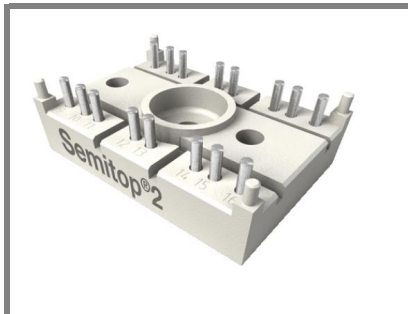


# SK50GB065



**SEMITOR® 2**

## IGBT Module

**SK50GB065**

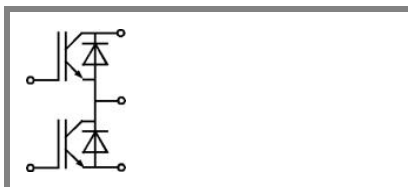
Preliminary Data

### 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 threshold voltage

### Typical Applications

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

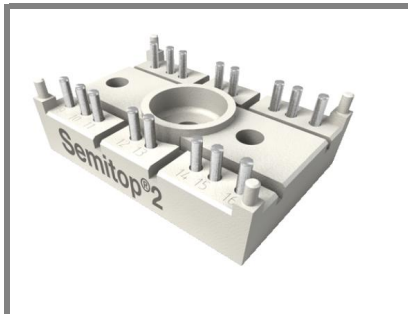


**GB**

Absolute Maximum Ratings		$T_s = 25\text{ }^\circ\text{C}$ , unless otherwise specified		
Symbol	Conditions	Values		Units
<b>IGBT</b>				
$V_{CES}$	$T_j = 25\text{ }^\circ\text{C}$	600		V
$I_C$	$T_j = 125\text{ }^\circ\text{C}$	$T_s = 25\text{ }^\circ\text{C}$	54	A
		$T_s = 80\text{ }^\circ\text{C}$	40	A
$I_{CRM}$	$I_{CRM} = 2 \times I_{Cnom}$	60		A
$V_{GES}$		$\pm 20$		V
$t_{psc}$	$V_{CC} = 300\text{ V}; V_{GE} \leq 20\text{ V}; T_j = 125\text{ }^\circ\text{C}$ $V_{CES} < 600\text{ V}$	10		$\mu\text{s}$
<b>Inverse Diode</b>				
$I_F$	$T_j = 150\text{ }^\circ\text{C}$	$T_s = 25\text{ }^\circ\text{C}$	64	A
		$T_s = 80\text{ }^\circ\text{C}$	48	A
$I_{FRM}$	$I_{FRM} = 2 \times I_{Fnom}$			A
$I_{FSM}$	$t_p = 10\text{ ms}; \text{half sine wave}$ $T_j = 150\text{ }^\circ\text{C}$	200		A
<b>Module</b>				
$I_{t(RMS)}$				A
$T_{vj}$		-40 ... +150		$^\circ\text{C}$
$T_{stg}$		-40 ... +125		$^\circ\text{C}$
$V_{isol}$	AC, 1 min.	2500		V

Characteristics		$T_s = 25\text{ }^\circ\text{C}$ , unless otherwise specified			
Symbol	Conditions	min.	typ.	max.	Units
<b>IGBT</b>					
$V_{GE(th)}$	$V_{GE} = V_{CE}, I_C = 1,4\text{ mA}$	3	4	5	V
$I_{CES}$	$V_{GE} = 0\text{ V}, V_{CE} = V_{CES}$ $T_j = 25\text{ }^\circ\text{C}$			0,0044	mA
$I_{GES}$	$V_{CE} = 0\text{ V}, V_{GE} = 20\text{ V}$ $T_j = 25\text{ }^\circ\text{C}$			240	nA
$V_{CE0}$		$T_j = 25\text{ }^\circ\text{C}$	1,1		V
		$T_j = 125\text{ }^\circ\text{C}$	1,1		V
$r_{CE}$	$V_{GE} = 15\text{ V}$	$T_j = 25\text{ }^\circ\text{C}$	15		m $\Omega$
		$T_j = 125\text{ }^\circ\text{C}$	19		m $\Omega$
$V_{CE(sat)}$	$I_{Cnom} = 60\text{ A}, V_{GE} = 15\text{ V}$	$T_j = 25\text{ }^\circ\text{C}_{chiplev.}$	2	2,5	V
		$T_j = 125\text{ }^\circ\text{C}_{chiplev.}$	2,2		V
$C_{ies}$	$V_{CE} = 25, V_{GE} = 0\text{ V}$ $f = 1\text{ MHz}$			3,2	nF
$C_{oes}$				0,3	nF
$C_{res}$				0,18	nF
$t_{d(on)}$	$R_{Gon} = 16\text{ }^\circ\Omega$	$V_{CC} = 300\text{ V}$ $I_{Cnom} = 40\text{ A}$	60	80	ns
$t_r$			30	40	ns
$E_{on}$			1,1	1,4	mJ
$t_{d(off)}$	$R_{Goff} = 16\text{ }^\circ\Omega$	$T_j = 125\text{ }^\circ\text{C}$ $V_{GE} = \pm 15\text{ V}$	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

# SK50GB065



**SEMITOP<sup>®</sup> 2**

## IGBT Module

### SK50GB065

#### Preliminary Data

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#### Typical Applications

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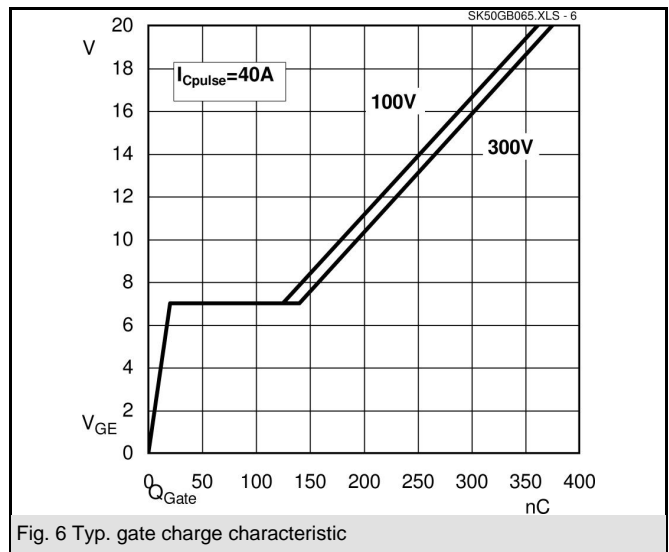
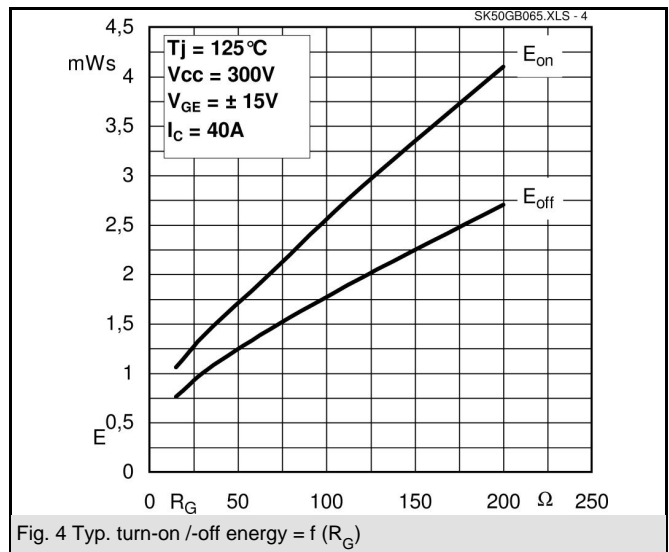
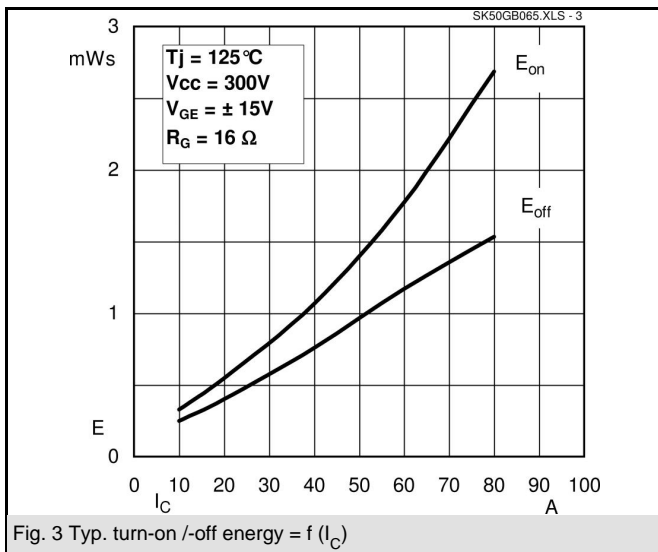
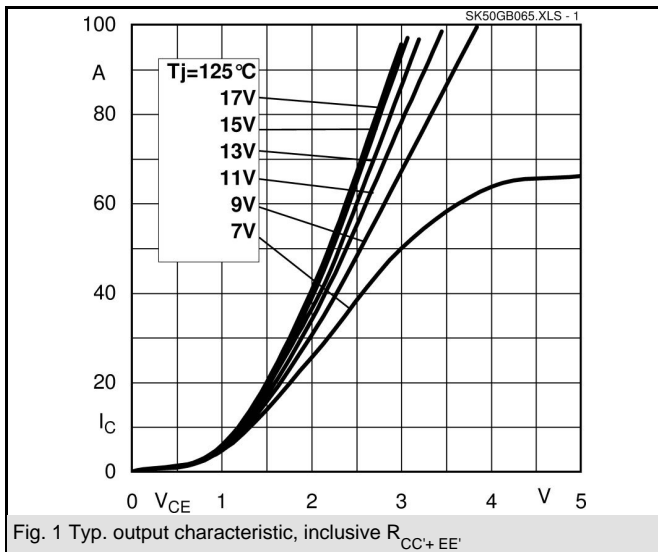
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#### Characteristics

Symbol	Conditions	min.	typ.	max.	Units
<b>Inverse Diode</b>					
$V_F = V_{EC}$	$I_{Fnom} = 50 \text{ A}; V_{GE} = 0 \text{ V}$	$T_j = 25 \text{ }^\circ\text{C}_{chiplev.}$	1,45	1,7	V
		$T_j = 150 \text{ }^\circ\text{C}_{chiplev.}$	1,4	1,75	V
$V_{F0}$		$T_j = 25 \text{ }^\circ\text{C}$			V
		$T_j = 125 \text{ }^\circ\text{C}$	0,85	0,9	V
$r_F$		$T_j = 25 \text{ }^\circ\text{C}$			mΩ
		$T_j = 125 \text{ }^\circ\text{C}$	11	16	mΩ
$I_{RRM}$	$I_{Fnom} = 50 \text{ A}$	$T_j = 125 \text{ }^\circ\text{C}$	40		A
$Q_{rr}$	$di/dt = -1000 \text{ A}/\mu\text{s}$		3,6		μC
$E_{rr}$	$V_{CC} = 300\text{V}$		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.

This technical information specifies semiconductor devices but promises no characteristics. No warranty or guarantee expressed or implied is made regarding delivery, performance or suitability.



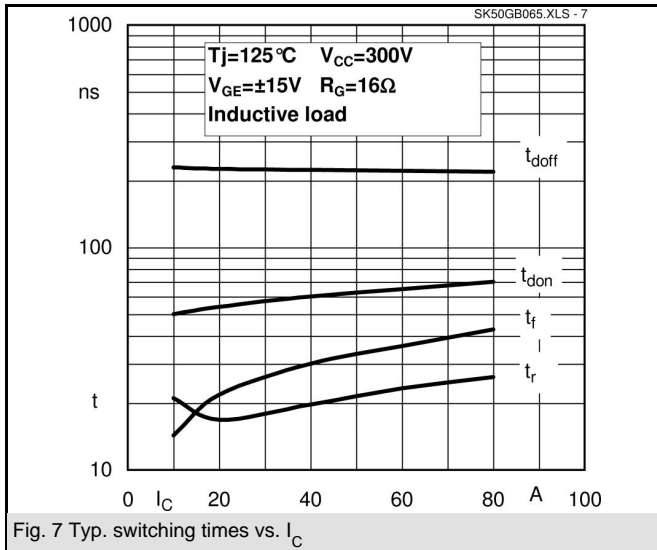


Fig. 7 Typ. switching times vs.  $I_C$

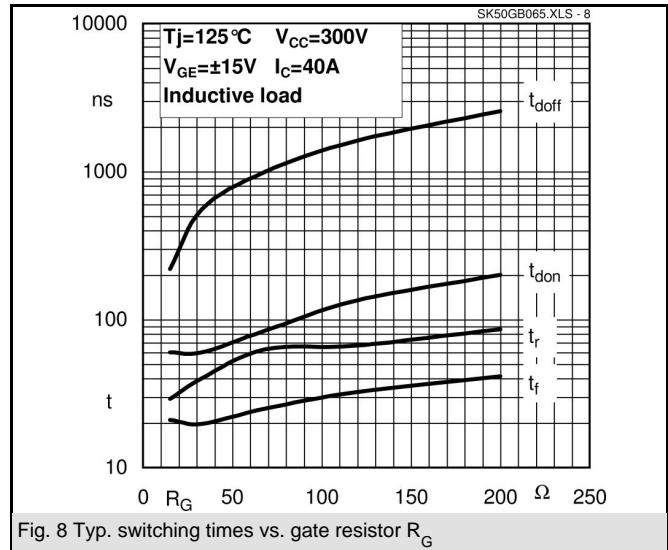


Fig. 8 Typ. switching times vs. gate resistor  $R_G$

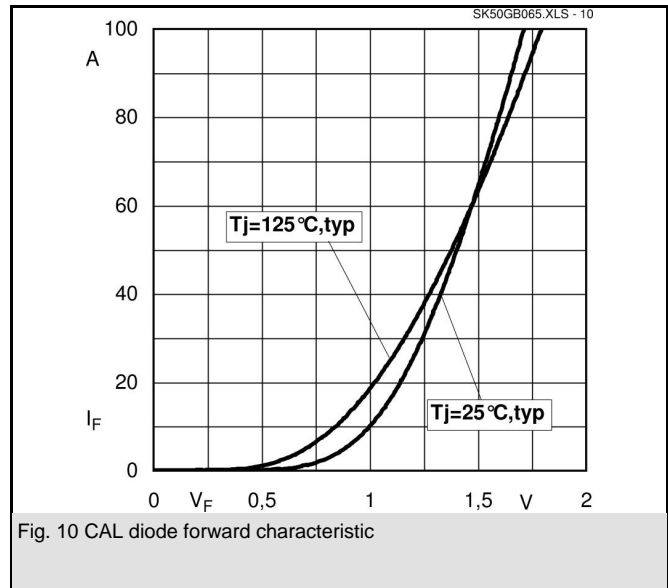
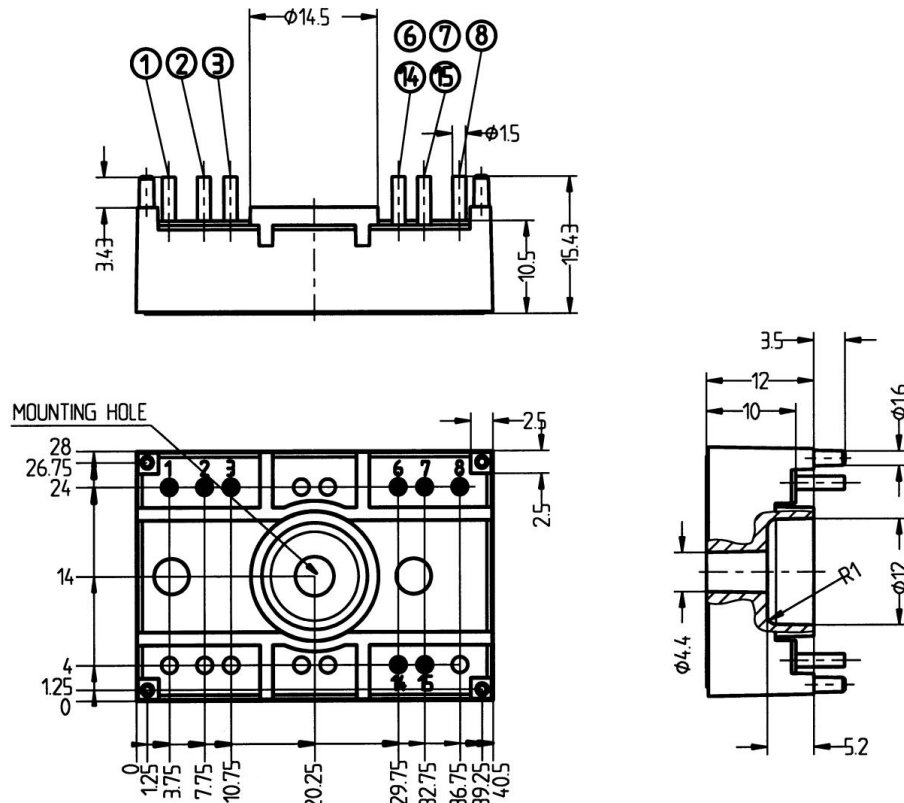


Fig. 10 CAL diode forward characteristic

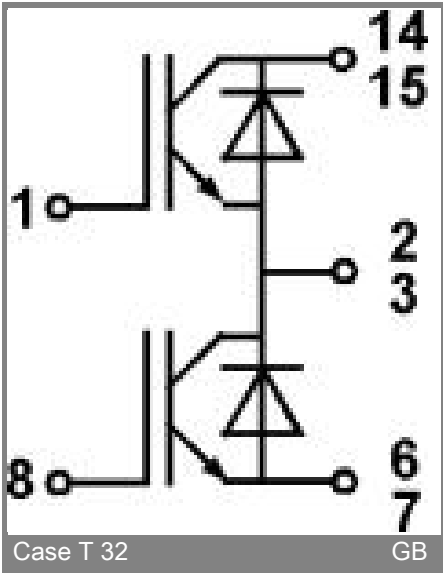
# SK50GB065

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

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