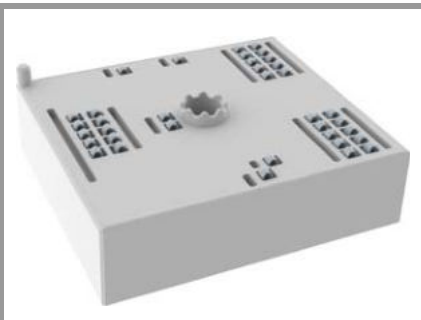




MiniSKiiP® 2 Dual

Half-Bridge

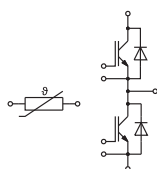
SKiiP 26GB12T4V1

Features*

- Trench 4 IGBTs
- Robust and soft freewheeling diodes in CAL technology
- Highly reliable spring contacts for electrical connections
- UL recognised: File no. E63532
- NTC T-Sensor

Remarks

- Max. case temperature limited to $T_C = 125^\circ\text{C}$
- Product reliability results valid for $T_j \leq 150^\circ\text{C}$ (recommended $T_{j,op} = -40 \dots +150^\circ\text{C}$)

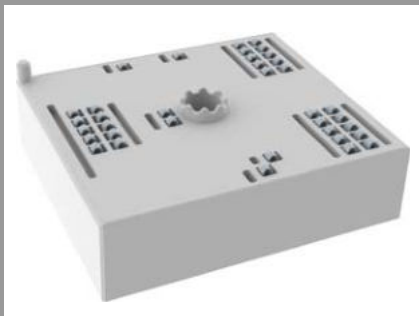


GB

Absolute Maximum Ratings				
Symbol	Conditions		Values	Unit
Inverter - IGBT				
V _{CES}	T _J = 25 °C		1200	V
I _C	λ _{paste} =0.8 W/(mK)	T _s = 25 °C	224	A
	T _J = 175 °C	T _s = 70 °C	181	A
I _C	λ _{paste} =2.5 W/(mK)	T _s = 25 °C	289	A
	T _J = 175 °C	T _s = 70 °C	236	A
I _{Cnom}			200	A
I _{CRM}			600	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
Inverse - Diode				
I _F	λ _{paste} =0.8 W/(mK)	T _s = 25 °C	194	A
	T _J = 175 °C	T _s = 70 °C	154	A
I _F	λ _{paste} =2.5 W/(mK)	T _s = 25 °C	219	A
	T _J = 175 °C	T _s = 70 °C	174	A
I _{FRM}			400	A
I _{FSM}	10 ms, sin 180°, T _J = 150 °C		990	A
T _J			-40 ... 175	°C
Module				
I _{t(RMS)}	T _{terminal} = 80 °C, 20 A per spring		200	A
T _{stg}	module without TIM		-40 ... 125	°C
V _{isol}	AC sinus 50 Hz, t = 1 min		2500	V

Characteristics						
Symbol	Conditions		min.	typ.	max.	Unit
Inverter - IGBT						
V _{CE(sat)}	I _C = 200 A	T _j = 25 °C		1.80	2.05	V
	V _{GE} = 15 V chiplevel	T _j = 150 °C		2.20	2.40	V
V _{CE0}	chiplevel	T _j = 25 °C		0.80	0.90	V
		T _j = 150 °C		0.70	0.80	V
r _{CE}	V _{GE} = 15 V chiplevel	T _j = 25 °C		5.0	5.8	mΩ
		T _j = 150 °C		7.5	8.0	mΩ
V _{GE(th)}	V _{GE} = V _{CE} , I _C = 12 mA		5	5.8	6.5	V
I _{CES}	V _{GE} = 0 V, V _{CE} = 1200 V, T _j = 25 °C				2.0	mA
C _{ies}	V _{CE} = 25 V V _{GE} = 0 V	f = 1 MHz		12.30		nF
C _{oes}		f = 1 MHz		0.81		nF
C _{res}		f = 1 MHz		0.69		nF
Q _G	V _{GE} = - 8 V...+ 15 V			1130		nC
R _{Gint}	T _j = 25 °C			3.8		Ω
t _{d(on)}	V _{CC} = 600 V	T _j = 150 °C		170		ns
t _r	I _C = 200 A	T _j = 150 °C		45		ns
E _{on}	R _{G on} = 2 Ω	T _j = 150 °C		13.6		mJ
t _{d(off)}	R _{G off} = 2 Ω	T _j = 150 °C		440		ns
t _f	di/dt _{on} = 5500 A/μs	T _j = 150 °C		91		ns
E _{off}	dv/dt = 7000 V/μs	T _j = 150 °C		22.1		mJ
	V _{GE} = +15/-15 V					
	L _s = 25 nH					
R _{th(j-s)}	per IGBT, λ _{paste} =0.8 W/(mK)			0.25		K/W
R _{th(j-s)}	per IGBT, λ _{paste} =2.5 W/(mK)			0.16		K/W

SKiiP 26GB12T4V1



MiniSKiiP® 2 Dual

Half-Bridge

SKiiP 26GB12T4V1

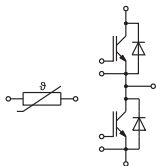
Features*

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Remarks

- Max. case temperature limited to $T_C = 125^\circ\text{C}$
- Product reliability results valid for $T_J \leq 150^\circ\text{C}$ (recommended $T_{J,op} = -40 \dots +150^\circ\text{C}$)

Characteristics						
Symbol	Conditions		min.	typ.	max.	Unit
Inverse - Diode						
V _F = V _{EC}	I _F = 200 A	T _j = 25 °C		2.20	2.52	V
	V _{GE} = 0 V chiplevel	T _j = 150 °C		2.15	2.47	V
V _{F0}	chiplevel	T _j = 25 °C		1.30	1.50	V
		T _j = 150 °C		0.90	1.10	V
r _F	chiplevel	T _j = 25 °C		4.5	5.1	mΩ
		T _j = 150 °C		6.3	6.9	mΩ
I _{RRM}	I _F = 200 A	T _j = 150 °C		228		A
Q _{rr}	di/dt _{off} = 5215 A/μs	T _j = 150 °C		32		μC
E _{rr}	V _{GE} = -15 V V _{CC} = 600 V	T _j = 150 °C		13.4		mJ
R _{th(j-s)}	per Diode, λ _{paste} =0.8 W/(mK)			0.34		K/W
R _{th(j-s)}	per Diode, λ _{paste} =2.5 W/(mK)			0.28		K/W
Module						
L _{CE}				20		nH
M _s	to heat sink		2		2.5	Nm
w				50		g
Temperature Sensor						
R ₁₀₀	T _C =100°C (R ₂₅ =5 kΩ)			493 ± 5%		Ω
B _{25/85}	R _(T) =R ₂₅ *exp[B _{25/85} *(1/T-1/298)], T[K]			3420		K



GB

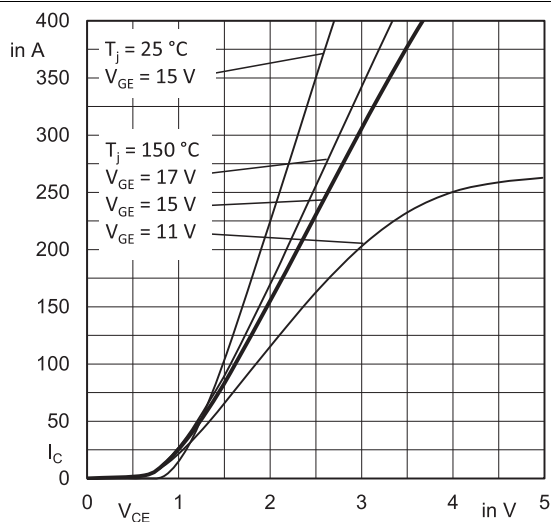


Fig. 1: Typ. output characteristic

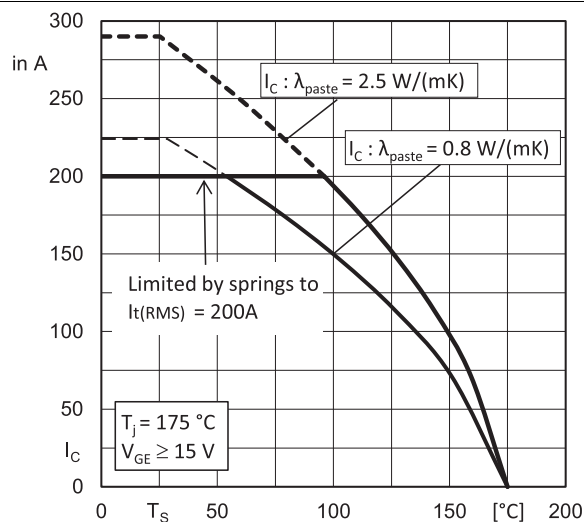


Fig. 2: Rated current vs. temperature $I_C = f(T_s)$

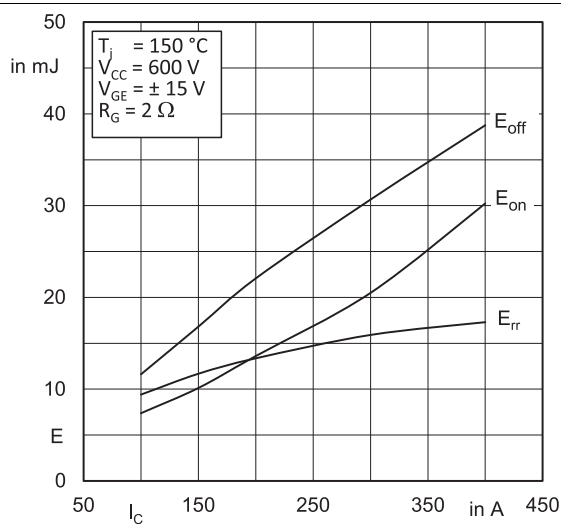


Fig. 3: Typ. turn-on /-off energy = $f(I_C)$

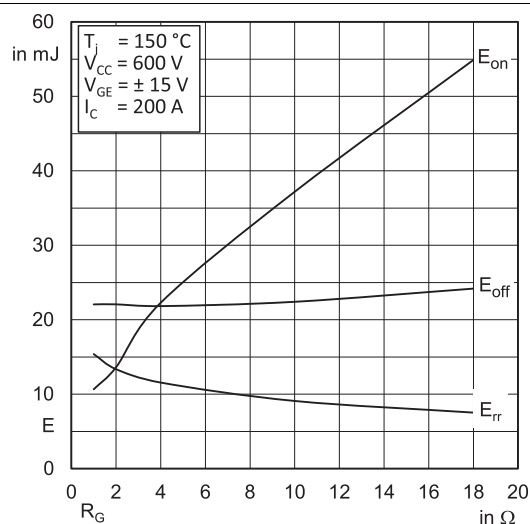


Fig. 4: Typ. turn-on /-off energy = $f(R_G)$

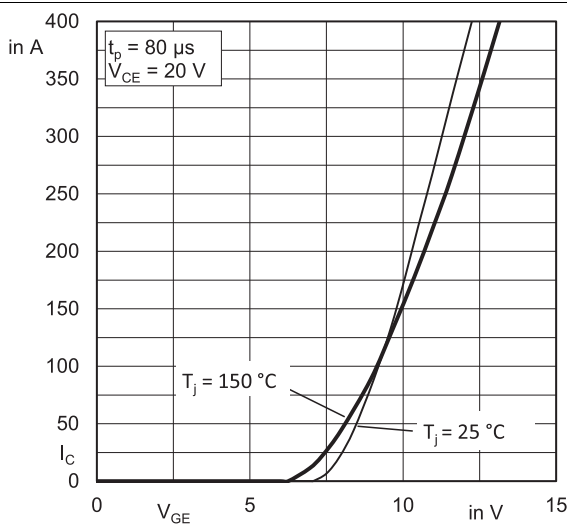


Fig. 5: Typ. transfer characteristic

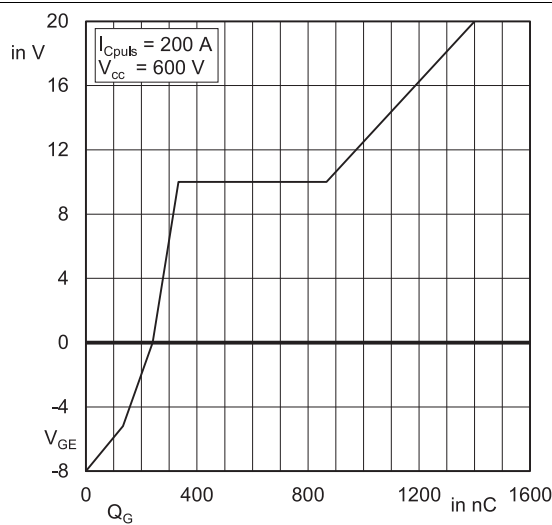


Fig. 6: Typ. gate charge characteristic

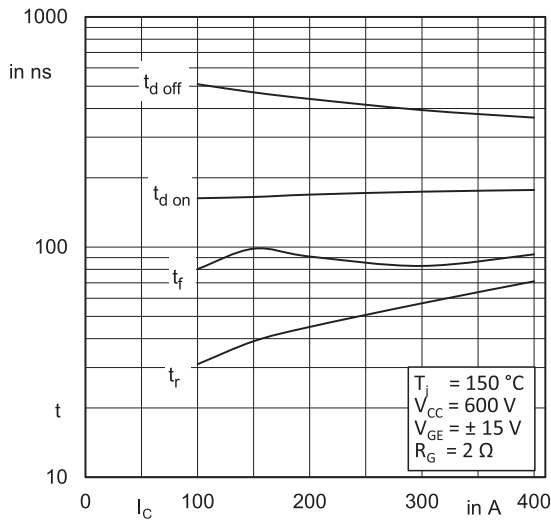


Fig. 7: Typ. switching times vs. I_C

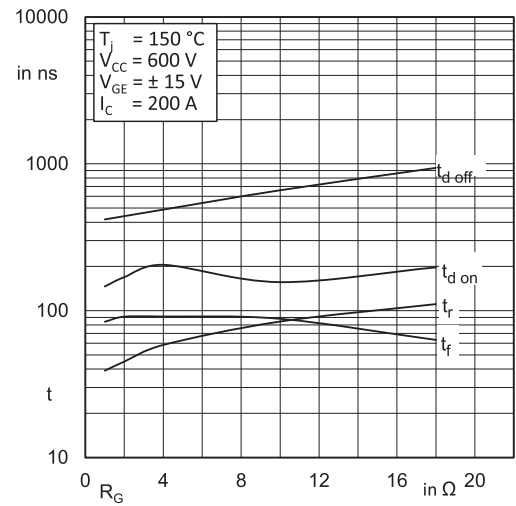


Fig. 8: Typ. switching times vs. gate resistor R_G

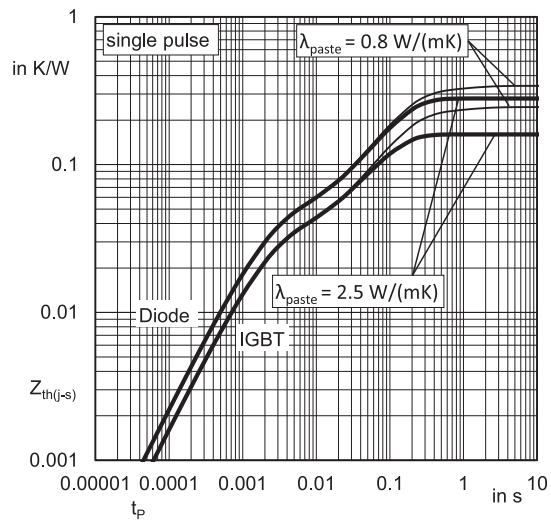


Fig. 9: Typ. transient thermal impedance

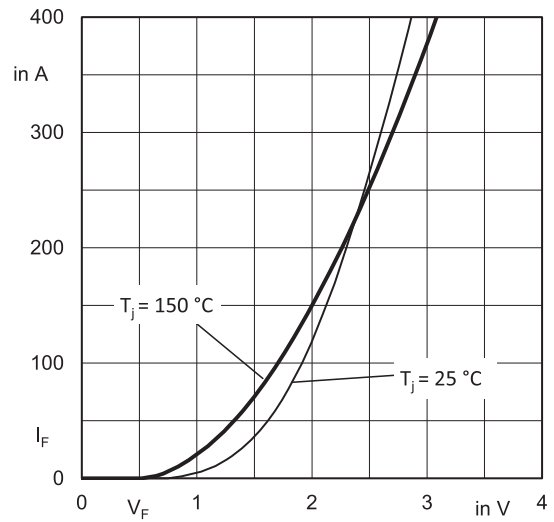


Fig. 10: Typ. CAL diode forward characteristic

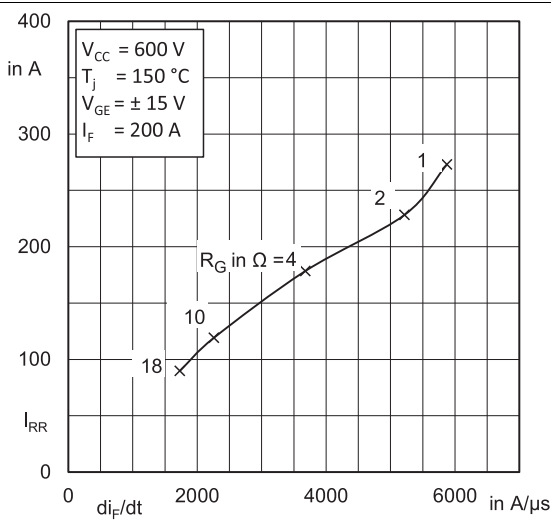


Fig. 11: Typ. CAL diode peak reverse recovery current

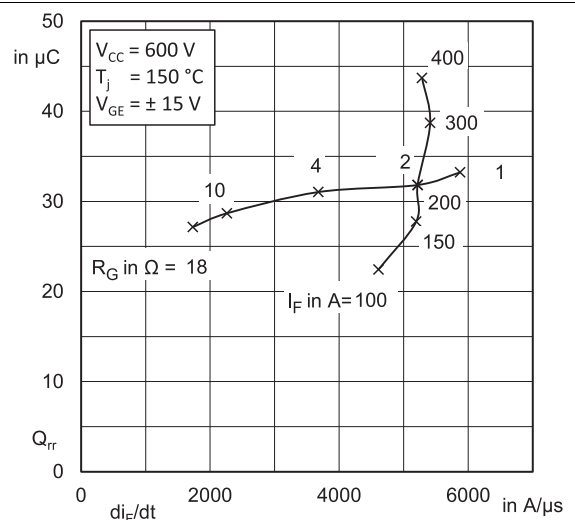
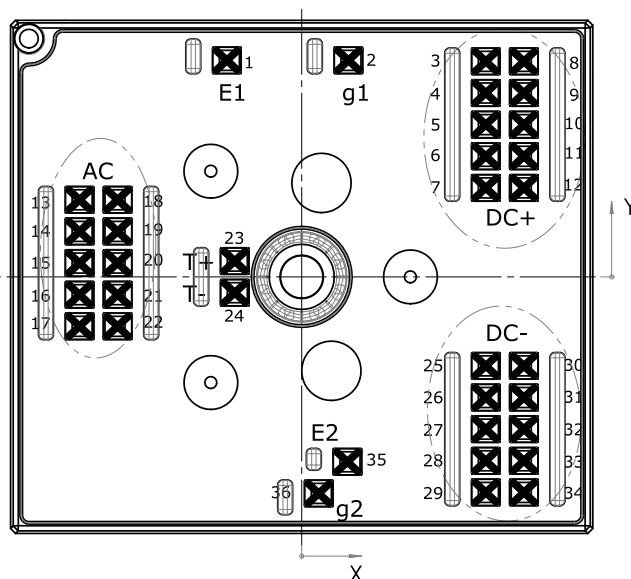


Fig. 12: Typ. CAL diode recovery charge

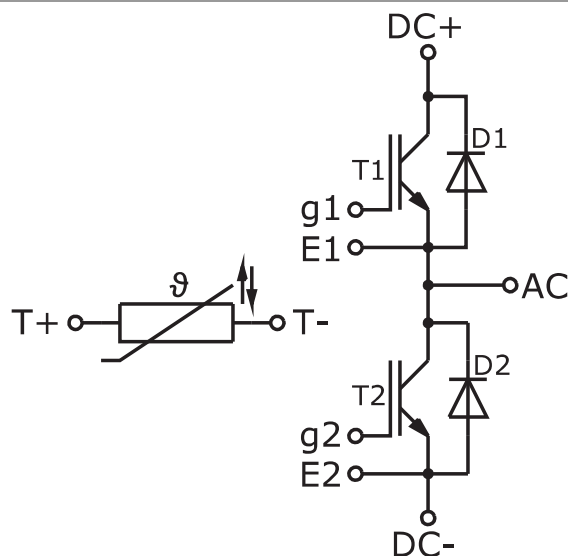
SKiiP 26GB12T4V1

Pin out							
Pin	X	Y	Function	Pin	X	Y	Function
1	-7,58	21,9	E1	19	-18,63	4,6	AC
2	4,73	21,9	g1	20	-18,63	1,4	AC
3	18,63	21,8	DC+	21	-18,63	-1,8	AC
4	18,63	18,6	DC+	22	-18,63	-5	AC
5	18,63	15,4	DC+	23	-6,78	1,6	T+
6	18,63	12,2	DC+	24	-6,78	-1,6	T-
7	18,63	9	DC+	25	18,63	-9	DC-
8	22,48	21,8	DC+	26	18,63	-12,2	DC-
9	22,48	18,6	DC+	27	18,63	-15,4	DC-
10	22,48	15,4	DC+	28	18,63	-18,6	DC-
11	22,48	12,2	DC+	29	18,63	-21,8	DC-
12	22,48	9	DC+	30	22,48	-9	DC-
13	-22,48	7,8	AC	31	22,48	-12,2	DC-
14	-22,48	4,6	AC	32	22,48	-15,4	DC-
15	-22,48	1,4	AC	33	22,48	-18,6	DC-
16	-22,48	-1,8	AC	34	22,48	-21,8	DC-
17	-22,48	-5	AC	35	4,63	-18,7	E2
18	-18,63	7,8	AC	36	1,73	-21,9	g2

all values in [mm]



Pinout and Dimensions



Pinout

This is an electrostatic discharge sensitive device (ESDS) due to international standard IEC 61340.

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