

SK30GB128



SEMISTOP® 2

IGBT Module

SK30GB128

SK30GAL128

SK30GAR128

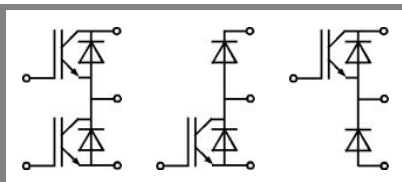
Preliminary Data

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



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GAL

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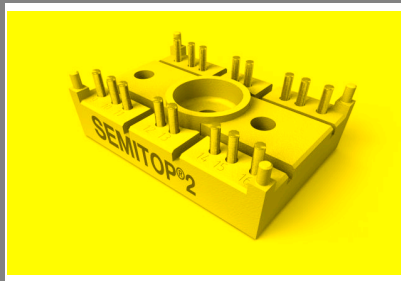
Absolute Maximum Ratings		$T_s = 25^\circ\text{C}$, unless otherwise specified	
Symbol	Conditions	Values	Units
IGBT			
V_{CES}	$T_j = 25^\circ\text{C}$	1200	V
I_C	$T_j = 125^\circ\text{C}$	$T_s = 25^\circ\text{C}$	35
		$T_s = 80^\circ\text{C}$	25
I_{CRM}	$I_{CRM} = 2 \times I_{Cnom}$	50	A
V_{GES}		± 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	μs

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}	$t_p = 10\text{ ms}; \text{half sine wave } T_j = 150^\circ\text{C}$	350	A

Freewheeling Diode		$T_{case} = 25^\circ\text{C}$, 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}	$t_p = 10\text{ ms}; \text{half sine wave } T_j = 150^\circ\text{C}$	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	
IGBT						
$V_{GE(th)}$	$V_{GE} = V_{CE}, I_C = 1\text{ mA}$	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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Typical Applications*

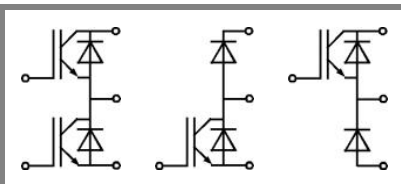
- Switching (not for linear use)
- Inverter
- Switched mode power supplies
- UPS

Characteristics

Symbol	Conditions	min.	typ.	max.	Units
Inverse Diode					
$V_F = V_{EC}$	$I_{Fnom} = 25\text{ A}; V_{GE} = 0\text{ V}$	$T_j = 25\text{ °C}_{chiplev.}$	2	2,5	V
		$T_j = 125\text{ °C}_{chiplev.}$	1,8	2,3	V
V_{F0}			1	1,2	V
r_F			32	44	mΩ
I_{RRM}	$I_F = 22\text{ A}$		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
Freewheeling Diode					
$V_F = V_{EC}$	$I_{Fnom} = 25\text{ A}; V_{GE} = 0\text{ V}$	$T_j = 25\text{ °C}_{chiplev.}$	2	2,5	V
		$T_j = 125\text{ °C}_{chiplev.}$	1,8	2,3	V
V_{F0}			1	1,2	V
r_F			32	44	V
I_{RRM}	$I_F = 22\text{ A}$		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.

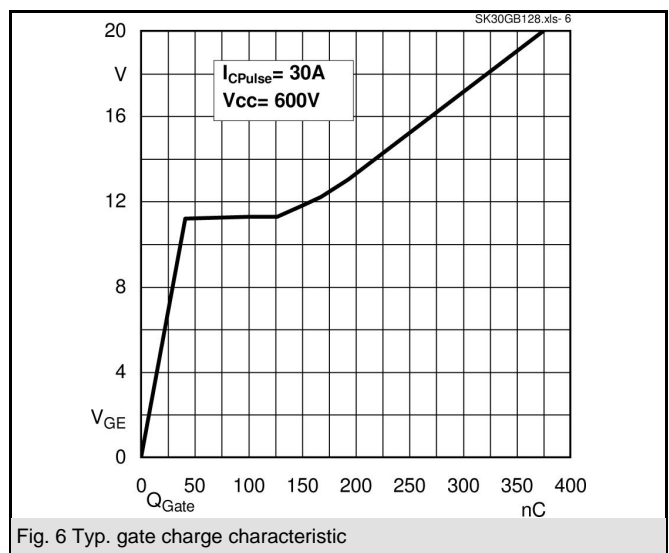
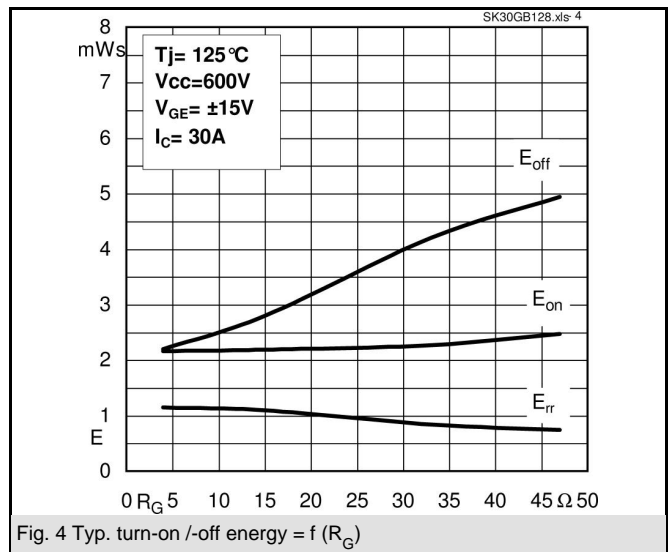
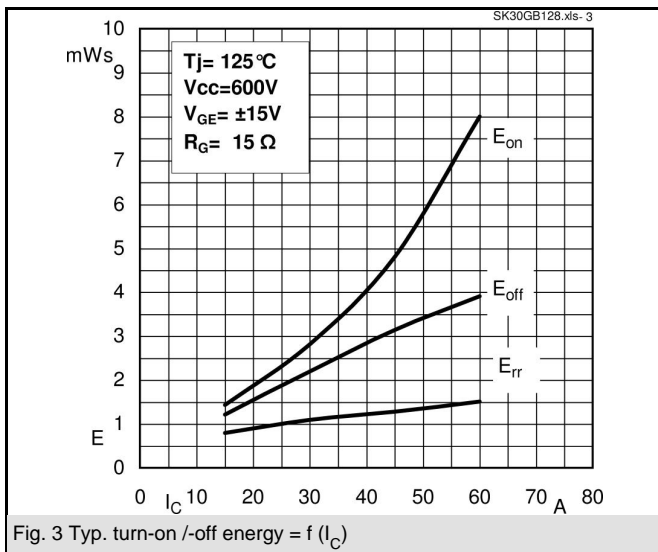
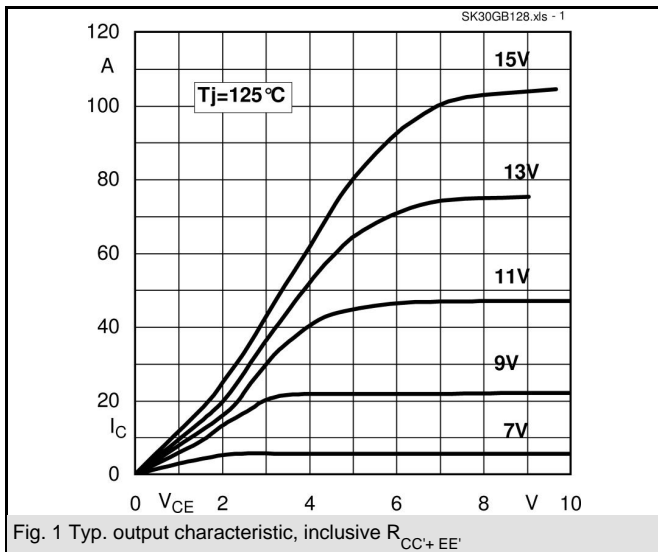
* The specifications of our components may not be considered as an assurance of component characteristics. Components have to be tested for the respective application. Adjustments may be necessary. The use of SEMIKRON products in life support appliances and systems is subject to prior specification and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



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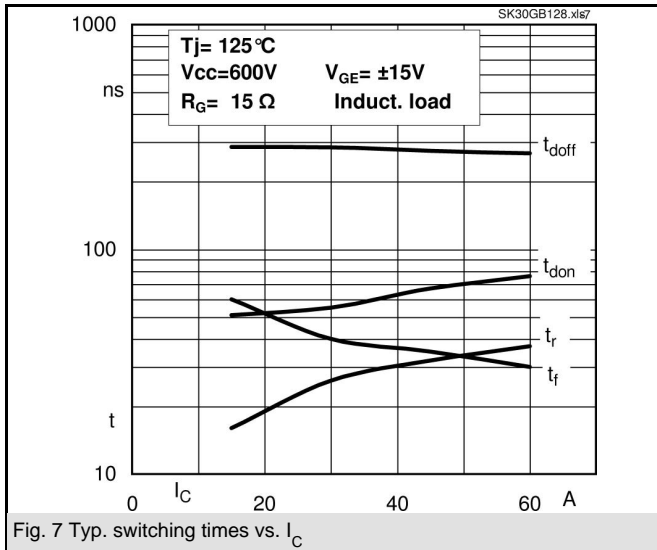


Fig. 7 Typ. switching times vs. I_C

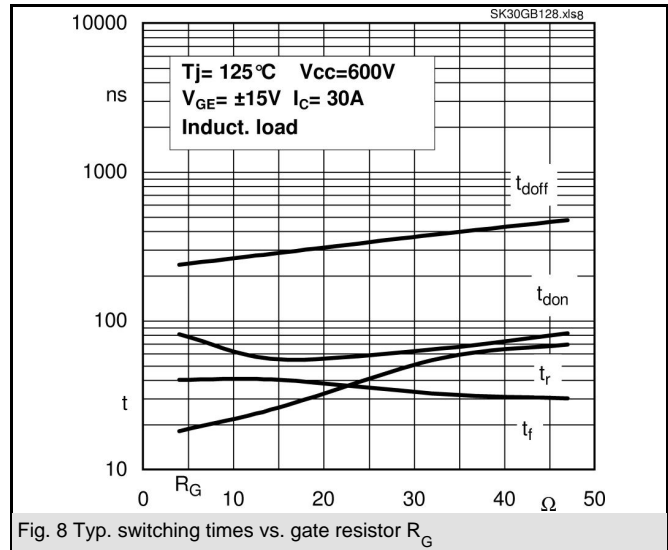


Fig. 8 Typ. switching times vs. gate resistor R_G

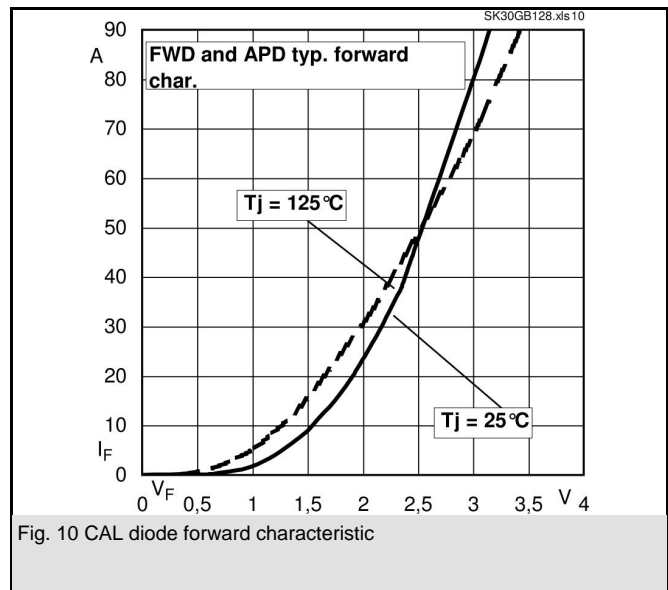
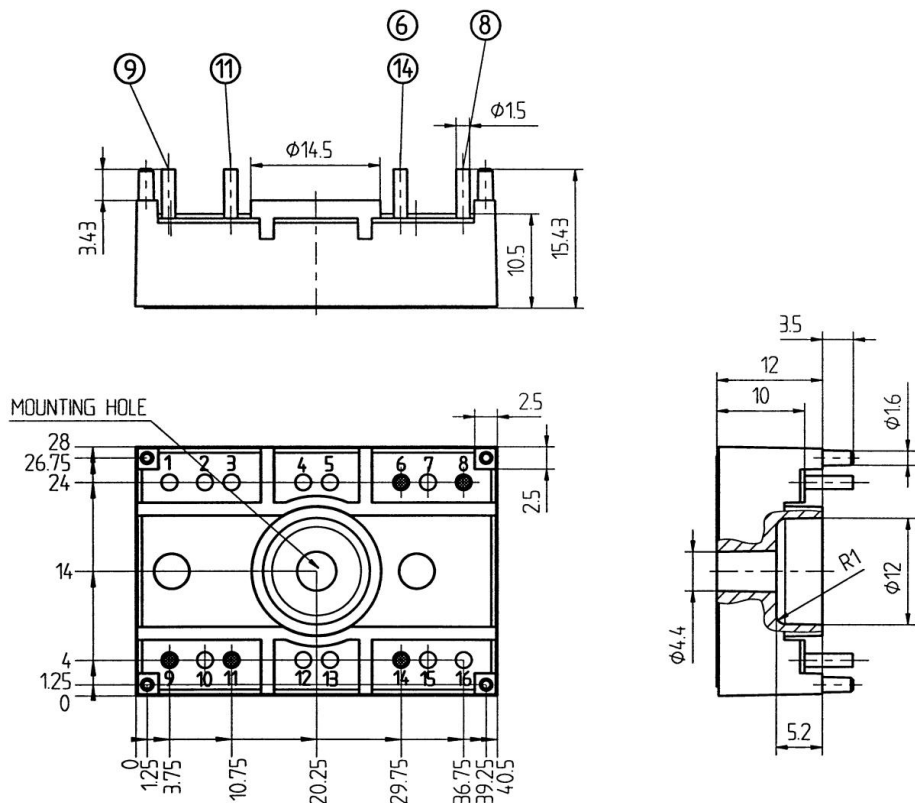


Fig. 10 CAL diode forward characteristic

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UL recognized file

no. E 63 532



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

