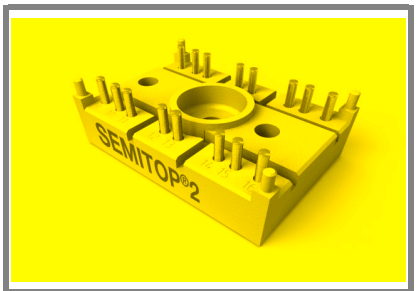
SK50GB065



SEMITOP® 2

IGBT Module

SK50GB065

Preliminary Data

Features

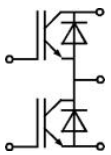
- Compact design
- One screw mounting
- Heat transfer and isolation through direct copper bonded aluminium oxide ceramic (DCB)
- N-channel homogeneous silicon structure (NPT-Non-Punch-Through IGBT)
- Low tail current with low temperature dependence
- Low treshold voltage

Typical Applications*

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

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	54	A
		T_s = 80 °C	40	A
I_{CRM}	I_{CRM}= 2 x I_{Cnom}		60	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 = 150 °C	T_s = 25 °C	64	A
		T_s = 80 °C	48	A
I_{FRM}	I_{FRM}= 2 x I_{Fnom}			A
I_{FSM}	t_p = 10 ms; half sine wave	T_j = 150 °C	200	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 = 1,4 mA		3	4	5	V
I_{CES}	V_{GE} = 0 V, V_{CE} = V_{CES}	T_j = 25 °C			0,0044	mA
I_{GES}	V_{CE} = 0 V, V_{GE} = 20 V	T_j = 25 °C			240	nA
V_{CE0}		T_j = 25 °C		1,1		V
		T_j = 125 °C		1,1		V
r_{CE}	V_{GE} = 15 V	T_j = 25°C		15		mΩ
		T_j = 125°C		19		mΩ
$V_{CE(sat)}$	I_{Cnom} = 60 A, V_{GE} = 15 V	T_j = 25°C$_{chiplev.}$		2	2,5	V
		T_j = 125°C$_{chiplev.}$		2,2		V
C_{ies}	V_{CE} = 25, V_{GE} = 0 V	f = 1 MHz		3,2		nF
C_{oes}				0,3		nF
C_{res}				0,18		nF
$t_{d(on)}$	R_{Gon} = 16 Ω	V_{CC} = 300V I_C= 40A T_j = 125 °C V_{GE}=±15V		60	80	ns
t_r				30	40	ns
E_{on}				1,1	1,4	mJ
$t_{d(off)}$	R_{Goff} = 16 Ω			220	280	ns
t_f				20	26	ns
E_{off}				0,7	0,9	mJ
$R_{th(j-s)}$	per IGBT				0,85	K/W



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IGBT Module

SK50GB065

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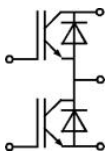

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Characteristics

Symbol	Conditions		min.	typ.	max.	Units
Inverse Diode						
$V_F = V_{EC}$	I_{Fnom} = 50 A; V_{GE} = 0 V	T_j = 25 °C$_{chiplev.}$		1,45	1,7	V
		T_j = 150 °C$_{chiplev.}$		1,4	1,75	V
V_{F0}		T_j = 25 °C				V
		T_j = 125 °C		0,85	0,9	V
r_F		T_j = 25 °C				mΩ
		T_j = 125 °C		11	16	mΩ
I_{RRM}	I_F = 50 A	T_j = 125 °C		40		A
Q_{rr}	di/dt = -1000 A/µs			3,6		µC
E_{rr}	V_{CC}= 300V			0,55		mJ
$R_{th(j-s)D}$	per diode				1,1	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.

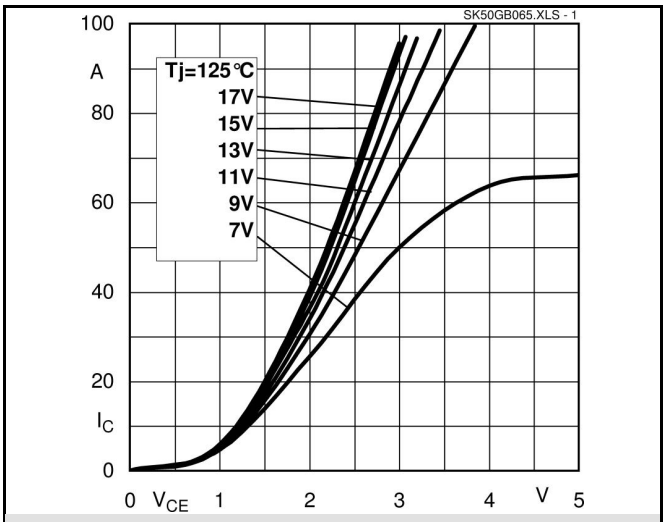


Fig. 1 Typ. output characteristic, inclusive $R_{CC'+EE'}$

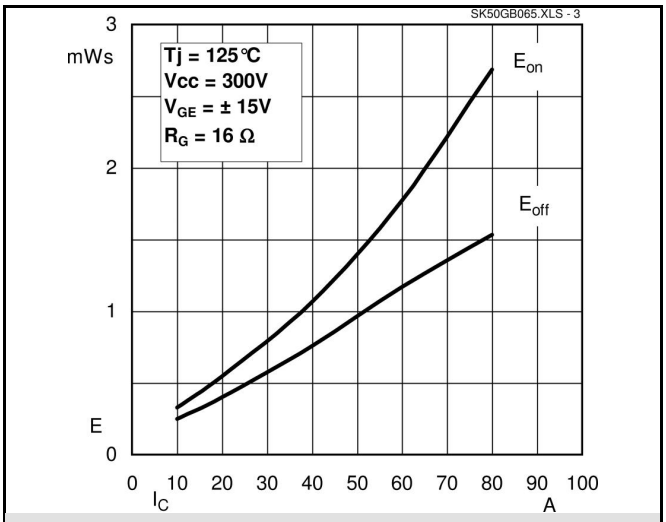


Fig. 3 Typ. turn-on /-off energy = f (I_C)

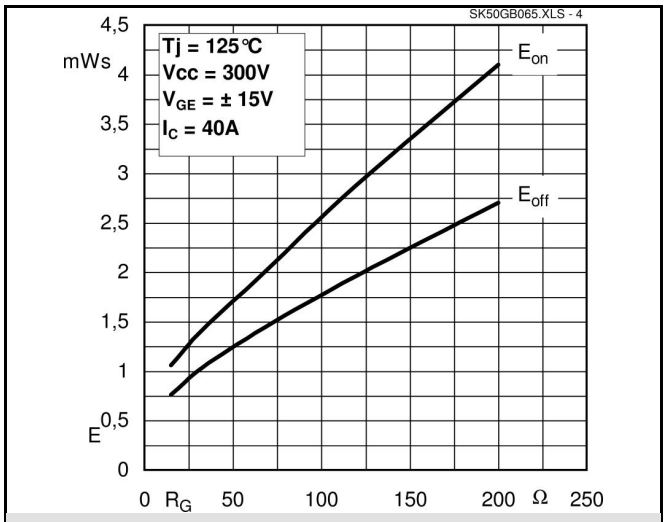


Fig. 4 Typ. turn-on /-off energy = f (R_G)

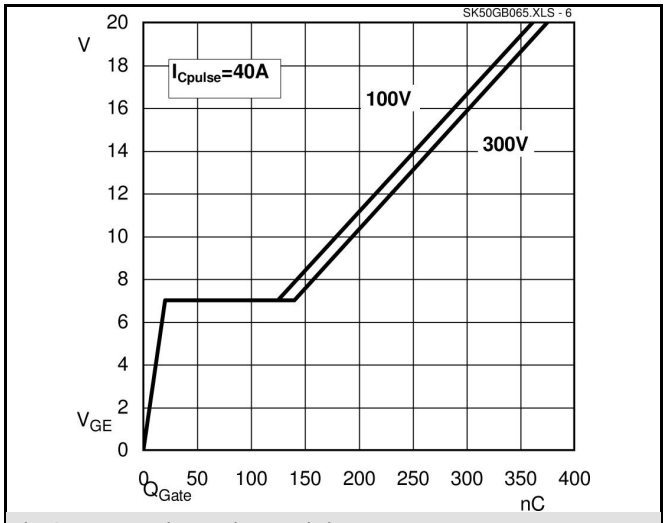


Fig. 6 Typ. gate charge characteristic

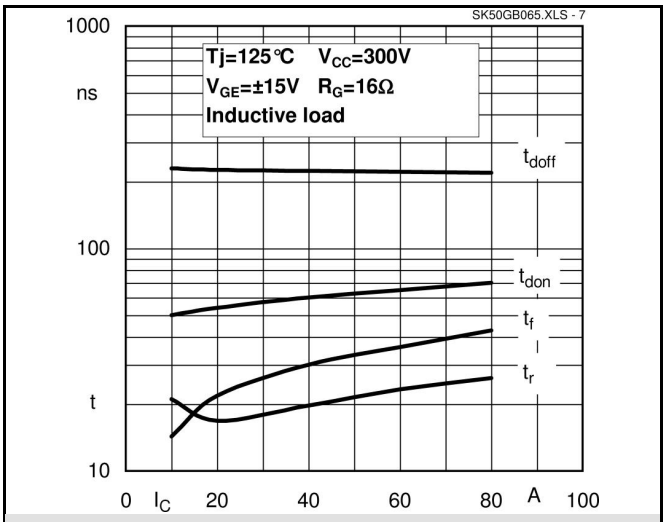


Fig. 7 Typ. switching times vs. I_C

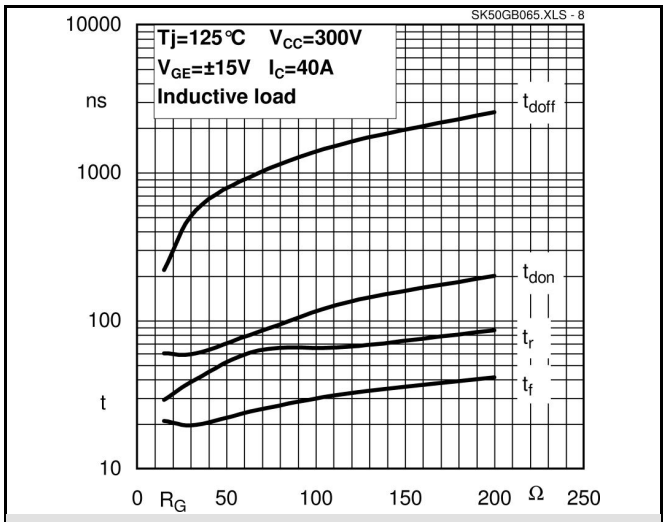


Fig. 8 Typ. switching times vs. gate resistor R_G

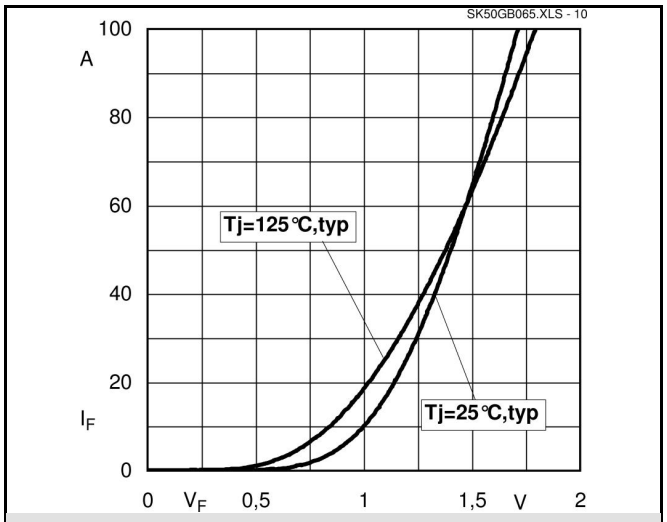
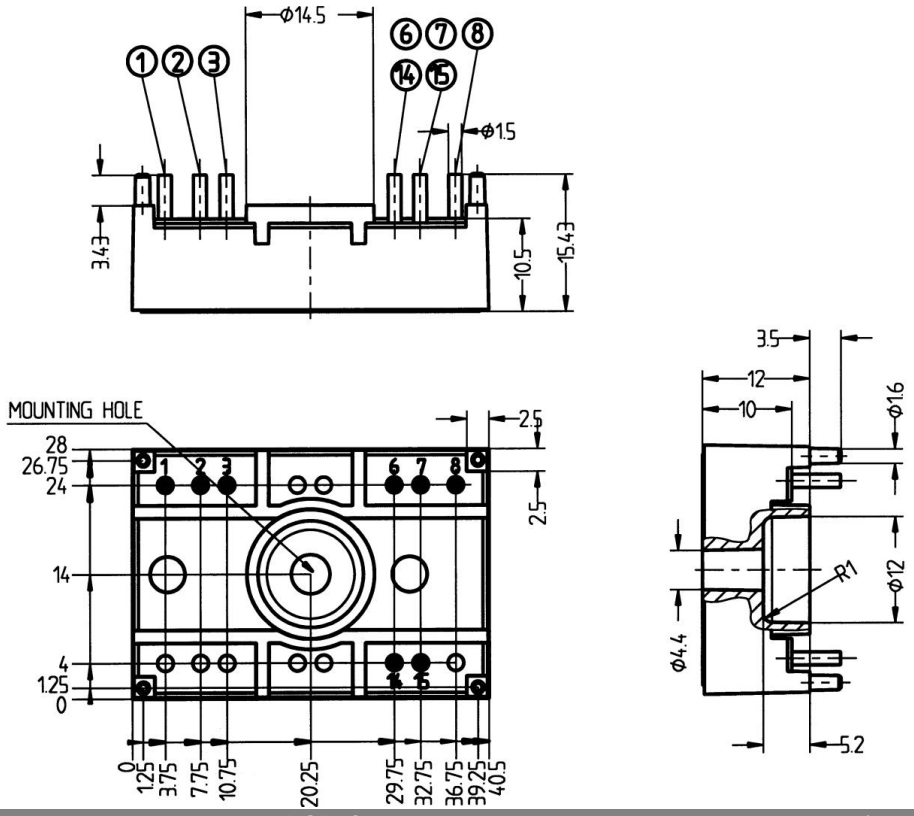
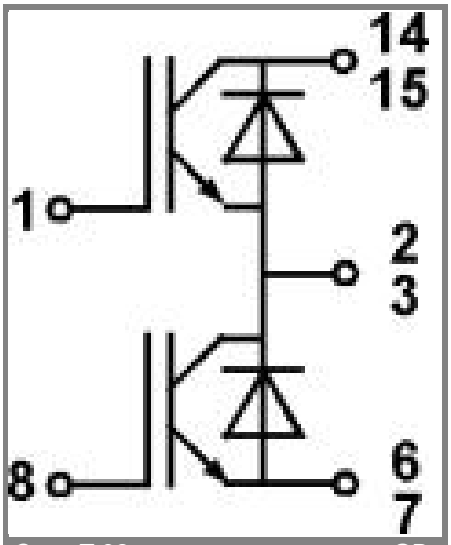


Fig. 10 CAL diode forward characteristic

UL recognized file no. E 63 532



Case T32 (Suggested hole diameter, in the PCB, for solder pins and plastic mounting pins: 2mm)



Case T 32 GB

