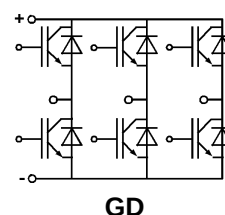
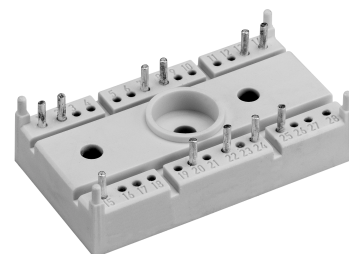


SEMITOP® 3 IGBT Module

SK 45 GD 063

Preliminary Data



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

Typical Applications

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

¹⁾ $T_h = 25\text{ °C}$, unless otherwise specified

²⁾ CAL = Controlled Axial Lifetime Technology (soft and fast recovery)

³⁾ Thermal resistance junction to heatsink

Case → page 4

Absolute Maximum Ratings		Values	Units
Symbol	Conditions ¹⁾		
V_{CES}		600	V
V_{GES}		± 20	V
I_C	$T_h = 25/80\text{ °C}$	45 / 30	A
I_{CM}	$t_p < 1\text{ ms}; T_h = 25/80\text{ °C}$	90 / 60	A
$I_F = -I_C$	$T_h = 25/80\text{ °C}$	36 / 24	A
$I_{FM} = -I_{CM}$	$t_p < 1\text{ ms}; T_h = 25/80\text{ °C}$	72 / 48	A
T_j		$-40 \dots +150$	°C
T_{stg}		$-40 \dots +125$	°C
T_{sol}	Terminals, 10 s	260	°C
V_{isol}	AC, 1 min	2500	V

Characteristics		min.	typ.	max.	Units
Symbol	Conditions ¹⁾				
V_{CEsat}	$I_C = 30\text{ A}; T_j = 25\text{ (125) °C}$	—	1,8(2,0)	2,1(2,3)	V
$t_{d(on)}$	$V_{CC} = 300\text{ V}; V_{GE} = \pm 15\text{ V}$	—	45	—	ns
t_r	$I_C = 30\text{ A}, T_j = 125\text{ °C}$	—	40	—	ns
$t_{d(off)}$	$R_{Gon} = R_{Goff} = 22\text{ }\Omega$	—	250	—	ns
t_f	inductive load	—	30	—	ns
$E_{on} + E_{off}$		—	2,65	—	mJ
C_{ies}		—	2,6	—	nF
R_{thjh} ³⁾		—	—	1,0	K/W
Inverse Diode ²⁾					
$V_F = V_{EC}$	$I_F = 25\text{ A}; T_j = 25\text{ (125) °C}$	—	1,45(1,4)	1,7(1,75)	V
V_{TO}	$T_j = 125\text{ °C}$	—	0,85	0,9	V
r_T	$T_j = 125\text{ °C}$	—	22	16	m Ω
I_{RRM}	$I_F = 25\text{ A}; V_R = 300\text{ V}$	—	16	—	A
Q_{rr}	$di_F/dt = -500\text{ A}/\mu\text{s}$	—	2	—	μC
E_{off}	$V_{GE} = 0\text{ V}; T_j = 125\text{ °C}$	—	0,25	—	mJ
R_{thjh} ³⁾	per Diode	—	—	1,7	K/W
Mechanical Data					
M_1	mounting torque	—	—	2,5	Nm
w		—	30	—	g
Case			T 16		

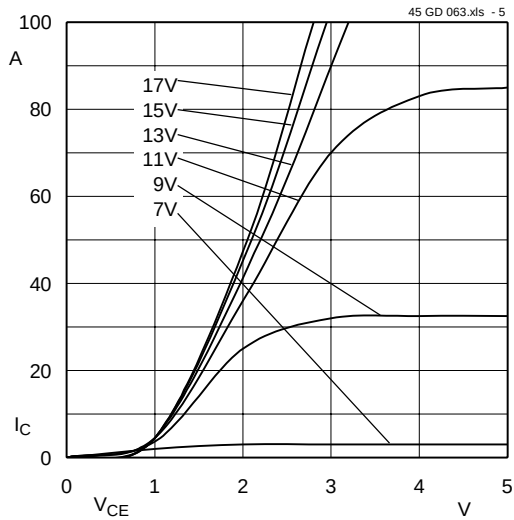


Fig. 5 Typ. output characteristic, $t_p = 80\text{ }\mu\text{s}$; 25 °C

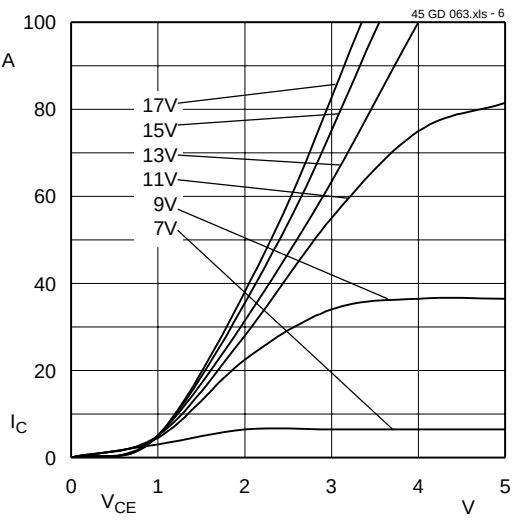


Fig. 6 Typ. output characteristic, $t_p = 80\text{ }\mu\text{s}$; 125 °C

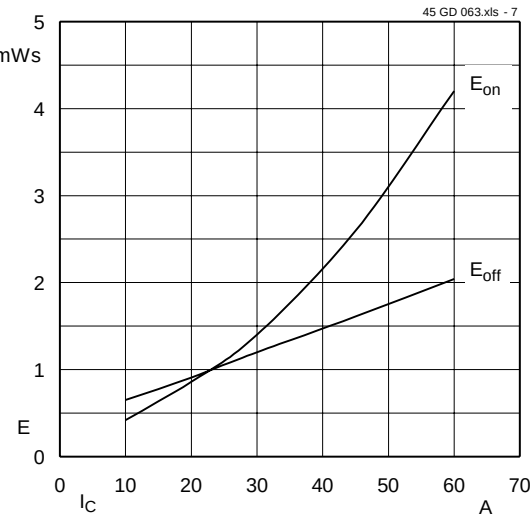


Fig. 7 Turn-on /-off energy = $f(I_C)$

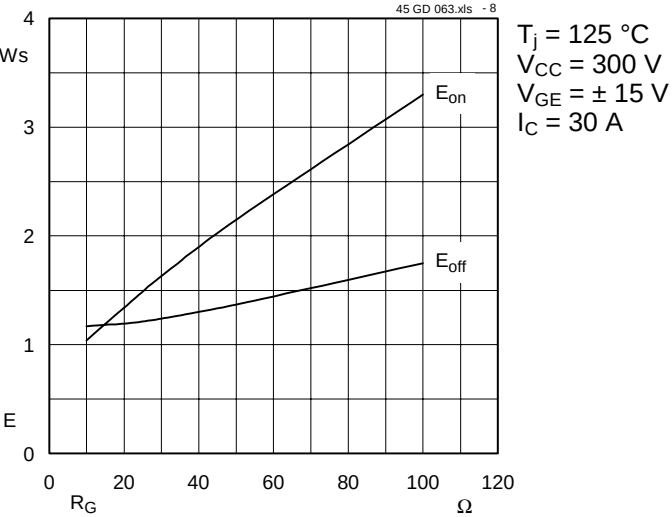


Fig. 8 Turn-on /-off energy = $f(R_G)$

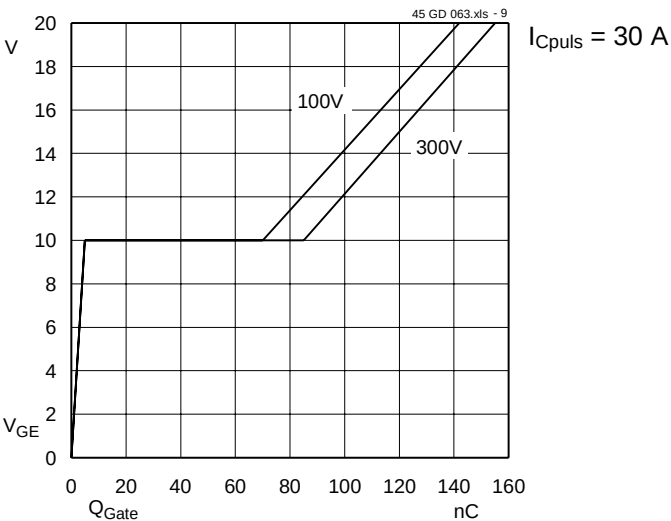


Fig. 9 Typ. gate charge characteristic

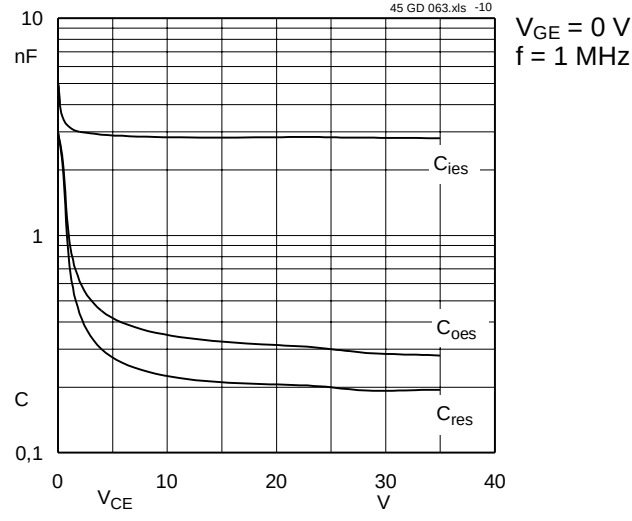


Fig. 10 Typ. capacitances vs. V_{CE}

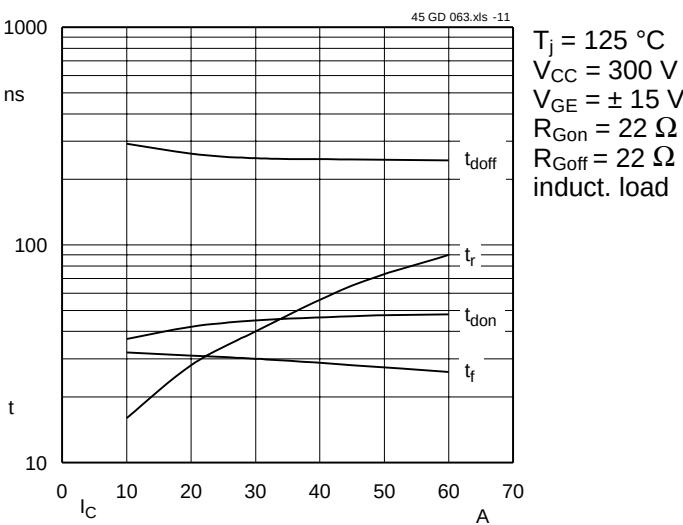


Fig. 11 Typ. switching times vs. I_C

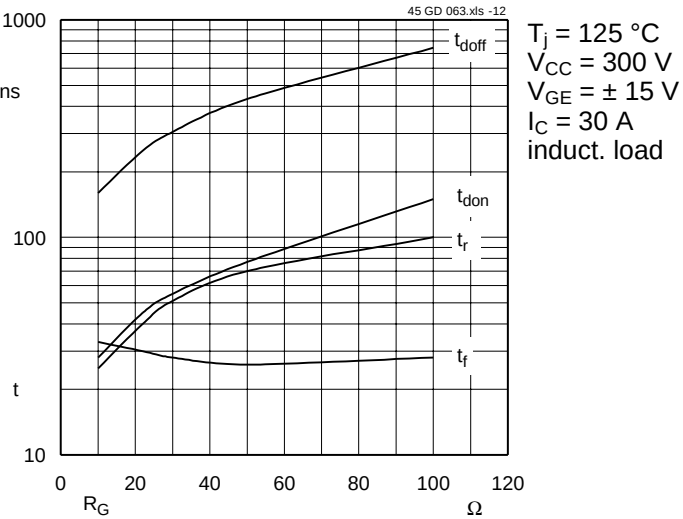


Fig. 12 Typ. switching times vs. gate resistor R_G

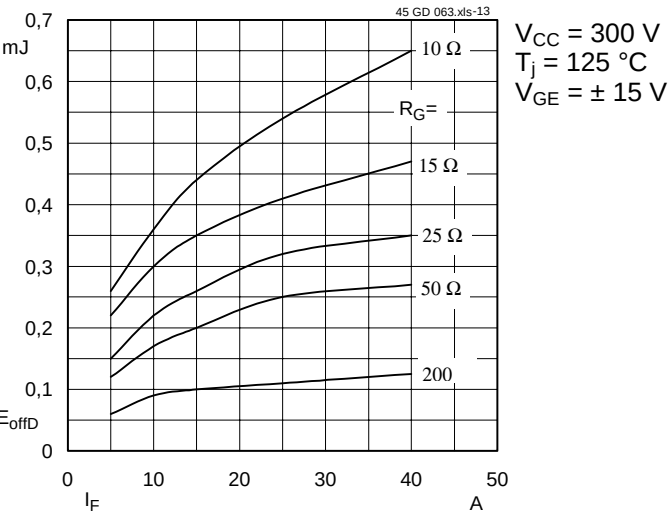
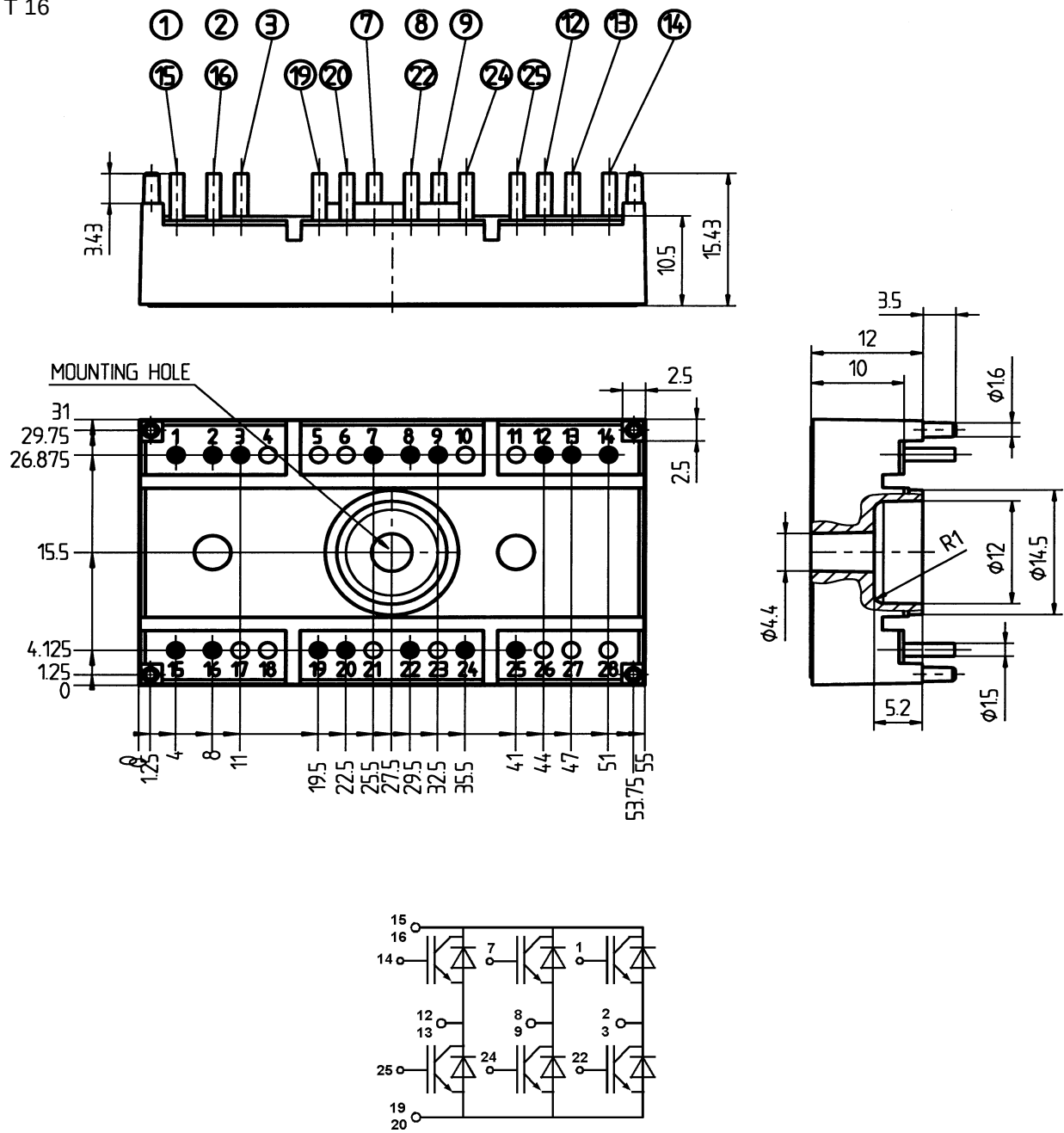


Fig. 13 Diode turn-off energy dissipation per pulse

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Dimensions in mm