

**SEMITOP® 2**

## IGBT Module

**SK30GB128**

**SK30GAL128**

**SK30GAR128**

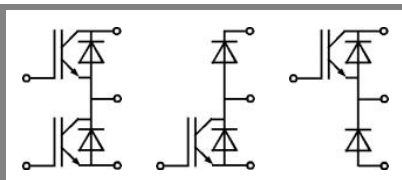
Preliminary Data

### 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

GAL

GAR

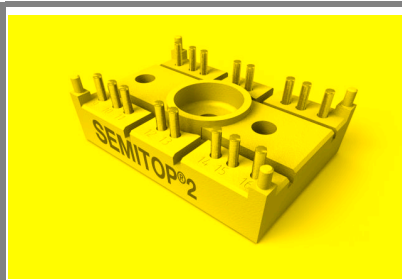
Absolute Maximum Ratings		$T_s = 25^\circ\text{C}$ , unless otherwise specified	
Symbol	Conditions	Values	Units
<b>IGBT</b>			
$V_{CES}$	$T_j = 25^\circ\text{C}$	1200	V
$I_C$	$T_j = 125^\circ\text{C}$	$T_s = 25^\circ\text{C}$	35
		$T_s = 80^\circ\text{C}$	25
$I_{CRM}$	$I_{CRM} = 2 \times I_{Cnom}$	50	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	$\mu\text{s}$

Inverse Diode		$T_s = 25^\circ\text{C}$ , unless otherwise specified	
Symbol	Conditions	Values	Units
$I_F$	$T_j = 150^\circ\text{C}$	$T_s = 25^\circ\text{C}$	37
		$T_s = 80^\circ\text{C}$	25
$I_{FRM}$	$I_{FRM} = 2 \times I_{Fnom}$		A
$I_{FSM}$	$t_p = 10\text{ ms};$ half sine wave $T_j = 150^\circ\text{C}$	350	A

Freewheeling Diode		$T_s = 25^\circ\text{C}$ , unless otherwise specified	
Symbol	Conditions	Values	Units
$I_F$	$T_j = 150^\circ\text{C}$	$T_{case} = 25^\circ\text{C}$	37
		$T_{case} = 80^\circ\text{C}$	25
$I_{FRM}$			A
$I_{FSM}$	$t_p = 10\text{ ms};$ half sine wave $T_j = 150^\circ\text{C}$	350	A

Module		$T_s = 25^\circ\text{C}$ , unless otherwise specified	
Symbol	Conditions	Values	Units
$I_{t(RMS)}$			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>						
$V_{GE(th)}$	$V_{GE} = V_{CE}, I_C = 1\text{ mA}$	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	0,1	mA	
		$T_j = 125^\circ\text{C}$			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		V	
		$T_j = 125^\circ\text{C}$	1		V	
$r_{CE}$	$V_{GE} = 15\text{ V}$	$T_j = 25^\circ\text{C}$	36		$\text{m}\Omega$	
		$T_j = 125^\circ\text{C}$	48		$\text{m}\Omega$	
$V_{CE(sat)}$	$I_{Cnom} = 25\text{ A}, V_{GE} = 15\text{ V}$	$T_j = 25^\circ\text{C}_{chiplev.}$	1,7	2	2,3	V
		$T_j = 125^\circ\text{C}_{chiplev.}$		2,2	3,7	V
$C_{ies}$	$V_{CE} = 25, V_{GE} = 0\text{ V}$	$f = 1\text{ MHz}$	1,9		nF	
$C_{oes}$			0,16		nF	
$C_{res}$			0,09		nF	
$t_{d(on)}$	$R_{Gon} = 15\ \Omega$	$V_{CC} = 600\text{ V}$ $I_C = 30\text{ A}$	55		ns	
$t_r$			26		ns	
$E_{on}$	$R_{Goff} = 15\ \Omega$	$T_j = 125^\circ\text{C}$ $V_{GE} = \pm 15\text{ V}$	2,8		mJ	
$t_{d(off)}$			284		ns	
$t_f$			40		ns	
$E_{off}$			2,19		mJ	
$R_{th(j-s)}$	per IGBT			1	K/W	



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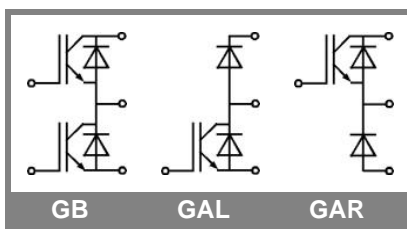
Preliminary Data

### Features

- Compact design
- One screw mounting
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### Typical Applications\*

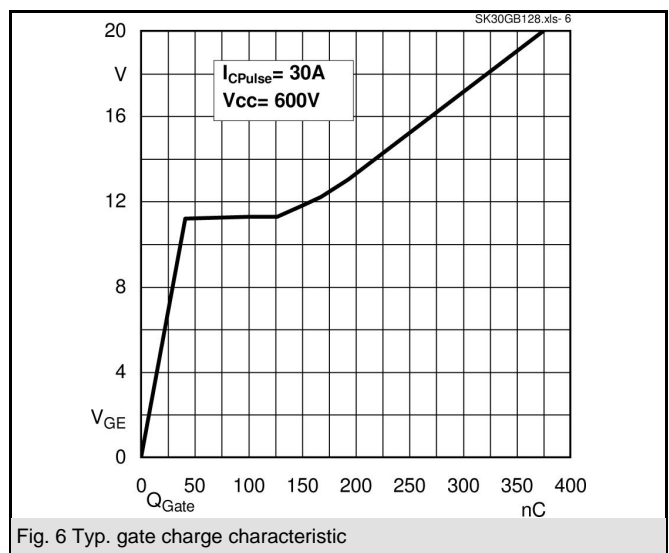
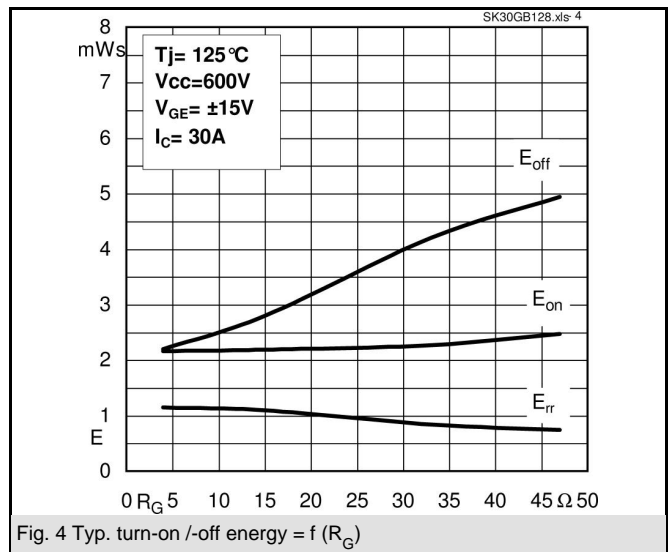
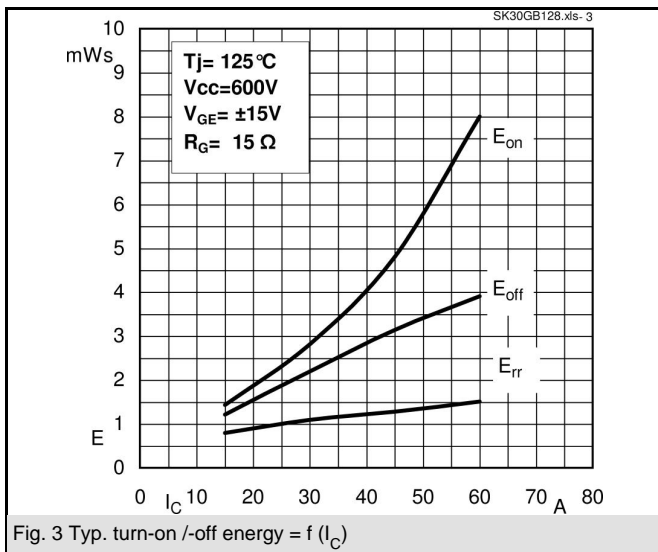
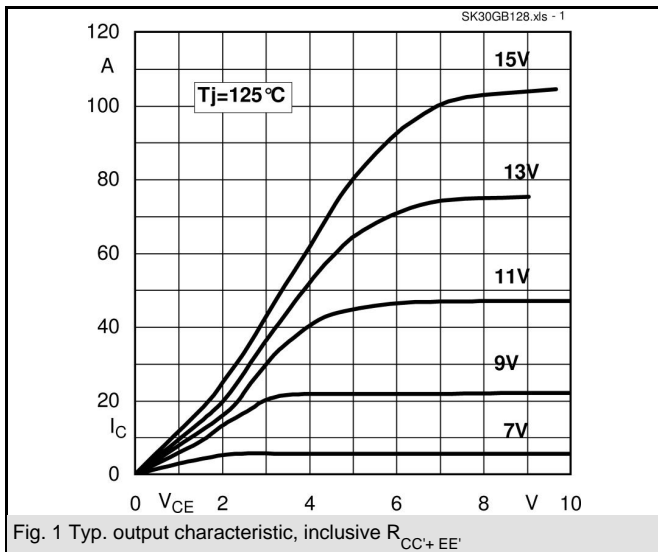
- Switching (not for linear use)
- Inverter
- Switched mode power supplies
- UPS

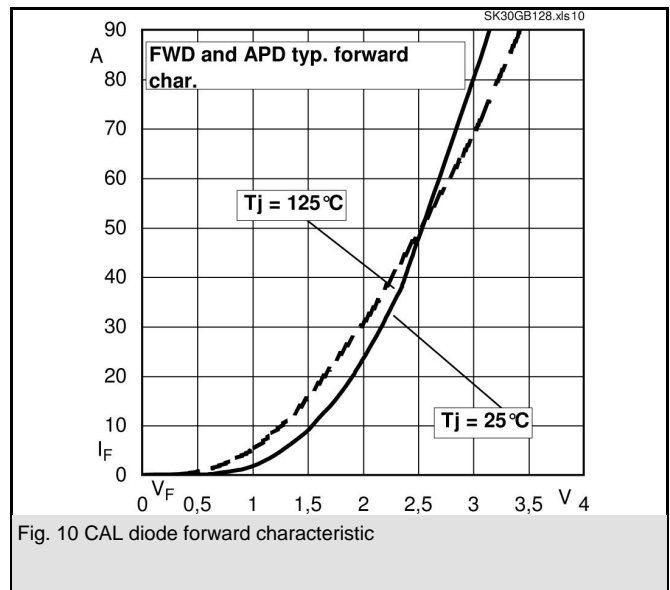
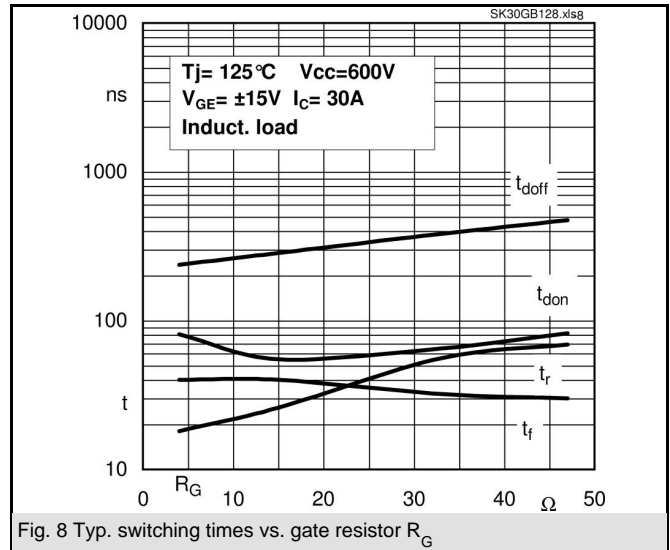
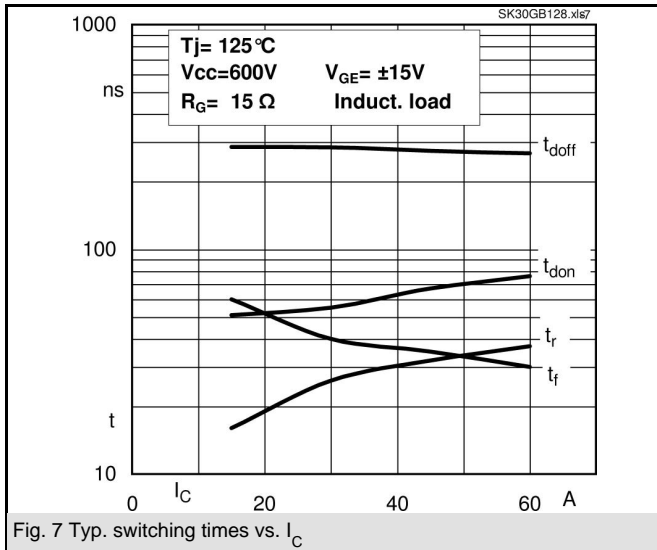


Characteristics					
Symbol	Conditions	min.	typ.	max.	Units
<b>Inverse Diode</b>					
$V_F = V_{EC}$	$I_{Fnom} = 25 \text{ A}; V_{GE} = 0 \text{ V}$	$T_j = 25 \text{ }^\circ\text{C}_{chiplev.}$	2	2,5	V
		$T_j = 125 \text{ }^\circ\text{C}_{chiplev.}$	1,8	2,3	V
$V_{F0}$			1	1,2	V
$r_F$			32	44	mΩ
$I_{RRM}$	$I_F = 22 \text{ A}$	$T_j = 125 \text{ }^\circ\text{C}$	25		A
$Q_{rr}$	$di/dt = -500 \text{ A}/\mu\text{s}$		4,5		μC
$E_{rr}$	$V_{CC} = 600\text{V}$		1		mJ
$R_{th(j-s)D}$	per diode			1,2	K/W
<b>Freewheeling Diode</b>					
$V_F = V_{EC}$	$I_{Fnom} = 25 \text{ A}; V_{GE} = 0 \text{ V}$	$T_j = 25 \text{ }^\circ\text{C}_{chiplev.}$	2	2,5	V
		$T_j = 125 \text{ }^\circ\text{C}_{chiplev.}$	1,8	2,3	V
$V_{F0}$			1	1,2	V
$r_F$			32	44	V
$I_{RRM}$	$I_F = 22 \text{ A}$	$T_j = 125 \text{ }^\circ\text{C}$	253		A
$Q_{rr}$	$di/dt = -500 \text{ A}/\mu\text{s}$		4,5		μC
$E_{rr}$	$V_R = 600\text{V}$		1		mJ
	per diode			1,2	K/W
$M_s$	to heat sink M1			2	Nm
w			19		g

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.

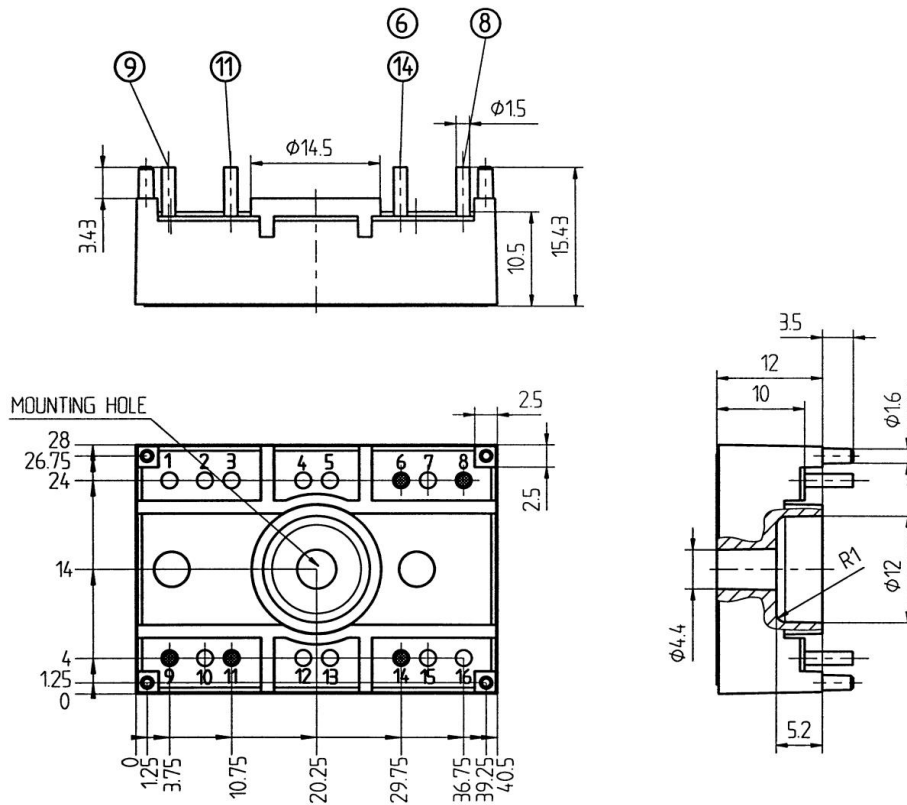




# SK30GB128

UL recognized file

no. E 63 532



Case T8 (Suggested hole diameter, in the PCB, for solder pins and plastic mounting pins: 2mm)

