

# SK80GB125T



SEMITOP<sup>®</sup> 3

## IGBT Module

SK80GB125T

Preliminary Data

### Features

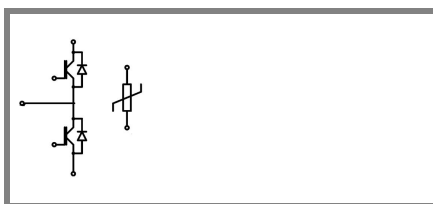
- Compact design
- One screw mounting
- Heat transfer and isolation through direct copper bonding Aluminium Nitride ceramic (DBC)
- High short circuit capability
- Low tail current with low temperature dependence

### Typical Applications\*

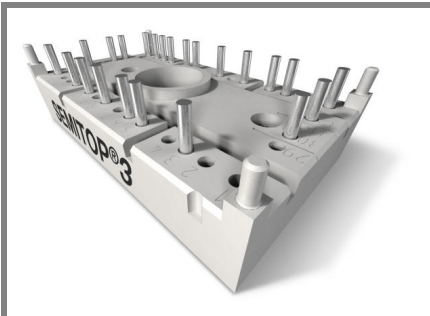
- Switching (not for linear use)
- Inverter
- Switched mode power supplies
- UPS

Absolute Maximum Ratings		$T_s = 25\text{ °C}$ , unless otherwise specified			
Symbol	Conditions	Values			Units
<b>IGBT</b>					
$V_{CES}$	$T_j = 25\text{ °C}$	1200			V
$I_C$	$T_j = 125\text{ °C}$	$T_s = 25\text{ °C}$	85		A
		$T_s = 80\text{ °C}$	55		A
$I_{CRM}$	$I_{CRM} = 2 \times I_{Cnom}$	150			A
$V_{GES}$		$\pm 20$			V
$t_{psc}$	$V_{CC} = 300\text{ V}; V_{GE} \leq 20\text{ V}; T_j = 125\text{ °C}$ $V_{CES} < 600\text{ V}$	10			$\mu\text{s}$
<b>Inverse Diode</b>					
$I_F$	$T_j = 150\text{ °C}$	$T_s = 25\text{ °C}$	90		A
		$T_s = 80\text{ °C}$	60		A
$I_{FRM}$	$I_{FRM} = 2 \times I_{Fnom}$				A
$I_{FSM}$	$t_p = 10\text{ ms}; \text{half sine wave } T_j = 150\text{ °C}$	550			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		$T_s = 25\text{ °C}$ , unless otherwise specified			
Symbol	Conditions	min.	typ.	max.	Units
<b>IGBT</b>					
$V_{GE(th)}$	$V_{GE} = V_{CE}, I_C = 3\text{ mA}$	4,5	5,5	6,5	V
$I_{CES}$	$V_{GE} = 0\text{ V}, V_{CE} = V_{CES} \quad T_j = 25\text{ °C}$	0,01			mA
$I_{GES}$	$V_{CE} = 0\text{ V}, V_{GE} = 20\text{ V} \quad T_j = 25\text{ °C}$	480			nA
$V_{CE0}$		$T_j = 25\text{ °C}$	1,4	1,9	V
		$T_j = 125\text{ °C}$	1,7	2,2	V
$r_{CE}$	$V_{GE} = 15\text{ V}$	$T_j = 25\text{ °C}$	18,6		$\text{m}\Omega$
		$T_j = 125\text{ °C}$	20		$\text{m}\Omega$
$V_{CE(sat)}$	$I_{Cnom} = 75\text{ A}, V_{GE} = 15\text{ V}$	$T_j = 25\text{ °C}_{chiplev.}$	3,2	3,3	V
		$T_j = 125\text{ °C}_{chiplev.}$	3,85	3,7	V
$C_{ies}$	$V_{CE} = 25, V_{GE} = 0\text{ V} \quad f = 1\text{ MHz}$	5,1			nF
$C_{oes}$		0,72			nF
$C_{res}$		0,38			nF
$t_{d(on)}$	$R_{Gon} = 8,2\ \Omega$	$V_{CC} = 600\text{ V}$ $I_C = 80\text{ A}$	180		ns
$t_r$			110		ns
$E_{on}$	$R_{Goff} = 8,2\ \Omega$	$T_j = 125\text{ °C}$ $V_{GE} = \pm 15\text{ V}$	9,9		mJ
$t_{d(off)}$			358		ns
$t_f$			26		ns
$E_{off}$			5		mJ
$R_{th(j-s)}$	per IGBT	0,32			K/W



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## IGBT Module

**SK80GB125T**

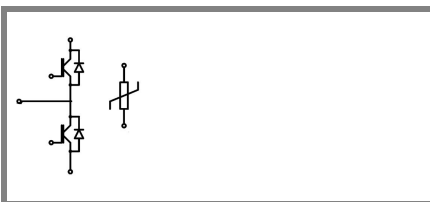
Preliminary Data

### Features

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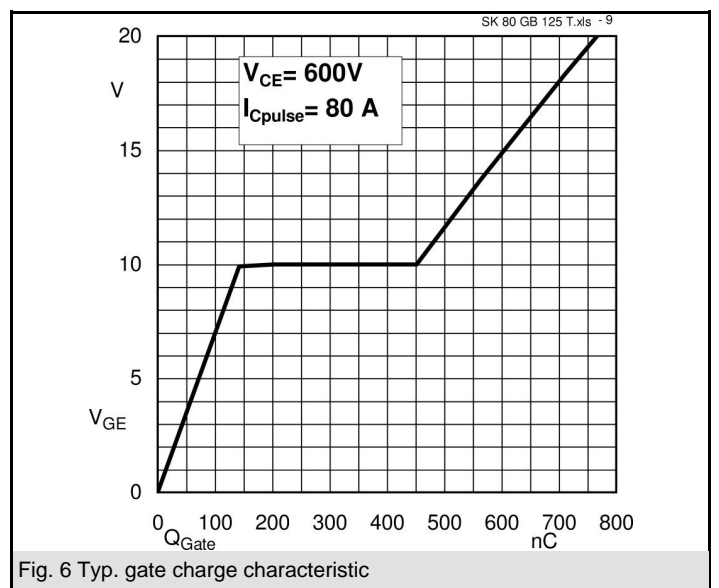
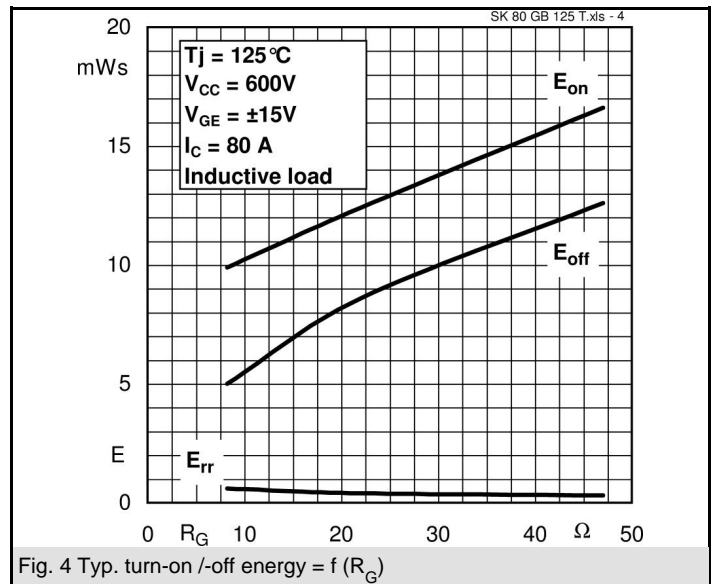
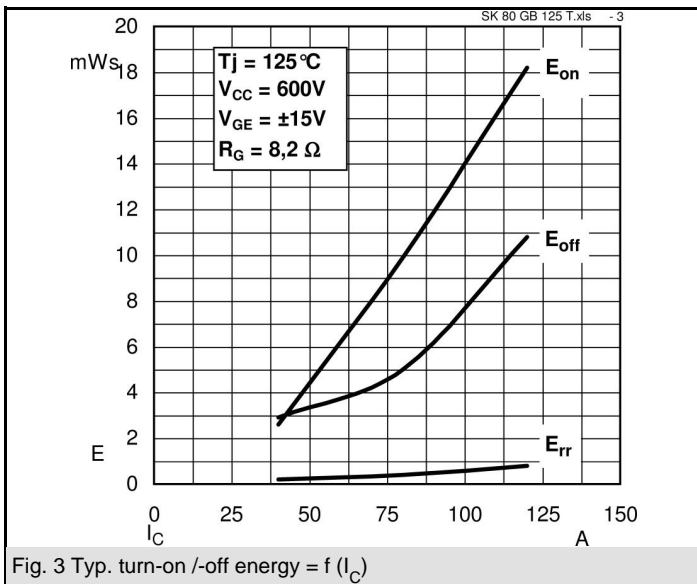
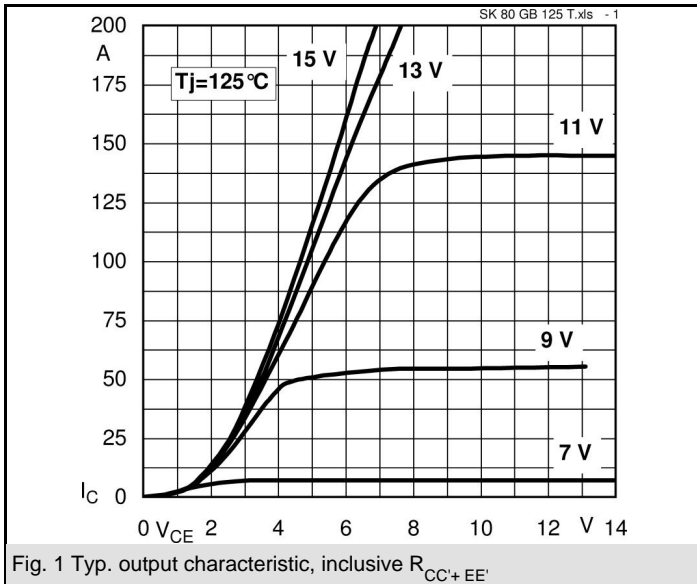


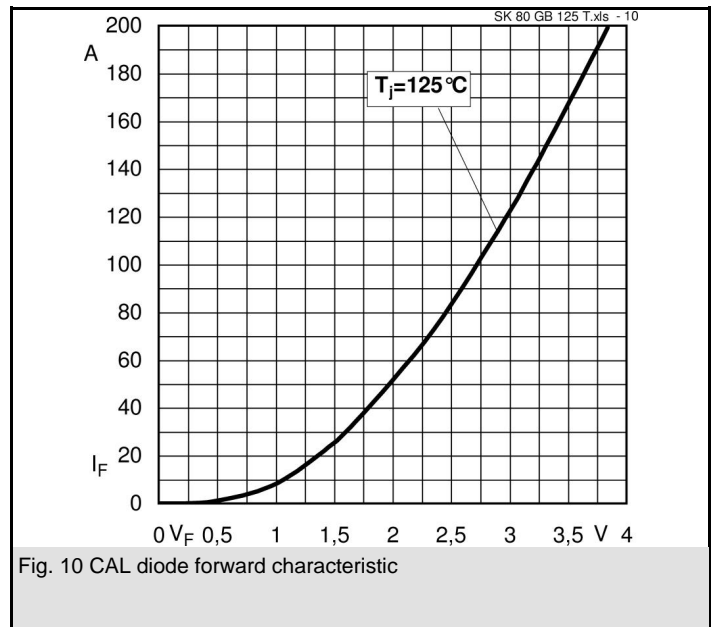
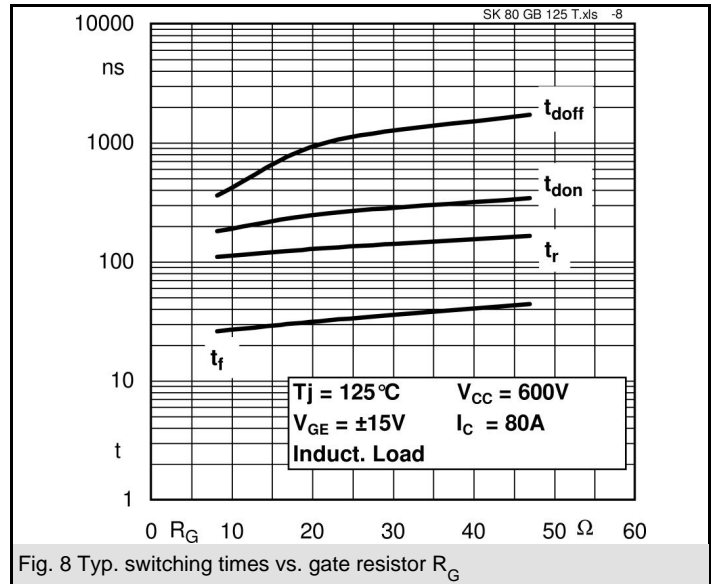
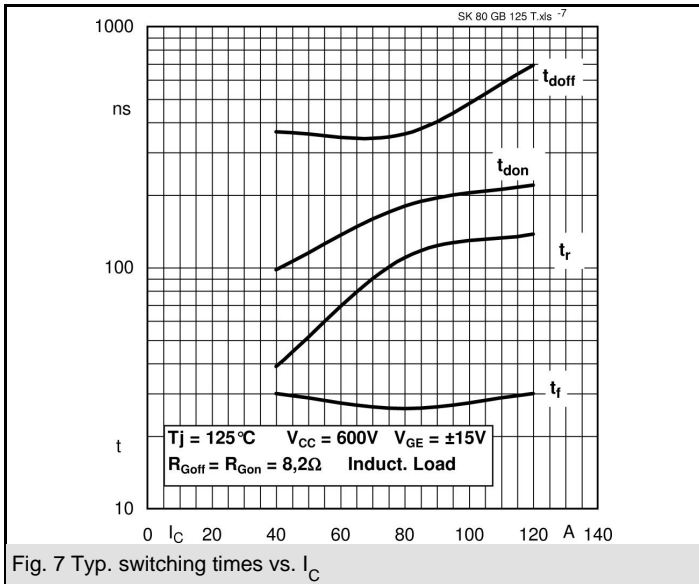
**GB - T**

Characteristics			min.	typ.	max.	Units
<b>Inverse Diode</b>						
$V_F = V_{EC}$	$I_{Fnom} = 55 \text{ A}; V_{GE} = 0 \text{ V}$	$T_j = 25 \text{ }^\circ\text{C}_{\text{chiplev.}}$ $T_j = 150 \text{ }^\circ\text{C}_{\text{chiplev.}}$		2 1,8		V V
$V_{F0}$		$T_j = 25 \text{ }^\circ\text{C}$ $T_j = 125 \text{ }^\circ\text{C}$		1,2		V V
$r_F$		$T_j = 25 \text{ }^\circ\text{C}$ $T_j = 125 \text{ }^\circ\text{C}$		11		m $\Omega$ m $\Omega$
$I_{RRM}$	$I_F = 50 \text{ A}$	$T_j = 125 \text{ }^\circ\text{C}$		40		A
$Q_{rr}$	$di/dt = -800 \text{ A}/\mu\text{s}$			8		$\mu\text{C}$
$E_{rr}$	$V_{CC} = 600\text{V}$			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 $\pm$ 5%		$\Omega$

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.

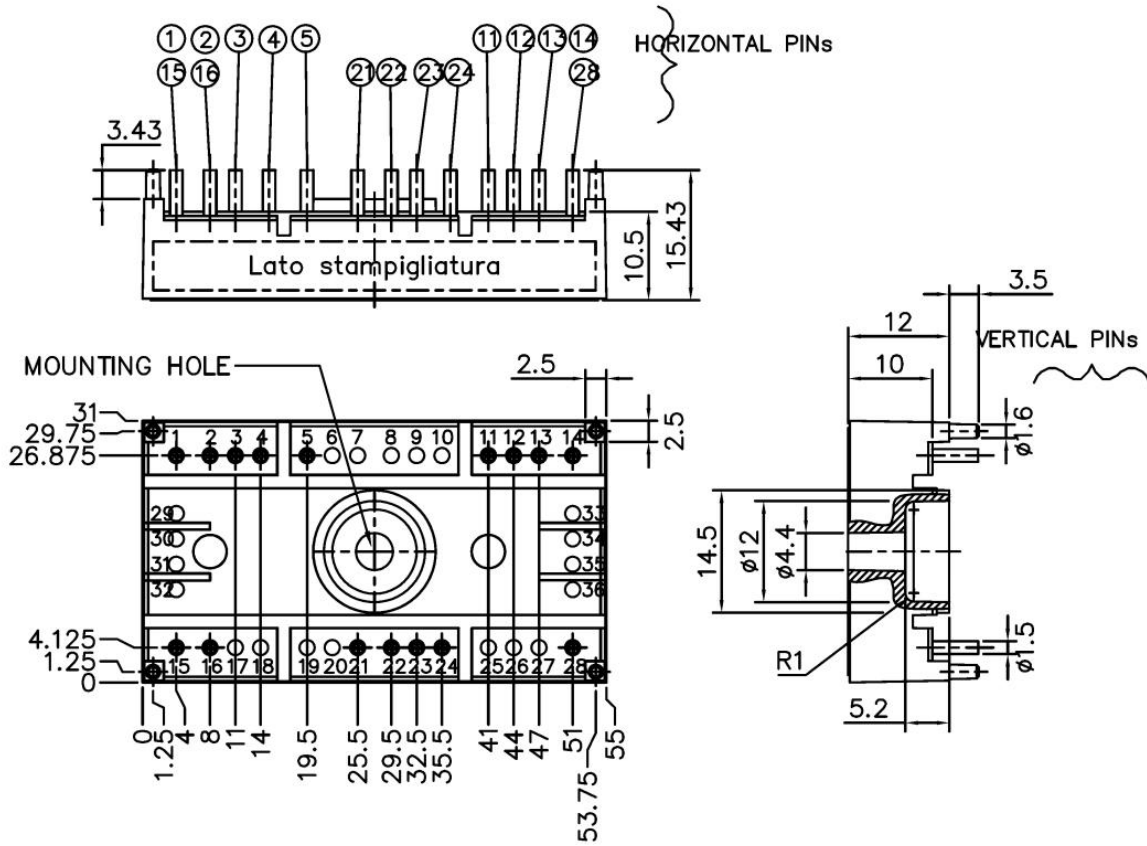




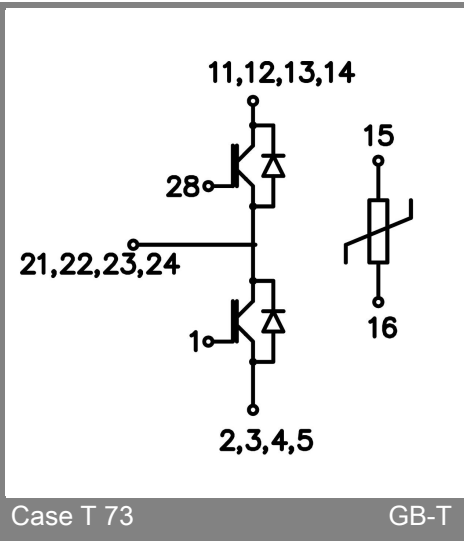
# SK80GB125T

UL recognized file

no. E 63 532



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



Case T 73

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