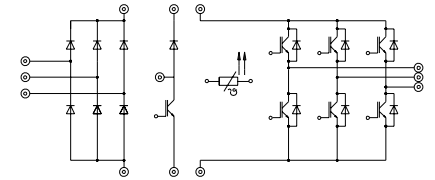


## SKiiP 31 NAB 12 T11

Absolute Maximum Ratings			
Symbol	Conditions <sup>1)</sup>	Values	Units
Inverter (Chopper see SKiiP 22 NAB 12 T18)			
V <sub>CEsat</sub>		1200	V
V <sub>GES</sub>		± 20	V
I <sub>C</sub>	T <sub>heatsink</sub> = 25 / 80 °C	45 / 30	A
I <sub>CM</sub>	t <sub>p</sub> < 1 ms; T <sub>heatsink</sub> = 25 / 80 °C	90 / 60	A
I <sub>F</sub> = -I <sub>C</sub>	T <sub>heatsink</sub> = 25 / 80 °C	38 / 26	A
I <sub>FM</sub> = -I <sub>CM</sub>	t <sub>p</sub> < 1 ms; T <sub>heatsink</sub> = 25 / 80 °C	76 / 52	A
Bridge Rectifier			
V <sub>RRM</sub>		1500	V
I <sub>D</sub>	T <sub>heatsink</sub> = 80 °C	35	A
I <sub>FSM</sub>	t <sub>p</sub> = 10 ms; sin. 180 °, T <sub>J</sub> = 25 °C	700	A
I <sup>2</sup> t	t <sub>p</sub> = 10 ms; sin. 180 °, T <sub>J</sub> = 25 °C	2400	A <sup>2</sup> s
T <sub>J</sub>		- 40 ... + 150	°C
T <sub>stg</sub>		- 40 ... + 125	°C
V <sub>isol</sub>	AC, 1 min.	2500	V

### MiniSKiiP 3 SEMIKRON integrated intelligent Power SKiiP 31 NAB 12 T11 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

<sup>1)</sup> T<sub>heatsink</sub> = 25 °C, unless otherwise specified

<sup>2)</sup> CAL = Controlled Axial Lifetime Technology (soft and fast recovery)

\* For diagrams of the Chopper IGBT please refer to SKiiP 22 NAB 12 T18

Characteristics					
Symbol	Conditions <sup>1)</sup>	min.	typ.	max.	Units
IGBT - Inverter					
V <sub>CEsat</sub>	I <sub>C</sub> = 30 A T <sub>J</sub> = 25 (125) °C	-	2,5(3,1)	3,0(3,7)	V
t <sub>d(on)</sub>	V <sub>CC</sub> = 600 V; V <sub>GE</sub> = ± 15 V	-	55	110	ns
t <sub>r</sub>	I <sub>C</sub> = 30 A; T <sub>J</sub> = 125 °C	-	55	110	ns
t <sub>d(off)</sub>	R <sub>gon</sub> = R <sub>goff</sub> = 39 Ω	-	400	600	ns
t <sub>f</sub>	inductive load	-	45	90	ns
E <sub>on</sub> + E <sub>off</sub>		-	7,8	-	mJ
C <sub>ies</sub>	V <sub>CE</sub> = 25 V; V <sub>GE</sub> = 0 V, 1 MHz	-	2,0	-	nF
R <sub>thjh</sub>	per IGBT	-	-	0,7	K/W
IGBT - Chopper *					
V <sub>CEsat</sub>	I <sub>C</sub> = 15 A T <sub>J</sub> = 25 (125) °C	-	2,5(3,1)	3,0(3,7)	V
t <sub>d(on)</sub>	V <sub>CC</sub> = 600 V; V <sub>GE</sub> = ± 15 V	-	55	110	ns
t <sub>r</sub>	I <sub>C</sub> = 15 A; T <sub>J</sub> = 125 °C	-	45	90	ns
t <sub>d(off)</sub>	R <sub>gon</sub> = R <sub>goff</sub> = 82 Ω	-	400	600	ns
t <sub>f</sub>	inductive load	-	70	100	ns
E <sub>on</sub> + E <sub>off</sub>		-	4,0	-	mJ
C <sub>ies</sub>	V <sub>CE</sub> = 25 V; V <sub>GE</sub> = 0 V, 1 MHz	-	1,0	-	nF
R <sub>thjh</sub>	per IGBT	-	-	1,4	K/W
Diode <sup>2)</sup> - Inverter (Diode <sup>2)</sup> - Chopper see SKiiP 22 NAB 12 T18)					
V <sub>F</sub> = V <sub>EC</sub>	I <sub>F</sub> = 25 A T <sub>J</sub> = 25 (125) °C	-	2,0(1,8)	2,5(2,3)	V
V <sub>TO</sub>	T <sub>J</sub> = 125 °C	-	1,0	1,2	V
r <sub>T</sub>	T <sub>J</sub> = 125 °C	-	32	44	mΩ
I <sub>RRM</sub>	I <sub>F</sub> = 25 A, V <sub>R</sub> = - 600 V	-	25	-	A
Q <sub>rr</sub>	di <sub>F</sub> /dt = - 500 A/μs	-	4,5	-	μC
E <sub>off</sub>	V <sub>GE</sub> = 0 V, T <sub>J</sub> = 125 °C	-	1,0	-	mJ
R <sub>thjh</sub>	per diode	-	-	1,2	K/W
Diode - Rectifier					
V <sub>F</sub>	I <sub>F</sub> = 35 A T <sub>J</sub> = 25 °C	-	1,2	-	V
R <sub>thjh</sub>	per diode	-	-	1,6	K/W
Temperature Sensor					
R <sub>TS</sub>	T = 25 / 100 °C		1000 / 1670		Ω
Mechanical Data					
M <sub>1</sub>	Mounting torque	2	-	2,5	Nm
Case			M3		

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

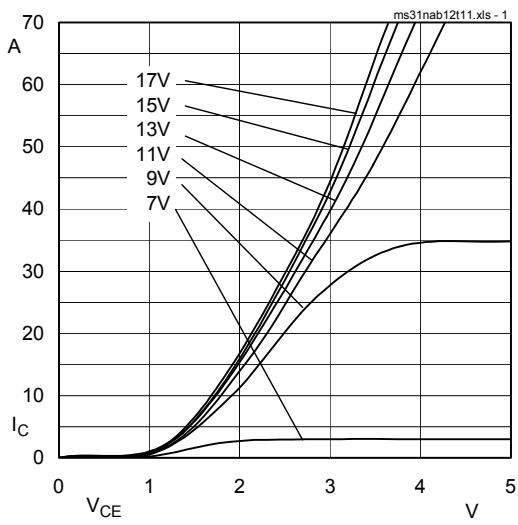


Fig. 1 Typ. output characteristic,  $t_p = 80 \mu s$ ;  $25 \text{ }^\circ\text{C}$

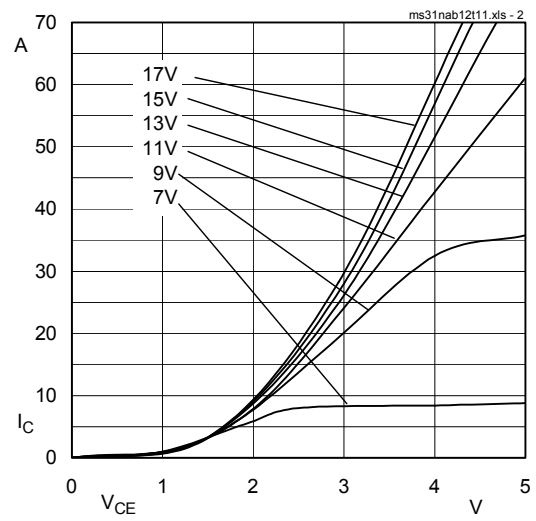


Fig. 2 Typ. output characteristic,  $t_p = 80 \mu s$ ;  $125 \text{ }^\circ\text{C}$

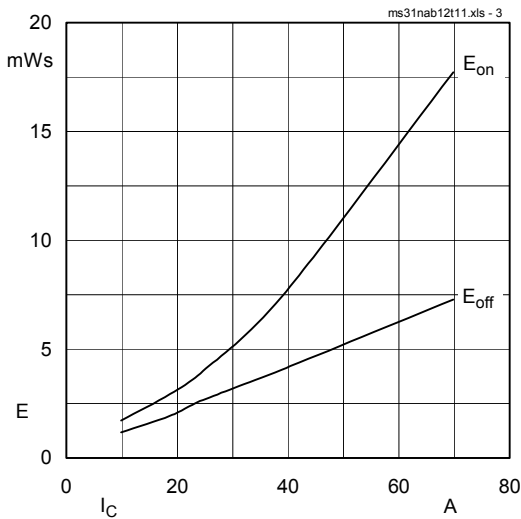


Fig. 3 Turn-on /-off energy =  $f(I_c)$

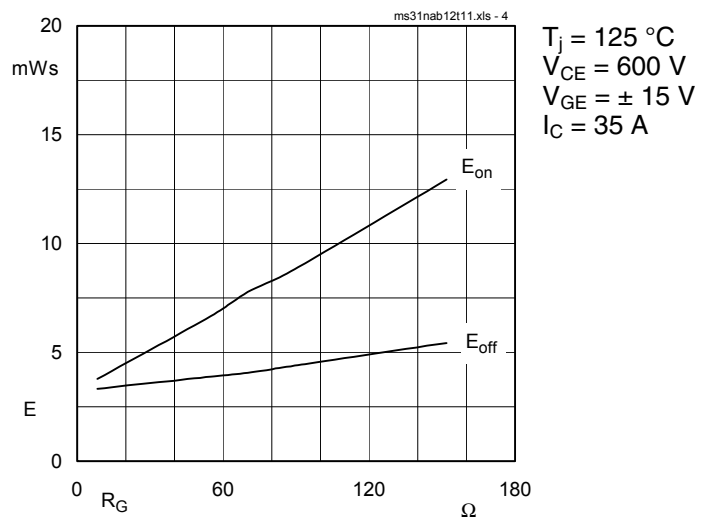


Fig. 4 Turn-on /-off energy =  $f(R_G)$

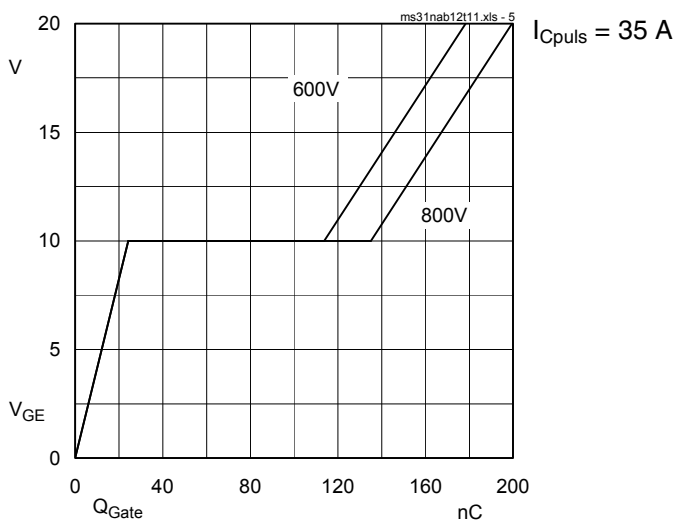


Fig. 5 Typ. gate charge characteristic

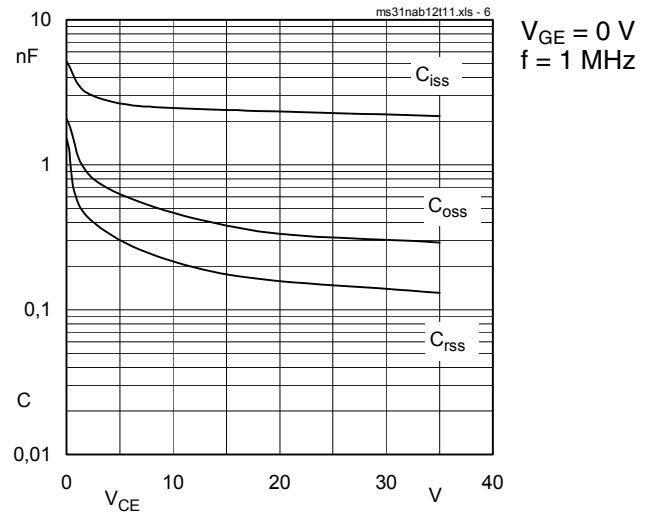


Fig. 6 Typ. capacitances vs.  $V_{CE}$