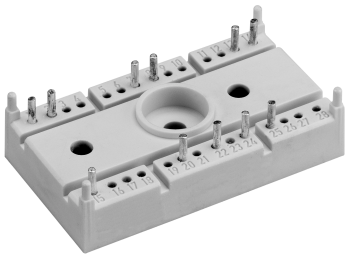
SEMIKRON

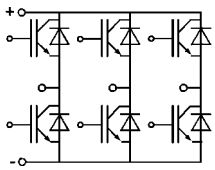
Absolute Maximum Ratings			
Symbol	Conditions [1]	Values	Units
V_{CES}		600	V
V_{GES}		± 20	V
I_C	$T_{heatsink}$ = 25 / 80 °C	18 / 13	A
I_{CM}	t_p < 1 ms; $T_{heatsink}$ = 25 / 80 °C	36 / 26	A
$I_F = -I_C$	$T_{heatsink}$ = 25 / 80 °C	22 / 15	A
$I_{FM} = -I_{CM}$	t_p < 1 ms; $T_{heatsink}$ = 25 / 80 °C	44 / 30	A
T_j		– 40 ... + 150	°C
T_{stg}		– 40 ... + 125	°C
T_{sol}	Terminals, 10 s	260	°C
V_{isol}	AC, 1 min.	2500	V

Characteristics					
Symbol	Conditions [1]	min.	typ.	max.	Units
V_{CEsat}	I_C = 10 A T_j = 25 (125) °C	–	2,1(2,4)	2,5(2,8)	V
$t_{d(on)}$	V_{CC} = 300 V; V_{GE} = ± 15 V	–	45	–	ns
t_r	I_C = 10 A; T_j = 125 °C	–	45	–	ns
$t_{d(off)}$	$R_{gon} = R_{goff}$ = 100 Ω	–	250	–	ns
t_f	inductive load	–	20	–	ns
$E_{on} + E_{off}$		–	1,0	–	mJ
C_{ies}	V_{CE} = 25 V; V_{GE} = 0 V, 1 MHz	–	0,57	–	nF
R_{thjh} [3]	per IGBT	–	–	2,0	K/W
Inverse Diode [2]					
$V_F = V_{EC}$	I_F = 10 A T_j = 25 (125) °C	–	1,45(1,4)	1,7(1,7)	V
V_{TO}	T_j = 125 °C	–	0,85	0,9	V
r_T	T_j = 125 °C	–	55	80	mΩ
I_{RRM}	I_F = 10 A, V_R = – 300 V	–	6,5	–	A
Q_{rr}	di_F/dt = – 200 A/µs	–	1	–	µC
E_{off}	V_{GE} = 0 V, T_j = 125°C	–	0,1	–	mJ
R_{thjh} [3]	per diode	–	–	2,3	K/W
Mechanical Data					
M_1	mounting torque	–	–	2,5	Nm
w		–	30	–	g
Case			T 12		

SEMITOP® 3
IGBT Module

SK 13 GD 063





GD

Features
- Compact Design
- One screw mounting
- Heat transfer and isolation through direct copper bonded aluminium oxide ceramic (DCB)
- N channel, homogeneous Silicon structure (NPT-Non punch-through IGBT)
- High short circuit capability
- Low tail current with low temperature dependence
- UL recognized, file no. E 63 532

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

[1] T_h = 25 °C unless otherwise specified
[2] CAL = Controlled Axial Lifetime Technology (soft and fast recovery)
[3] Thermal resistence junction to heatsink

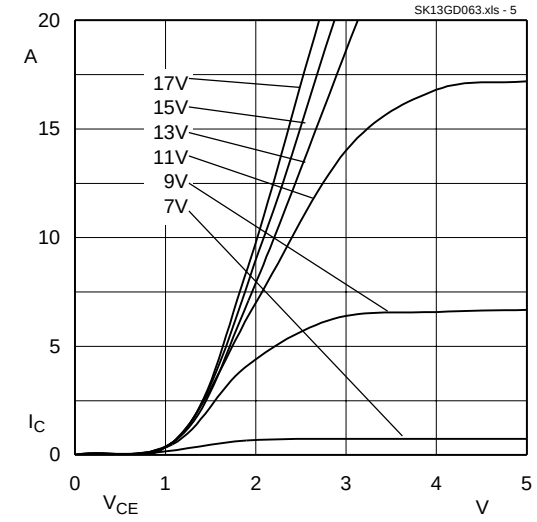


Fig. 5 Typ. output characteristic, t_p = 80 µs; 25 °C

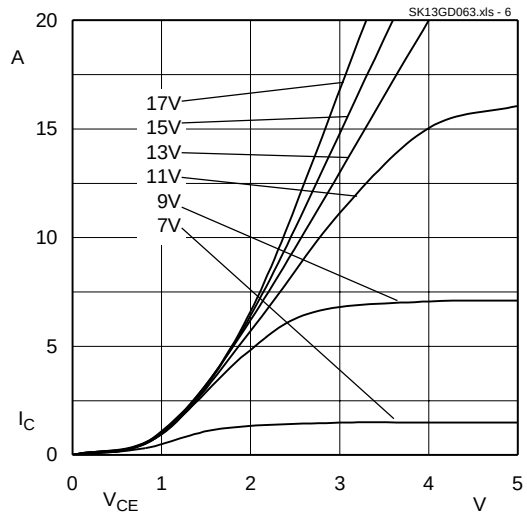


Fig. 6 Typ. output characteristic, t_p = 80 µs; 125 °C

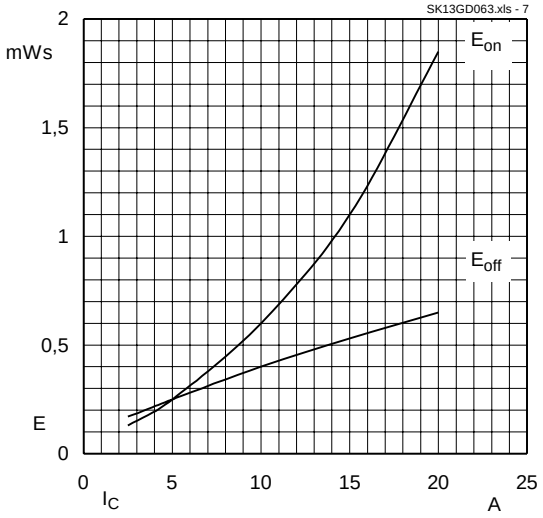


Fig. 7 Turn-on /-off energy = f (I_C)

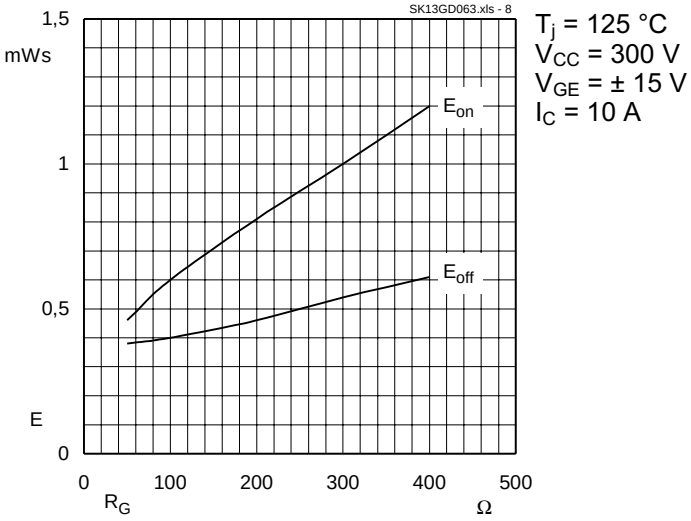


Fig. 8 Turn-on /-off energy = f (R_G)

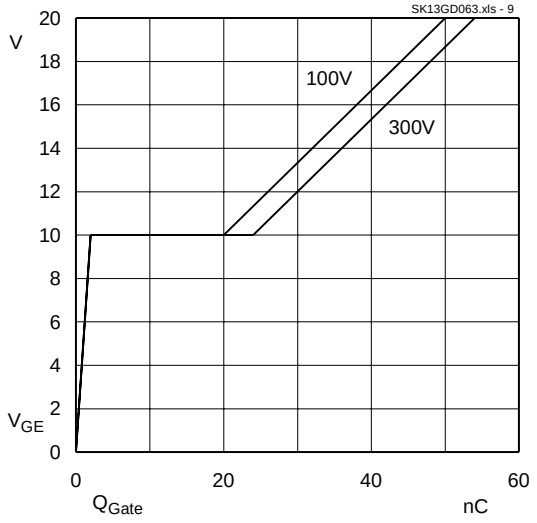


Fig. 9 Typ. gate charge characteristic

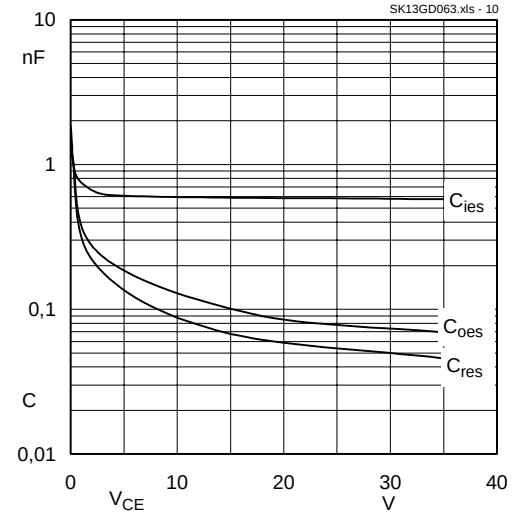
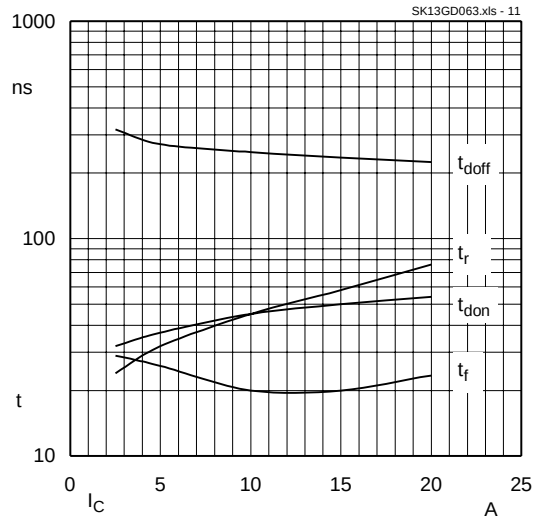
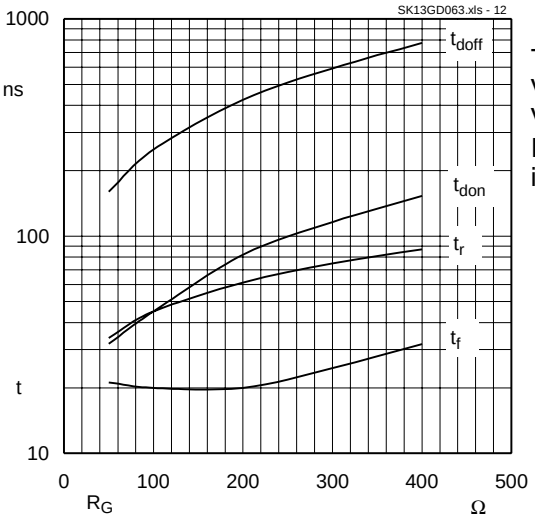


Fig. 10 Typ. capacitances vs. V_{CE}



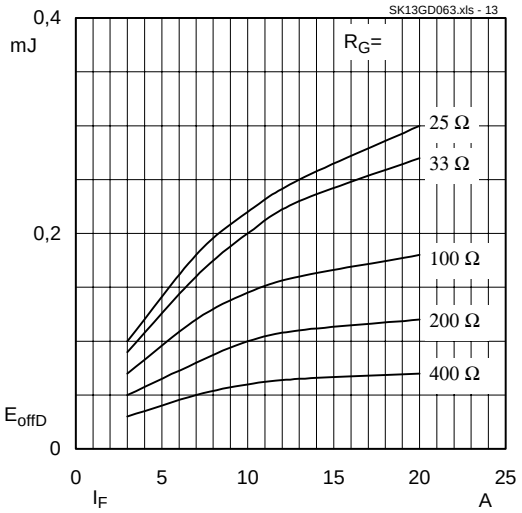
T_j = 125 °C
V_{CC} = 300 V
V_{GE} = ± 15 V
R_{Gon} = 100 Ω
R_{Goff} = 100 Ω
induct. load

Fig. 11 Typ. switching times vs. I_C



T_j = 125 °C
V_{CC} = 300 V
V_{GE} = ± 15 V
I_C = 10 A
induct. load

Fig. 12 Typ. switching times vs. gate resistor R_G

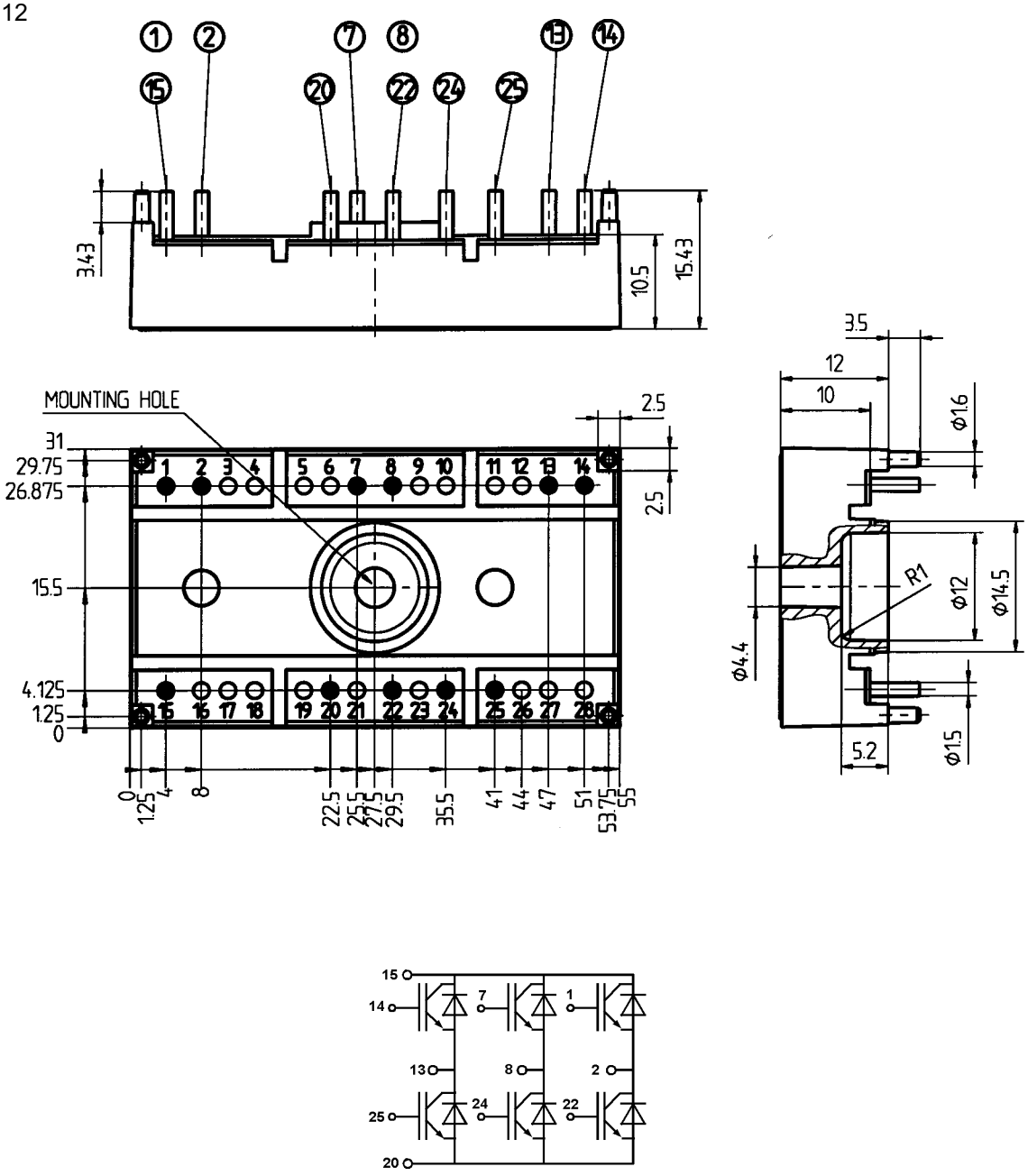


V_{CC} = 300 V
T_j = 125 °C
V_{GE} = ± 15 V

Fig. 13 Diode turn-off energy dissipation per pulse

SEMITOP® 3
SK 13 GD 063

Case T 12



Dimensions in mm