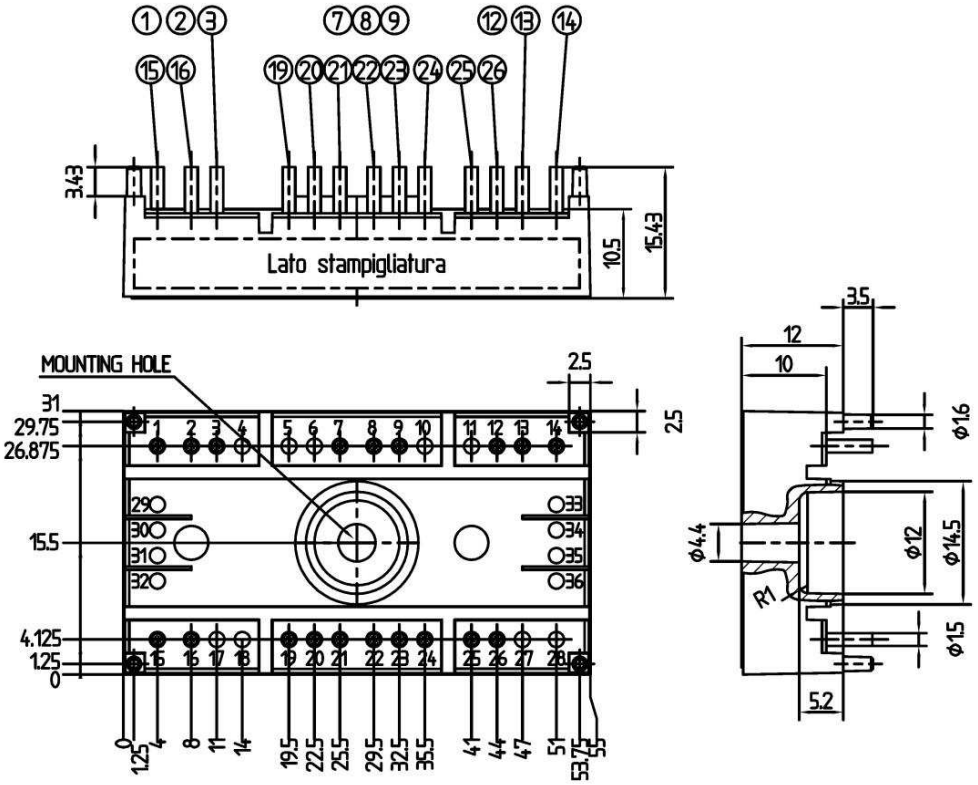


Fig. 10 CAL diode forward characteristic

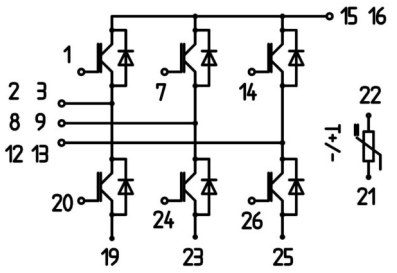
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Case T52 (Suggested hole diameter, in the PCB, for solder pins and plastic mounting pins: 2mm)



Case T 52 GD-ET

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