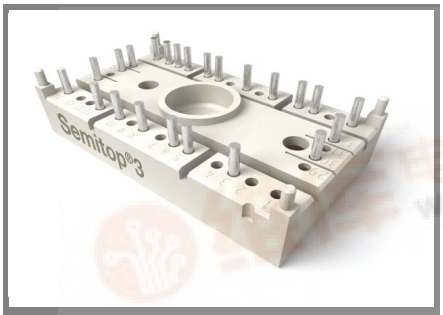
SK 9 DGD 065 ET



SEMITOP® 3

3-phase bridge rectifier +
3-phase bridge inverter

SK 9 DGD 065 ET

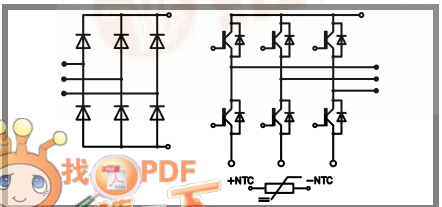
Preliminary Data

Features

- Compact design
- One screw mounting
- Heat transfer and isolation through direct copper bonded alumium oxide ceramic (DCB)
- Ultrafast NPT technology IGBT
- CAL Technology FWD
- Integrated NTC temperature sensor

Typical Applications

- Inverter



DGD - ET

Absolute Maximum Ratings		T_s= 25°C, unless otherwise specified	
Symbol	**Conditions**	**Values**	**Units**
IGBT - Inverter			
V_{CES}		600	V
I_C	T_s = 25 (80) °C	12 (8)	A
I_{CRM}	I_{CRM}= 2 x I_{Cnom}, t_p = 1 ms	12	A
V_{GES}		±20	V
T_j		-40 ... +150	°C
Diode - Inverter			
I_F	T_s = 25 (80) °C	20 (13)	A
I_{FRM}	I_{FRM} = 2xI_{Fnom}, t_p = 1 ms	16	A
T_j		-40 ... +150	°C
Rectifier			
V_{RRM}		800	V
I_F	T_s = 80 °C	25	A
I_{FSM} / I_{TSM}	t_p = 10 ms , sin 180 ° ,T_j = 25 °C	220	A
I^2t	t_p = 10 ms , sin 180 ° ,T_j = 25 °C	240	A²s
T_j		-40 ... +150	°C
T_{sol}	Terminals, 10s	260	°C
T_{stg}		-40 ... +125	°C
V_{isol}	AC, 1 min. / 1s	2500 / 3000	V

Characteristics		T_s= 25°C, unless otherwise specified			
Symbol	**Conditions**	**min.**	**typ.**	**max.**	**Units**
IGBT - Inverter					
V_{CEsat}	I_C = 6 A, T_j = 25 (125) °C		2 (2,2)		V
$V_{GE(th)}$	V_{GE} = V_{CE}, I_C = 0,5 mA	3	4	5	V
$V_{CE(TO)}$	T_j = 25 °C (125) °C		1,2 (1,1)		V
r_T	T_j = 25 °C (125) °C		133 (183)		mΩ
C_{ies}	V_{CE} = V_{GE} = 0 V, f = 1 MHz		0,35		nF
C_{oes}	V_{CE} = V_{GE} = 0 V, f = 1 MHz		0,4		nF
C_{res}	V_{CE} = V_{GE} = 0 V, f = 1 MHz		0,25		nF
$R_{th(j-s)}$	per IGBT			2,6	K/W
$t_{d(on)}$	under following conditions		20		ns
t_r	V_{CC} = 300 V, V_{GE} = ± 15 V		25		ns
$t_{d(off)}$	I_C = 6 A, T_j = 125 °C		145		ns
t_f	R_{Gon} = R_{Goff} = 120 Ω		25		ns
E_{on}	inductive load		0,22		mJ
E_{off}			0,12		mJ
Diode - Inverter					
V_F = V_{EC}	I_F = 8 A, T_j = 25 (125) °C		1,35		V
$V_{(TO)}$	T_j = 25 °C (125) °C		(0,8)		V
r_T	T_j = 25 °C (125) °C		(44)		mΩ
$R_{th(j-s)}$	per diode			2,7	K/W
I_{RRM}	under following conditions		4,2		A
Q_{rr}	I_F = 8 A, V_R = 300 V		0,65		µC
E_{rr}	V_{GE} = 0 V, T_j = 125 °C				mJ
	$di_{F/dt}$ = -120 A/µs				
Diode rectifier					
V_F	I_F = 20 A, T_j = 25 °C		1,1		V
$V_{(TO)}$	T_j = 150 °C		0,85		V
r_T	T_j = 150 °C		15		mΩ
$R_{th(j-s)}$	per diode			2,15	K/W
Temperatur sensor					
R_{ts}	5 %, T_r = 25 (100) °C		5000(493)		Ω
Mechanical data					
w			31		g
M_s	Mounting torque	2,3		2,5	Nm

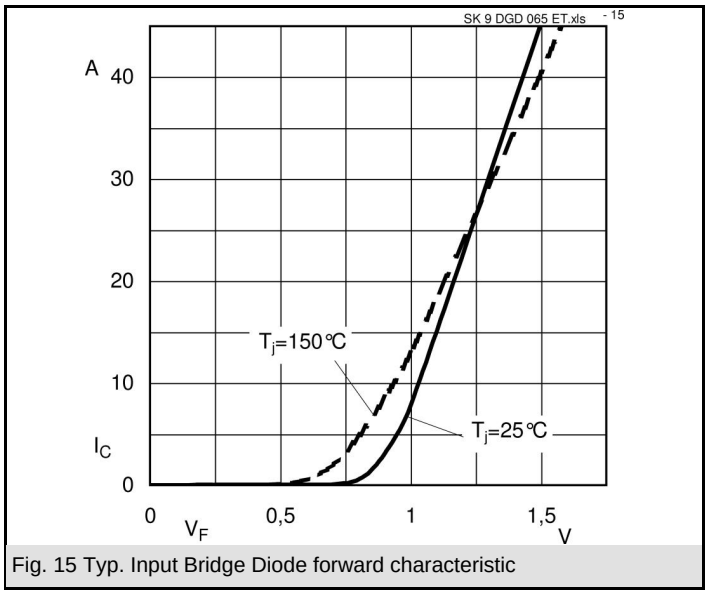


Fig. 15 Typ. Input Bridge Diode forward characteristic

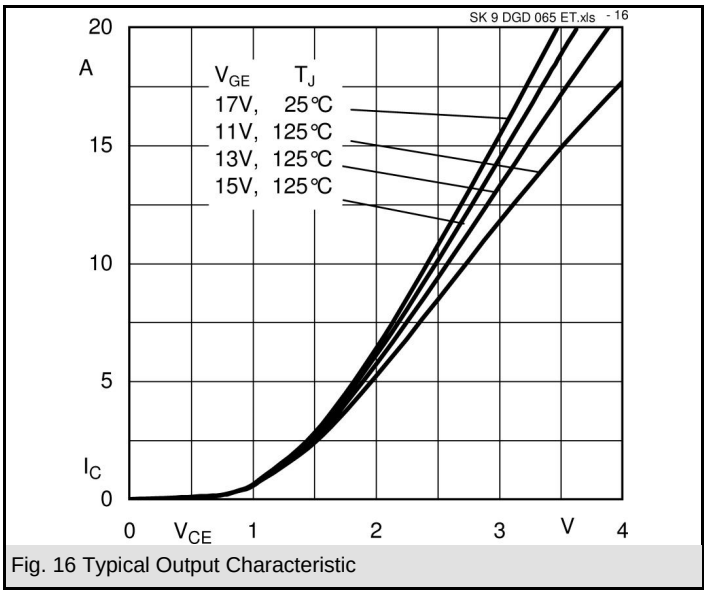


Fig. 16 Typical Output Characteristic

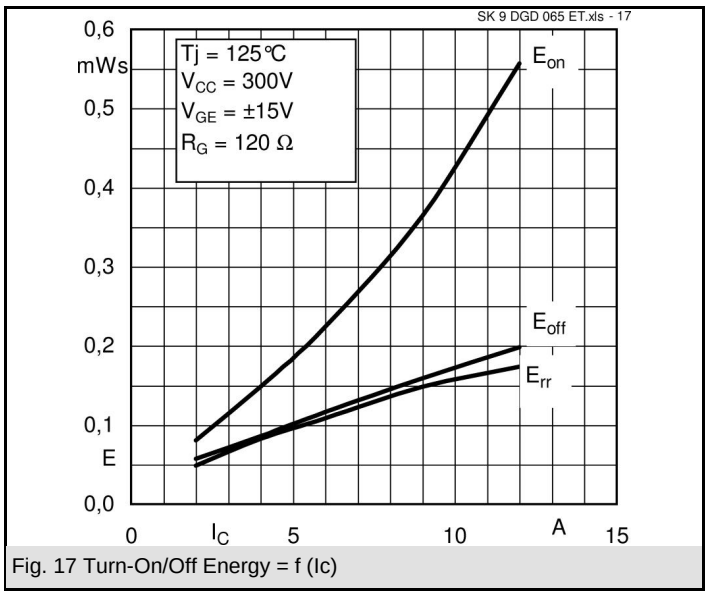


Fig. 17 Turn-On/Off Energy = f (Ic)

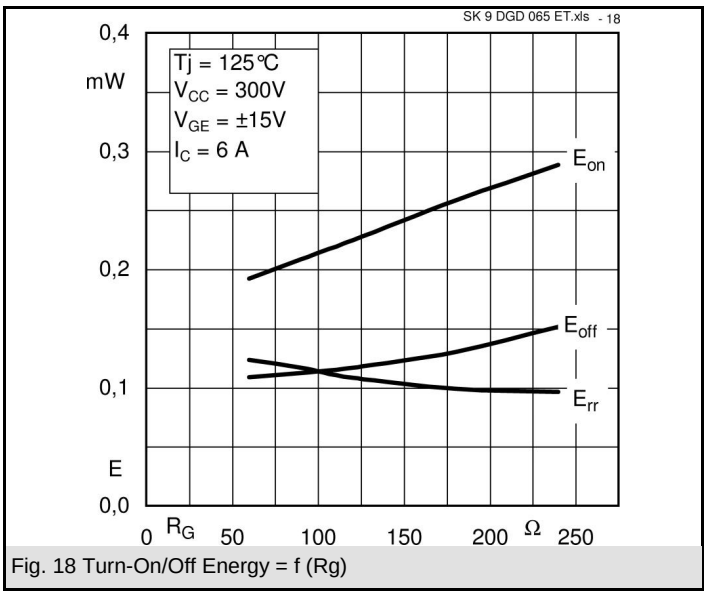


Fig. 18 Turn-On/Off Energy = f (Rg)

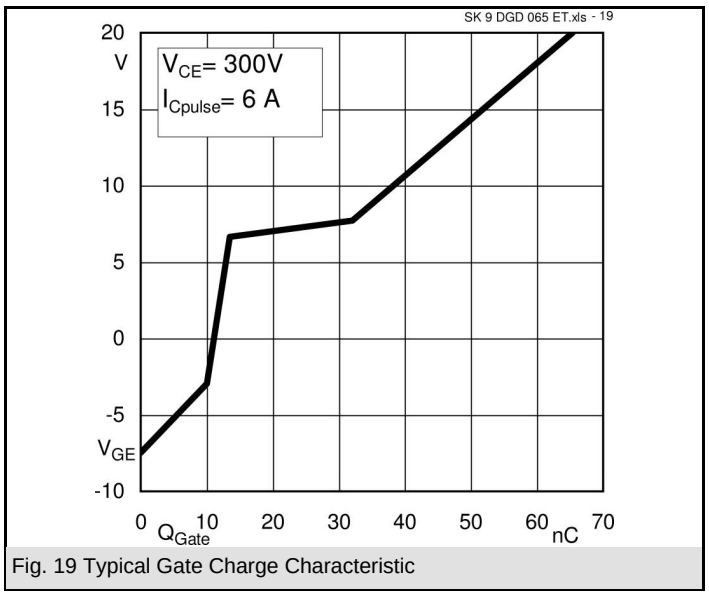


Fig. 19 Typical Gate Charge Characteristic

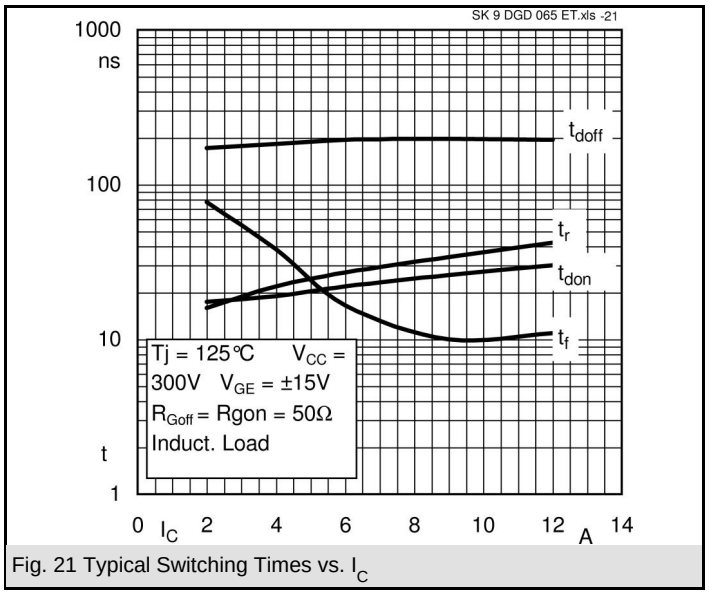


Fig. 21 Typical Switching Times vs. I_C

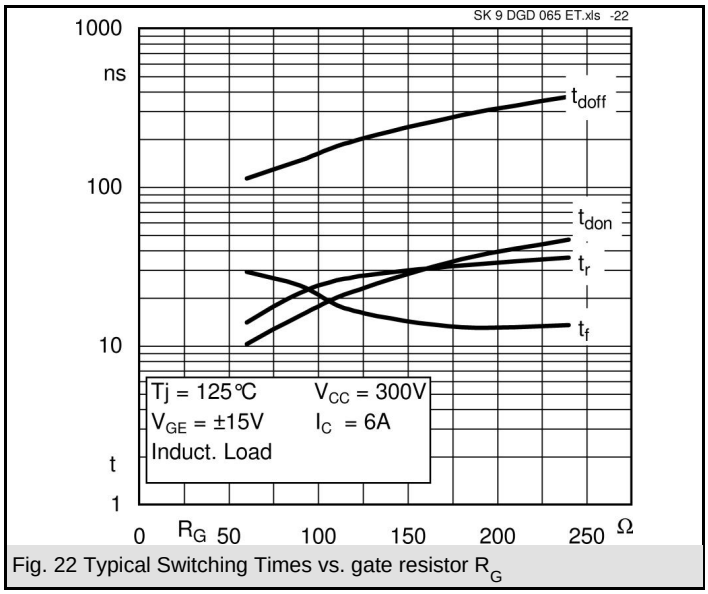


Fig. 22 Typical Switching Times vs. gate resistor R_G

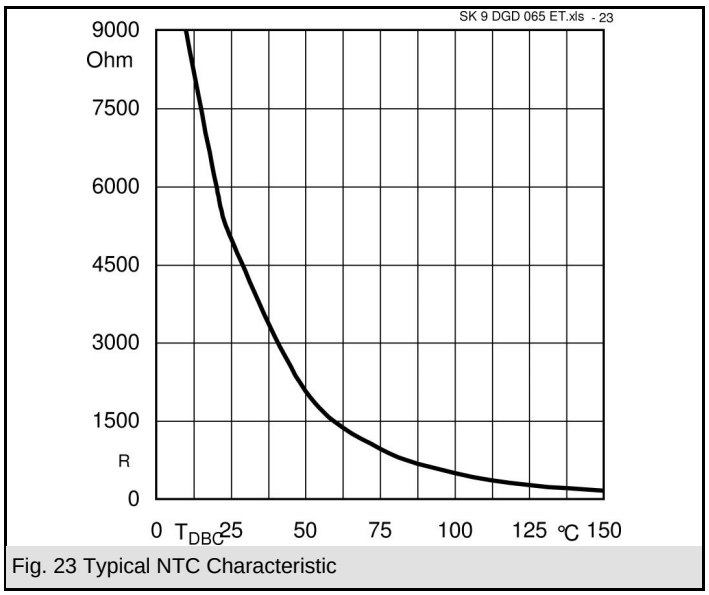


Fig. 23 Typical NTC Characteristic

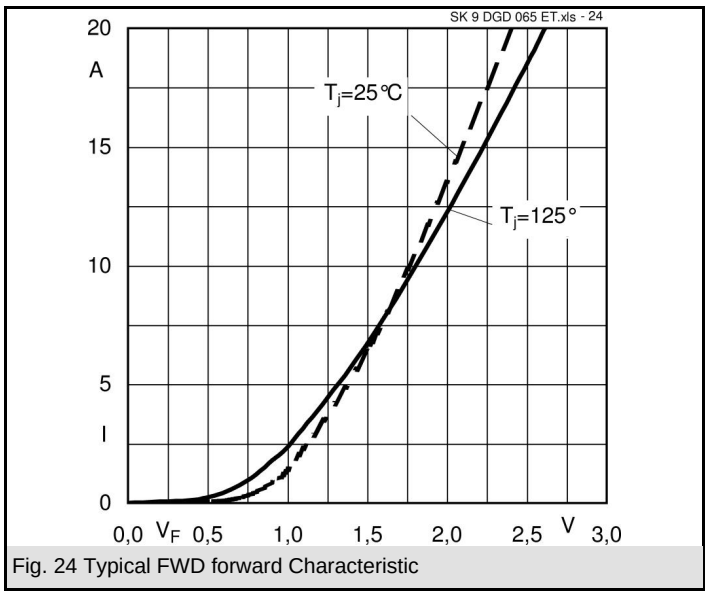


Fig. 24 Typical FWD forward Characteristic

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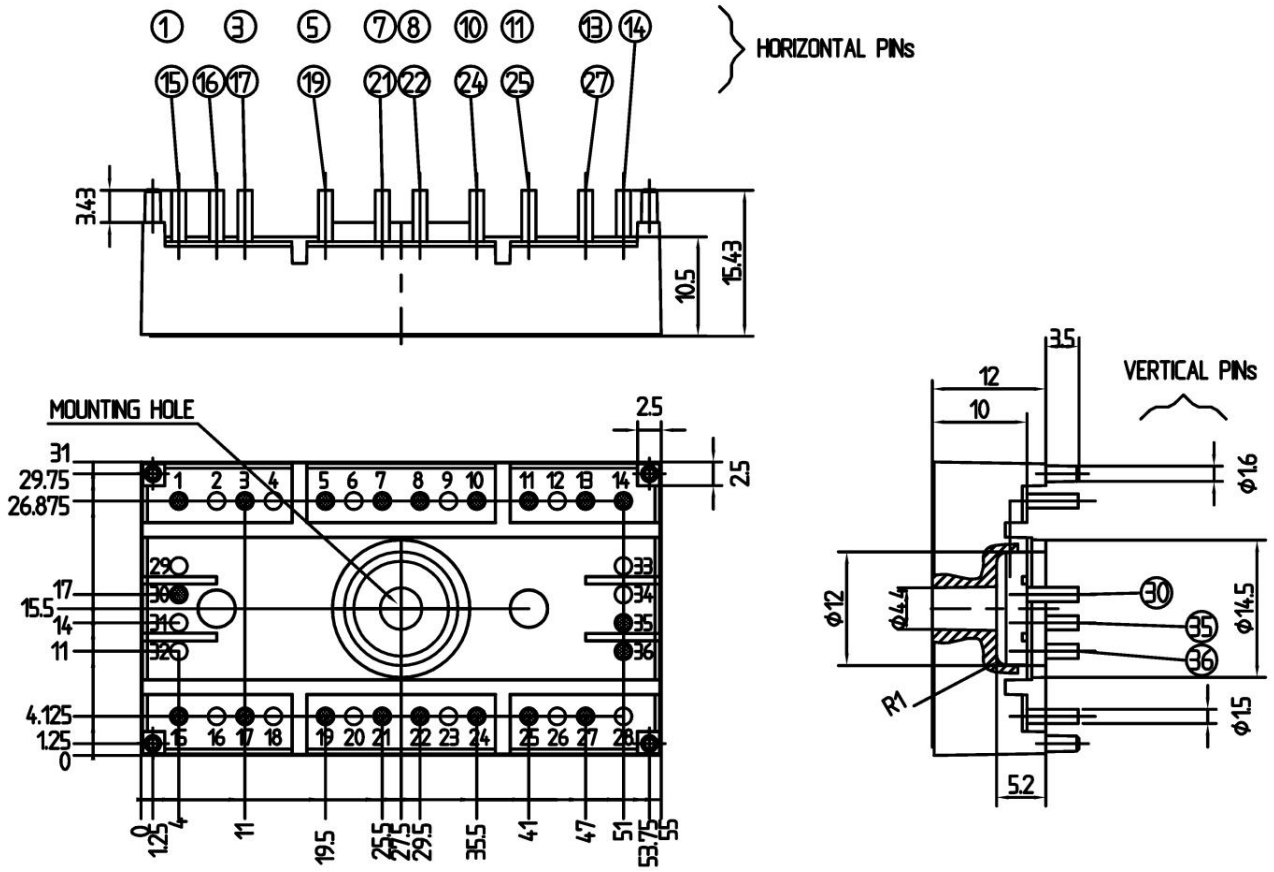
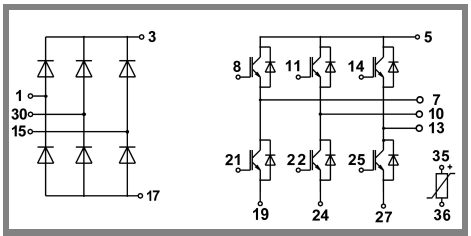
Dimensions in mm



Case T60 (Suggested hole diameter, in the PCB, for solder pins and plastic mounting pins: 2mm)



Case T60 DGD - ET

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

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