

SEMITOP® 3

IGBT Module

SK80GB125T

Preliminary Data

Features

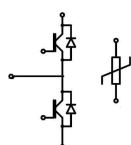
- Compact design
- One screw mounting
- Heat transfer and isolation through direct copper bonding Aluminium Nitride ceramic (DBC)
- High short circuit capability
- Low tail current with low temperature dependence

Typical Applications*

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

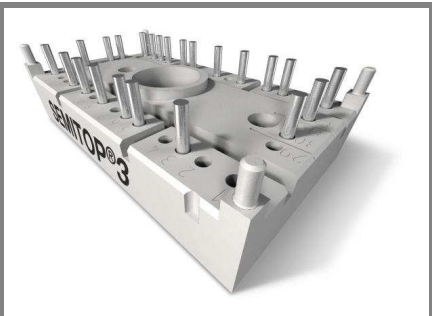
Absolute Maximum Ratings		T _s = 25 °C, unless otherwise specified		
Symbol	Conditions	Values	Units	
IGBT				
V _{CES}	T _j = 25 °C	1200	V	
I _C	T _j = 125 °C	T _s = 25 °C	85	A
		T _s = 80 °C	55	A
I _{CRM}	I _{CRM} = 2 x I _{Cnom}	150	A	
V _{GES}		± 20	V	
t _{psc}	V _{CC} = 300 V; V _{GE} ≤ 20 V; T _j = 125 °C V _{CES} < 600 V	10	µs	
Inverse Diode				
I _F	T _j = 150 °C	T _s = 25 °C	90	A
		T _s = 80 °C	60	A
I _{FRM}	I _{FRM} = 2 x I _{Fnom}		A	
I _{FSM}	t _p = 10 ms; half sine wave T _j = 150 °C	550	A	
Module				
I _{t(RMS)}			A	
T _{vj}		-40 ... +150	°C	
T _{stg}		-40 ... +125	°C	
V _{isol}	AC, 1 min.	2500	V	

Characteristics		$T_s = 25\text{ °C}$, unless otherwise specified			
Symbol	Conditions	min.	typ.	max.	Units
IGBT					
$V_{GE(th)}$	$V_{GE} = V_{CE}$, $I_C = 3\text{ mA}$	4,5	5,5	6,5	V
I_{CES}	$V_{GE} = 0\text{ V}$, $V_{CE} = V_{CES}$ $T_j = 25\text{ °C}$			0,01	mA
I_{GES}	$V_{CE} = 0\text{ V}$, $V_{GE} = 20\text{ V}$ $T_j = 25\text{ °C}$			480	nA
V_{CE0}			$T_j = 25\text{ °C}$	1,4	V
			$T_j = 125\text{ °C}$	1,7	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	V
			$T_j = 125\text{ °C}_{chiplev.}$	3,85	V
C_{ies}	$V_{CE} = 25$, $V_{GE} = 0\text{ V}$ $f = 1\text{ MHz}$		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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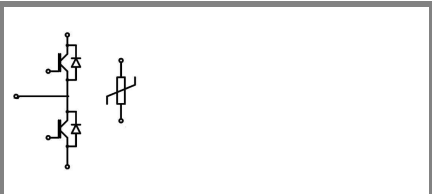
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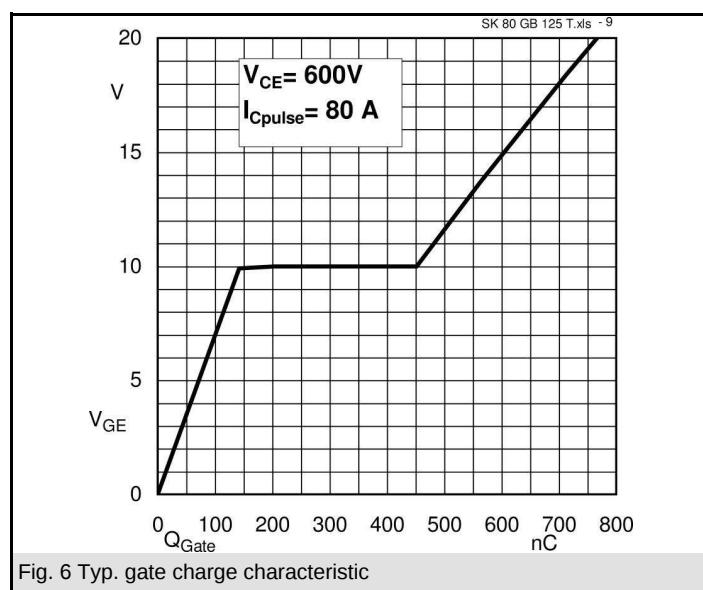
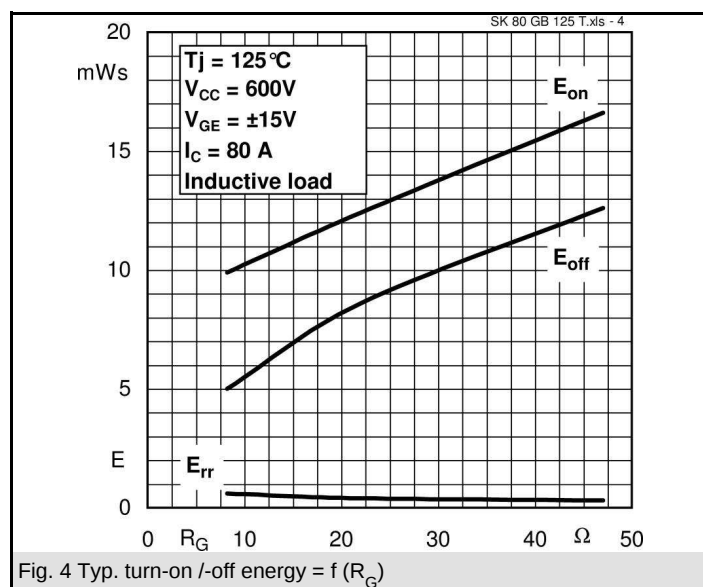
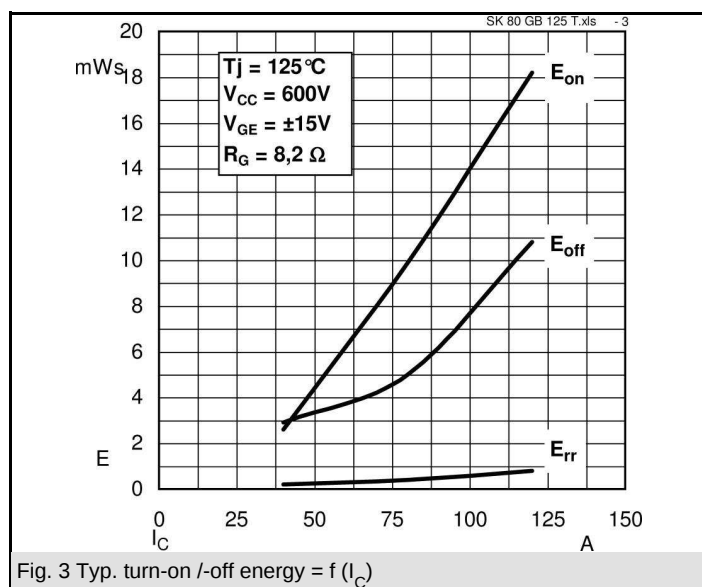
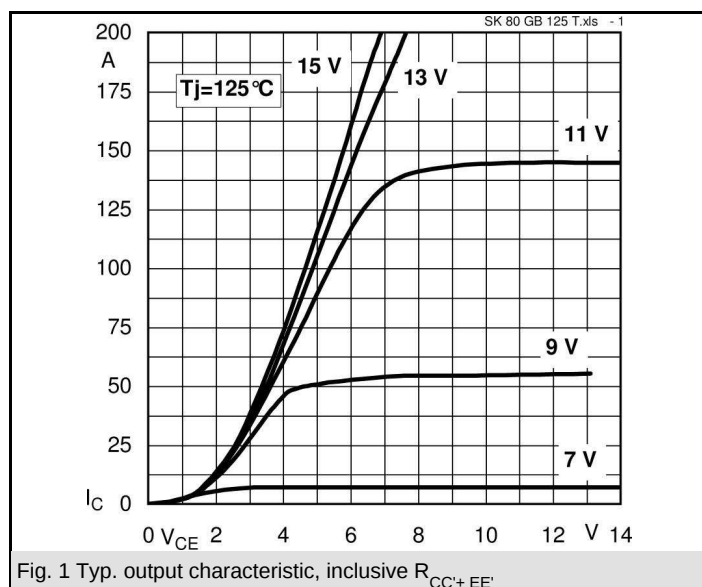


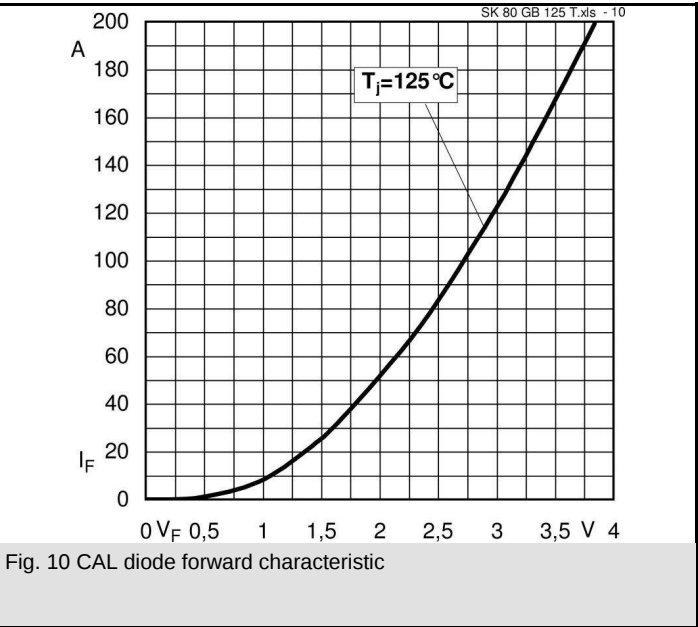
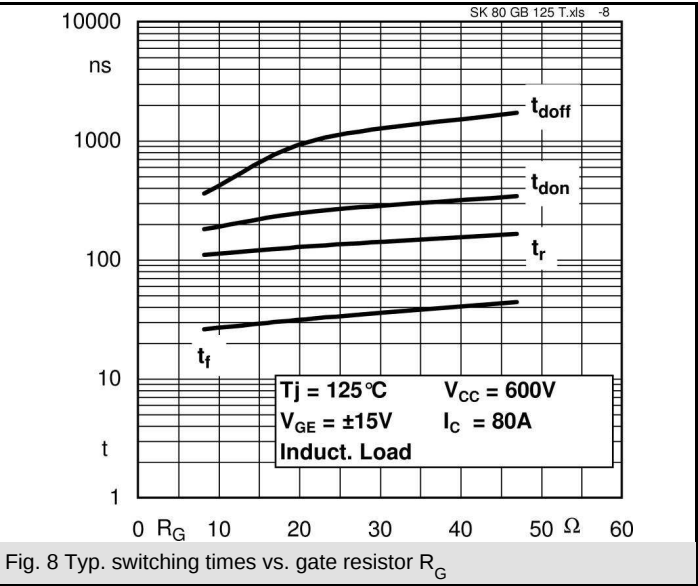
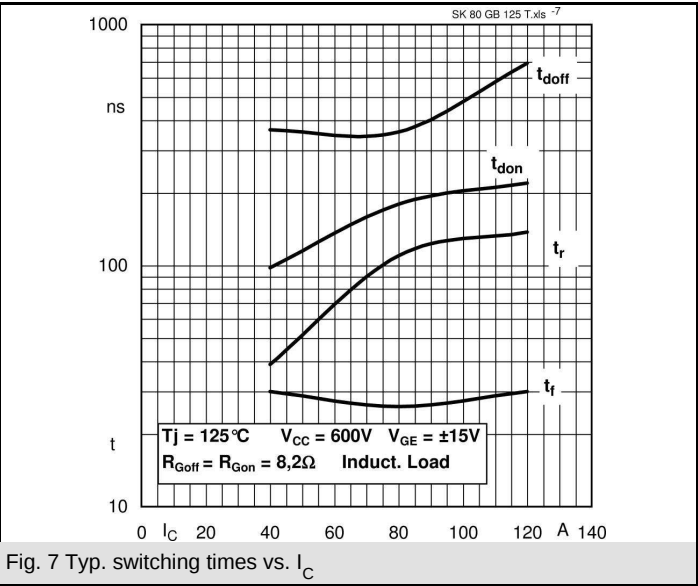
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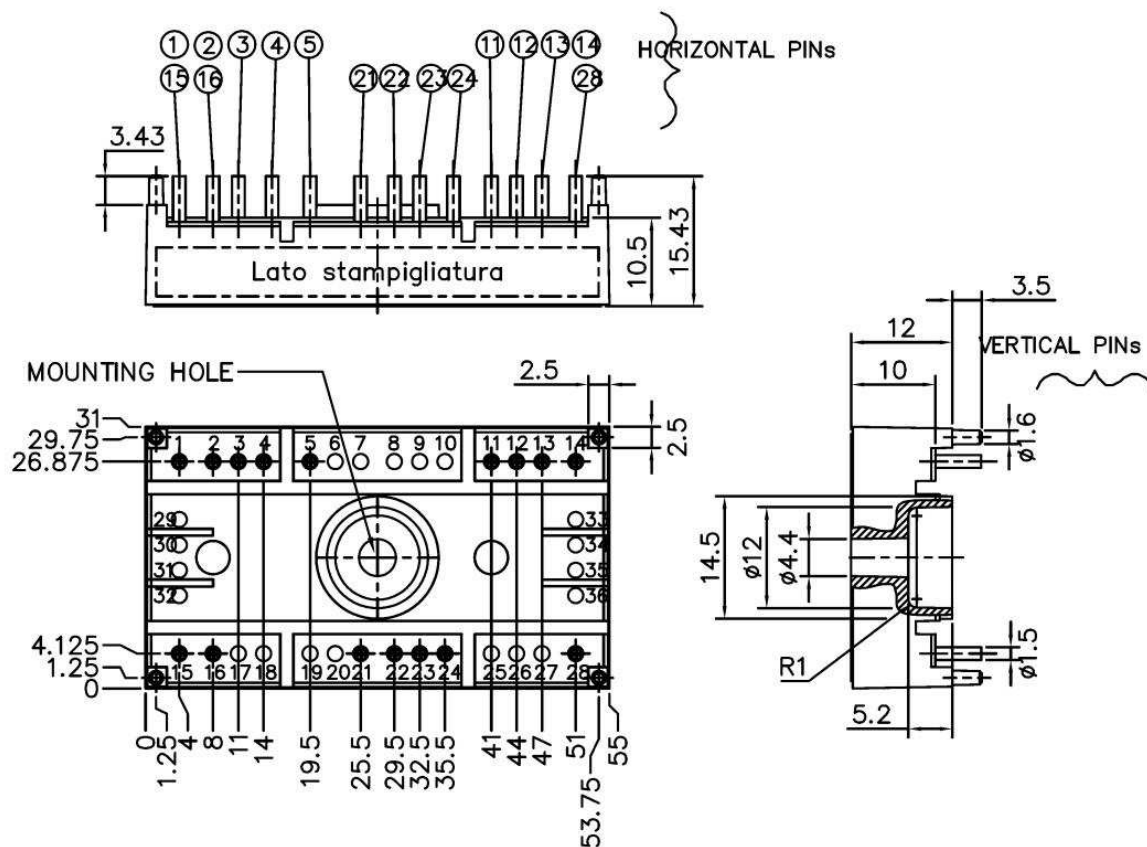
Characteristics						
Symbol	Conditions		min.	typ.	max.	Units
Inverse Diode						
V _F = V _{EC}	I _{Fnom} = 55 A; V _{GE} = 0 V	T _j = 25 °C _{chiplev.}		2		V
		T _j = 150 °C _{chiplev.}		1,8		V
V _{F0}		T _j = 25 °C				V
		T _j = 125 °C		1,2		V
r _F		T _j = 25 °C				mΩ
		T _j = 125 °C		11		mΩ
I _{RRM}	I _F = 50 A	T _j = 125 °C		40		A
Q _{rr}	di/dt = -800 A/μs			8		μC
E _{rr}	V _{CC} = 600V			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
Temperature sensor						
R ₁₀₀	T _s =100°C (R ₂₅ =5kΩ)			493±5%		Ω

This is an electrostatic discharge sensitive device (ESDS), international standard IEC 60747-1, Chapter IX.

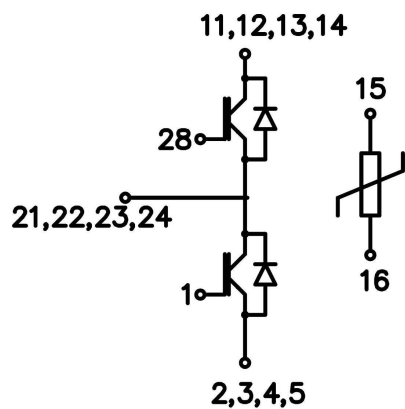
* The specifications of our components may not be considered as an assurance of component characteristics. Components have to be tested for the respective application. Adjustments may be necessary. The use of SEMIKRON products in life support appliances and systems is subject to prior specification and written approval by SEMIKRON. We therefore strongly recommend prior consultation of our personal.







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



Case T 73

GB-T