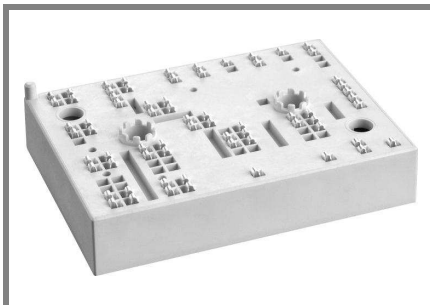# SKiiP 39ANB16V1

CONVERTER, INVERTER, BRAKE

MiniSKiiP® 3

3-phase bridge rectifier + brake chopper
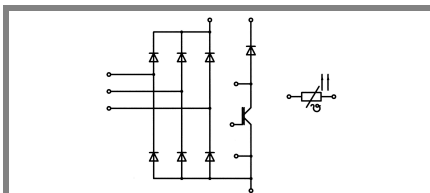
SKiiP 39ANB16V1

Features

- Fast Trench IGBTs
- Robust and soft freewheeling diodes in CAL technology
- Highly reliable spring contacts for electrical connections
- UL recognised file no. E63532

Typical Applications*
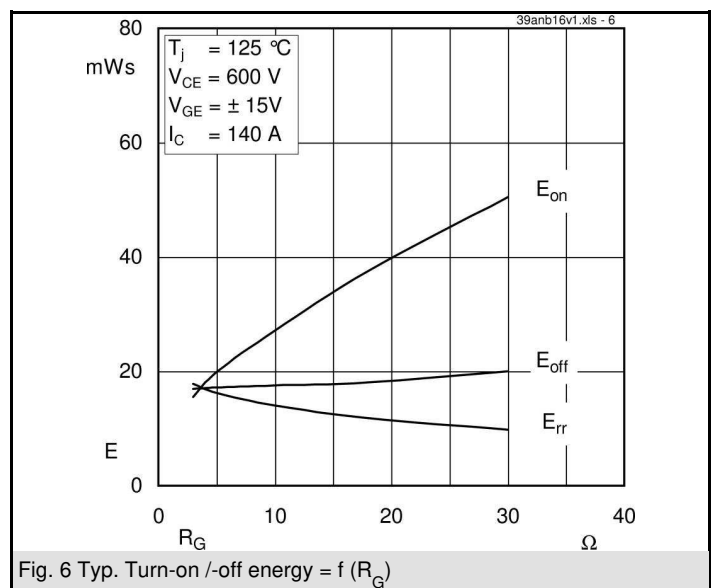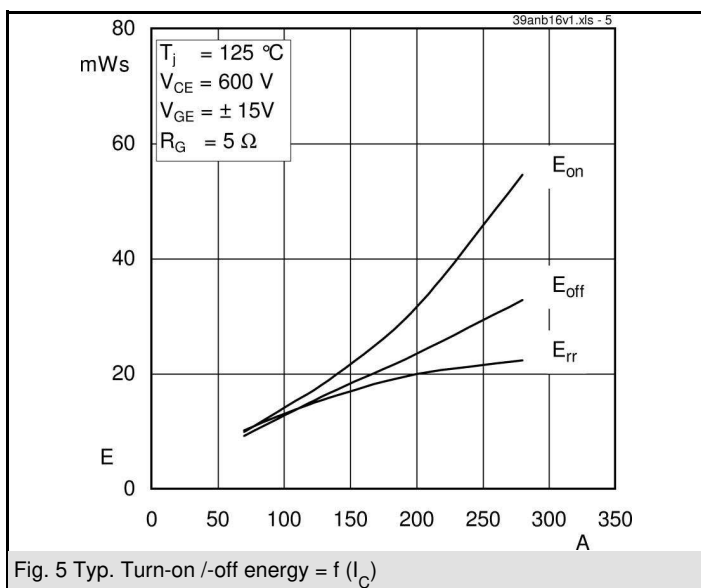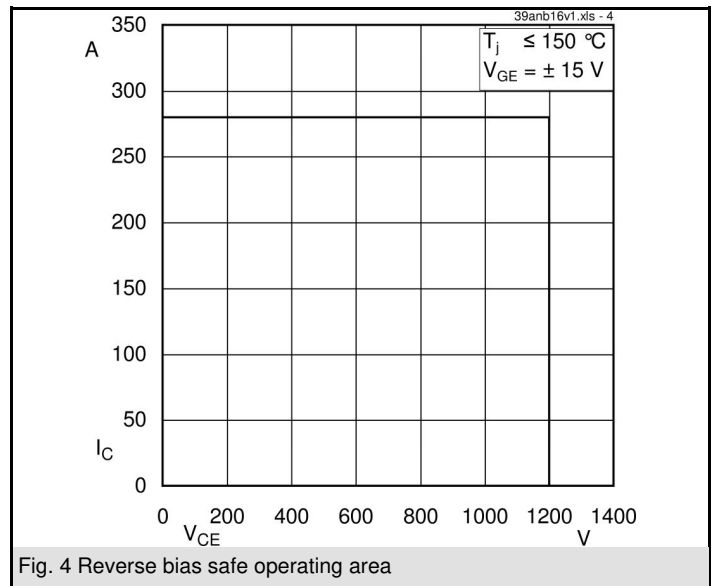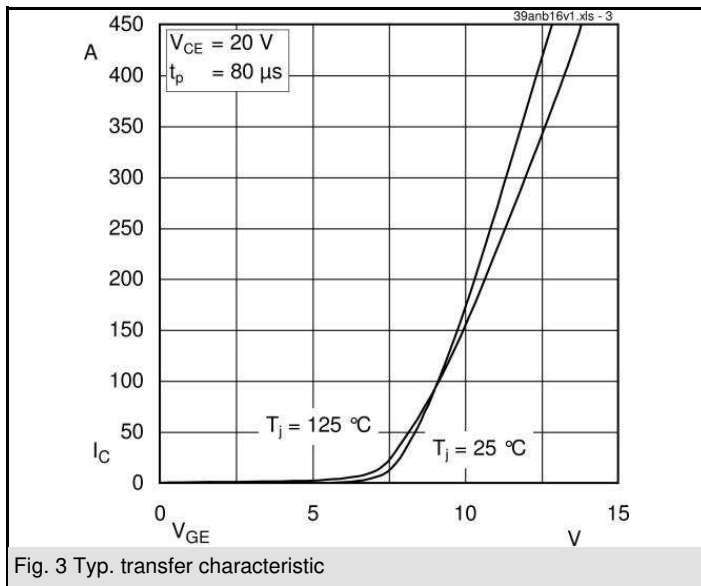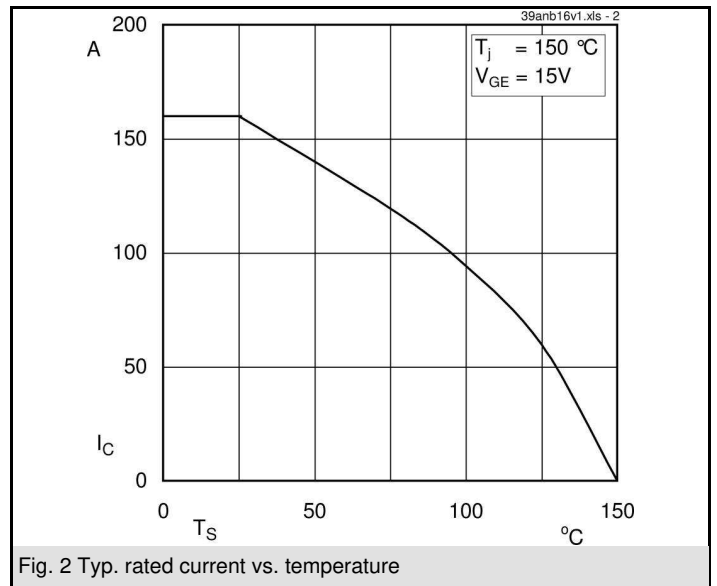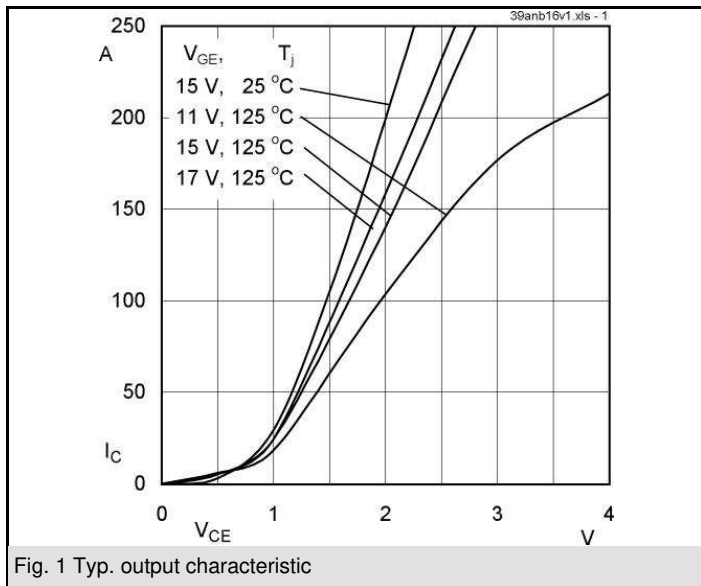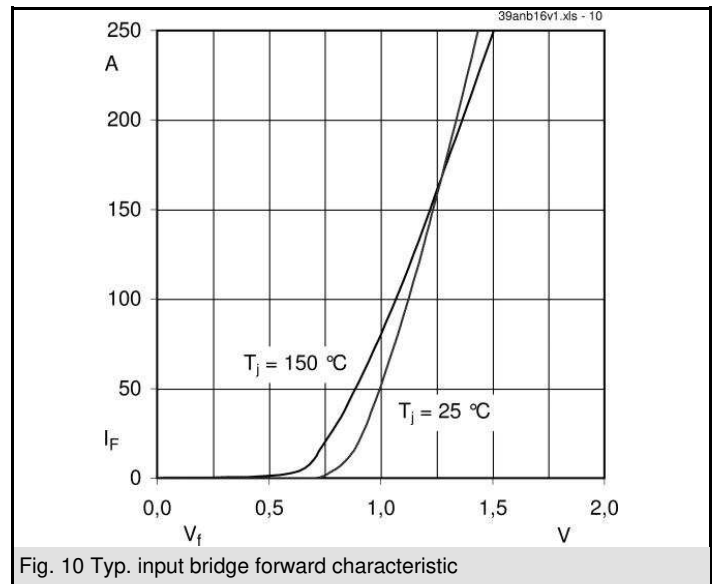
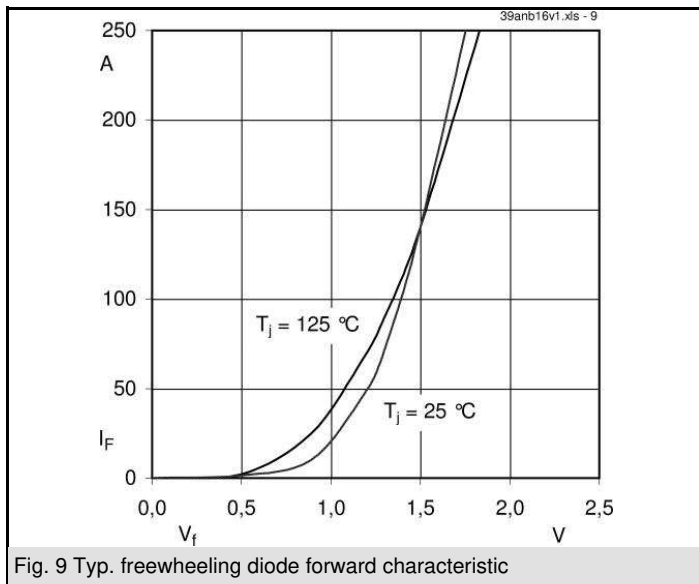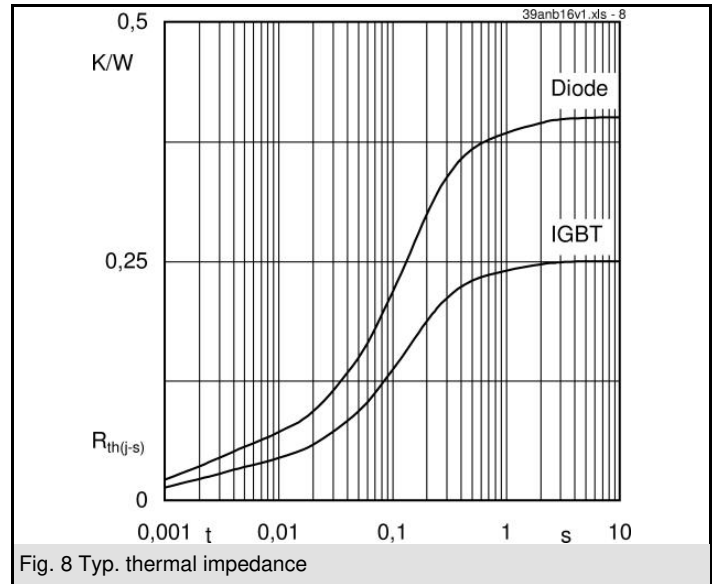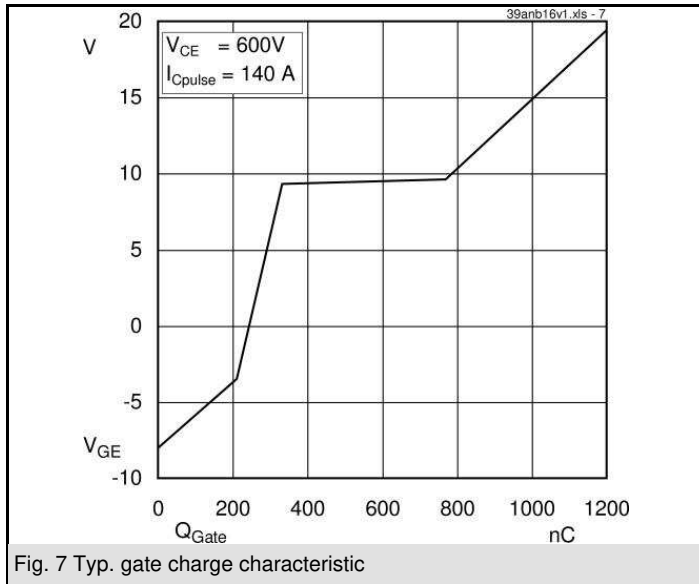- Input bridge for Inverter up to 45 kVA

Remarks

- V_{CEsat}, V_F = chip level value

ANB

Absolute Maximum Ratings		T_S = 25 °C, unless otherwise specified	
Symbol	Conditions	Values	Units
IGBT - Inverter, Chopper			
V_{CES}		1200	V
I_C	T_s = 25 (70) °C	157 (118)	A
I_{CRM}		280	A
V_{GES}		± 20	V
T_j		- 40 ... + 150	°C
Diode - Inverter, Chopper			
I_F	T_s = 25 (70) °C	167 (124)	A
I_{FRM}		280	A
T_j		- 40 ... + 150	°C
Diode - Rectifier			
V_{RRM}		1600	V
I_F	T_s = 70 °C	124	A
I_{FSM}	t_p = 10 ms, sin 180 °, T_j = 25 °C	1600	A
i^2t	t_p = 10 ms, sin 180 °, T_j = 25 °C	14500	A²s
T_j		- 40 ... + 150	°C
Module			
I_{tRMS}	per power terminal (20 A / spring)	160	A
T_{stg}		- 40 ... + 125	°C
V_{isol}	AC, 1 min.	2500	V

Characteristics			T_S = 25 °C, unless otherwise specified		
Symbol	Conditions	min.	typ.	max.	Units
IGBT - Inverter, Chopper					
V_{CEsat}	I_{Cnom} = 140 A, T_j = 25 (125) °C		1,7 (2)	2,1 (2,4)	V
$V_{GE(th)}$	V_{GE} = V_{CE}, I_C = 6 mA	5	5,8	6,5	V
$V_{CE(TO)}$	T_j = 25 (125) °C		1 (0,9)	1,2 (1,1)	V
r_T	T_j = 25 (125) °C		5 (7,9)	6,4 (9,3)	mΩ
C_{ies}	V_{CE} = 25 V, V_{GE} = 0 V, f = 1 MHz		11,2		nF
C_{oes}	V_{CE} = 25 V, V_{GE} = 0 V, f = 1 MHz		1,9		nF
C_{res}	V_{CE} = 25 V, V_{GE} = 0 V, f = 1 MHz		1,5		nF
$R_{th(j-s)}$	per IGBT		0,3		K/W
$t_{d(on)}$	under following conditions		80		ns
t_r	V_{CC} = 600 V, V_{GE} = ± 15 V		40		ns
$t_{d(off)}$	I_{Cnom} = 140 A, T_j = 125°C		500		ns
t_f	R_{Gon} = R_{Goff} = 5 Ω		100		ns
E_{on}	inductive load		19,9		mJ
E_{off}			17,2		mJ
Diode - Inverter, Chopper					
V_F = V_{EC}	I_{Fnom} = 140 A, T_j = 25 (125) °C		1,5 (1,5)	1,7 (1,7)	V
$V_{(TO)}$	T_j = 25 (125) °C		1 (0,8)	1,1 (0,9)	V
r_T	T_j = 25 (125) °C		3,6 (5)	4,3 (5,7)	mΩ
$R_{th(j-s)}$	per diode		0,4		K/W
I_{RRM}	under following conditions		210		A
Q_{rr}	I_{Fnom} = 140 A, V_R = 600 V		38		µC
E_{rr}	V_{GE} = 0 V, T_j = 125 °C		16,2		mJ
	di_F/dt = 4300 A/µs				
Diode - Rectifier					
V_F	I_{Fnom} = 90 A, T_j = 25 °C		1,2		V
$V_{(TO)}$	T_j = 150 °C		0,8		V
r_T	T_j = 150 °C		4		mΩ
$R_{th(j-s)}$	per diode		0,5		K/W
Temperature Sensor					
R_{ts}	3 %, T_r = 25 (100) °C		1000(1670)		Ω
Mechanical Data					
w			95		g
M_s	Mounting torque	2		2,5	Nm

y

Fig. 1 Typ. output characteristic

Fig. 2 Typ. rated current vs. temperature

Fig. 3 Typ. transfer characteristic

Fig. 4 Reverse bias safe operating area

Fig. 5 Typ. Turn-on /-off energy = f (I$_C$)

Fig. 6 Typ. Turn-on /-off energy = f (R$_G$)

Fig. 7 Typ. gate charge characteristic

Fig. 8 Typ. thermal impedance

Fig. 9 Typ. freewheeling diode forward characteristic

Fig. 10 Typ. input bridge forward characteristic

circuit

pinout, dimensions

MiniSKiiP 3

standard pressure part
pressure part is no part
of MiniSKiiP and must be
ordered separately

Only for the standard
pressure part:
Accessible for mounting
of SMD (max height 3,5)
on PCB by customer)

For mounting please follow
the assembly instruction

measure: mm
tolerance: ISO 2768-f

PRESSURE PIN AREA

CONTACT AREA

PCB TOP-VIEW
PCB BOTTOM-VIEW CONTACT-SIDE

PCB BOTTOM-VIEW CONTACT-SIDE

This is an electrostatic discharge sensitive device (ESDS), international standard IEC 60747-1, Chapter IX.

* The specifications of our components may not be considered as an assurance of component characteristics. Components have to be tested for the respective application. Adjustments may be necessary. The use of SEMIKRON products in life support appliances and systems is subject to prior specification and written approval by SEMIKRON. We therefore strongly recommend prior consultation of our personal.

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F3L100R07W2E3_B11 F3L15R12W2H3_B27 F3L400R07ME4_B22 F3L400R12PT4_B26 F4-100R12KS4 F4-50R07W2H3_B51 F4-75R12KS4_B11 FB15R06W1E3 FB20R06W1E3_B11 FD1000R33HE3-K FD300R06KE3 FD300R12KE3 FD300R12KS4_B5 FD400R12KE3 FD400R33KF2C-K FD401R17KF6C_B2 FD-DF80R12W1H3_B52 FF100R12KS4 FF1200R17KE3_B2 FF150R12KE3G FF200R06KE3 FF200R06YE3 FF200R12KT3 FF200R12KT3_E FF200R12KT4 FF200R17KE3 FF300R06KE3_B2 FF300R12KE4_E FF300R12KS4HOSA1 FF300R12ME4_B11 FF300R12MS4 FF300R17ME4 FF450R12ME4P FF450R17IE4 FF600R12IE4V FF600R12IP4V FF800R17KP4_B2 FF900R12IE4V MIXA30W1200TED MIXA450PF1200TSF FP06R12W1T4_B3 FP100R07N3E4 FP100R07N3E4_B11 FP10R06W1E3_B11 FP10R12W1T4_B11 FP10R12YT3 FP10R12YT3_B4 FP150R07N3E4 FP15R12KT3 FP15R12W2T4