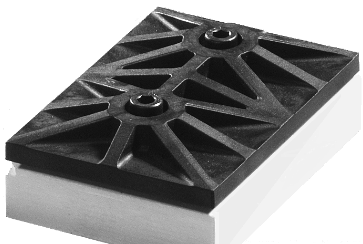
SEMIKRON

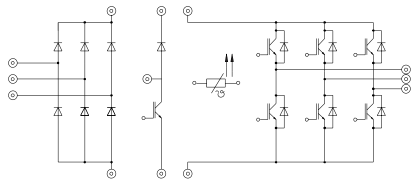
Absolute Maximum Ratings			
Symbol	Conditions [1]	Values	Units
Inverter			
V_{CES}		1200	V
V_{GES}		± 20	V
I_C	$T_{heatsink}$ = 25 / 80 °C	65 / 45	A
I_{CM}	t_p < 1 ms; $T_{heatsink}$ = 25 / 80 °C	130 / 90	A
$I_F = -I_C$	$T_{heatsink}$ = 25 / 80 °C	60 / 40	A
$I_{FM} = -I_{CM}$	t_p < 1 ms; $T_{heatsink}$ = 25 / 80 °C	120 / 80	A
Bridge Rectifier			
V_{RRM}		1500	V
I_D	$T_{heatsink}$ = 80 °C	35	A
I_{FSM}	t_p = 10 ms; sin. 180 °, T_j = 25 °C	700	A
I^2t	t_p = 10 ms; sin. 180 °, T_j = 25 °C	2400	A^2s
T_j		– 40 ... + 150	°C
T_{stg}		– 40 ... + 125	°C
V_{isol}	AC, 1 min.	2500	V

Characteristics					
Symbol	Conditions [1]	min.	typ.	max.	Units
IGBT - Inverter					
V_{CEsat}	I_C = 50 A T_j = 25 (125) °C	–	2,5(3,1)	3,0(3,7)	V
$t_{d(on)}$	V_{CC} = 600 V; V_{GE} = ± 15 V	–	44	100	ns
t_r	I_C = 50 A; T_j = 125 °C	–	56	100	ns
$t_{d(off)}$	$R_{gon} = R_{goff}$ = 22 Ω	–	380	500	ns
t_f	inductive load	–	70	100	ns
$E_{on} + E_{off}$		–	13	–	mJ
C_{ies}	V_{CE} = 25 V; V_{GE} = 0 V, 1 MHz	–	3,3	–	nF
R_{thjh}	per IGBT	–	–	0,5	K/W
IGBT - Chopper *					
V_{CEsat}	I_C = 25 A T_j = 25 (125) °C	–	2,5(3,1)	3,0(3,7)	V
$t_{d(on)}$	V_{CC} = 600 V; V_{GE} = ± 15 V	–	75	150	ns
t_r	I_C = 25 A; T_j = 125 °C	–	65	130	ns
$t_{d(off)}$	$R_{gon} = R_{goff}$ = 47 Ω	–	400	600	ns
t_f	inductive load	–	50	100	ns
$E_{on} + E_{off}$		–	6,2	–	mJ
C_{ies}	V_{CE} = 25 V; V_{GE} = 0 V, 1 MHz	–	1,65	–	nF
R_{thjh}	per IGBT	–	–	1,0	K/W
Diode [2] - Inverter & Chopper					
$V_F = V_{EC}$	I_F = 50 A T_j = 25 (125) °C	–	2,0(1,8)	2,5(2,3)	V
V_{TO}	T_j = 125 °C	–	1,0	1,2	V
r_T	T_j = 125 °C	–	16	22	mΩ
I_{RRM}	I_F = 50 A, V_R = – 600 V	–	40	–	A
Q_{rr}	di_F/dt = – 800 A/µs	–	8,0	–	µC
E_{off}	V_{GE} = 0 V, T_j = 125 °C	–	2,0	–	mJ
R_{thjh}	per diode	–	–	1,0	K/W
Diode - Rectifier					
V_F	I_F = 35 A T_j = 25 °C	–	1,2	–	V
R_{thjh}	per diode	–	–	1,6	K/W
Temperature Sensor					
R_{TS}	T = 25 / 100 °C		1000 / 1670		Ω
Mechanical Data					
M_1	Mounting torque	2	–	2,5	Nm
Case			M3		

MiniSKiiP 3
SEMIKRON integrated intelligent Power
SKiiP 32 NAB 12 T1
3-phase bridge rectifier + braking chopper
3-phase bridge inverter

Case M3





UL recognized file no. E63532

Options

- also available with powerful chopper. For characteristics please refer to Inverter IGBT

[1] $T_{heatsink}$ = 25 °C, unless otherwise specified

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

* For diagrams of the Chopper IGBT please refer to SKiiP 30 NAB 12 T10

This technical information specifies semiconductor devices but promises no characteristics. No warranty or guarantee expressed or implied is made regarding delivery, performance or suitability.

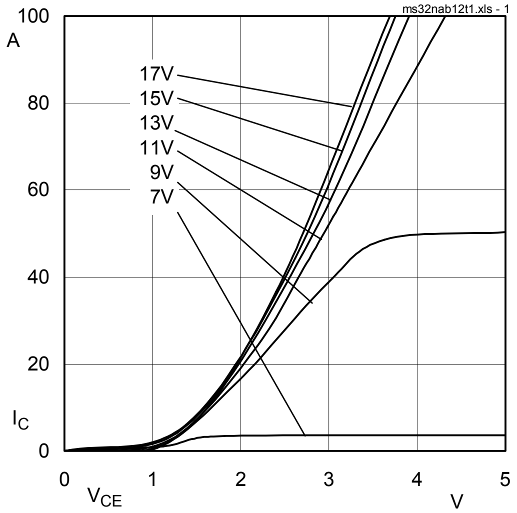


Fig. 1 Typ. output characteristic, t_p = 80 µs; 25 °C

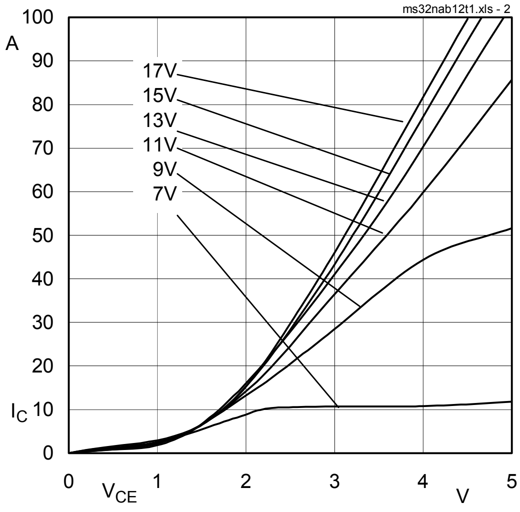
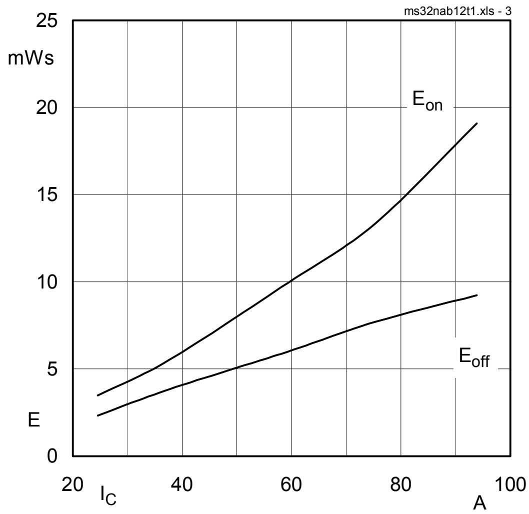
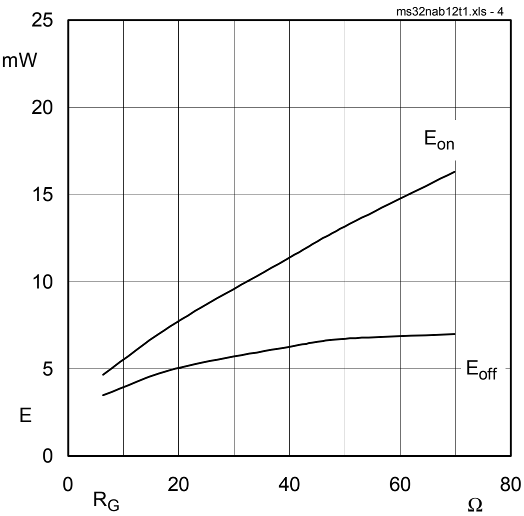


Fig. 2 Typ. output characteristic, t_p = 80 µs; 125 °C



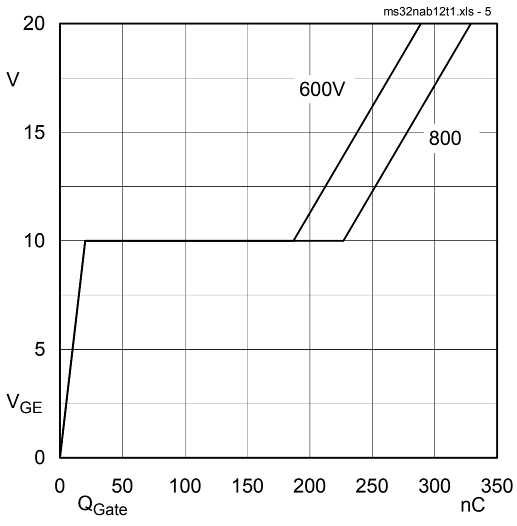
T_j = 125 °C
V_{CE} = 600 V
V_{GE} = ± 15 V
R_G = 22 Ω

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



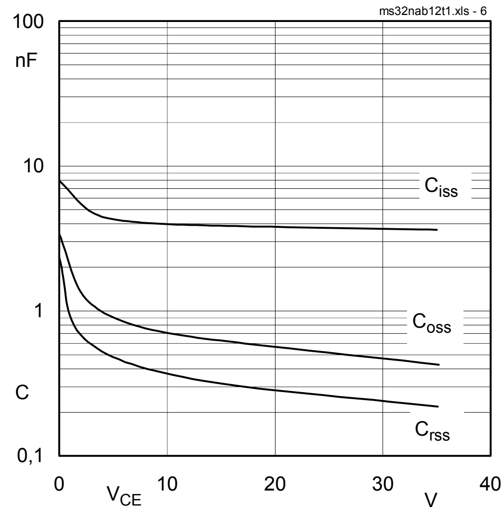
T_j = 125 °C
V_{CE} = 600 V
V_{GE} = ± 15 V
I_C = 50 A

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



I_{Cpuls} = 50 A

Fig. 5 Typ. gate charge characteristic



V_{GE} = 0 V
f = 1 MHz

Fig. 6 Typ. capacitances vs. V_{CE}