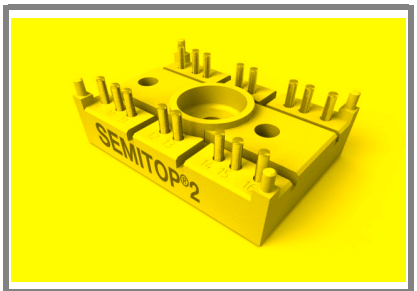
SK30GB128



SEMITOP® 2

IGBT Module

SK30GB128

SK30GAL128

SK30GAR128

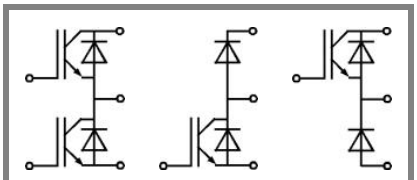
Preliminary Data

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 °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	35	A
		T_s = 80 °C	25	A
I_{CRM}	I_{CRM}= 2 x I_{Cnom}		50	A
V_{GES}			± 20	V
t_{psc}	V_{CC} = 600 V; $V_{GE} \leq$ 20 V; V_{CES} < 1200 V	T_j = 125 °C	10	µs
Inverse Diode				
I_F	T_j = 150 °C	T_s = 25 °C	37	A
		T_s = 80 °C	25	A
I_{FRM}	I_{FRM}= 2 x I_{Fnom}			A
I_{FSM}	t_p = 10 ms; half sine wave	T_j = 150 °C	350	A
Freewheeling Diode				
I_F	T_j = 150 °C	T_{case} = 25 °C	37	A
		T_{case} = 80 °C	25	A
I_{FRM}				A
I_{FSM}	t_p = 10 ms; half sine wave	T_j = 150 °C	350	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 °C, unless otherwise specified			
Symbol	**Conditions**		**min.**	**typ.**	**max.**	**Units**
IGBT						
$V_{GE(th)}$	V_{GE} = V_{CE}, I_C = 1 mA		4,5	5,5	6,5	V
I_{CES}	V_{GE} = 0 V, V_{CE} = V_{CES}	T_j = 25 °C		0,1	0,1	mA
		T_j = 125 °C				mA
I_{GES}	V_{CE} = 0 V, V_{GE} = 20 V	T_j = 25 °C			200	nA
		T_j = 125 °C				nA
V_{CE0}		T_j = 25 °C		1,1		V
		T_j = 125 °C		1		V
r_{CE}	V_{GE} = 15 V	T_j = 25°C		36		mΩ
		T_j = 125°C		48		mΩ
$V_{CE(sat)}$	I_{Cnom} = 25 A, V_{GE} = 15 V	T_j = 25°C$_{chiplev.}$	1,7	2	2,3	V
		T_j = 125°C$_{chiplev.}$		2,2	3,7	V
C_{ies}	V_{CE} = 25, V_{GE} = 0 V	f = 1 MHz		1,9		nF
C_{oes}				0,16		nF
C_{res}				0,09		nF
$t_{d(on)}$	R_{Gon} = 15 Ω	V_{CC} = 600V		55		ns
t_r		I_C= 30A		26		ns
E_{on}		T_j = 125 °C		2,8		mJ
$t_{d(off)}$	R_{Goff} = 15 Ω	V_{GE}=±15V		284		ns
t_f				40		ns
E_{off}				2,19		mJ
$R_{th(j-s)}$	per IGBT				1	K/W

SEMITOP® 2

IGBT Module

SK30GB128

SK30GAL128

SK30GAR128

Preliminary Data

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- Switching (not for linear use)
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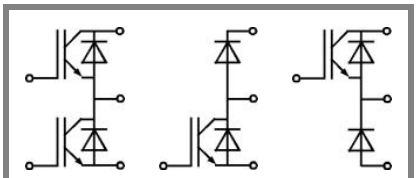


GB GAL GAR

Characteristics

Symbol	Conditions		min.	typ.	max.	Units
Inverse Diode						
$V_F = V_{EC}$	I_{Fnom} = 25 A; V_{GE} = 0 V	T_j = 25 °C$_{chiplev.}$		2	2,5	V
		T_j = 125 °C$_{chiplev.}$		1,8	2,3	V
V_{F0}		T_j = 125 °C		1	1,2	V
r_F		T_j = 125 °C		32	44	mΩ
I_{RRM}	I_F = 22 A	T_j = 125 °C		25		A
Q_{rr}	di/dt = -500 A/µs			4,5		µC
E_{rr}	V_{CC}= 600V			1		mJ
$R_{th(j-s)D}$	per diode				1,2	K/W
Freewheeling Diode						
$V_F = V_{EC}$	I_{Fnom} = 25 A; V_{GE} = 0 V	T_j = 25 °C$_{chiplev.}$		2	2,5	V
		T_j = 125 °C$_{chiplev.}$		1,8	2,3	V
V_{F0}		T_j = 125 °C		1	1,2	V
r_F		T_j = 125 °C		32	44	V
I_{RRM}	I_F = 22 A	T_j = 125 °C		253		A
Q_{rr}	di/dt = -500 A/µs			4,5		µC
E_{rr}	V_R=600V			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.

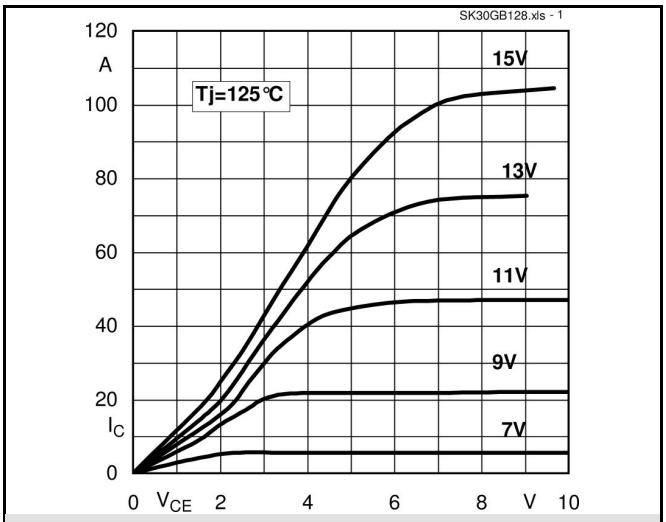


Fig. 1 Typ. output characteristic, inclusive $R_{CC'+EE'}$

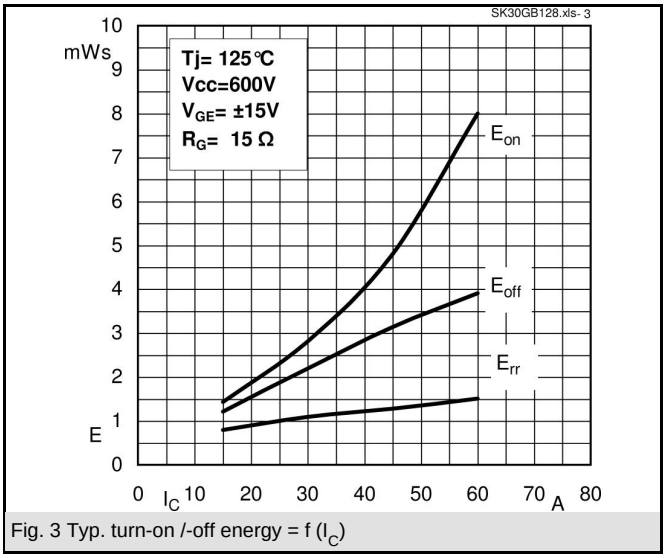


Fig. 3 Typ. turn-on /-off energy = f (I_C)

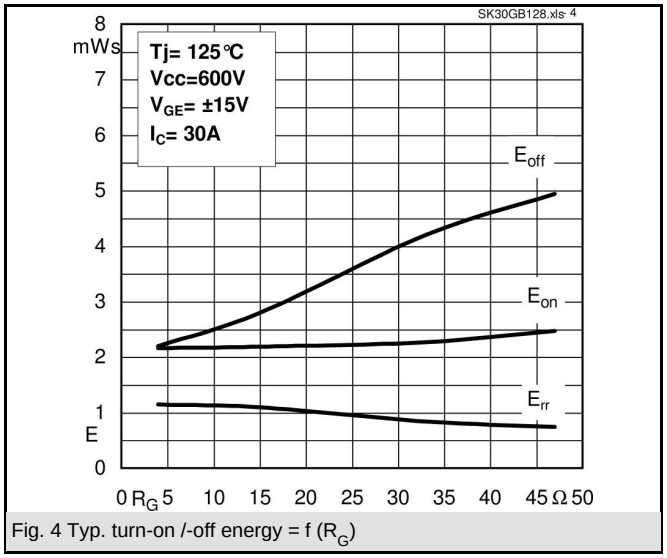


Fig. 4 Typ. turn-on /-off energy = f (R_G)

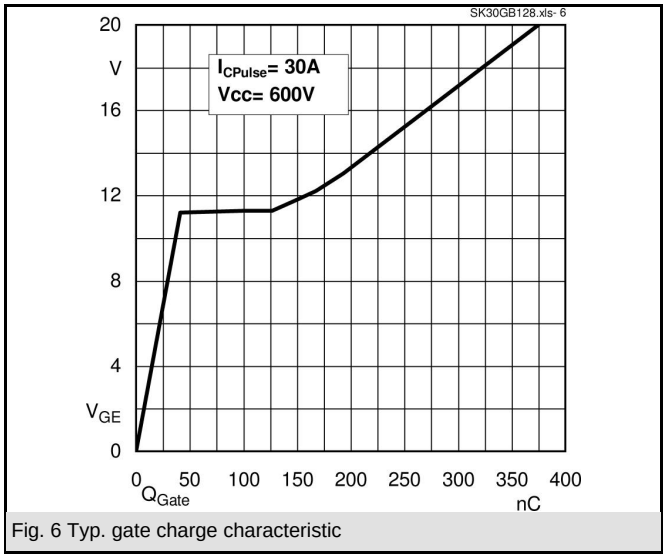


Fig. 6 Typ. gate charge characteristic

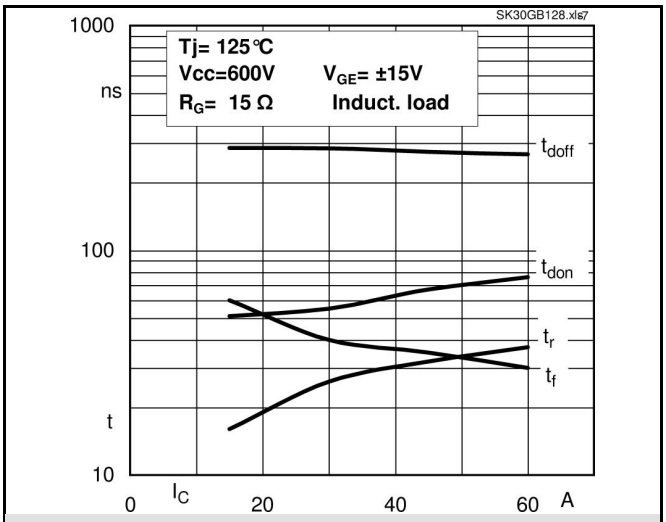


Fig. 7 Typ. switching times vs. I_C

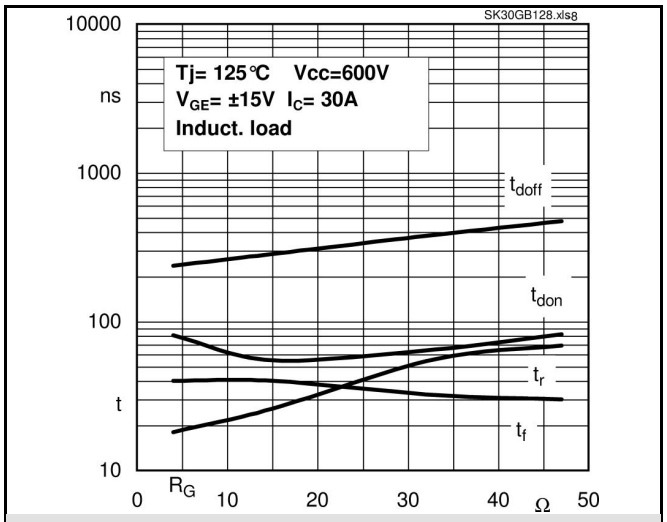


Fig. 8 Typ. switching times vs. gate resistor R_G

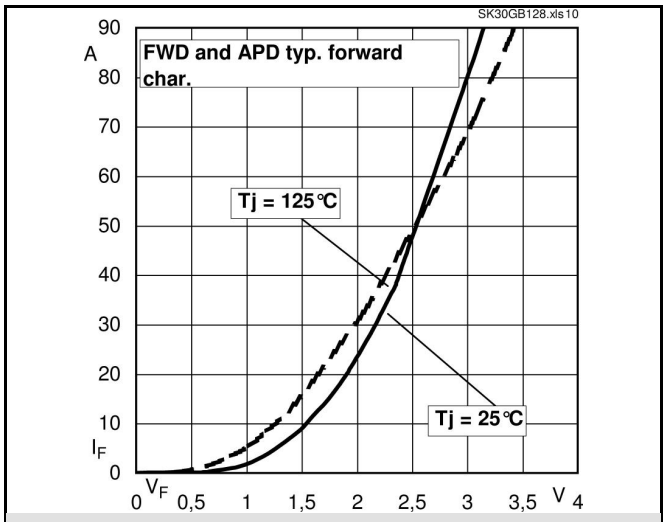
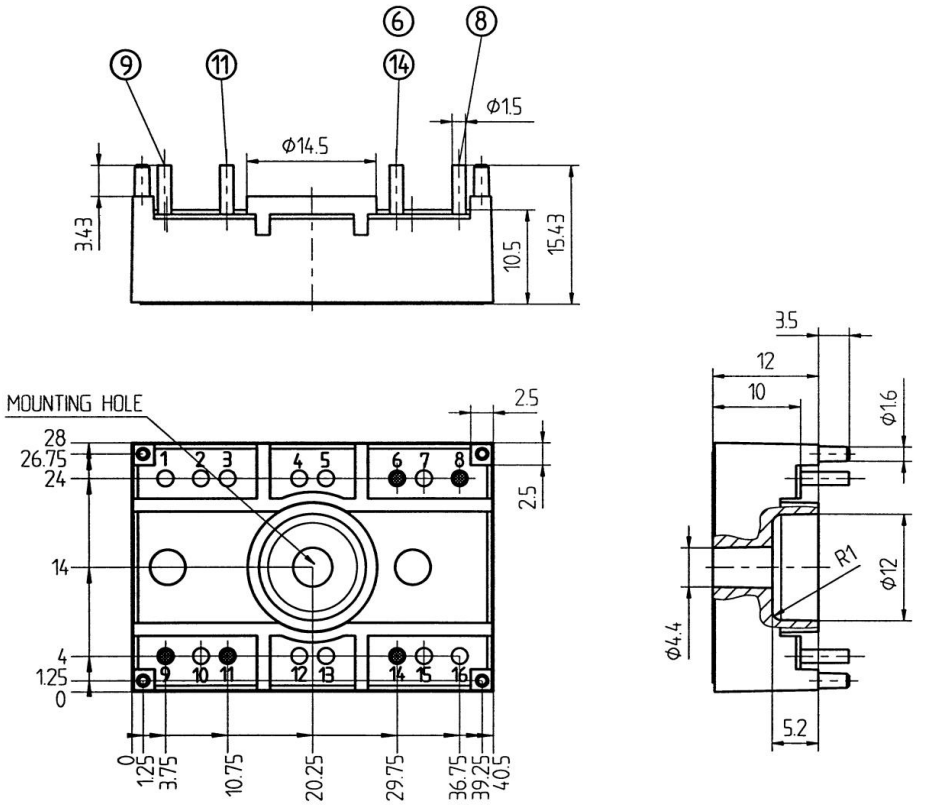
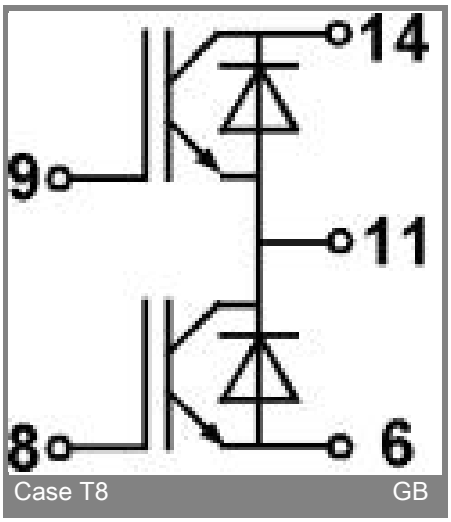


Fig. 10 CAL diode forward characteristic

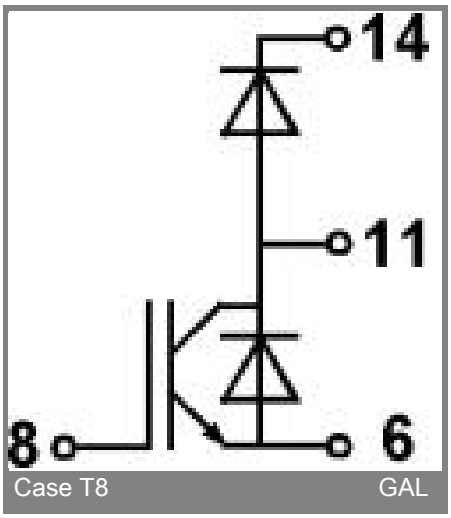
UL recognized file no. E 63 532



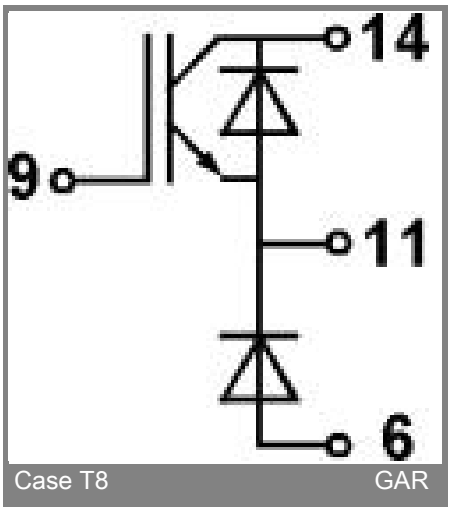
Case T8 (Suggested hole diameter, in the PCB, for solder pins and plastic mounting pins: 2mm)



Case T8 GB



Case T8 GAL



Case T8 GAR