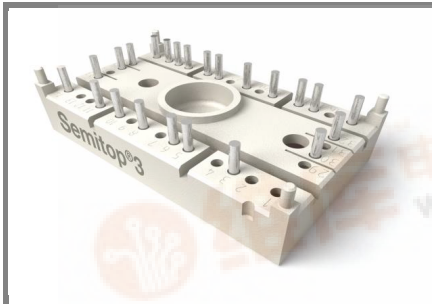


# SK 9 BGD 065 ET



**SEMITOP<sup>®</sup> 3**

1-phase bridge rectifier  
+3-phase bridge inverter

**SK 9 BGD 065 ET**

Preliminary Data

### Features

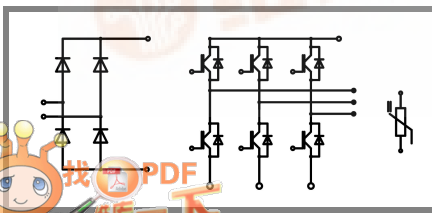
- Compact design
- One screw mounting
- Heat transfer and isolation through direct copper bonded alumium oxide ceramic (DCB)
- N-channel homogeneous silicon structure (NPT-Non punch-through IGBT)
- High short circuit capability
- Low tail current with low temperature dependance

### Typical Applications

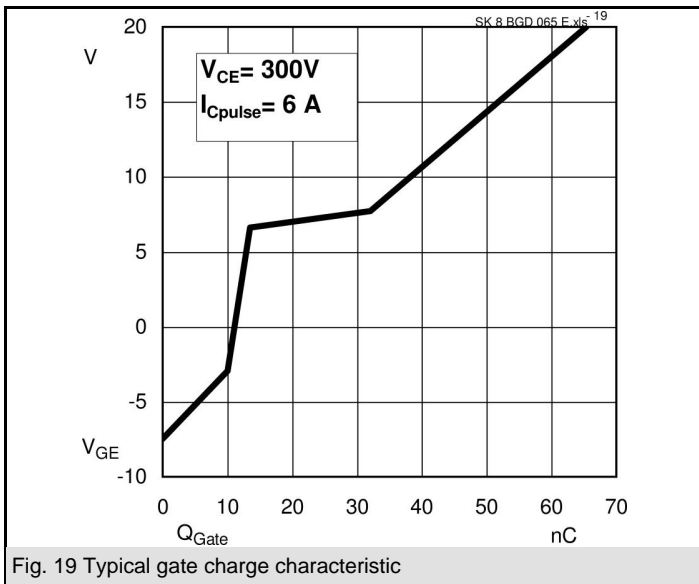
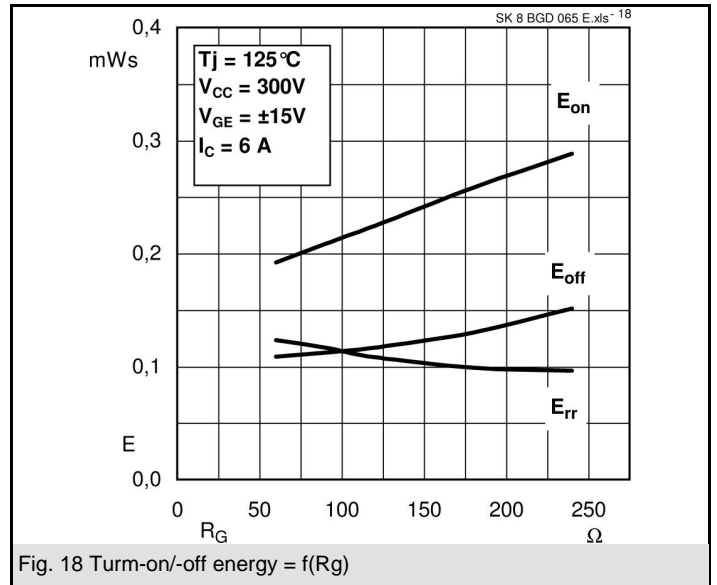
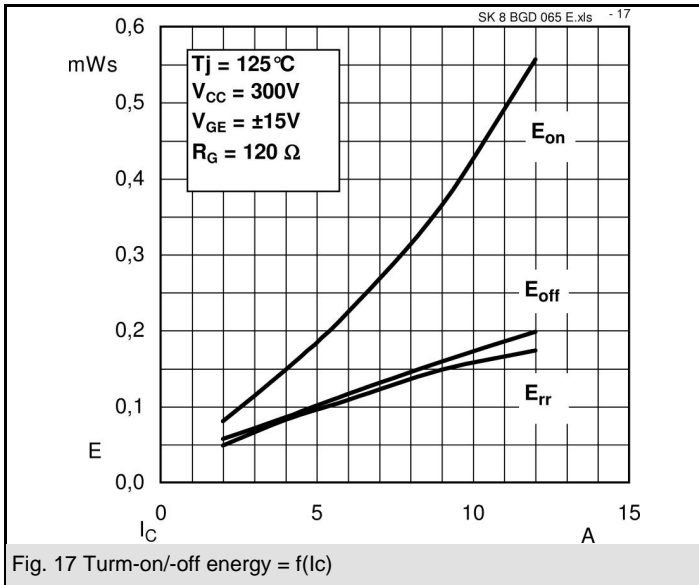
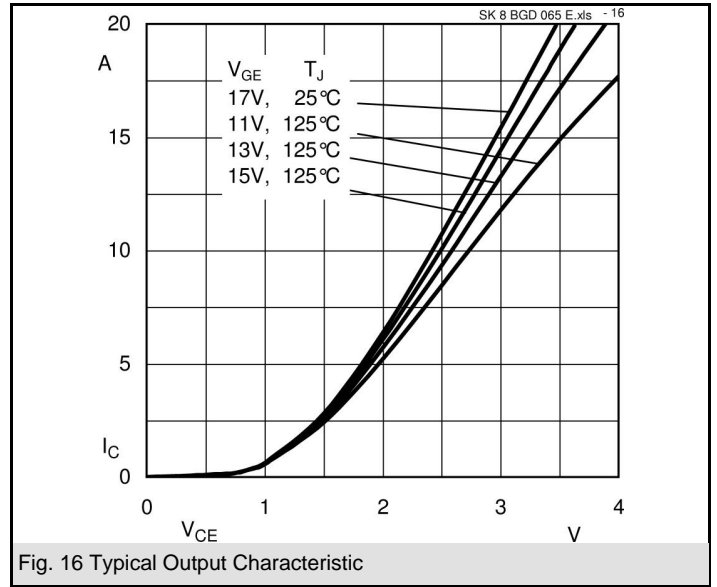
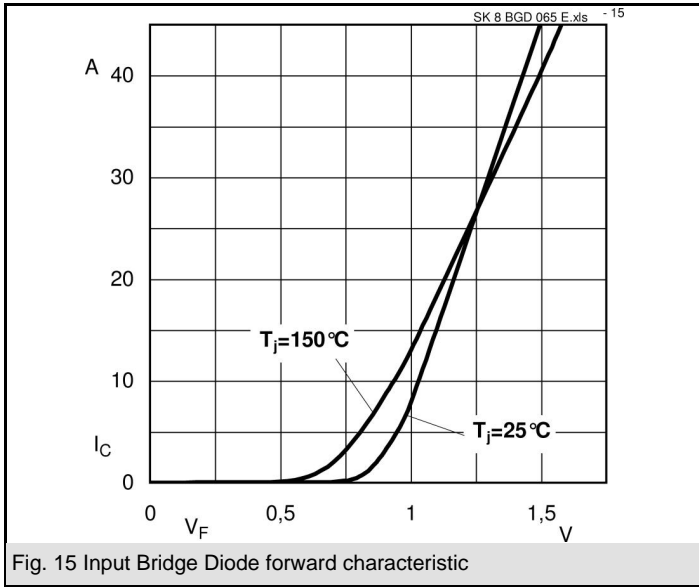
- Inverter
- Servo drives

Absolute Maximum Ratings		$T_s = 25^\circ\text{C}$ , unless otherwise specified	
Symbol	Conditions	Values	Units
<b>IGBT - Inverter</b>			
$V_{CES}$		600	V
$I_C$	$T_s = 25 (80)^\circ\text{C}$	12 (8)	A
$I_{CRM}$	$I_{CRM} = 2 \times I_{Cnom}$ , $t_p = 1 \text{ ms}$	12	A
$V_{GES}$		$\pm 20$	V
$T_j$		-40 ... +150	$^\circ\text{C}$
<b>Diode - Inverter</b>			
$I_F$	$T_s = 25 (80)^\circ\text{C}$	(13)	A
$I_{FRM}$	$I_{FRM} = 2 \times I_{Fnom}$ , $t_p = 1 \text{ ms}$	16	A
$T_j$		-40 ... +150	$^\circ\text{C}$
<b>Rectifier</b>			
$V_{RRM}$		800	V
$I_F$	$T_s = 80^\circ\text{C}$	25	A
$I_{FSM} / I_{TSM}$	$t_p = 10 \text{ ms}$ , $\sin 180^\circ$ , $T_j = 125^\circ\text{C}$	220	A
$I_t^2$	$t_p = 10 \text{ ms}$ , $\sin 180^\circ$ , $T_j = 125^\circ\text{C}$	240	$\text{A}^2\text{s}$
$T_j$		-40 ... +150	$^\circ\text{C}$
$T_{sol}$	Terminals, 10s	260	$^\circ\text{C}$
$T_{stg}$		-40 ... +125	$^\circ\text{C}$
$V_{isol}$	AC, 1 min. / 1s	2500 / 3000	V

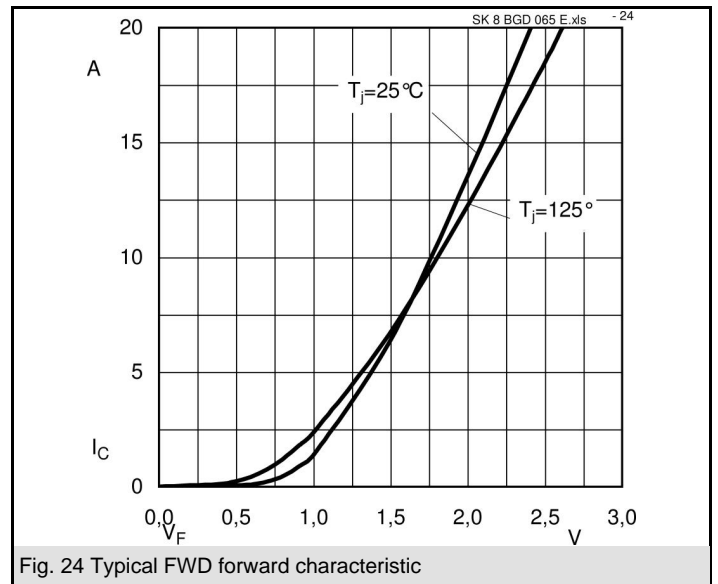
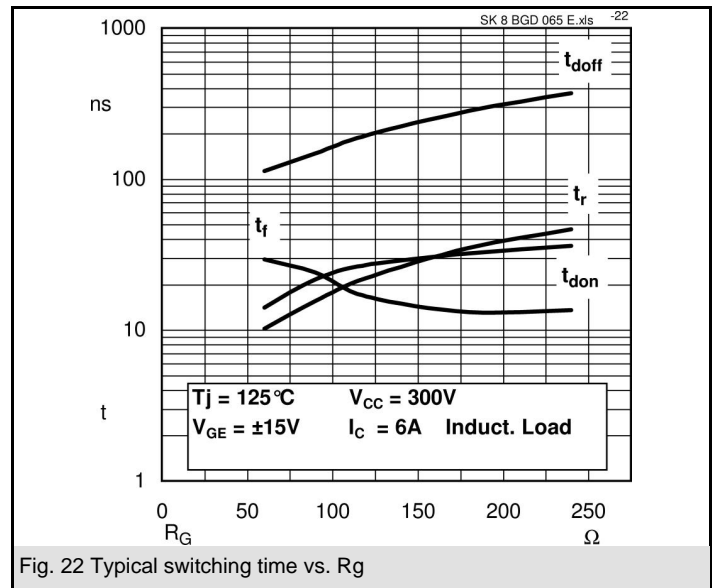
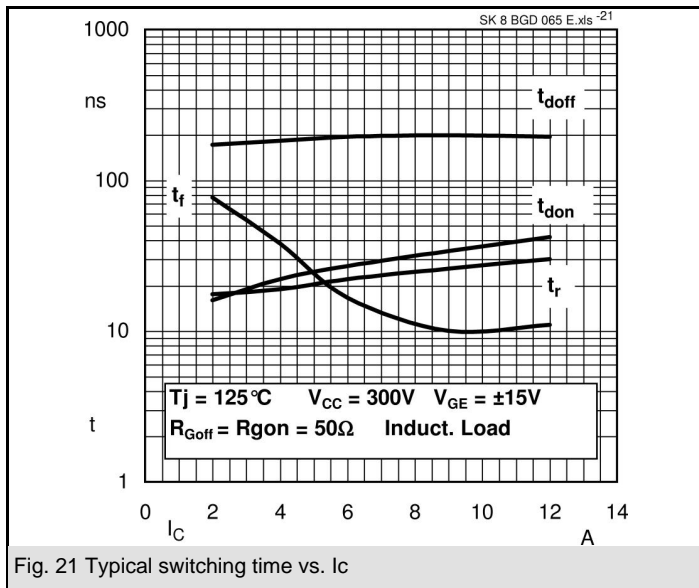
Characteristics		$T_s = 25^\circ\text{C}$ , unless otherwise specified			
Symbol	Conditions	min.	typ.	max.	Units
<b>IGBT - Inverter</b>					
$V_{CEsat}$	$I_C = 6 \text{ A}$ , $T_j = 25 (125)^\circ\text{C}$		2 (2,2)		V
$V_{GE(th)}$	$V_{GE} = V_{CE}$ , $I_C = 0,5 \text{ mA}$	3	4	5	V
$V_{CE(TO)}$	$T_j = 25^\circ\text{C} (125)^\circ\text{C}$		1,2 (1,1)		V
$r_T$	$T_j = 25^\circ\text{C} (125)^\circ\text{C}$		133 (183)		$\text{m}\Omega$
$C_{ies}$	$V_{CE} = V_{GE} = 0 \text{ V}$ , $f = 1 \text{ MHz}$		-		nF
$C_{oes}$	$V_{CE} = V_{GE} = 0 \text{ V}$ , $f = 1 \text{ MHz}$		-		nF
$C_{res}$	$V_{CE} = 25 V_{GE} = 0 \text{ V}$ , $f = 1 \text{ MHz}$		0,03		nF
$R_{th(j-s)}$	per IGBT			2,6	$\text{K/W}$
$t_{d(on)}$	under following conditions		20		ns
$t_r$	$V_{CC} = 300 \text{ V}$ , $V_{GE} = \pm 15 \text{ V}$		25		ns
$t_{d(off)}$	$I_C = 6 \text{ A}$ , $T_j = 125^\circ\text{C}$		145		ns
$t_f$	$R_{Gon} = R_{Goff} = 120 \Omega$		25		ns
$E_{on}$	inductive load		0,22		mJ
$E_{off}$			0,12		mJ
<b>Diode - Inverter</b>					
$V_F = V_{EC}$	$I_F = 8 \text{ A}$ , $T_j = 25 (125)^\circ\text{C}$		1,35		V
$V_{(TO)}$	$T_j = 125^\circ\text{C}$		(0,8)	(0,9)	V
$r_T$	$T_j = 125^\circ\text{C}$		(44)		$\text{m}\Omega$
$R_{th(j-s)}$	per diode			2,7	$\text{K/W}$
$I_{RRM}$	under following conditions		4,2		A
$Q_{rr}$	$I_F = 8 \text{ A}$ , $V_R = 300 \text{ V}$		0,65		$\mu\text{C}$
$E_{rr}$	$V_{GE} = 0 \text{ V}$ , $T_j = 125^\circ\text{C}$				mJ
	$di_F/dt = -120 \text{ A}/\mu\text{s}$				
<b>Diode rectifier</b>					
$V_F$	$I_F = 20 \text{ A}$ , $T_j = 25^\circ\text{C}$		1,1		V
$V_{(TO)}$	$T_j = 150^\circ\text{C}$		0,85		V
$r_T$	$T_j = 150^\circ\text{C}$		15		$\text{m}\Omega$
$R_{th(j-s)}$	per diode			2,15	$\text{K/W}$
<b>Temperatur sensor</b>					
$R_{ts}$	%, $T_r = ( )^\circ\text{C}$		( )		$\Omega$
<b>Mechanical data</b>					
w			31		g
$M_s$	Mounting torque	2,3		2,5	Nm



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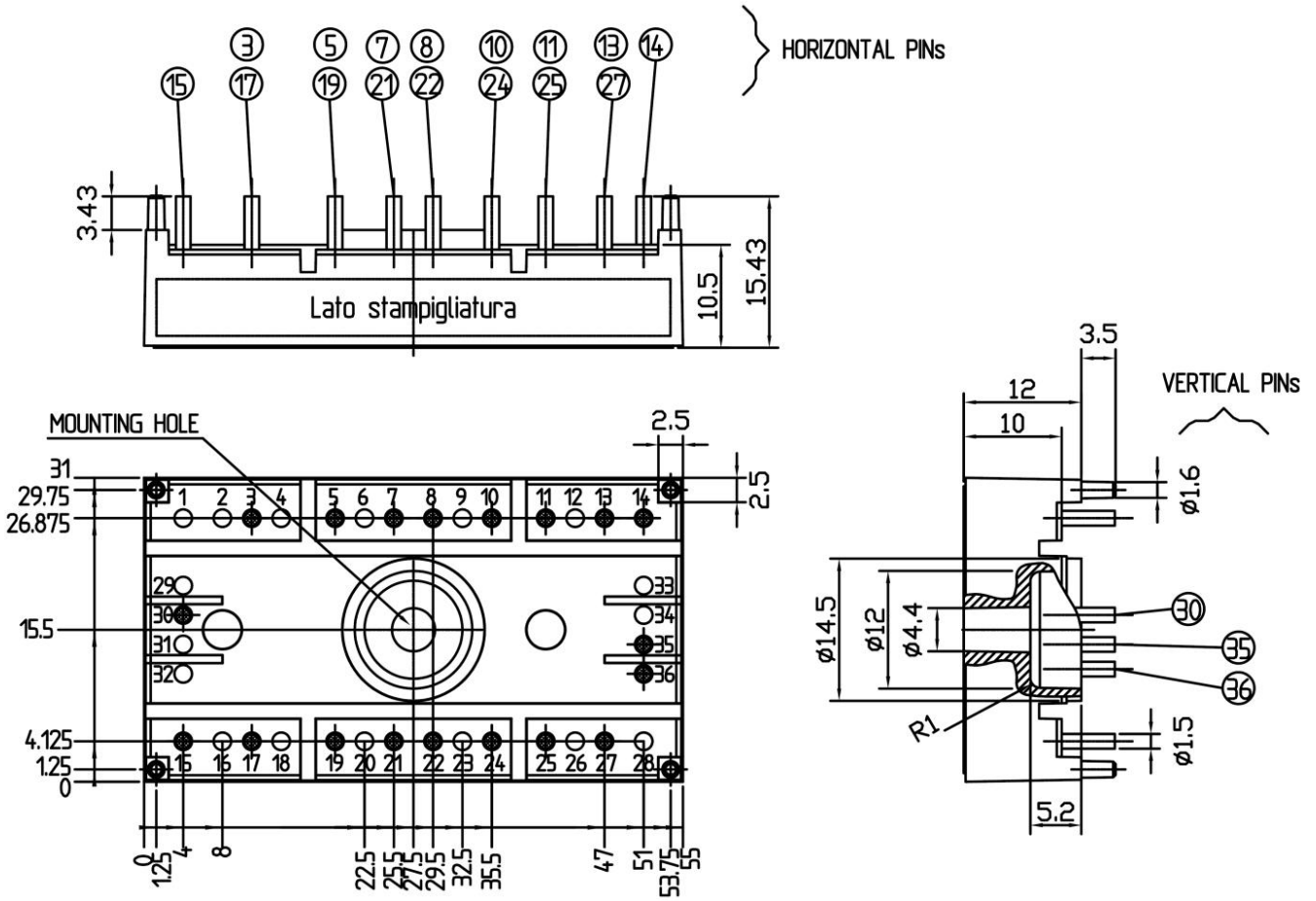


# SK 9 BGD 065 ET

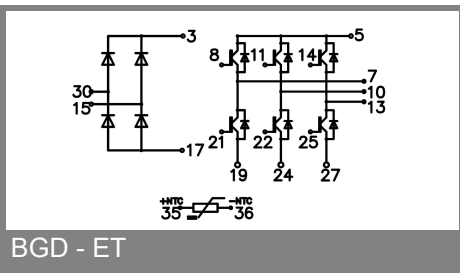


# SK 9 BGD 065 ET

Dimensions in mm



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



This is an electrostatic discharge sensitive device (ESDS), international standard IEC 60747-1, Chapter IX.

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