SK8GD126

SEMITOP® 2

IGBT Module

SK8GD126

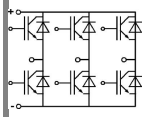
Preliminary Data

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



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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 = 150 °C	T_s = 25 °C	15	A
		T_s = 80 °C	10	A
I_{CRM}	I_{CRM}= 2 x I_{Cnom}		16	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	13	A
		T_s = 80 °C	9	A
I_{FRM}	I_{FRM}= 2 x I_{Fnom}			A
I_{FSM}	t_p = 10 ms; half sine wave	T_j = 150 °C	55	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 = 0,3 mA		5	5,8	6,5	V
I_{CES}	V_{GE} = 1200 V, V_{CE} = V_{CES}	T_j = 25 °C			0,05	mA
		T_j = 125 °C				mA
I_{GES}	V_{CE} = 0 V, V_{GE} = 20 V	T_j = 25 °C			120	nA
		T_j = 125 °C				nA
V_{CE0}		T_j = 25 °C		1	1,2	V
		T_j = 125 °C		0,9		V
r_{CE}	V_{GE} = 15 V	T_j = 25°C		87,5		mΩ
		T_j = 125°C		137		mΩ
$V_{CE(sat)}$	I_{Cnom} = 8 A, V_{GE} = 15 V	T_j = 25°C$_{chiplev.}$		1,7	2,2	V
		T_j = 125°C$_{chiplev.}$		2		V
C_{ies}	V_{CE} = 25, V_{GE} = 0 V	f = 1 MHz		0,605		nF
C_{oes}				0,037		nF
C_{res}				0,029		nF
$t_{d(on)}$	R_{Gon} = 50 Ω	V_{CC} = 600V		85		ns
t_r		I_C= 8A		30		ns
E_{on}		T_j = 125 °C		0,78		mJ
$t_{d(off)}$	R_{Goff} = 50 Ω	V_{GE}=±15V		430		ns
t_f				90		ns
E_{off}				0,96		mJ
$R_{th(j-s)}$	per IGBT				2	K/W

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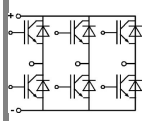

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Characteristics

Symbol	Conditions		min.	typ.	max.	Units
Inverse Diode						
$V_F = V_{EC}$	I_{Fnom} = 8 A; V_{GE} = 0 V	T_j = 25 °C$_{chiplev.}$		1,9	22	V
		T_j = 125 °C$_{chiplev.}$		2	2,4	V
V_{F0}		T_j = 25 °C		1	1,1	V
		T_j = 125 °C		0,8		V
r_F		T_j = 25 °C		112	138	mΩ
		T_j = 125 °C		150		mΩ
I_{RRM}	I_F = 8 A	T_j = 125 °C		9,4		A
Q_{rr}	di/dt = -300 A/µs			1,5		µC
E_{rr}	V_{CC}= 600V			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.

* 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.

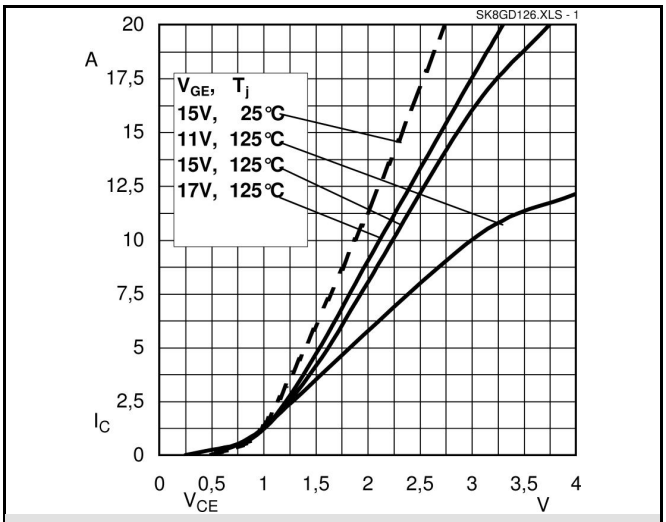


Fig. 1 Typ. output characteristic, inclusive $R_{CC'+EE'}$

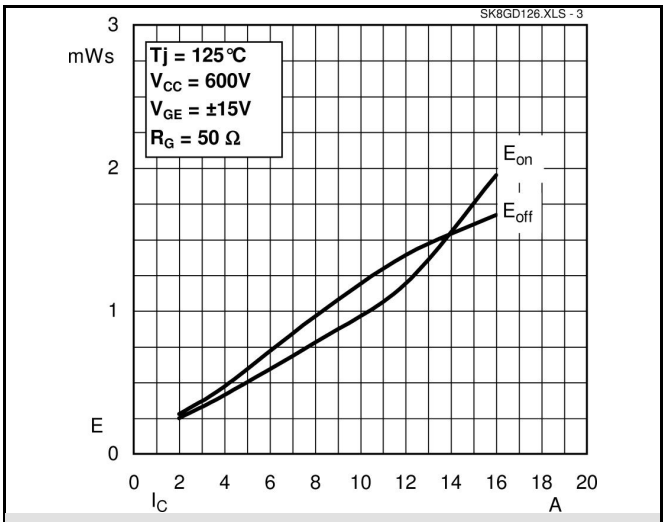


Fig. 3 Typ. turn-on /-off energy = f (I_C)

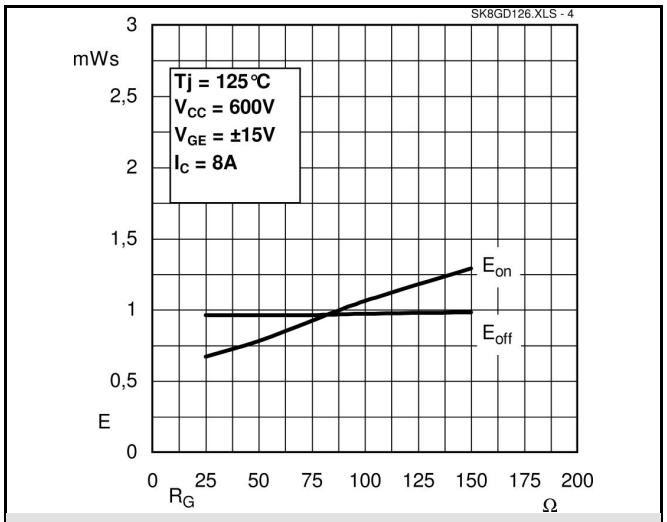


Fig. 4 Typ. turn-on /-off energy = f (R_G)

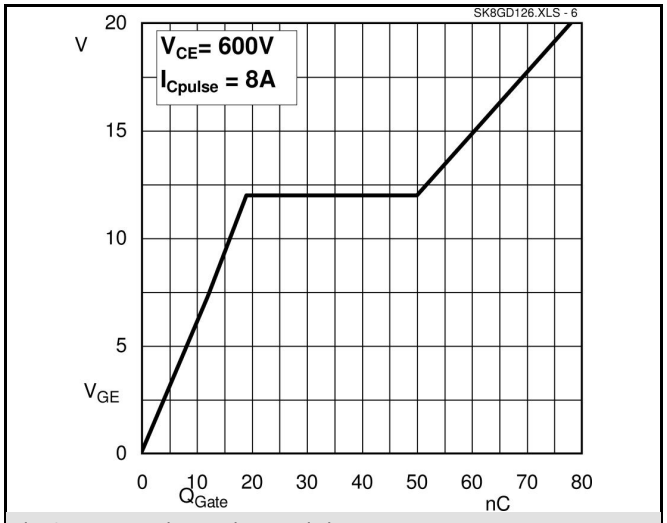


Fig. 6 Typ. gate charge characteristic

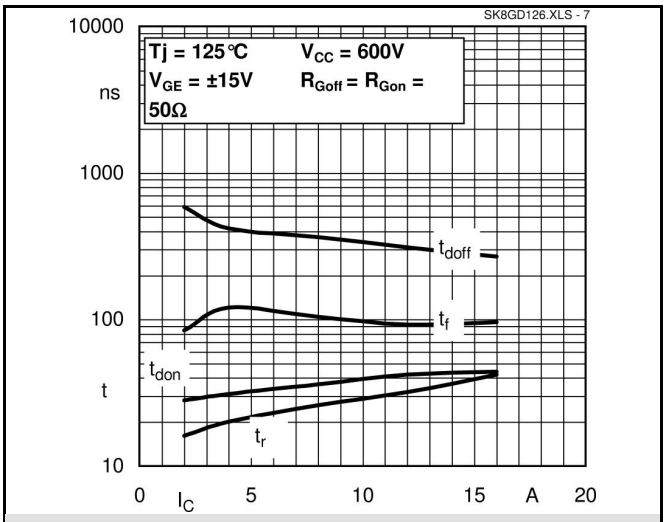


Fig. 7 Typ. switching times vs. I_C

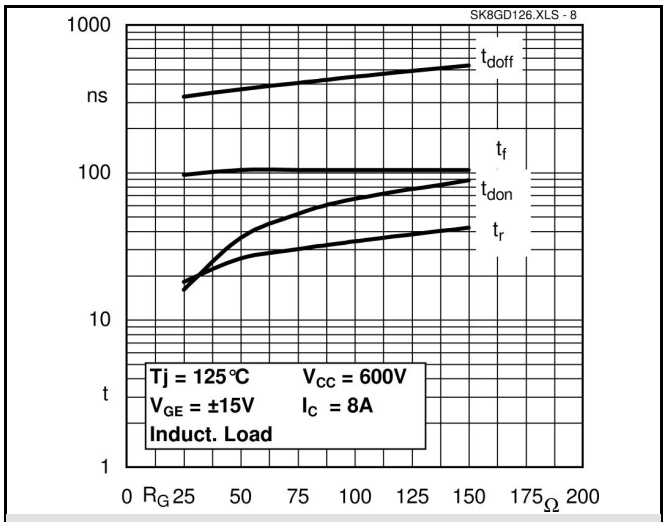


Fig. 8 Typ. switching times vs. gate resistor R_G

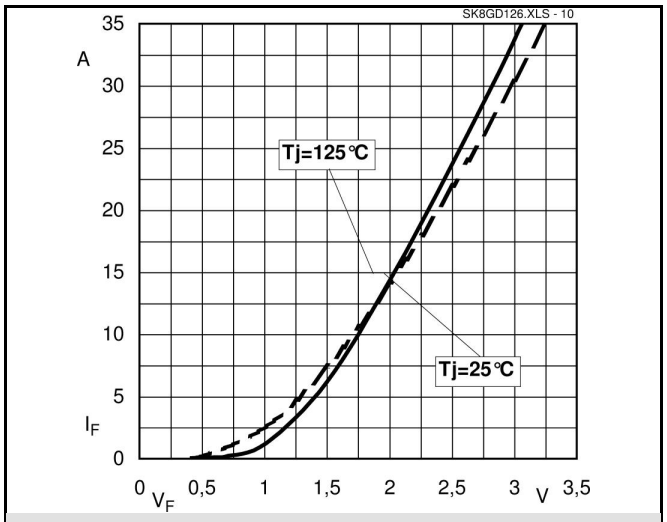
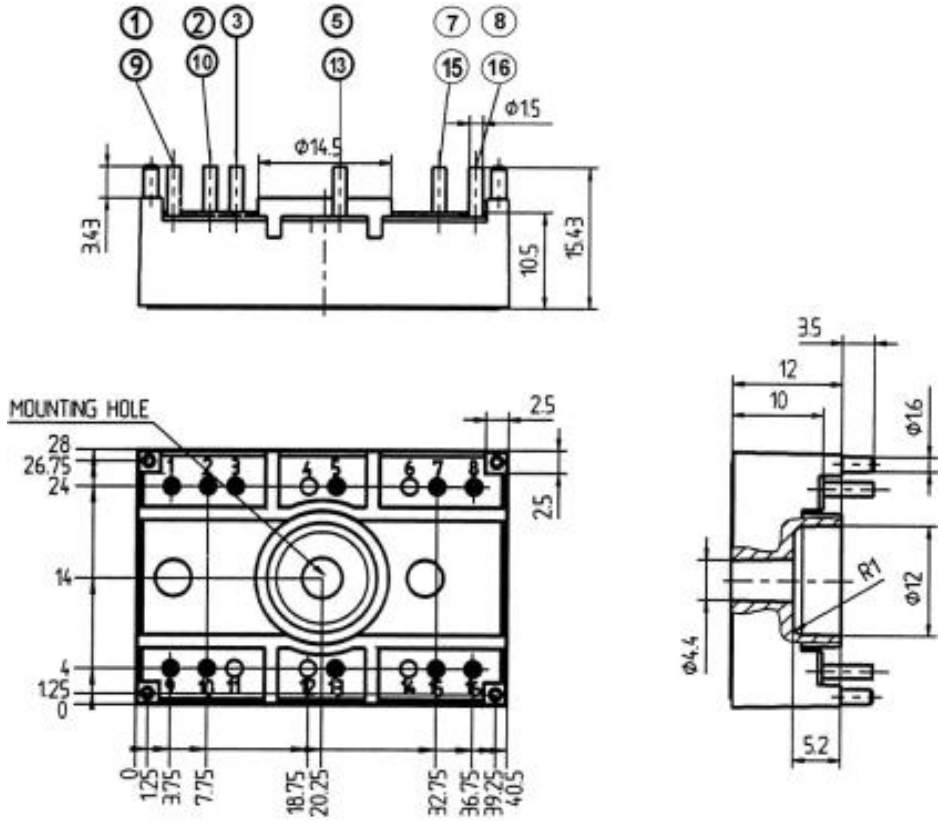
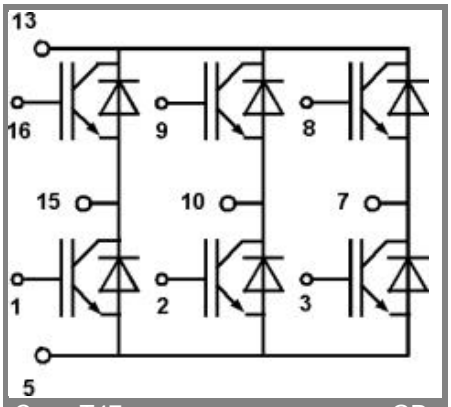


Fig. 10 CAL diode forward characteristic

UL recognized file no. E 63 532



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



Case T47 GD

