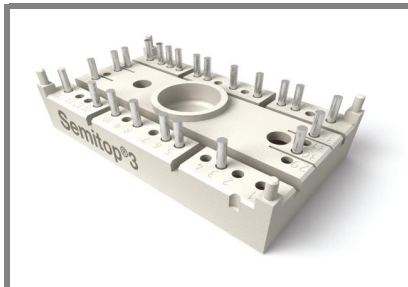


# SK80GB125T



SEMITOP® 3

## IGBT Module

SK80GB125T

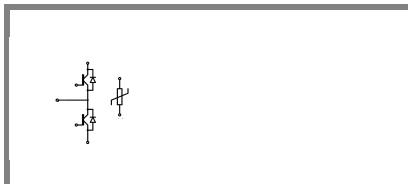
Preliminary Data

### Features

- Compact design
- One screw mounting
- Heat transfer and isolation through direct copper bonding Aluminium Nitride ceramic (DBC)
- High short circuit capability
- Low tail current with low temperature dependence

### Typical Applications

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

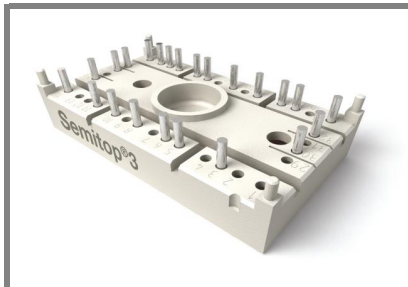


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Absolute Maximum Ratings		T <sub>s</sub> = 25 °C, unless otherwise specified	
Symbol	Conditions	Values	Units
<b>IGBT</b>			
V <sub>CES</sub>	T <sub>j</sub> = 25 °C	1200	V
I <sub>C</sub>	T <sub>j</sub> = 125 °C	T <sub>s</sub> = 25 °C	85
		T <sub>s</sub> = 80 °C	55
I <sub>CRM</sub>	I <sub>CRM</sub> = 2 × I <sub>Cnom</sub>	150	A
V <sub>GES</sub>		± 20	V
t <sub>psc</sub>	V <sub>CC</sub> = 300 V; V <sub>GE</sub> ≤ 20 V; T <sub>j</sub> = 125 °C V <sub>CES</sub> < 600 V	10	μs
<b>Inverse Diode</b>			
I <sub>F</sub>	T <sub>j</sub> = 150 °C	T <sub>s</sub> = 25 °C	90
		T <sub>s</sub> = 80 °C	60
I <sub>FRM</sub>	I <sub>FRM</sub> = 2 × I <sub>Fnom</sub>		A
I <sub>FSM</sub>	t <sub>p</sub> = 10 ms; half sine wave T <sub>j</sub> = 150 °C	550	A
<b>Module</b>			
I <sub>t(RMS)</sub>			A
T <sub>vj</sub>		-40 ... +150	°C
T <sub>stg</sub>		-40 ... +125	°C
V <sub>isol</sub>	AC, 1 min.	2500	V

Characteristics		T <sub>s</sub> = 25 °C, unless otherwise specified			
Symbol	Conditions	min.	typ.	max.	Units
<b>IGBT</b>					
V <sub>GE(th)</sub>	V <sub>GE</sub> = V <sub>CE</sub> , I <sub>C</sub> = 3 mA	4,5	5,5	6,5	V
I <sub>CES</sub>	V <sub>GE</sub> = 0 V, V <sub>CE</sub> = V <sub>CES</sub> T <sub>j</sub> = 25 °C			0,01	mA
I <sub>GES</sub>	V <sub>CE</sub> = 0 V, V <sub>GE</sub> = 20 V T <sub>j</sub> = 25 °C			480	nA
V <sub>CE0</sub>			T <sub>j</sub> = 25 °C	1,4	1,9
			T <sub>j</sub> = 125 °C	1,7	2,2
r <sub>CE</sub>	V <sub>GE</sub> = 15 V		T <sub>j</sub> = 25 °C		18,6
			T <sub>j</sub> = 125 °C		20
V <sub>CE(sat)</sub>	I <sub>Cnom</sub> = 75 A, V <sub>GE</sub> = 15 V		T <sub>j</sub> = 25 °C <sub>chiplev.</sub>	3,2	3,3
			T <sub>j</sub> = 125 °C <sub>chiplev.</sub>	3,85	3,7
C <sub>ies</sub>	V <sub>CE</sub> = 25, V <sub>GE</sub> = 0 V f = 1 MHz			5,1	nF
C <sub>oes</sub>				0,72	nF
C <sub>res</sub>				0,38	nF
t <sub>d(on)</sub>	R <sub>Gon</sub> = 8,2 Ω	V <sub>CC</sub> = 600V I <sub>Cnom</sub> = 80A		180	ns
t <sub>r</sub>				110	ns
E <sub>on</sub>				9,9	mJ
t <sub>d(off)</sub>	R <sub>Goff</sub> = 8,2 Ω	T <sub>j</sub> = 125 °C V <sub>GE</sub> = ±15V		358	ns
t <sub>f</sub>				26	ns
E <sub>off</sub>				5	mJ
R <sub>th(j-s)</sub>	per IGBT			0,32	K/W

# SK80GB125T



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## IGBT Module

SK80GB125T

Preliminary Data

### Features

- Compact design
- One screw mounting
- Heat transfer and isolation through direct copper bonding Aluminium Nitride ceramic (DBC)
- High short circuit capability
- Low tail current with low temperature dependence

### Typical Applications

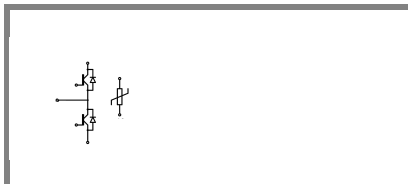
- Switching (not for linear use)
- Inverter
- Switched mode power supplies
- UPS

### Characteristics

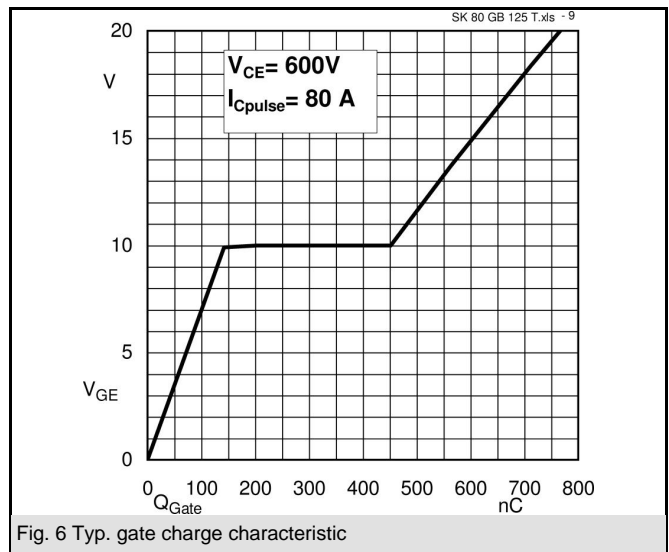
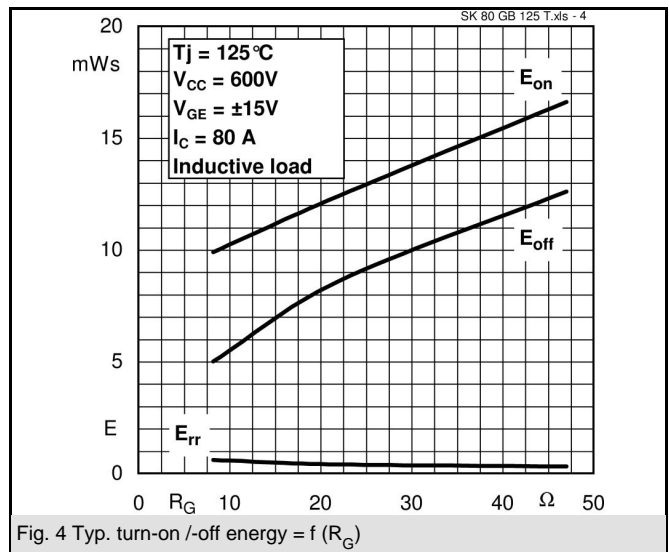
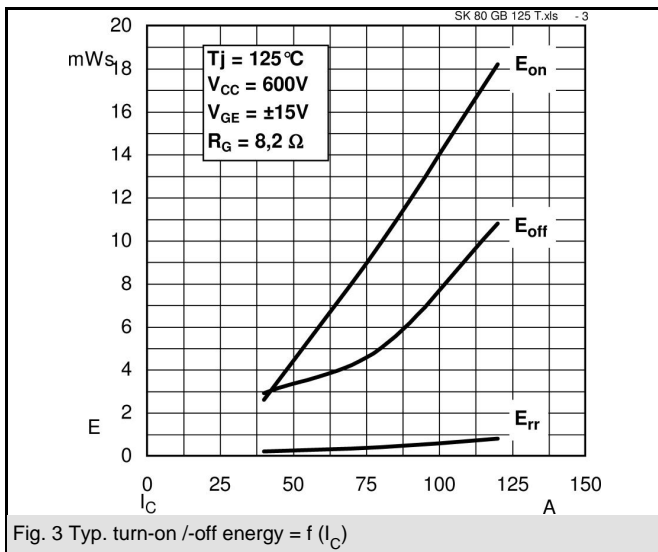
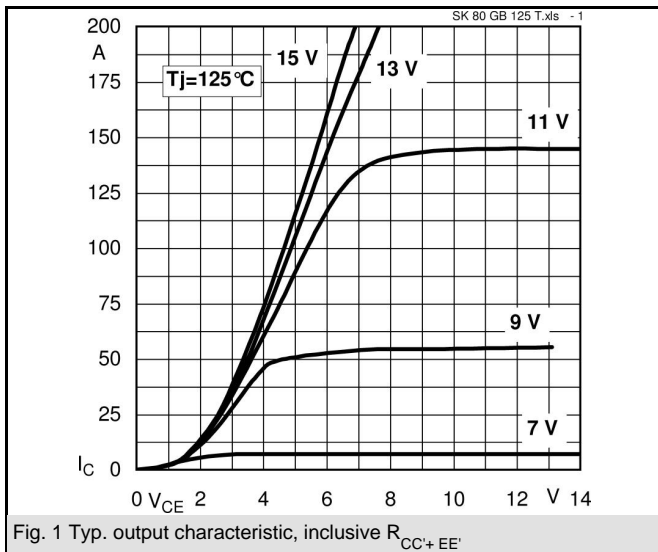
Symbol	Conditions	min.	typ.	max.	Units
<b>Inverse Diode</b>					
$V_F = V_{EC}$	$I_{Fnom} = 55 \text{ A}; V_{GE} = 0 \text{ V}$		$T_j = 25 \text{ }^\circ\text{C}_{chiplev.}$	2	V
			$T_j = 150 \text{ }^\circ\text{C}_{chiplev.}$	1,8	V
$V_{F0}$			$T_j = 25 \text{ }^\circ\text{C}$		V
			$T_j = 125 \text{ }^\circ\text{C}$	1,2	V
$r_F$			$T_j = 25 \text{ }^\circ\text{C}$		mΩ
			$T_j = 125 \text{ }^\circ\text{C}$	11	mΩ
$I_{RRM}$	$I_{Fnom} = 50 \text{ A}$	$T_j = 125 \text{ }^\circ\text{C}$		40	A
$Q_{rr}$	$di/dt = -800 \text{ A}/\mu\text{s}$			8	μC
$E_{rr}$	$V_{CC} = 600\text{V}$			1	mJ
$R_{th(j-s)D}$	per diode			0,65	K/W
$M_s$	to heat sink	2,25		2,5	Nm
w			30		g
<b>Temperature sensor</b>					
$R_{100}$	$T_s = 100^\circ\text{C} (R_{25} = 5\text{k}\Omega)$		493±5%		Ω

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.



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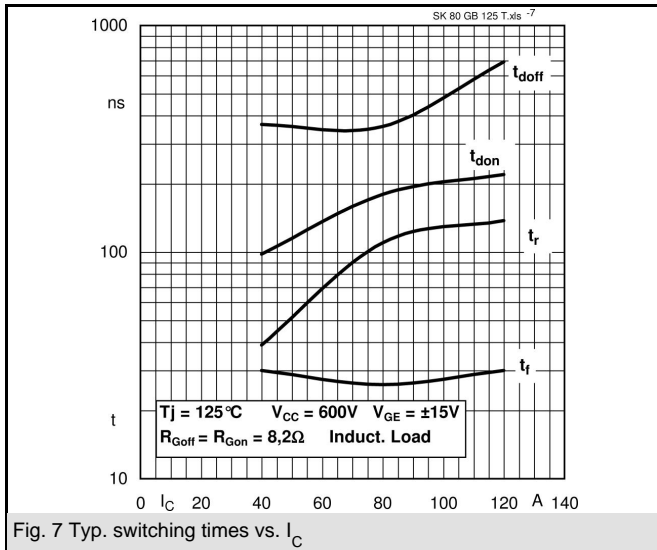


Fig. 7 Typ. switching times vs.  $I_C$

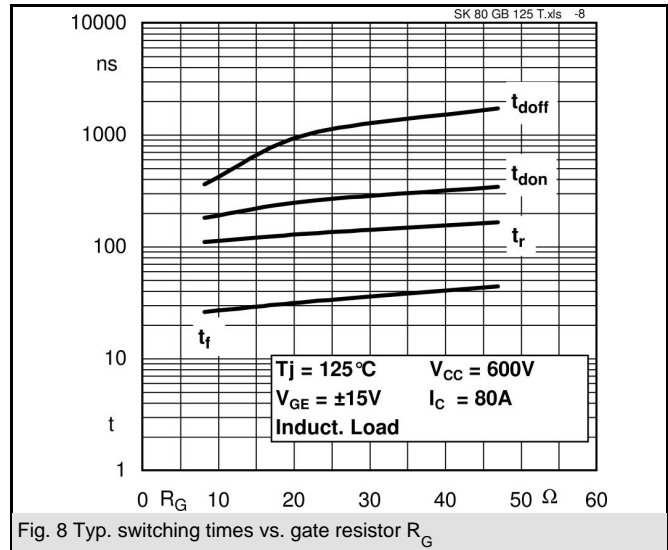


Fig. 8 Typ. switching times vs. gate resistor  $R_G$

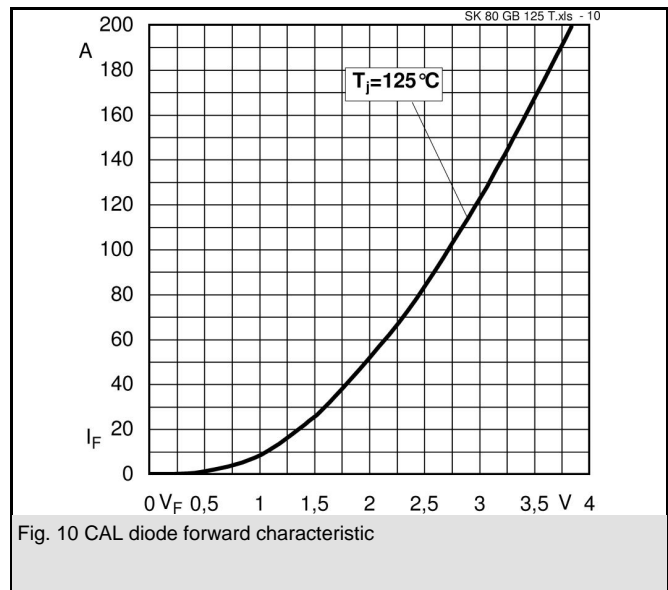
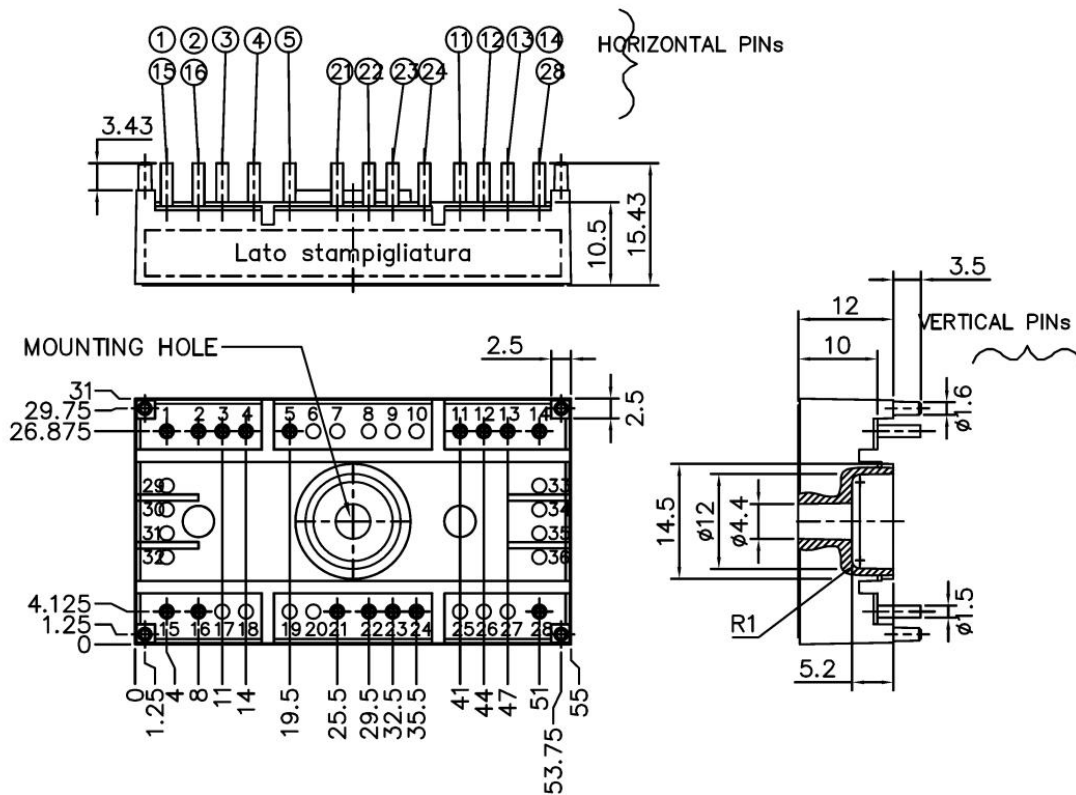


Fig. 10 CAL diode forward characteristic

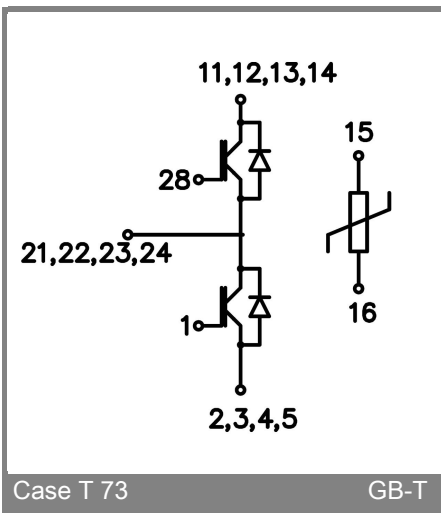
# SK80GB125T

UL Recognized  
File no. E 63 532

Dimensions in mm



Case T73 (Suggested hole diameter, in the PCB, for solder pins and plastic mounting pins: 2mm)



Case T 73

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