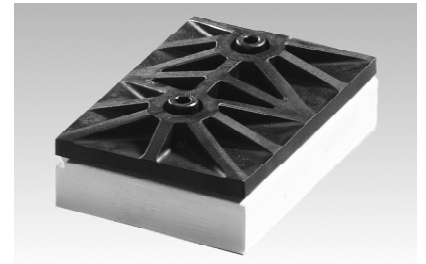


SKiiP 30 NAB 06

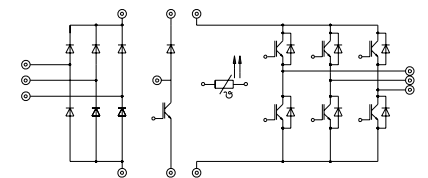
Absolute Maximum Ratings		Values	Units
Symbol	Conditions ¹⁾		
Inverter			
V _{CES}		600	V
V _{GES}		± 20	V
I _C	T _{heatsink} = 25 / 80 °C	36 / 25	A
I _{CM}	t _p < 1 ms; T _{heatsink} = 25 / 80 °C	72 / 50	A
I _F = -I _C	T _{heatsink} = 25 / 80 °C	57 / 38	A
I _{FM} = -I _{CM}	t _p < 1 ms; T _{heatsink} = 25 / 80 °C	114 / 76	A
Bridge Rectifier			
V _{RRM}		800	V
I _D	T _{heatsink} = 80 °C	25	A
I _{FSM}	t _p = 10 ms; sin. 180 °, T _j = 25 °C	370	A
I ² t	t _p = 10 ms; sin. 180 °, T _j = 25 °C	680	A ² s
T _j		- 40 ... + 150	°C
T _{stg}		- 40 ... + 125	°C
V _{isol}	AC, 1 min.	2500	V

MiniSKiiP 3
SEMIKRON integrated intelligent Power
SKiiP 30 NAB 06
3-phase bridge rectifier +
braking chopper +
3-phase bridge inverter

Case M3



Characteristics		min.	typ.	max.	Units
Symbol	Conditions ¹⁾				
IGBT - Inverter					
V _{CESat}	I _C = 30 A T _j = 25 (125) °C	-	2,1(2,2)	2,7(2,8)	V
t _{d(on)}	V _{CC} = 300 V; V _{GE} = ± 15 V I _C = 30 A; T _j = 125 °C R _{gon} = R _{goff} = 33 Ω inductive load	-	50	100	ns
t _r		-	80	160	ns
t _{d(off)}		-	250	370	ns
t _f		-	500	750	ns
E _{on} + E _{off}		-	4,0	-	mJ
C _{ies}	V _{CE} = 25 V; V _{GE} = 0 V, 1 MHz	-	1,6	-	nF
R _{thjh}	per IGBT	-	-	1,7	K/W
IGBT - Chopper *					
V _{CESat}	I _C = 20 A T _j = 25 (125) °C	-	2,1(2,2)	2,7(2,8)	V
t _{d(on)}	V _{CC} = 300 V; V _{GE} = ± 15 V I _C = 20 A; T _j = 125 °C R _{gon} = R _{goff} = 47 Ω inductive load	-	40	80	ns
t _r		-	70	140	ns
t _{d(off)}		-	250	370	ns
t _f		-	500	750	ns
E _{on} + E _{off}		-	2,5	-	mJ
C _{ies}	V _{CE} = 25 V; V _{GE} = 0 V, 1 MHz	-	1,1	-	nF
R _{thjh}	per IGBT	-	-	2,0	K/W
Diode ²⁾ - Inverter (Diode ²⁾ - Chopper see SKiiP 21NAB 06)					
V _F = V _{EC}	I _F = 50 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	-	11	16	mΩ
I _{RRM}	I _F = 50 A, V _R = - 300 V di _F /dt = - 800 A/μs V _{GE} = 0 V, T _j = 125 °C	-	50	-	A
Q _{rr}		-	5,0	-	μC
E _{off}		-	1,5	-	mJ
R _{thjh}		per diode	-	-	1,2
Diode - Rectifier					
V _F	I _F = 25 A, T _j = 25 °C	-	1,2	-	V
R _{thjh}	per diode	-	-	2,6	K/W
Temperature Sensor					
R _{TS}	T = 25 / 100 °C		1000 / 1670		Ω
Mechanical Data					
M ₁	case to heatsink, SI Units	2	-	2,5	Nm
Case	mechanical outline see page B 16 - 9		M3		



UL recognized file no. E63532

- specification of temperature sensor see part A
- common characteristics see page B16-3

Options

- also available with faster IGBTs (type ... 063), data sheet on request

¹⁾ T_{heatsink} = 25 °C, unless otherwise specified

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

* For diagrams of Chopper please refer to SKiiP 21 NAB 06

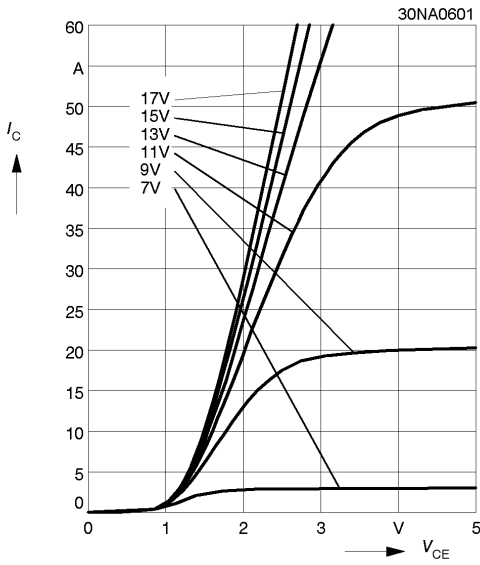


Fig. 1 Typ. output characteristic, $t_p = 80 \mu s$; $25 \text{ }^\circ\text{C}$

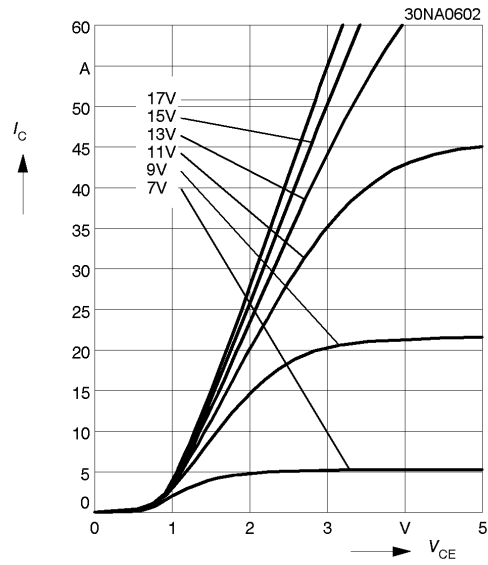


Fig. 2 Typ. output characteristic, $t_p = 80 \mu s$; $125 \text{ }^\circ\text{C}$

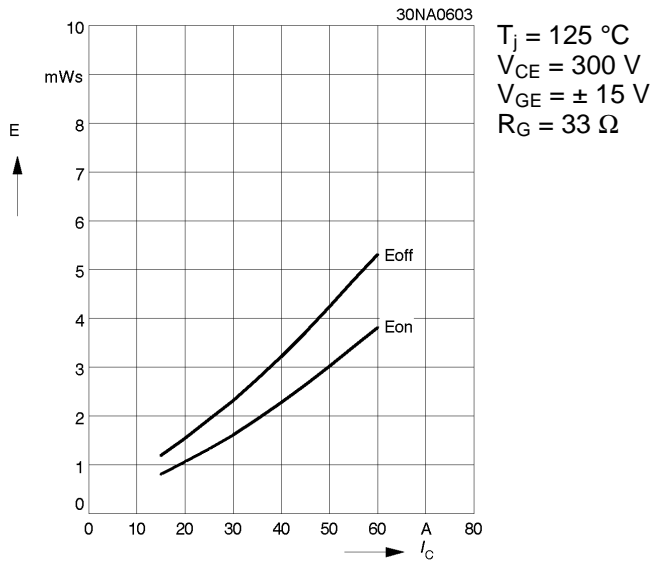


Fig. 3 Turn-on /-off energy = $f(I_c)$

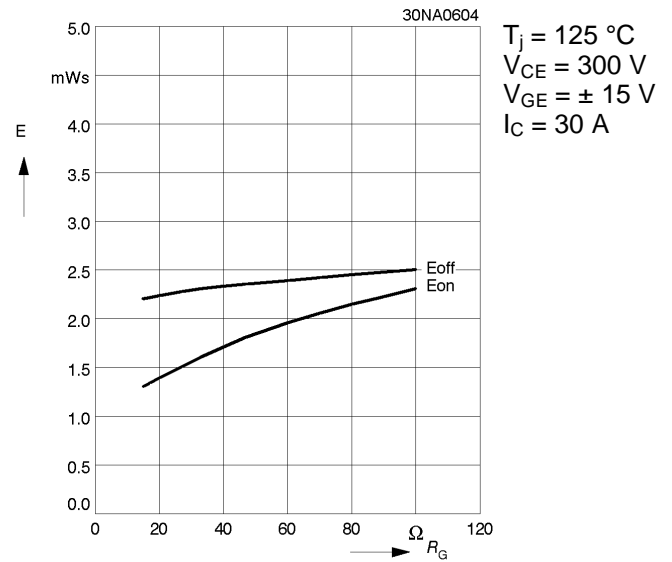


Fig. 4 Turn-on /-off energy = $f(R_G)$

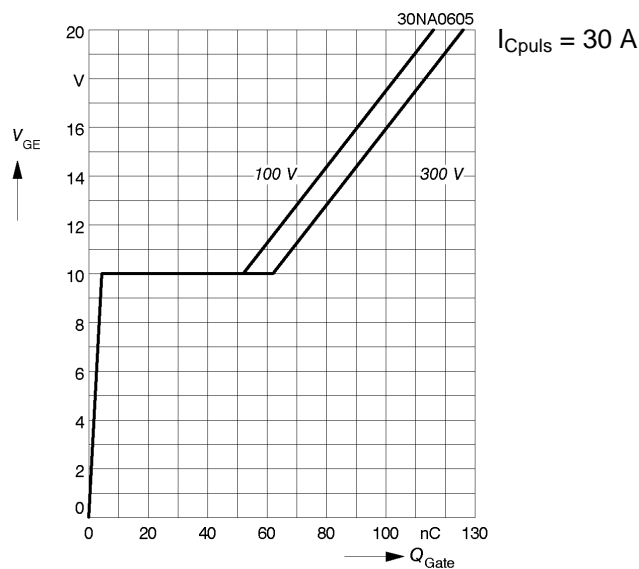


Fig. 5 Typ. gate charge characteristic

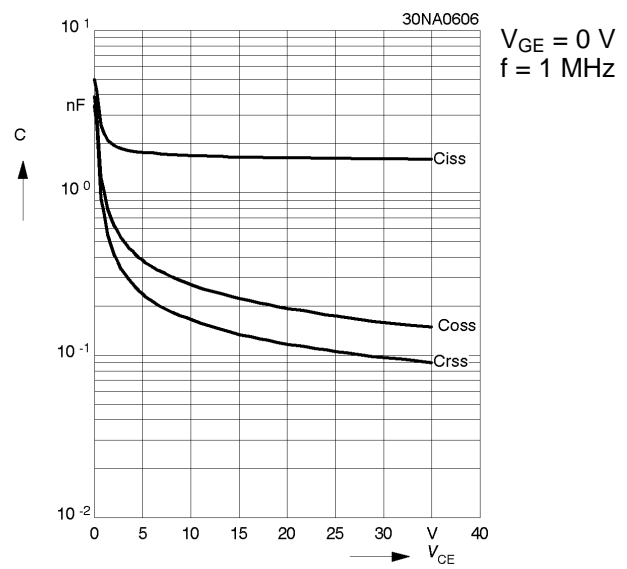


Fig. 6 Typ. capacitances vs. V_{CE}

2. Common characteristics of MiniSKiiP

MiniSKiiP 600 V

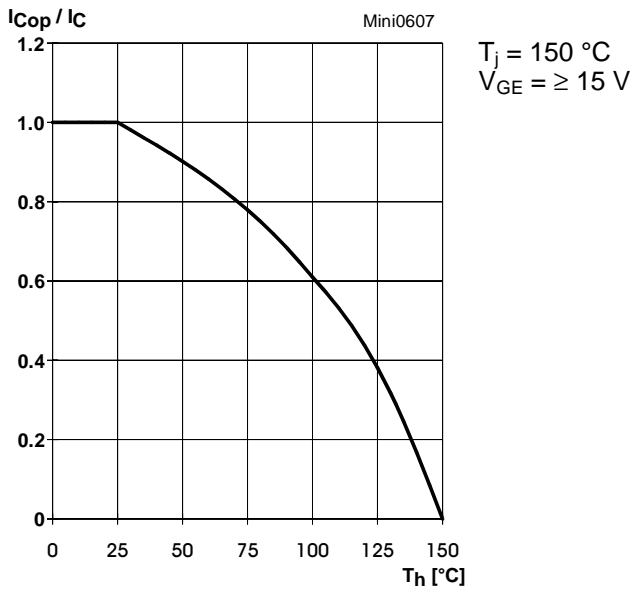


Fig. 7 Rated current of the IGBT $I_{COP} / I_C = f(T_h)$

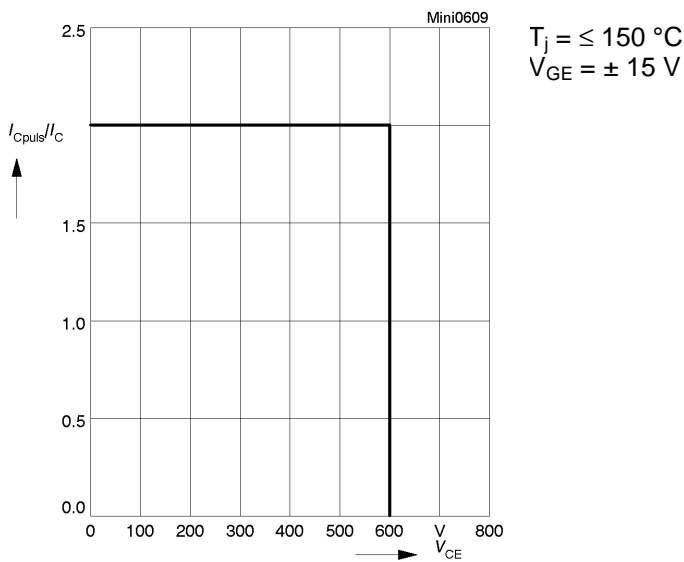


Fig. 9 Turn-off safe operating area (RBSOA) of the IGBT

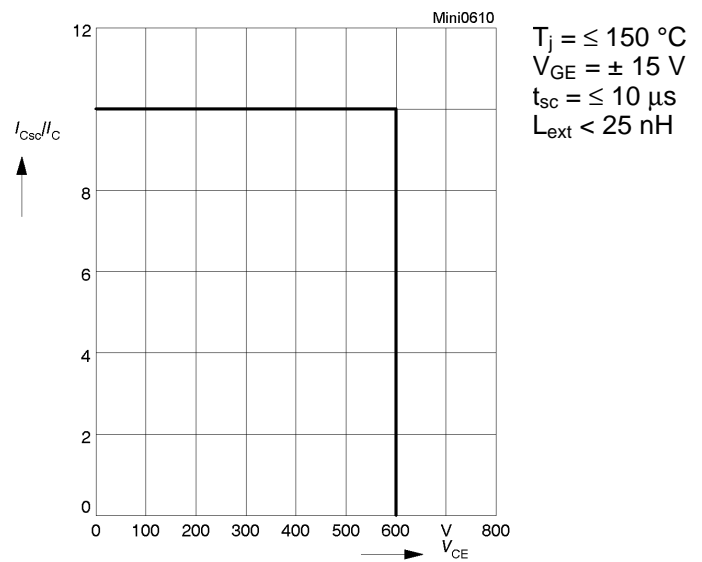


Fig. 10 Safe operating area at short circuit of the IGBT

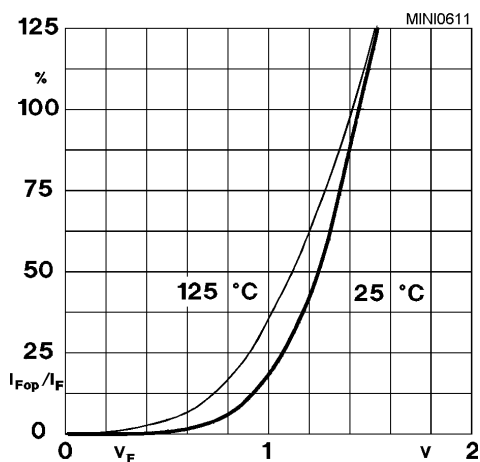


Fig. 11 Typ. freewheeling diode forward characteristic

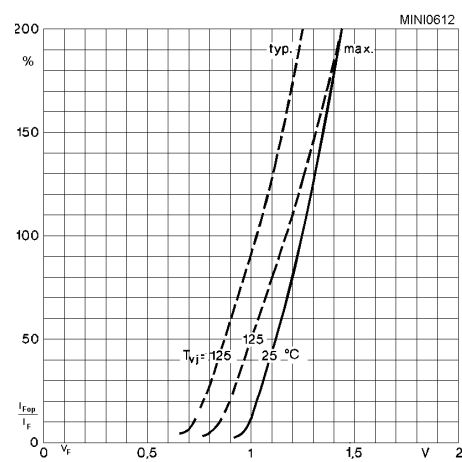


Fig. 12 Forward characteristic of the input bridge diode

MiniSKiiP 3

SKiiP 30 NAB 06
 SKiiP 31 NAB 06
 SKiiP 32 NAB 06
 SKiiP 30 NAB 12
 SKiiP 31 NAB 12
 SKiiP 32 NAB 12

Circuit
 Case M3
 Layout and connections for the
 customer's printed circuit board

