



**SEMITOP<sup>®</sup> 2**

## IGBT Module

**SK8GD126**

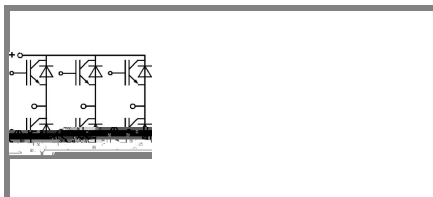
Preliminary Data

### Features

- Fast TRENCH IGBTs
- Soft freewheeling diodes in CAL High Density technology
- Compact design
- One screw mounting
- Heat transfer and isolation through direct copper bonded aluminium oxide ceramic (DCB)

### Typical Applications

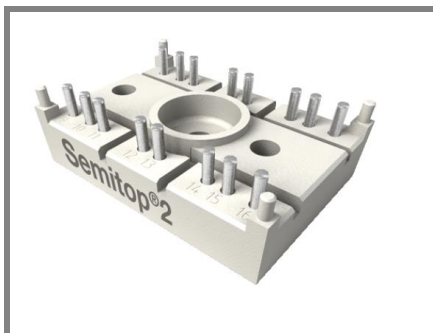
- Switching (not for linear use)
- Inverter
- Switched mode power supplies
- UPS



**GD**

Absolute Maximum Ratings		$T_s = 25\text{ }^\circ\text{C}$ , unless otherwise specified	
Symbol	Conditions	Values	Units
<b>IGBT</b>			
$V_{CES}$	$T_j = 25\text{ }^\circ\text{C}$	1200	V
$I_C$	$T_j = 150\text{ }^\circ\text{C}$	$T_s = 25\text{ }^\circ\text{C}$	15 A
		$T_s = 80\text{ }^\circ\text{C}$	10 A
$I_{CRM}$	$I_{CRM} = 2 \times I_{Cnom}$	16	A
$V_{GES}$		$\pm 20$	V
$t_{psc}$	$V_{CC} = 600\text{ V}; V_{GE} \leq 20\text{ V}; T_j = 125\text{ }^\circ\text{C}$ $V_{CES} < 1200\text{ V}$	10	$\mu\text{s}$
<b>Inverse Diode</b>			
$I_F$	$T_j = 150\text{ }^\circ\text{C}$	$T_s = 25\text{ }^\circ\text{C}$	13 A
		$T_s = 80\text{ }^\circ\text{C}$	9 A
$I_{FRM}$	$I_{FRM} = 2 \times I_{Fnom}$		A
$I_{FSM}$	$t_p = 10\text{ ms}; \text{half sine wave } T_j = 150\text{ }^\circ\text{C}$	55	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>					
$V_{GE(th)}$	$V_{GE} = V_{CE}, I_C = 0,3\text{ mA}$	5	5,8	6,5	V
$I_{CES}$	$V_{GE} = 1200\text{ V}, V_{CE} = V_{CES}$	$T_j = 25\text{ }^\circ\text{C}$		0,05	mA
		$T_j = 125\text{ }^\circ\text{C}$			mA
$I_{GES}$	$V_{CE} = 0\text{ V}, V_{GE} = 20\text{ V}$	$T_j = 25\text{ }^\circ\text{C}$		120	nA
		$T_j = 125\text{ }^\circ\text{C}$			nA
$V_{CE0}$		$T_j = 25\text{ }^\circ\text{C}$	1	1,2	V
		$T_j = 125\text{ }^\circ\text{C}$	0,9		V
$r_{CE}$	$V_{GE} = 15\text{ V}$	$T_j = 25\text{ }^\circ\text{C}$	87,5		$\text{m}\Omega$
		$T_j = 125\text{ }^\circ\text{C}$	137		$\text{m}\Omega$
$V_{CE(sat)}$	$I_{Cnom} = 8\text{ A}, V_{GE} = 15\text{ V}$	$T_j = 25\text{ }^\circ\text{C}_{chiplev.}$	1,7	2,2	V
		$T_j = 125\text{ }^\circ\text{C}_{chiplev.}$	2		V
$C_{ies}$	$V_{CE} = 25, V_{GE} = 0\text{ V}$	$f = 1\text{ MHz}$	0,605		nF
$C_{oes}$			0,037		nF
$C_{res}$			0,029		nF
$t_{d(on)}$	$R_{Gon} = 50\text{ }\Omega$	$V_{CC} = 600\text{ V}$ $I_{Cnom} = 8\text{ A}$	85		ns
$t_r$			30		ns
$E_{on}$	$R_{Goff} = 50\text{ }\Omega$	$T_j = 125\text{ }^\circ\text{C}$ $V_{GE} = \pm 15\text{ V}$	0,78		mJ
$t_{d(off)}$			430		ns
$t_f$			90		ns
$E_{off}$			0,96		mJ
$R_{th(j-s)}$	per IGBT			2	K/W



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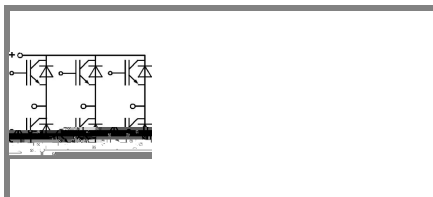
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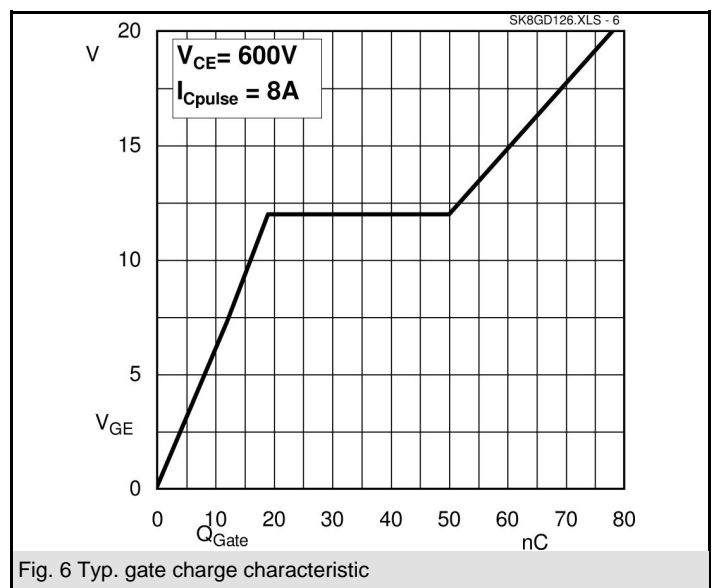
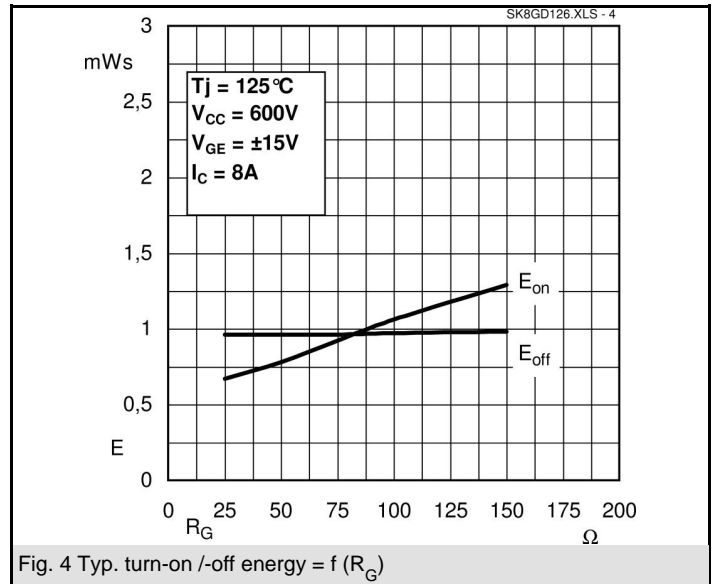
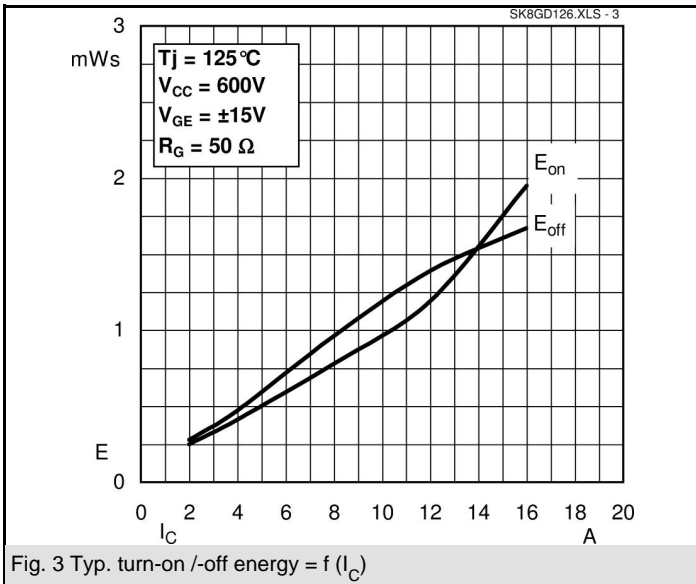
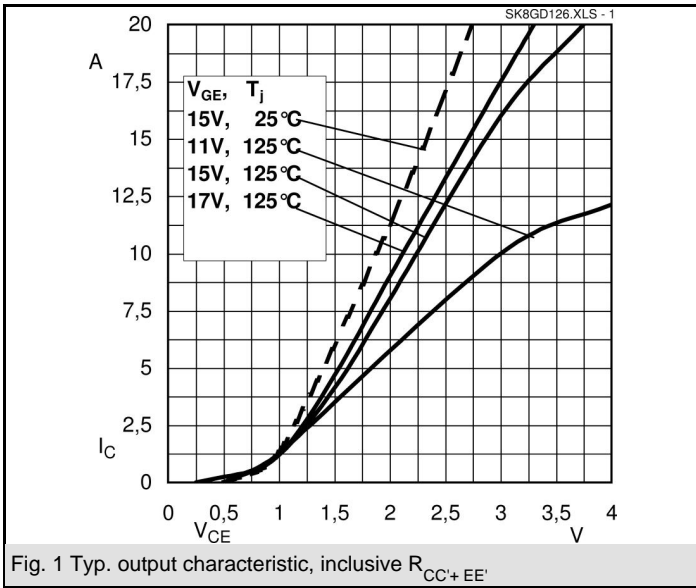
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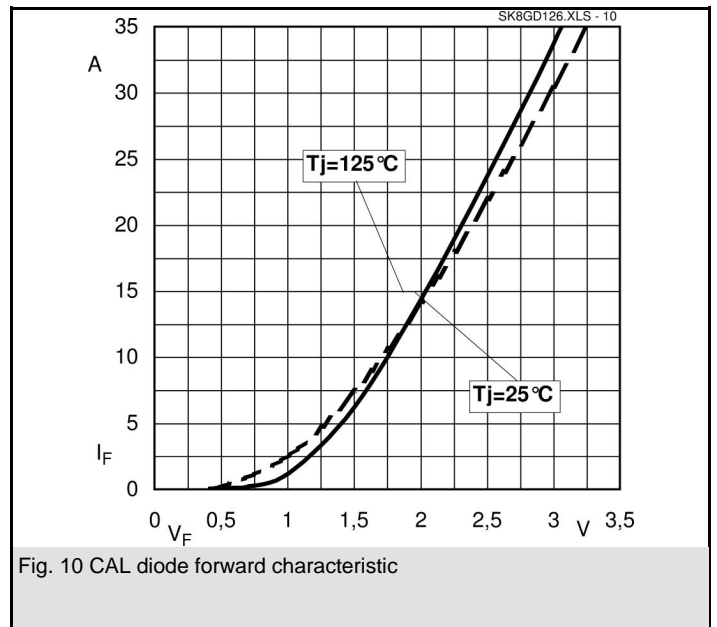
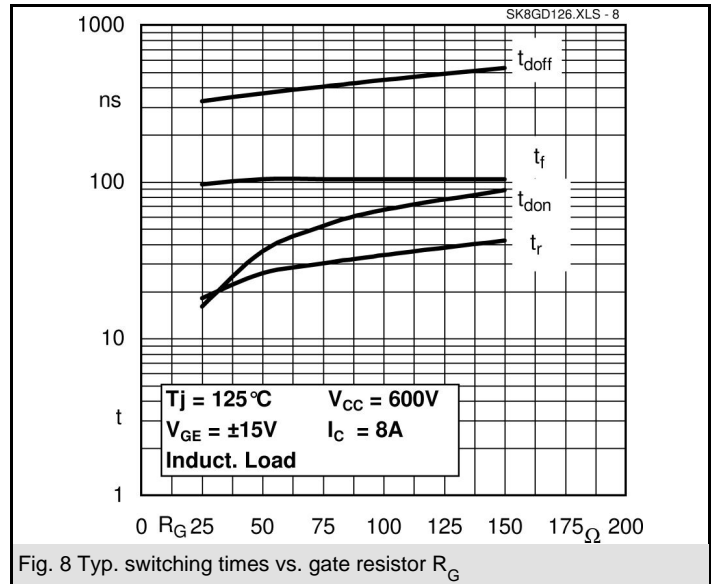
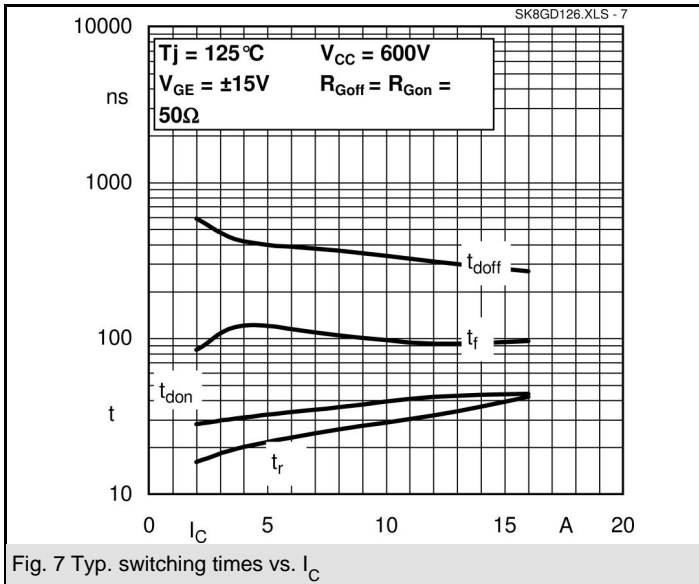
### Characteristics

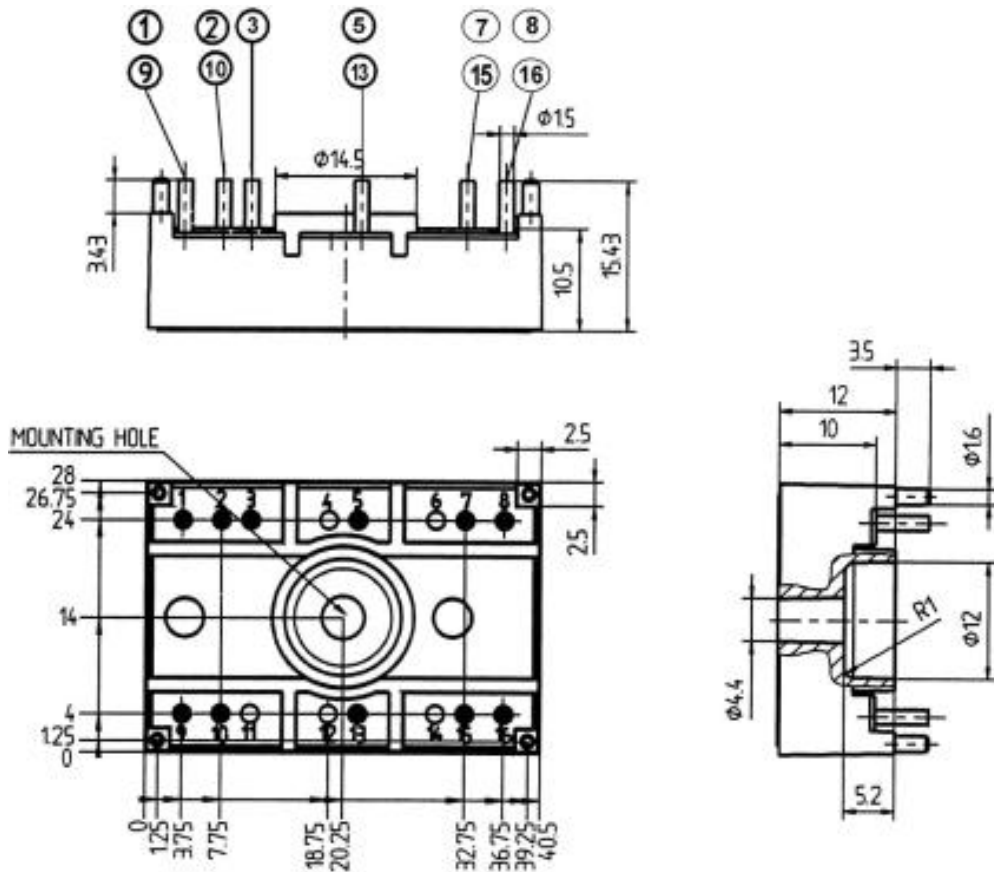
Symbol	Conditions	min.	typ.	max.	Units
<b>Inverse Diode</b>					
$V_F = V_{EC}$	$I_{Fnom} = 8 \text{ A}; V_{GE} = 0 \text{ V}$	$T_j = 25 \text{ }^\circ\text{C}_{\text{chiplev.}}$	1,9	22	V
		$T_j = 125 \text{ }^\circ\text{C}_{\text{chiplev.}}$	2	2,4	V
$V_{F0}$		$T_j = 25 \text{ }^\circ\text{C}$	1	1,1	V
		$T_j = 125 \text{ }^\circ\text{C}$	0,8		V
$r_F$		$T_j = 25 \text{ }^\circ\text{C}$	112	138	mΩ
		$T_j = 125 \text{ }^\circ\text{C}$	150		mΩ
$I_{RRM}$	$I_{Fnom} = 8 \text{ A}$	$T_j = 125 \text{ }^\circ\text{C}$	9,4		A
$Q_{rr}$	$di/dt = -300 \text{ A}/\mu\text{s}$		1,5		μC
$E_{rr}$	$V_{CC} = 600\text{V}$		20,6		mJ
$R_{th(j-s)D}$	per diode			2,8	K/W
$M_s$	to heat sink			2	Nm
w			21		g

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

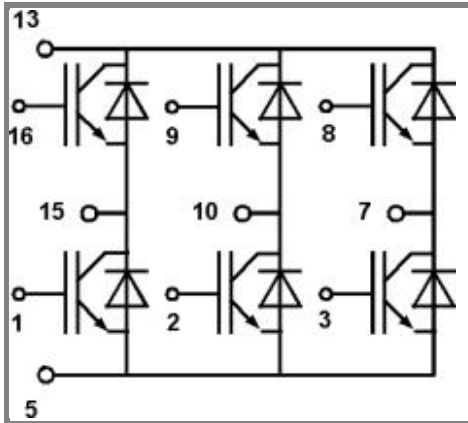
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Case T47 (Suggested hole diameter, in the PCB, for solder pins and plastic mounting pins: 2mm)



Case T47

GD