

SEMITOP® 3

IGBT Module

SK150GB066T

Target Data

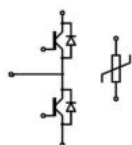
Features

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

Typical Applications*

Remarks

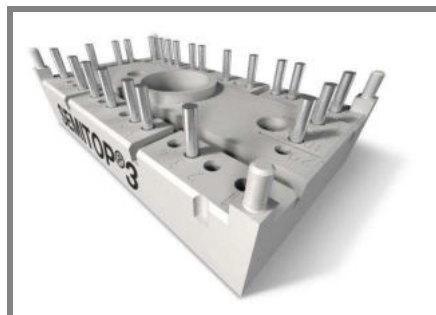
- $V_{isol} = 3000V$ AC, 50Hz, 1s



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Absolute Maximum Ratings			$T_s = 25\text{ }^{\circ}\text{C}$, unless otherwise specified	
Symbol	Conditions		Values	Units
IGBT				
V_{CES}	$T_j = 25\text{ }^{\circ}\text{C}$		600	V
I_C	$T_j = 175\text{ }^{\circ}\text{C}$	$T_s = 25\text{ }^{\circ}\text{C}$	124	A
		$T_s = 70\text{ }^{\circ}\text{C}$	96	A
I_{CRM}	$I_{CRM} = 2 \times I_{Cnom}$		300	A
V_{GES}			± 20	V
t_{psc}	$V_{CC} = 360\text{ V}$; $V_{GE} \leq 20\text{ V}$; $T_j = 150\text{ }^{\circ}\text{C}$ $V_{CES} < 600\text{ V}$		6	μs
Inverse Diode				
I_F	$T_j = 175\text{ }^{\circ}\text{C}$	$T_s = 25\text{ }^{\circ}\text{C}$	135	A
		$T_s = 70\text{ }^{\circ}\text{C}$	95	A
I_{FRM}	$I_{FRM} = 2 \times I_{Fnom}$		300	A
Module				
$I_{t(RMS)}$				A
T_{vj}			-40 ... +175	$^{\circ}\text{C}$
T_{stg}			-40 ... +125	$^{\circ}\text{C}$
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 = 2,4 mA		5	5,8	6,5	V	
I _{CES}	V _{GE} = 0 V, V _{CE} = V _{CES}	T _J = 25 °C	0,0076			mA	
		T _J = 125 °C				mA	
I _{GES}	V _{CE} = 0 V, V _{GE} = 20 V	T _J = 25 °C	1200			nA	
		T _J = 125 °C				nA	
V _{CE0}		T _J = 25 °C	0,8			V	
		T _J = 150 °C				0,7	1
r _{CE}	V _{GE} = 15 V	T _J = 25°C	4			5	mΩ
		T _J = 150°C				6,35	7
V _{CE(sat)}	I _{Cnom} = 150 A, V _{GE} = 15 V	T _J = 25°C _{chiplev.}	1,45			1,85	V
		T _J = 150°C _{chiplev.}				1,65	2,05
C _{ies}	V _{CE} = 25, V _{GE} = 0 V	f = 1 MHz	9,4				nF
C _{oes}						0,6	nF
C _{res}						0,29	nF
Q _G	V _{GE} = -7V...+15V		1400				nC
t _{d(on)}	R _{Gon} = 8 Ω di/dt = 2250 A/μs	V _{CC} = 300V I _C = 150A T _J = 150 °C V _{GE} = -7/+15 V	95				ns
t _r			50				ns
E _{on}			6,25				mJ
t _{d(off)}			541				ns
t _f	R _{Goff} = 8 Ω di/dt = 2250 A/μs		70				ns
E _{off}			5,7				mJ
R _{th(j-s)}	per IGBT		0,65				K/W



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Typical Applications*

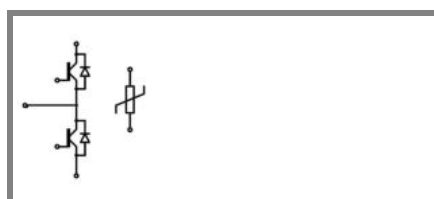
Remarks

- $V_{isol} = 3000V$ AC, 50Hz, 1s

Characteristics		min.	typ.	max.	Units
Symbol	Conditions				
Inverse Diode					
$V_F = V_{EC}$	$I_{Fnom} = 150 A$; $V_{GE} = 0 V$				
	$T_j = 25 ^\circ C_{chiplev.}$		1,35		V
	$T_j = 150 ^\circ C_{chiplev.}$		1,31		V
V_{F0}					V
	$T_j = 25 ^\circ C$				V
	$T_j = 150 ^\circ C$		0,85		V
r_F					mΩ
	$T_j = 25 ^\circ C$				mΩ
	$T_j = 150 ^\circ C$		3,9		mΩ
I_{RRM}	$I_F = 150 A$		100		A
Q_{rr}	$di/dt = 2250 A/\mu s$		11		μC
E_{rr}	$V_{CC} = 300V$		1,7		mJ
$R_{th(j-s)D}$	per diode		0,73		K/W
M_s	to heat sink	2,5		2,75	Nm
w			60		g
Temperature sensor					
R_{100}	$T_s = 100^\circ C$ ($R_{25} = 5k\Omega$)		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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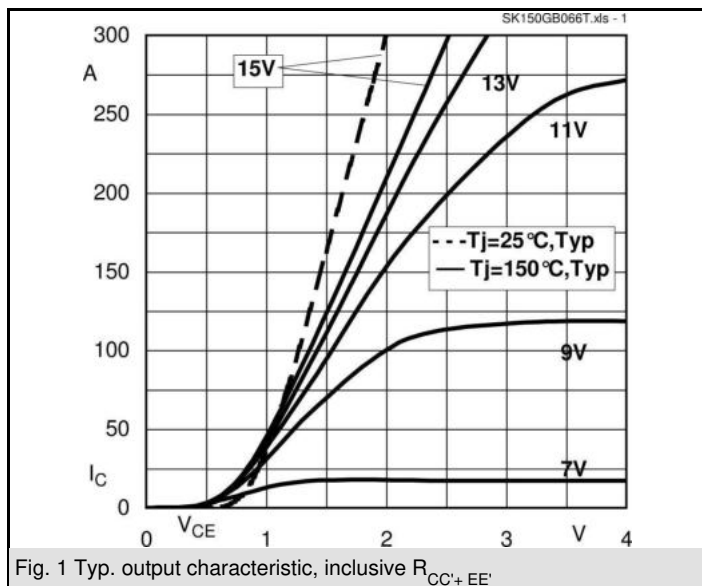


Fig. 1 Typ. output characteristic, inclusive $R_{CC'+EE'}$

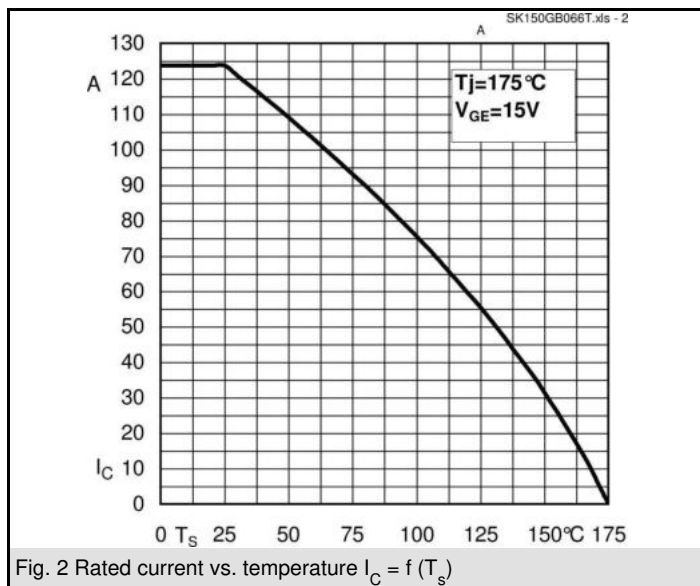


Fig. 2 Rated current vs. temperature $I_C = f(T_s)$

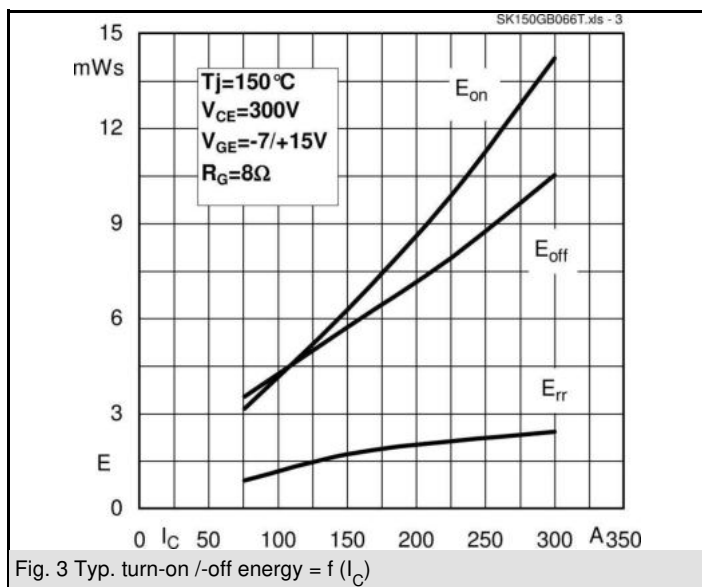


Fig. 3 Typ. turn-on /-off energy = $f(I_C)$

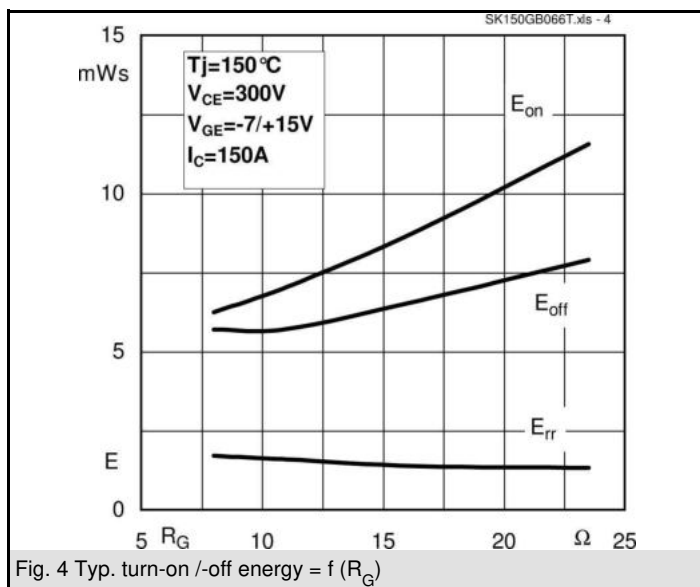


Fig. 4 Typ. turn-on /-off energy = $f(R_G)$

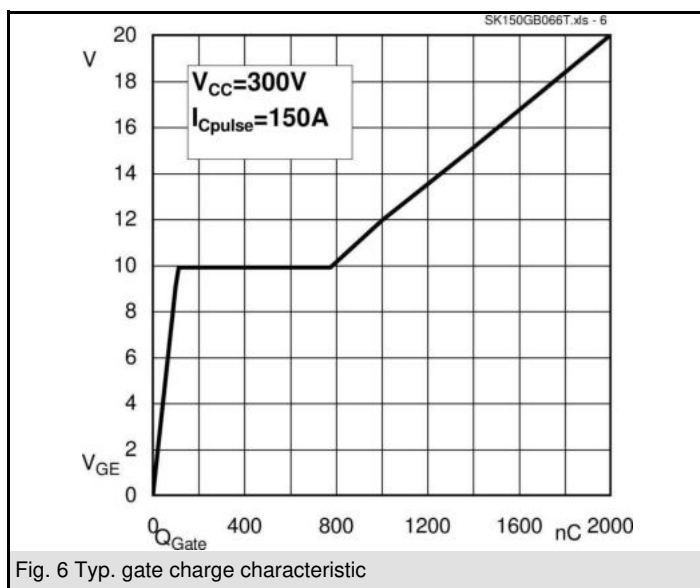
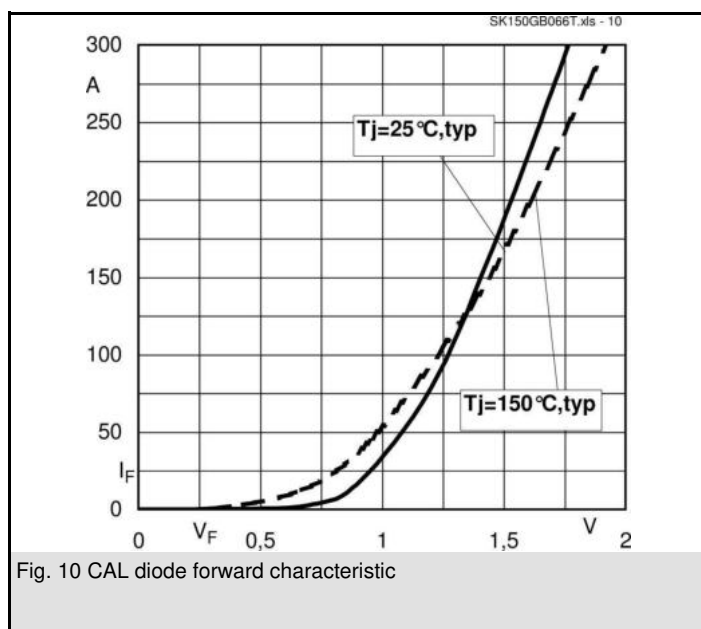
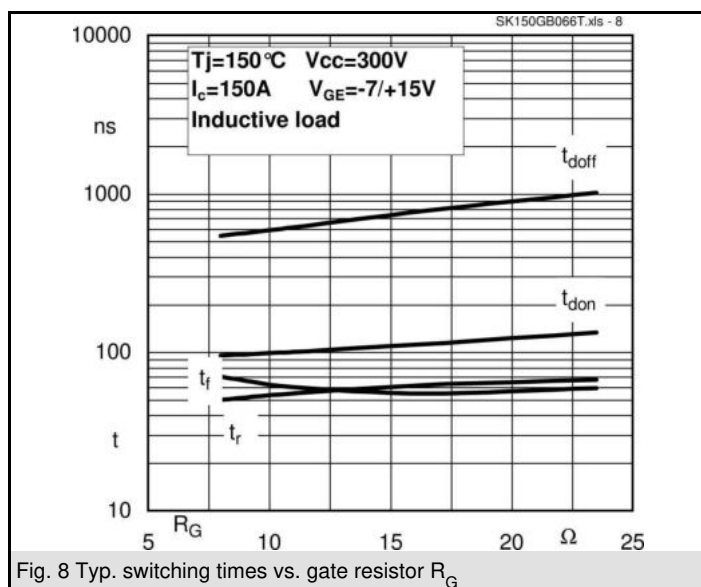
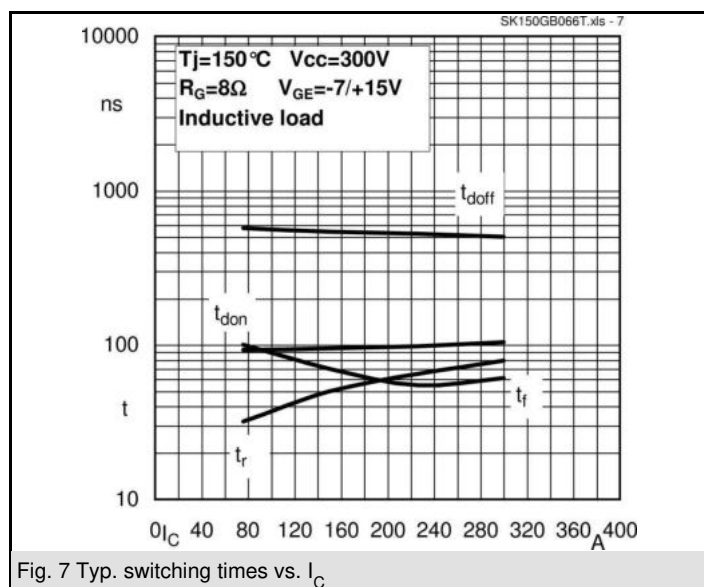


Fig. 6 Typ. gate charge characteristic



file no. E 63 532

