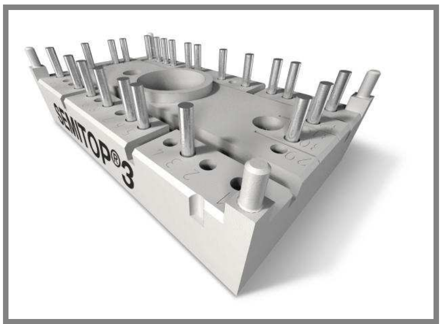
SK50GH065F



SEMITOP® 3

IGBT Module

SK50GH065F

Target Data

Features

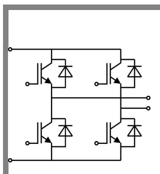
- Compact design
- One screw mounting
- Heat transfer and isolation through direct copper bonding aluminium oxide ceramic (DBC)
- Ultrafast NPT IGBT
- Turbo FWDiodes
- Low treshold voltage
- Low tail current with low temperature dependence

Typical Applications*

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

Remarks

- V_F = chip level value



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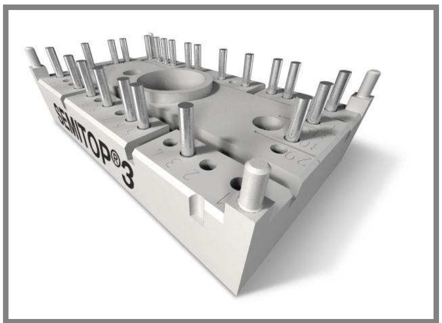
Absolute Maximum Ratings T_s = 25 °C, unless otherwise specified

Symbol	Conditions		Values	Units
IGBT				
V_{CES}	T_j = 25 °C		600	V
I_C	T_j = 125 °C	T_s = 25 °C	54	A
		T_s = 80 °C	40	A
I_{CRM}	I_{CRM}= 2 x I_{Cnom}		100	A
V_{GES}			± 20	V
t_{psc}	V_{CC} = 300 V; $V_{GE} \leq$ 20 V; V_{CES} < 600 V	T_j = 125 °C	10	µs
Inverse Diode				
I_F	T_j = 150 °C	T_s = 25 °C	82	A
		T_s = 80 °C	50	A
I_{FRM}	I_{FRM}= 2 x I_{Fnom}		120	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 = 0,7 mA		3	4	5	V
I_{CES}	V_{GE} = 600 V, V_{CE} = V_{CES}	T_j = 25 °C			0,0022	mA
I_{GES}	V_{CE} = 0 V, V_{GE} = 20 V	T_j = 25 °C			120	nA
V_{CE0}		T_j = 25 °C		1,2	1,3	V
		T_j = 125 °C		1,1	0,9	V
r_{CE}	V_{GE} = 15 V	T_j = 25°C			12	mΩ
		T_j = 125°C			22	mΩ
$V_{CE(sat)}$	I_{Cnom} = 60 A, V_{GE} = 15 V	T_j = 25°$C_{chiplev.}$		2	2,5	V
		T_j = 125°$C_{chiplev.}$		2,2	2,7	V
C_{ies}	V_{CE} = 25, V_{GE} = 0 V	f = 1 MHz		3,2		nF
C_{oes}				0,3		nF
C_{res}				0,18		nF
$t_{d(on)}$	R_{Gon} = 15 Ω di/dt = 1200 A/µs	V_{CC} = 300V I_C= 60A T_j = 125 °C V_{GE}=±15V				ns
t_r						ns
E_{on}				1,07		mJ
$t_{d(off)}$	R_{Goff} = 15 Ω di/dt = 1200 A/µs					ns
t_f						ns
E_{off}				1,76		mJ
$R_{th(j-s)}$	per IGBT				0,85	K/W



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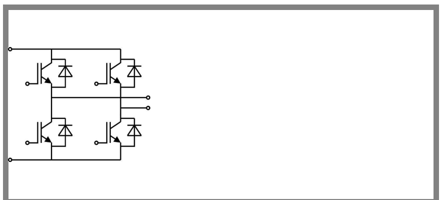

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Characteristics

Symbol	Conditions		min.	typ.	max.	Units
Inverse Diode						
$V_F = V_{EC}$	I_{Fnom} = 60 A; V_{GE} = 0 V	T_j = 25 °$C_{chiplev.}$		1,1	1,6	V
		T_j = 125 °$C_{chiplev.}$			1,2	V
V_{F0}		T_j = 150 °C		0,85		V
r_F		T_j = 150 °C		12		mΩ
I_{RRM}	I_F = 40 A	T_j = 125 °C		40		A
Q_{rr}	di/dt = 1200 A/µs			3		µC
E_{rr}	V_{CC}=300V			0,42		mJ
$R_{th(j-s)D}$	per diode				1,1	K/W
M_s	to heat sink		2,25		2,5	Nm
w				30		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.

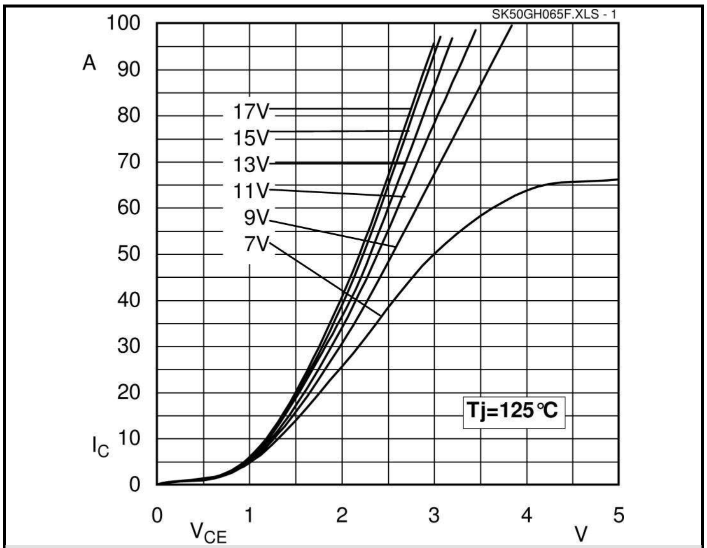

Fig. 1 Typ. output characteristic, inclusive $R_{CC'+EE'}$

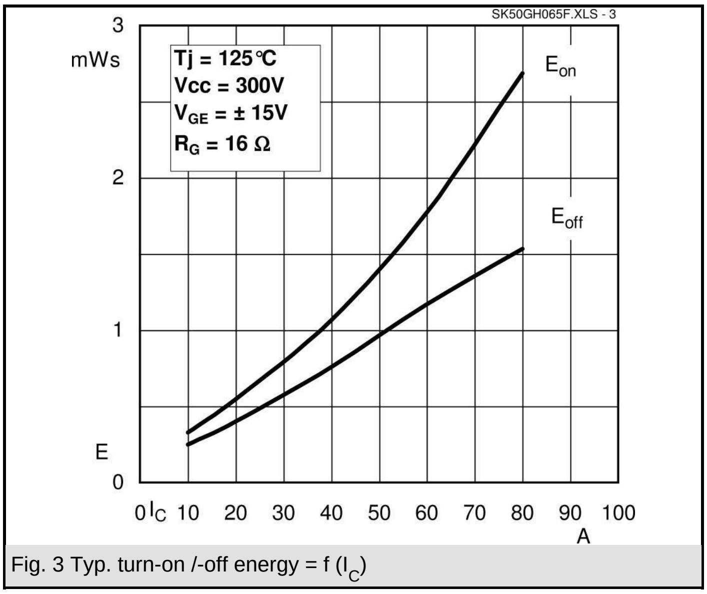

Fig. 3 Typ. turn-on /-off energy = f (I_C)

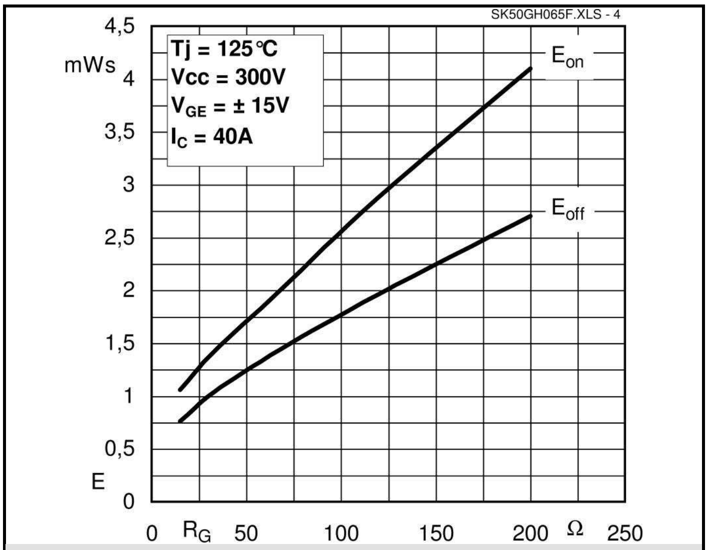

Fig. 4 Typ. turn-on /-off energy = f (R_G)

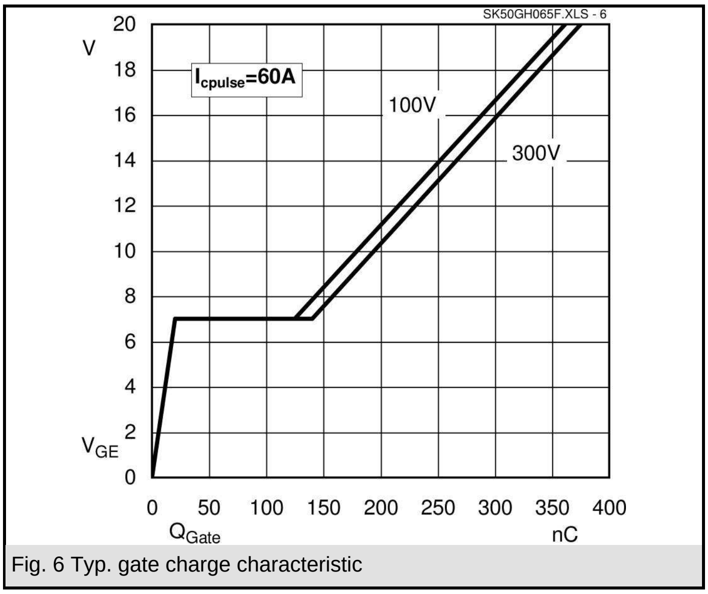

Fig. 6 Typ. gate charge characteristic

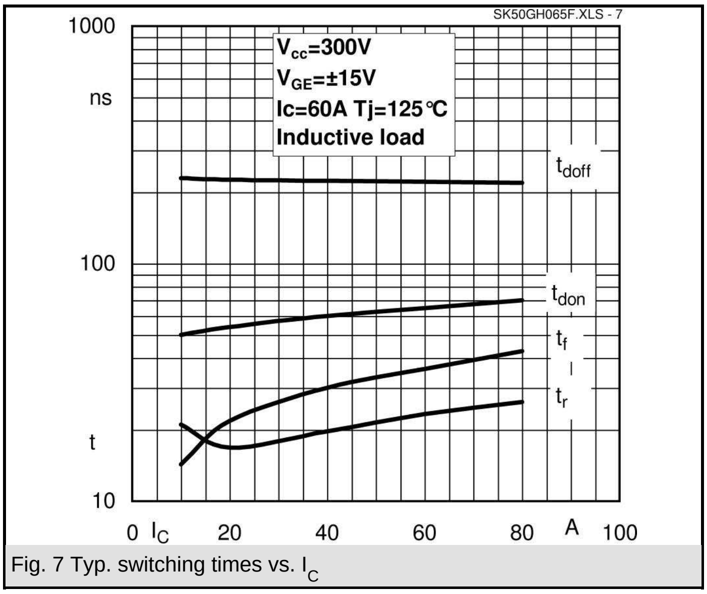

Fig. 7 Typ. switching times vs. I_C

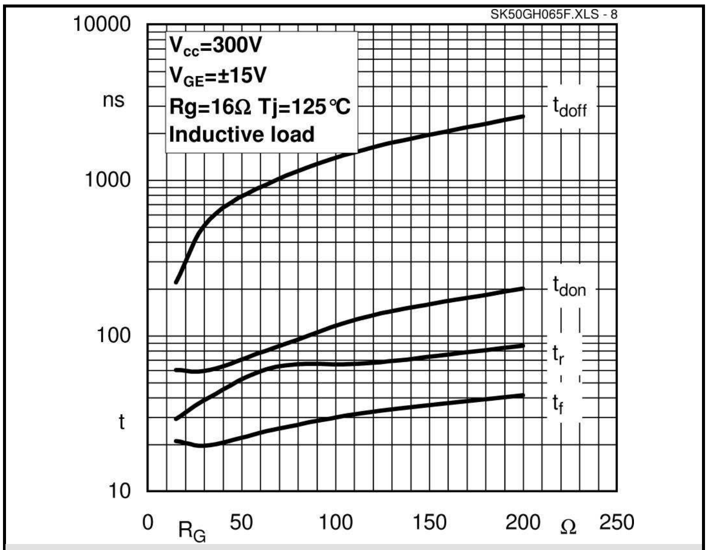

Fig. 8 Typ. switching times vs. gate resistor R_G

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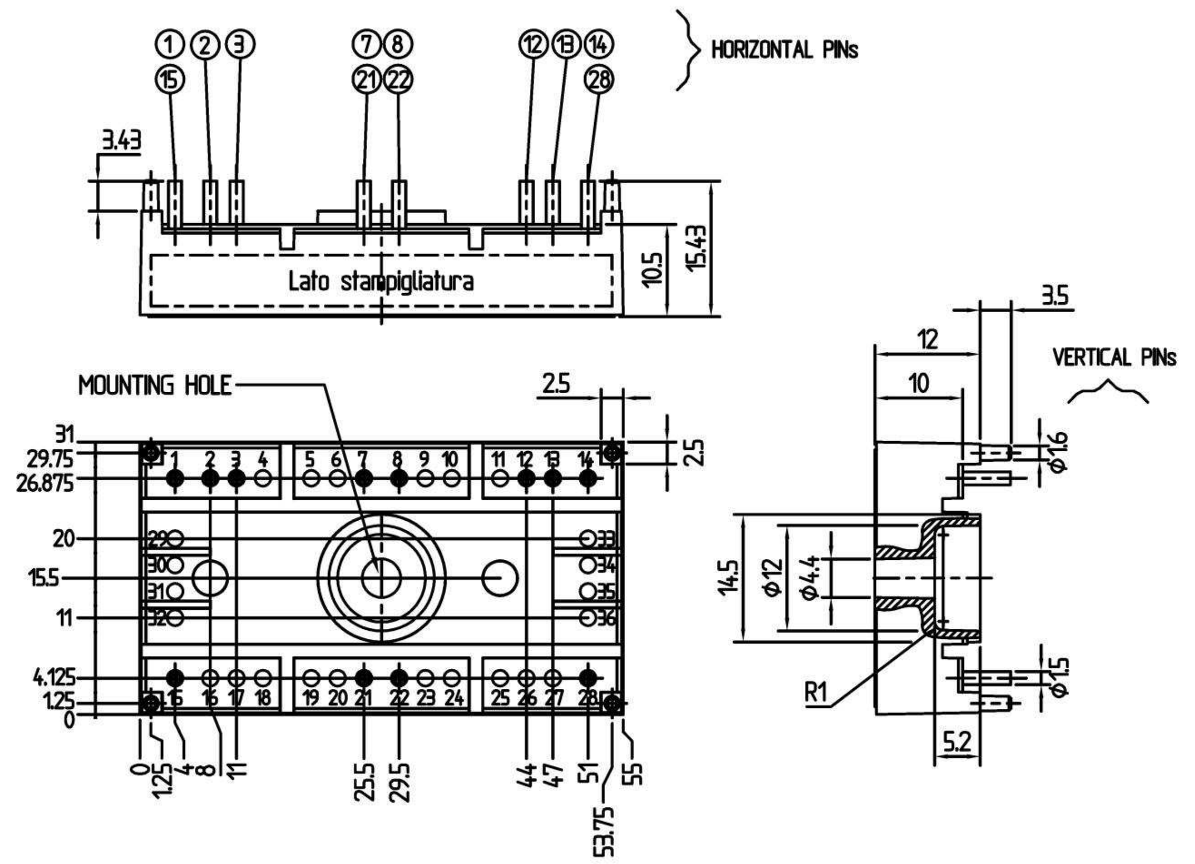
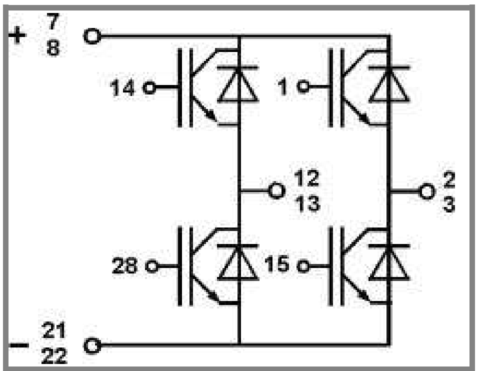


Case T19 (Suggested hole diameter, in the PCB, for solder pins and plastic mounting pins: 2mm)



Case T19 GH