SK 9GD065



SEMITOP[®] 2

IGBT Module

SK 9GD065

Preliminary Data

Features

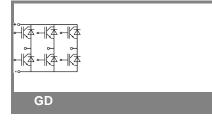
- Compact design
- One screw mounting
- Heat transfer and isolation through direct copper bonded aluminium oxide ceramic (DCB)
- Ultrafast NPT technology IGBT
- CAL technology FWD

Typical Applications*

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

• UPS

Absolute Maximum Ratings T _s = 25 °C, unless otherwise spec								
Symbol	Conditions	Values			Units			
IGBT								
V _{CES}	$T_j = 25 °C$ $T_j = 125 °C$ $T_s = 25 °C$		600			V		
I _C	T _j = 125 °C	T _s = 25 °C		11		Α		
		T _s = 80 °C		8		А		
I _{CRM}	I _{CRM} = 2 x I _{Cnom}		12			А		
V _{GES}			± 20			V		
t _{psc}	$\label{eq:V_CC} \begin{array}{l} V_{CC} \texttt{=} 300 \; V; \; V_{GE} \leq 20 \; V; \\ V_{CES} \texttt{<} 600 \; V \end{array}$	T _j = 125 °C	10			μs		
Inverse D	Diode							
I _F	$T_{j} = 125 \text{ °C}$ $T_{s} = 25 \text{ °C}$		22			А		
		T _s = 80 °C		15		Α		
I _{FRM}	I _{FRM} = 2 x I _{Fnom}		30		Α			
Module								
I _{t(RMS)}						Α		
T _{vj}			-	40 +150		°C		
T _{stg}			-	40 +125		°C		
V _{isol}	AC, 1 min.			2500		V		
ISOI				2000				
Characte	ristics	Т, =	25 °C, ur	nless othe	erwise sp	pecified		
Characte Symbol		T _s =	25 °C, ur min.					
Symbol	ristics Conditions	T _s =	25 °C, ur min.	nless othe typ.	erwise sp max.			
Symbol IGBT	Conditions	T _s =						
Symbol IGBT V _{GE(th)}	Conditions		min.	typ.	max.	Unit		
Symbol IGBT	Conditions $V_{GE} = V_{CE}, I_C = 0.2 \text{ mA}$ $V_{GE} = 0.7, V_{CE} = V_{CES}$	T _j = 25 °C	min.	typ.	max. 5	Units		
Symbol IGBT V _{GE(th)} I _{CES}	Conditions $V_{GE} = V_{CE}, I_C = 0.2 \text{ mA}$ $V_{GE} = 0.7, V_{CE} = V_{CES}$	T _j = 25 °C	min.	typ.	max. 5	V V MA		
Symbol IGBT V _{GE(th)}	Conditions	$T_{j} = 25 \text{ °C}$ $T_{j} = 125 \text{ °C}$ $T_{j} = 25 \text{ °C}$	min.	typ.	max. 5 0,03	V MA MA		
Symbol IGBT V _{GE(th)} I _{CES}	Conditions $V_{GE} = V_{CE}, I_C = 0.2 \text{ mA}$ $V_{GE} = 0.7, V_{CE} = V_{CES}$	T _j = 25 °C	min.	typ.	max. 5 0,03	V MA MA nA		
Symbol IGBT V _{GE(th)} I _{CES}	Conditions $V_{GE} = V_{CE}, I_C = 0.2 \text{ mA}$ $V_{GE} = 0.7, V_{CE} = V_{CES}$	$T_j = 25 \ ^{\circ}C$ $T_j = 125 \ ^{\circ}C$ $T_j = 25 \ ^{\circ}C$ $T_j = 125 \ ^{\circ}C$ $T_j = 125 \ ^{\circ}C$ $T_j = 25 \ ^{\circ}C$	min.	typ. 4	max. 5 0,03	V mA mA nA nA		
Symbol IGBT V _{GE(th)} I _{CES}	Conditions $V_{GE} = V_{CE}, I_C = 0.2 \text{ mA}$ $V_{GE} = 0.7, V_{CE} = V_{CES}$	$T_j = 25 °C$ $T_j = 125 °C$ $T_j = 25 °C$ $T_j = 125 °C$	min.	typ. 4 1,2	max. 5 0,03	V mA mA nA nA V		
Symbol IGBT V _{GE(th)} I _{CES} I _{GES} V _{CE0}	V _{GE} = V _{CE} , I _C = 0,2 mA V _{GE} = 0 V, V _{CE} = V _{CES} V _{CE} = 0 V, V _{GE} = 20 V V _{GE} = 15 V	$T_{j} = 25 \ ^{\circ}C$ $T_{j} = 125 \ ^{\circ}C$ $T_{j} = 125 \ ^{\circ}C$ $T_{j} = 125 \ ^{\circ}C$ $T_{j} = 25 \ ^{\circ}C$ $T_{j} = 125 \ ^{\circ}C$ $T_{j} = 25 \ ^{\circ}C$ $T_{j} = 125 \ ^{\circ}C$ $T_{j} = 125 \ ^{\circ}C$	min.	typ. 4 1,2 1,1	max. 5 0,03	V mA mA nA nA V V V		
Symbol IGBT V _{GE(th)} I _{CES} V _{CE0} r _{CE}	V _{GE} = V _{CE} , I _C = 0,2 mA V _{GE} = 0 V, V _{CE} = V _{CES} V _{CE} = 0 V, V _{GE} = 20 V	$T_{j} = 25 °C$ $T_{j} = 125 °C$ $T_{j} = 25 °C$ $T_{j} = 125 °C$ $T_{j} = 25 °C$ $T_{j} = 125 °C$ $T_{j} = 125 °C$ $T_{j} = 25 °C$ $T_{j} = 125 °C$ $T_{j} = 125 °C$ $T_{j} = 25 °C$	min.	typ. 4 1,2 1,1 133	max. 5 0,03	V mA mA nA nA v v mA		
Symbol IGBT V _{GE(th)} I _{GES} V _{CE0} r _{CE} V _{CE(sat)}	V _{GE} = V _{CE} , I _C = 0,2 mA V _{GE} = 0 V, V _{CE} = V _{CES} V _{CE} = 0 V, V _{GE} = 20 V V _{GE} = 15 V	$T_{j} = 25 °C$ $T_{j} = 125 °C$ $T_{j} = 25 °C$ $T_{j} = 125 °C$ $T_{j} = 25 °C$ $T_{j} = 125 °C$ $T_{j} = 125 °C$ $T_{j} = 25 °C$ $T_{j} = 125 °C$ $T_{j} = 125 °C$ $T_{j} = 25 °C$	min.	typ. 4 1,2 1,1 133 183	max. 5 0,03 120	V mA mA nA nA NA v w m m m m m m m m m m		
Symbol IGBT V _{GE(th)} I _{GES} V _{CE0} V _{CE0} V _{CE(sat)} C _{ies}	V _{GE} = V _{CE} , I _C = 0,2 mA V _{GE} = 0 V, V _{CE} = V _{CES} V _{CE} = 0 V, V _{GE} = 20 V V _{GE} = 15 V I _{Cnom} = 6 A, V _{GE} = 15 V	$T_{j} = 25 \text{ °C}$ $T_{j} = 125 \text{ °C}$ $T_{j} = 25 \text{ °C}$ $T_{j} = 125 \text{ °C}$ $T_{j} = 25 \text{ °C}$ $T_{j} = 125 \text{ °C}$ $T_{j} = 25 \text{ °C}$ $T_{j} = 125 \text{ °C}$ $T_{j} = 125 \text{ °C}$ $T_{j} = 125 \text{ °C}$	min.	typ. 4 1,2 1,1 133 183 2 2,2 0,35	max. 5 0,03 120 2,5	V mA mA nA nA nA v V w v v v v v v v v v v v v v v v v v v v nF		
Symbol IGBT V _{GE(th)} I _{CES} V _{CE0} V _{CE0} V _{CE(sat)} C _{ies} C _{oes}	V _{GE} = V _{CE} , I _C = 0,2 mA V _{GE} = 0 V, V _{CE} = V _{CES} V _{CE} = 0 V, V _{GE} = 20 V V _{GE} = 15 V	$T_{j} = 25 °C$ $T_{j} = 125 °C$ $T_{j} = 25 °C$ $T_{j} = 125 °C$ $T_{j} = 25 °C$ $T_{j} = 125 °C$ $T_{j} = 125 °C$ $T_{j} = 25 °C$ $T_{j} = 125 °C$ $T_{j} = 125 °C$ $T_{j} = 25 °C$	min.	typ. 4 1,2 1,1 133 183 2 2,2 0,35 0,038	max. 5 0,03 120 2,5	V mA mA nA N V V V NF nF nF		
Symbol IGBT V _{GE(th)} I _{GES} V _{CE0} V _{CE0} V _{CE(sat)} C _{ies}	V _{GE} = V _{CE} , I _C = 0,2 mA V _{GE} = 0 V, V _{CE} = V _{CES} V _{CE} = 0 V, V _{GE} = 20 V V _{GE} = 15 V I _{Cnom} = 6 A, V _{GE} = 15 V	$T_{j} = 25 \text{ °C}$ $T_{j} = 125 \text{ °C}$ $T_{j} = 25 \text{ °C}$ $T_{j} = 125 \text{ °C}$ $T_{j} = 25 \text{ °C}$ $T_{j} = 125 \text{ °C}$ $T_{j} = 25 \text{ °C}$ $T_{j} = 125 \text{ °C}$ $T_{j} = 125 \text{ °C}$ $T_{j} = 125 \text{ °C}$	min.	typ. 4 1,2 1,1 133 183 2 2,2 0,35 0,038 0,023	max. 5 0,03 120 2,5	V mA mA nA nA nA v V w v v v v v v v v v v v v v v v v v v v nF		
Symbol IGBT V _{GE(th)} I _{CES} I _{GES} V _{CE0} r _{CE} V _{CE(sat)} C _{ies} C _{oes} C _{res} t _{d(on)}	Conditions $V_{GE} = V_{CE}, I_C = 0.2 \text{ mA}$ $V_{GE} = 0 \text{ V}, V_{CE} = V_{CES}$ $V_{CE} = 0 \text{ V}, V_{GE} = 20 \text{ V}$ $V_{GE} = 15 \text{ V}$ $I_{Cnom} = 6 \text{ A}, V_{GE} = 15 \text{ V}$ $V_{CE} = 25, V_{GE} = 0 \text{ V}$	$T_{j} = 25 \text{ °C}$ $T_{j} = 125 \text{ °C}$ $T_{j} = 125 \text{ °C}$ $T_{j} = 125 \text{ °C}$ $T_{j} = 25 \text{ °C}$ $T_{j} = 125 \text{ °C}$ $T_{j} = 125 \text{ °C}$ $T_{j} = 125 \text{ °C}$ $T_{j} = 25 \text{ °C}$ $T_{j} = 125 \text{ °C}$	min.	typ. 4 1,2 1,1 133 183 2 2,2 0,35 0,038 0,023 20	max. 5 0,03 120 2,5	V mA mA nA mΩ V V V NF nF nF nF nF nF nF nF		
Symbol IGBT V _{GE(th)} I _{CES} I _{GES} V _{CE0} r _{CE} V _{CE(sat)} C _{ies} C _{oes} C _{res} t _{d(on)}	V _{GE} = V _{CE} , I _C = 0,2 mA V _{GE} = 0 V, V _{CE} = V _{CES} V _{CE} = 0 V, V _{GE} = 20 V V _{GE} = 15 V I _{Cnom} = 6 A, V _{GE} = 15 V	$T_{j} = 25 °C$ $T_{j} = 125 °C$	min.	typ. 4 1,2 1,1 133 183 2 2,2 0,35 0,038 0,023 20 25	max. 5 0,03 120 2,5	V mA mA nA mΩ V V V V NF nF nF nF nS ns		
Symbol IGBT V _{GE(th)} I _{CES} I _{GES} V _{CE0} r _{CE} V _{CE(sat)} C _{ies} C _{res} t _{d(on)} t _r E _{on}	Conditions $V_{GE} = V_{CE}, I_C = 0.2 \text{ mA}$ $V_{GE} = 0 \text{ V}, V_{CE} = V_{CES}$ $V_{CE} = 0 \text{ V}, V_{GE} = 20 \text{ V}$ $V_{GE} = 15 \text{ V}$ $V_{GE} = 15 \text{ V}$ $I_{Cnom} = 6 \text{ A}, V_{GE} = 15 \text{ V}$ $V_{CE} = 25, V_{GE} = 0 \text{ V}$ $R_{Gon} = 120 \Omega$	$T_{j} = 25 \text{ °C}$ $T_{j} = 125 \text{ °C}$ $T_{j} = 125 \text{ °C}$ $T_{j} = 125 \text{ °C}$ $T_{j} = 25 \text{ °C}$ $T_{j} = 125 \text{ °C}$	min.	typ. 4 1,2 1,1 133 183 2 2,2 0,35 0,038 0,023 20 25 0,22	max. 5 0,03 120 2,5	V mA mA nA mΩ V V V V NF nF nF nF nS mS mJ		
Symbol IGBT V _{GE(th)} I _{CES} I _{GES} V _{CE0} r _{CE} V _{CE(sat)} C _{ies} C _{oes} C _{res} t _{d(on)}	Conditions $V_{GE} = V_{CE}, I_C = 0.2 \text{ mA}$ $V_{GE} = 0 \text{ V}, V_{CE} = V_{CES}$ $V_{CE} = 0 \text{ V}, V_{GE} = 20 \text{ V}$ $V_{GE} = 15 \text{ V}$ $I_{Cnom} = 6 \text{ A}, V_{GE} = 15 \text{ V}$ $V_{CE} = 25, V_{GE} = 0 \text{ V}$	$T_{j} = 25 °C$ $T_{j} = 125 °C$	min.	typ. 4 1,2 1,1 133 183 2 2,2 0,35 0,038 0,023 20 25	max. 5 0,03 120 2,5	V mA mA nA mΩ V V V V NF nF nF nF nS ns		



per IGBT

R_{th(j-s)}

K/W

2,6

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Features

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- Ultrafast NPT technology IGBT
- CAL technology FWD

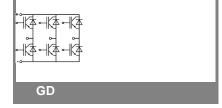
Typical Applications*

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

Symbol	Conditions		min.	typ.	max.	Units
Inverse [Diode					
$V_F = V_{EC}$	I _{Fnom} = 15 A; V _{GE} = 0 V			1,4	1,7	V
		T _j = 125 °C _{chiplev.}		1,4	1,7	V
V _{F0}		T _j = 25 °C		1	1,1	V
		T _j = 125 °C		0,9	1	V
r _F		T _i = 25 °C		30	40	mΩ
		T _j = 125 °C		33	47	mΩ
I _{RRM}	I _F = 15 A	T _i = 125 °C		22		Α
Q _{rr}	di/dt = 1100 A/µs	ī		1,5		μC
E _{rr}	V _{CC} = 300V			0,31		mJ
R _{th(j-s)D}	per diode				2,3	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.



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