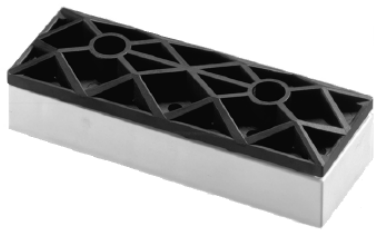


SKiiP 82ANB15T40



MiniSKiiP® 8

3-phase bridge rectifier +
brake chopper

SKiiP 82ANB15T40

Features

- Trench 4 IGBT's
- Robust and soft freewheeling diodes in CAL technology
- Highly reliable spring contacts for electrical connections
- UL recognised file no. E63532

Remarks

- Case temp. Limited to $T_C = 125^\circ\text{C}$ max. (for baseplateless modules $T_C = T_S$)
- product rel. results valid for $T_j \leq 150^\circ\text{C}$ (recomm. $T_{op} = -40 \dots +150^\circ\text{C}$)
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- Diode 4: Rectifier diode

Absolute Maximum Ratings

Symbol	Conditions		Values	Unit
IGBT 1				
V _{CES}	T _j = 25 °C		1200	V
I _C	T _j = 150 °C	T _s = 25 °C	82	A
		T _s = 70 °C	63	A
I _C	T _j = 175 °C	T _s = 25 °C	91	A
		T _s = 70 °C	74	A
I _{Cnom}			75	A
I _{CRM}	I _{CRM} = 3 x I _{Cnom}		225	A
V _{GES}			-20 ... 20	V
t _{psc}	V _{CC} = 800 V V _{GE} ≤ 15 V V _{CES} ≤ 1200 V	T _j = 150 °C	10	μs
T _j			-40 ... 175	°C

Absolute Maximum Ratings

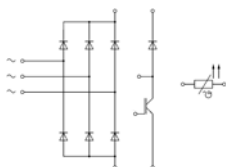
Symbol	Conditions		Values	Unit
Diode 1				
V _{RRM}	T _j = 25 °C		1200	V
I _F	T _j = 150 °C	T _s = 25 °C	74	A
		T _s = 70 °C	55	A
I _F	T _j = 175 °C	T _s = 25 °C	83	A
		T _s = 70 °C	66	A
I _{Fnom}			75	A
I _{FRM}	I _{FRM} = 3 x I _{Fnom}		225	A
I _{FSM}	10 ms, sin 180°, T _j = 150 °C		430	A
T _j			-40 ... 175	°C

Absolute Maximum Ratings

Symbol	Conditions		Values	Unit
Diode 4				
V _{RRM}			1600	V
I _F	T _j = 150 °C	T _s = 25 °C	110	A
		T _s = 70 °C	80	A
I _{Fnom}			45	A
I _{FSM}	10 ms, sin 180°, T _j = 150 °C		890	A
I ² t	10 ms, sin. 180°, T _j = 150 °C		3900	A ² s
T _j			-40 ... 150	°C

Absolute Maximum Ratings

Symbol	Conditions	Values	Unit
Module			
$I_{t(RMS)}$		100	A
T_{stg}		-40 ... 125	$^\circ\text{C}$
V_{isol}	AC sinus 50Hz, $t = 1\text{ min}$	2500	V



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MiniSKiiP® 8

3-phase bridge rectifier + brake chopper

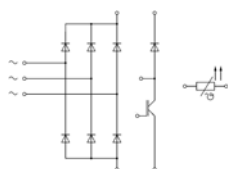
SKiiP 82ANB15T40

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Characteristics						
Symbol	Conditions		min.	typ.	max.	Unit
IGBT 1						
V _{CE(sat)}	I _C = 75 A	T _j = 25 °C		1.85	2.10	V
	V _{GE} = 15 V chiplevel	T _j = 150 °C		2.25	2.45	V
V _{CE0}	chiplevel	T _j = 25 °C		0.8	0.9	V
		T _j = 150 °C		0.7	0.8	V
r _{CE}	V _{GE} = 15 V chiplevel	T _j = 25 °C		14	16	mΩ
		T _j = 150 °C		21	22	mΩ
V _{GE(th)}	V _{GE} = V _{CE} V, I _C = 3 mA		5	5.8	6.5	V
I _{CES}	V _{GE} = 0 V	T _j = 25 °C		0.1	0.3	mA
	V _{CE} = 1200 V					mA
C _{ies}	V _{CE} = 25 V V _{GE} = 0 V	f = 1 MHz		4.40		nF
C _{oes}		f = 1 MHz		0.29		nF
C _{res}		f = 1 MHz		0.23		nF
Q _G	- 8 V...+ 15 V			425		nC
R _{Gint}	T _j = 25 °C			10.00		Ω
t _{d(on)}	V _{CC} = 600 V	T _j = 150 °C		148		ns
t _r	I _C = 75 A	T _j = 150 °C		78		ns
E _{on}	R _{G on} = 1 Ω	T _j = 150 °C		16.6		mJ
t _{d(off)}	R _{G off} = 2.1 Ω	T _j = 150 °C		380		ns
t _f	di/dt _{on} = 1370 A/μs	T _j = 150 °C		63		ns
E _{off}	di/dt _{off} = 950 A/μs	T _j = 150 °C				
	V _{GE neg} = -15 V V _{GE pos} = 15 V	T _j = 150 °C		8		mJ
R _{th(j-s)}	per IGBT			0.57		K/W

Characteristics						
Symbol	Conditions		min.	typ.	max.	Unit
Diode 1						
V _F = V _{EC}	I _F = 75 A	T _j = 25 °C		2.2	2.5	V
	V _{GE} = 0 V chiplevel	T _j = 150 °C		2.1	2.4	V
V _{F0}	chiplevel	T _j = 25 °C		1.3	1.5	V
		T _j = 150 °C		0.9	1.1	V
r _F	chiplevel	T _j = 25 °C		12	13	mΩ
		T _j = 150 °C		16	18	mΩ
I _{RRM}	I _F = 75 A	T _j = 150 °C		31		A
Q _{rr}	di/dt _{off} = 480 A/μs	T _j = 150 °C		13.5		μC
E _{rr}	V _{GE} = -15 V	T _j = 150 °C		5.6		mJ
R _{th(j-s)}	per Diode			0.75		K/W

Characteristics						
Symbol	Conditions		min.	typ.	max.	Unit
Diode 4						
V _F = V _{EC}	I _F = 45 A	T _j = 25 °C		1	1.21	V
	V _{GE} = 0 V chiplevel	T _j = 125 °C			1.1	V
V _{F0}	chiplevel	T _j = 25 °C			1.0	V
		T _j = 125 °C			0.8	V
r _F	chiplevel	T _j = 25 °C			5.2	mΩ
		T _j = 125 °C			6.0	mΩ
R _{th(j-s)}	per Diode			0.77		K/W

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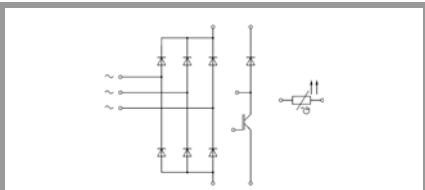
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Characteristics					
Symbol	Conditions	min.	typ.	max.	Unit
Temperatur Sensor					
R_{100}	$T_r = 100^{\circ}\text{C}$, tolerance = 3 %		$1670 \pm 3\%$		Ω
$R(T)$	$R(T) = 1000\Omega[1 + A(T - 25^{\circ}\text{C}) + B(T - 25^{\circ}\text{C})^2]$, $A = 7.635 \cdot 10^{-3}^{\circ}\text{C}^{-1}$, $B = 1.731 \cdot 10^{-5}^{\circ}\text{C}^{-2}$				
Characteristics					
Symbol	Conditions	min.	typ.	max.	Unit
Module					
M_s	to heat sink	2		2.5	Nm
w			185		g



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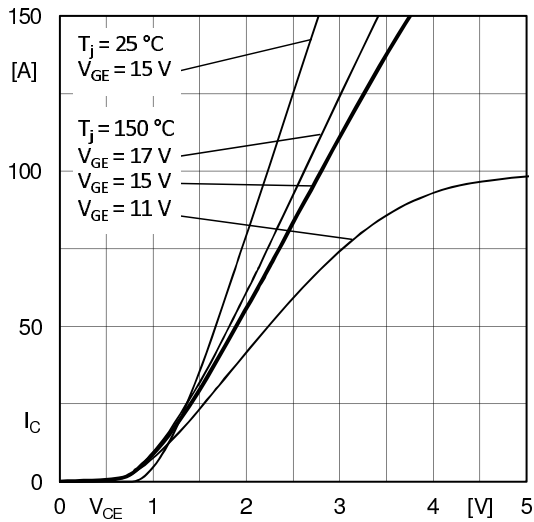


Fig. 1: Typ. output characteristic, inclusive $R_{CC'+EE'}$

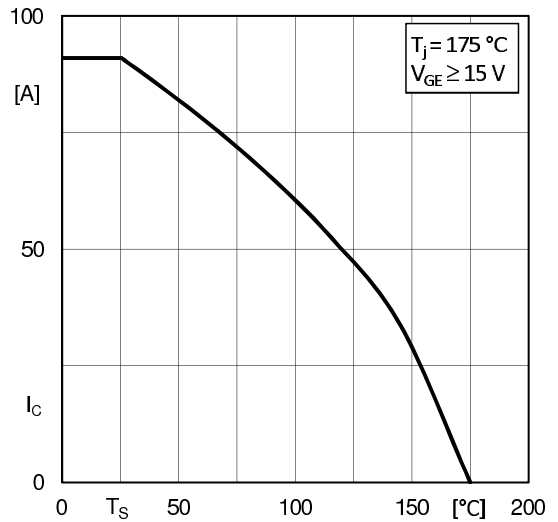


Fig. 2: Rated current vs. temperature $I_C = f(T_S)$

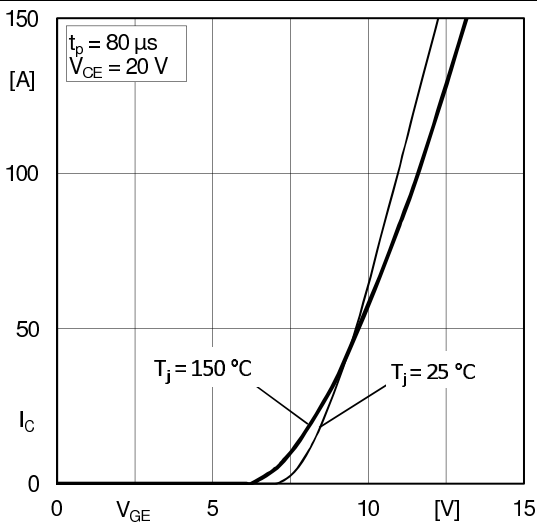


Fig. 5: Typ. transfer characteristic

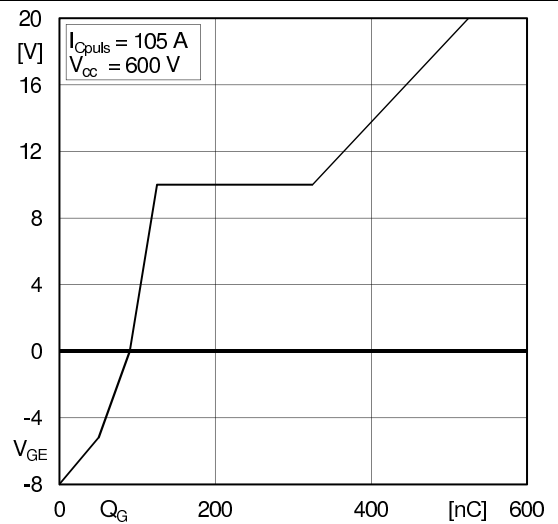


Fig. 6: Typ. gate charge characteristic

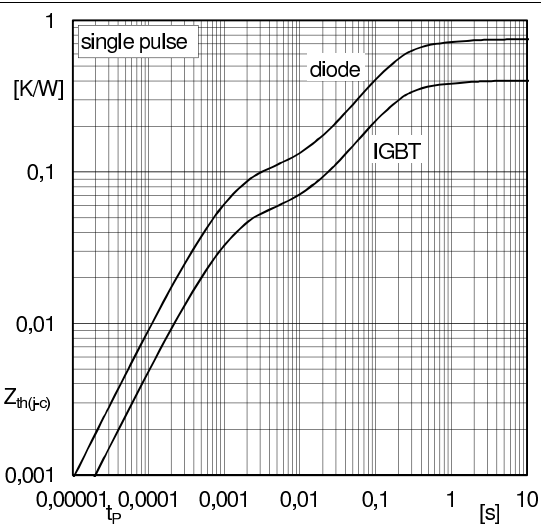


Fig. 9: Transient thermal impedance of IGBT and Diode

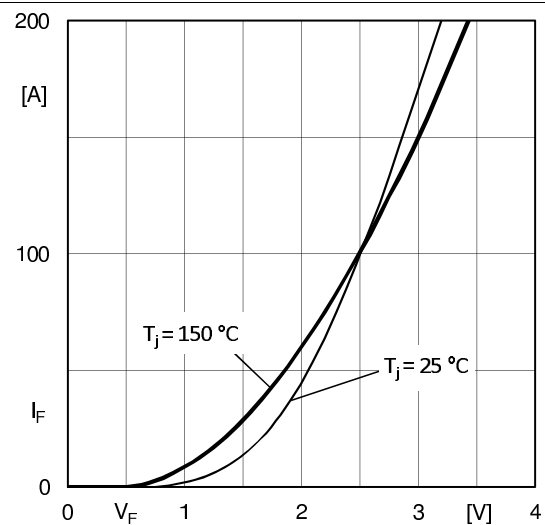
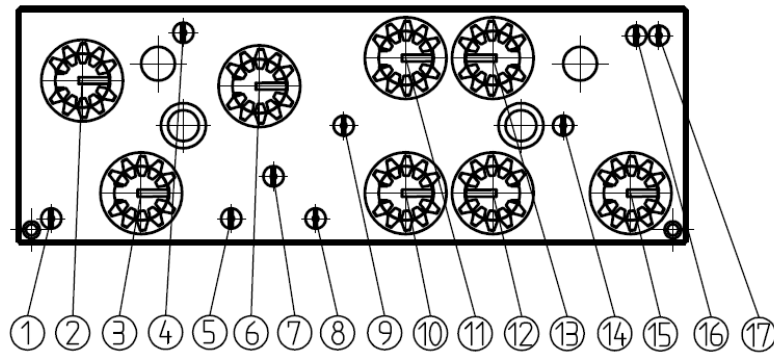


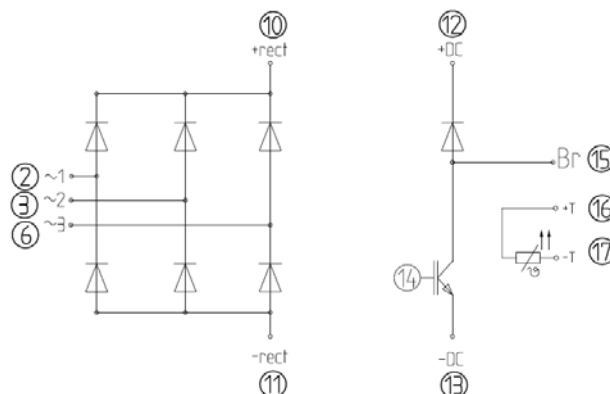
Fig. 10: CAL diode forward characteristic



PIN	FUNCTION	
	DIODEN BRÜCKE/ DIODE BRIDGE	
1		nicht bel./nc
2	~1	
3	~2	
4		nicht bel./nc
5		nicht bel./nc
6	~3	
7		nicht bel./nc
8		nicht bel./nc
9		nicht bel./nc
10	+	
11	-	
12	+	
13	-	
14		Gate Br
15	Br	
16		T+
17		T-

nc = not connected

pinout, dimensions



pinout

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 staff.