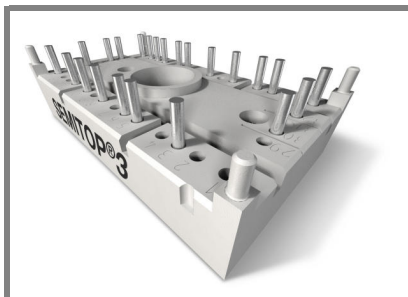


# SK60GB128



SEMITOP® 3

## IGBT Module

SK60GB128

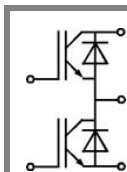
Preliminary Data

### Features

- Compact design
- One screw mounting
- Heat transfer and isolation through direct copper bonded aluminium oxide ceramic (DCB)
- High short circuit capability
- SPT= Soft-Punch-Through technology
- $V_{ce,sat}$  with positive coefficient

### Typical Applications

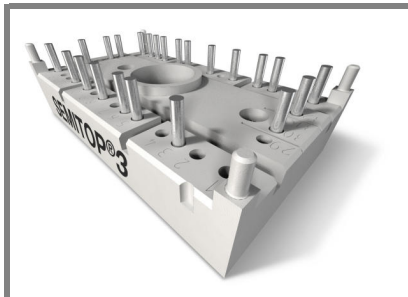
- Switching (not for linear use)
- Inverter
- Switched mode power supplies
- UPS



GB

Absolute Maximum Ratings		$T_s = 25^\circ\text{C}$ , unless otherwise specified	
Symbol	Conditions	Values	Units
<b>IGBT</b>			
$V_{CES}$	$T_j = 25^\circ\text{C}$	1200	V
$I_C$	$T_j = 125^\circ\text{C}$	$T_s = 25^\circ\text{C}$	63 A
		$T_s = 80^\circ\text{C}$	44 A
$I_{CRM}$	$I_{CRM} = 2 \times I_{Cnom}$	100	A
$V_{GES}$		$\pm 20$	V
$t_{psc}$	$V_{CC} = 600\text{ V}; V_{GE} \leq 20\text{ V}; T_j = 125^\circ\text{C}$ $V_{CES} < 1200\text{ V}$	10	$\mu\text{s}$
<b>Inverse Diode</b>			
$I_F$	$T_j = 150^\circ\text{C}$	$T_s = 25^\circ\text{C}$	57 A
		$T_s = 80^\circ\text{C}$	38 A
$I_{FRM}$	$I_{FRM} = 2 \times I_{Fnom}$		A
$I_{FSM}$	$t_p = 10\text{ ms}; \text{half sine wave } T_j = 150^\circ\text{C}$	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		$T_s = 25^\circ\text{C}$ , unless otherwise specified				
Symbol	Conditions	min.	typ.	max.	Units	
<b>IGBT</b>						
$V_{GE(th)}$	$V_{GE} = V_{CE}, I_C = 2\text{ mA}$	4,5	5,5	6,5	V	
$I_{CES}$	$V_{GE} = 0\text{ V}, V_{CE} = V_{CES}$	$T_j = 25^\circ\text{C}$		0,1	mA	
		$T_j = 125^\circ\text{C}$		0,2	mA	
$I_{GES}$	$V_{CE} = 0\text{ V}, V_{GE} = 20\text{ V}$	$T_j = 25^\circ\text{C}$		200	nA	
		$T_j = 125^\circ\text{C}$			nA	
$V_{CE0}$		$T_j = 25^\circ\text{C}$	1,1	1,3	V	
		$T_j = 125^\circ\text{C}$	1	1,2	V	
$r_{CE}$	$V_{GE} = 15\text{ V}$	$T_j = 25^\circ\text{C}$	16		$\text{m}\Omega$	
		$T_j = 125^\circ\text{C}$	18		$\text{m}\Omega$	
$V_{CE(sat)}$	$I_{Cnom} = 50\text{ A}, V_{GE} = 15\text{ V}$	$T_j = 25^\circ\text{C}_{chiplev.}$	1,7	1,9	2,3	V
		$T_j = 125^\circ\text{C}_{chiplev.}$		1,9	2,3	V
$C_{ies}$	$V_{CE} = 25\text{ V}, V_{GE} = 0\text{ V}$	$f = 1\text{ MHz}$	4,46		nF	
$C_{oes}$			0,33		nF	
$C_{res}$			0,21		nF	
$t_{d(on)}$	$R_{Gon} = 15\ \Omega$	$V_{CC} = 600\text{ V}$ $I_C = 50\text{ A}$	80		ns	
$t_r$			50		ns	
$E_{on}$			5,8		mJ	
$t_{d(off)}$	$R_{Goff} = 15\ \Omega$	$T_j = 125^\circ\text{C}$ $V_{GE} = \pm 15\text{ V}$	420		ns	
$t_f$			40		ns	
$E_{off}$			4,8		mJ	
$R_{th(j-s)}$	per IGBT			0,6	K/W	



**SEMITOP® 3**

## IGBT Module

### SK60GB128

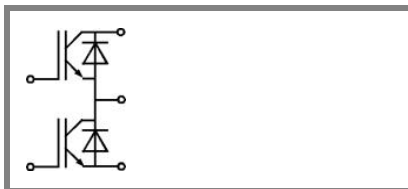
#### Preliminary Data

#### Features

- Compact design
- One screw mounting
- Heat transfer and isolation through direct copper bonded aluminium oxide ceramic (DCB)
- High short circuit capability
- SPT= Soft-Punch-Through technology
- $V_{ce,sat}$  with positive coefficient

#### Typical Applications

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



GB

#### Characteristics

Symbol	Conditions	min.	typ.	max.	Units
<b>Inverse Diode</b>					
$V_F = V_{EC}$	$I_{Fnom} = 50 \text{ A}; V_{GE} = 0 \text{ V}$	$T_j = 25 \text{ }^\circ\text{C}_{chiplev.}$	2	2,5	V
		$T_j = 125 \text{ }^\circ\text{C}_{chiplev.}$	1,8	2,3	V
$V_{F0}$			1	1,2	V
$r_F$			18	22	m $\Omega$
$I_{RRM}$	$I_F = 50 \text{ A}$		40		A
$Q_{rr}$	$di/dt = -800 \text{ A}/\mu\text{s}$		8		$\mu\text{C}$
$E_{rr}$	$V_{CC} = 600\text{V}$		2		mJ
$R_{th(j-s)D}$	per diode			0,9	K/W
$M_s$	to heat sink M1	2,25		2,5	Nm
w			29		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.

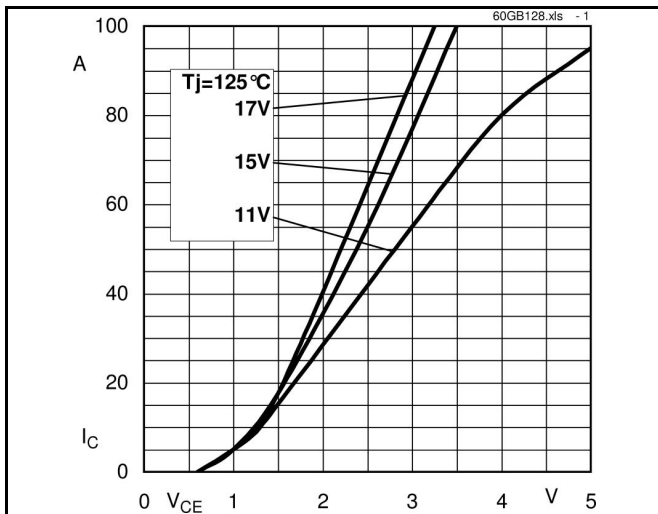


Fig. 1 Typ. output characteristic, inclusive  $R_{CC+EE}$

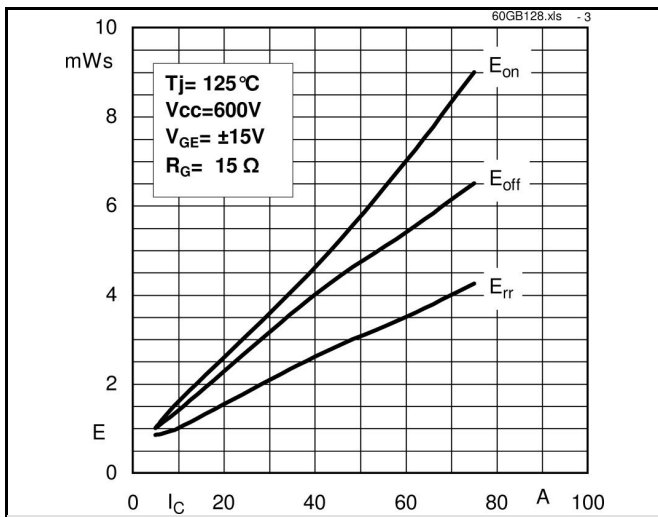


Fig. 3 Typ. turn-on /-off energy =  $f(I_C)$

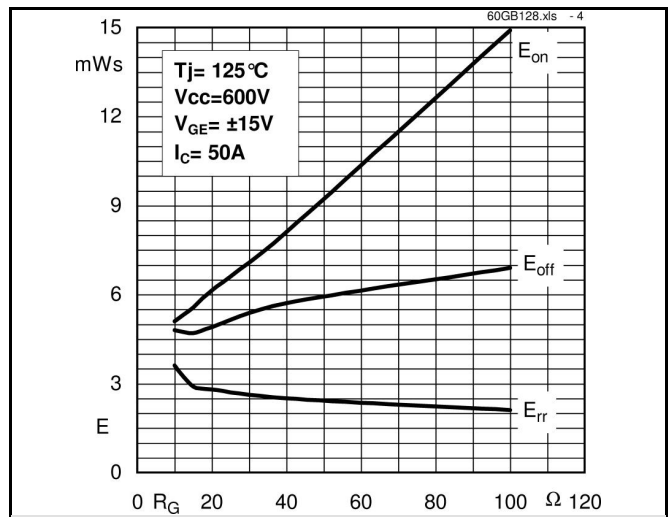


Fig. 4 Typ. turn-on /-off energy =  $f(R_G)$

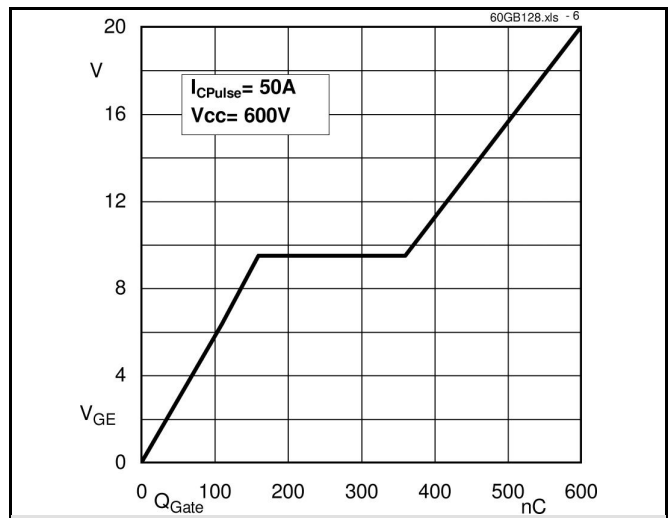
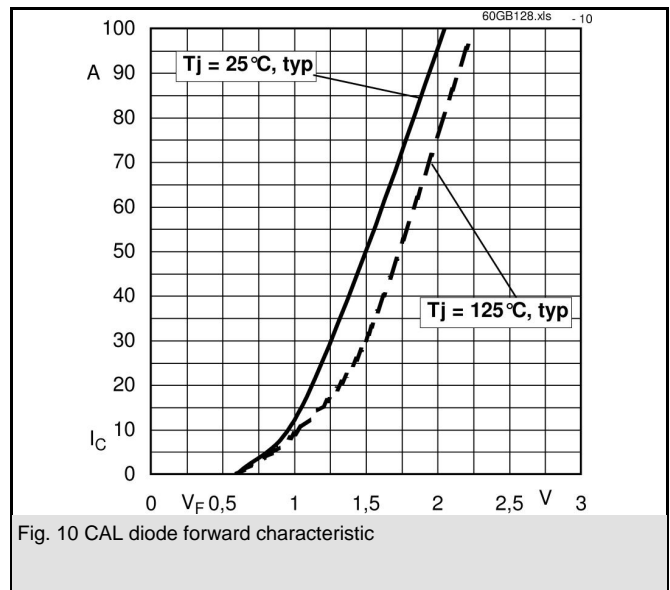
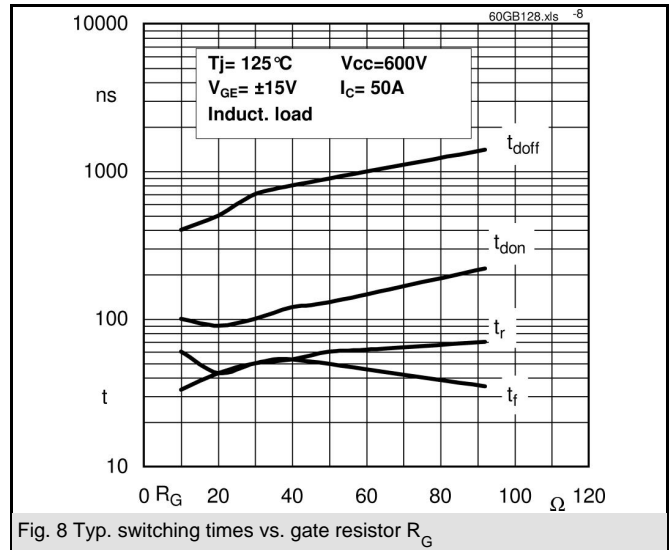
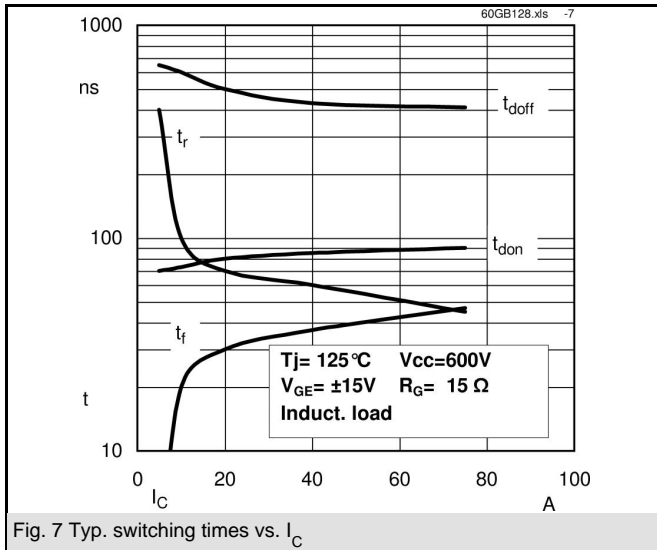
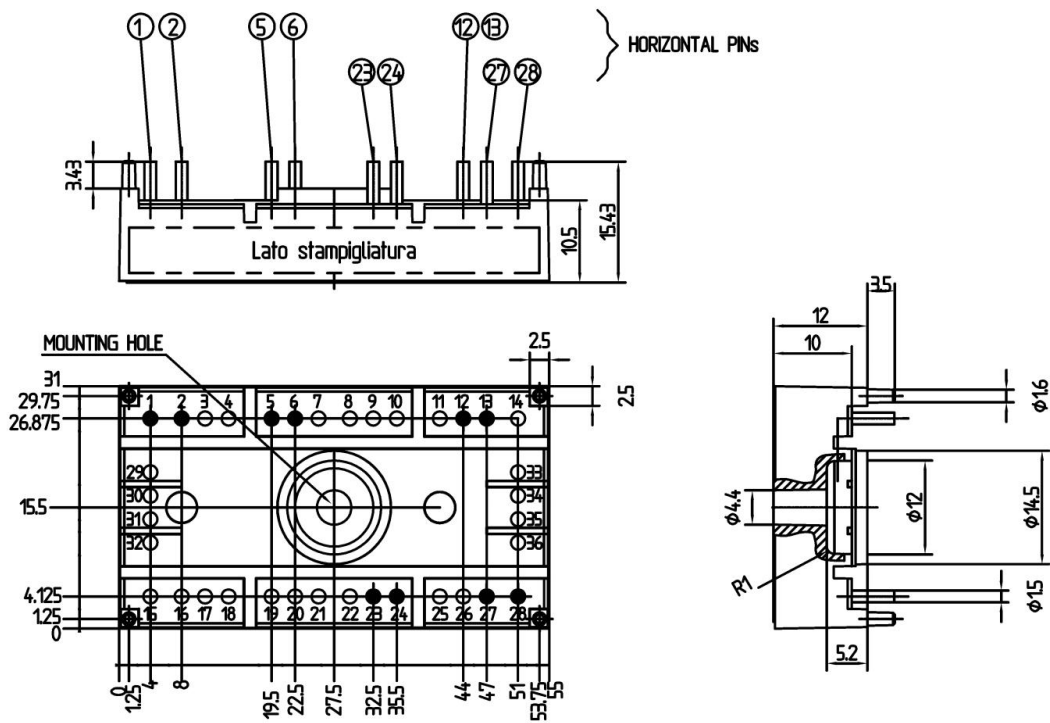
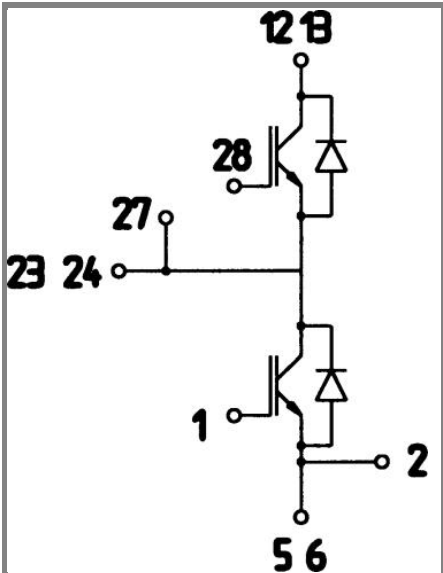


Fig. 6 Typ. gate charge characteristic





Case T27 (Suggested hole diameter, in the PCB, for solder pins and plastic mounting pins: 2mm)



Case T27

GB