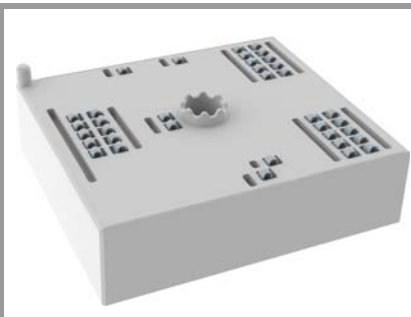




MiniSKiiP® 2 Dual

IGBT module

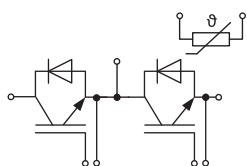
SKiiP 26GB12F4V1

Features

- Fast 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 $T_{j,op} = -40 \dots +150^\circ\text{C}$)

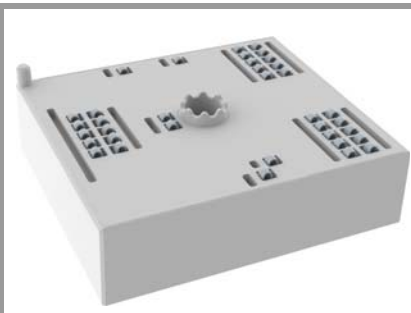


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Absolute Maximum Ratings				
Symbol	Conditions		Values	Unit
Inverter - IGBT				
V _{CES}	T _j = 25 °C		1200	V
I _C	λ _{paste} =0.8 W/(mK)	T _s = 25 °C	197	A
	T _j = 175 °C	T _s = 70 °C	158	A
I _C	λ _{paste} =2.5 W/(mK)	T _s = 25 °C	258	A
	T _j = 175 °C	T _s = 70 °C	208	A
I _{Cnom}			200	A
I _{CRM}	I _{CRM} = 2 x I _{Cnom}		400	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 _{Fnom}			200	A
I _{FRM}	I _{FRM} = 2 x I _{Fnom}		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}			-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		2.05	2.42	V
	V _{GE} = 15 V chipllevel	T _J = 150 °C		2.59	2.96	V
V _{CE0}	chipllevel	T _J = 25 °C		1.10	1.28	V
		T _J = 150 °C		0.95	1.13	V
r _{CE}	V _{GE} = 15 V	T _J = 25 °C		4.8	5.7	mΩ
	chipllevel	T _J = 150 °C		8.2	9.2	mΩ
V _{GE(th)}	V _{GE} = V _{CE} , I _C = 7.6 mA		5.2	5.8	6.4	V
I _{CES}	V _{GE} = 0 V, V _{CE} = 1200 V, T _J = 25 °C			0.1	0.3	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			1134		nC
R _{Gint}	T _J = 25 °C			3.8		Ω
t _{d(on)}	V _{CC} = 600 V	T _J = 150 °C		167		ns
t _r	I _C = 200 A	T _J = 150 °C		52		ns
E _{on}	R _{G on} = 2 Ω R _{G off} = 2 Ω	T _J = 150 °C		16.8		mJ
t _{d(off)}	di/dt _{on} = 4100 A/μs	T _J = 150 °C		414		ns
t _f	di/dt _{off} = 2500 A/μs	T _J = 150 °C		52		ns
E _{off}	V _{GE} = +15/-15 V	T _J = 150 °C		16.3		mJ
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 26GB12F4V1



MiniSKiiP® 2 Dual

IGBT module

SKiiP 26GB12F4V1

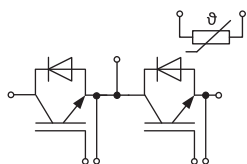
Features

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- Max. case temperature limited to $T_C = 125^\circ\text{C}$
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Characteristics						
Symbol	Conditions		min.	typ.	max.	Unit
Inverse - Diode						
$V_F = V_{EC}$	$I_F = 200\text{ A}$	$T_j = 25\text{ }^{\circ}\text{C}$		2.20	2.52	V
	$V_{GE} = 0\text{ V}$ chiplevel	$T_j = 150\text{ }^{\circ}\text{C}$		2.15	2.47	V
V_{F0}	chiplevel	$T_j = 25\text{ }^{\circ}\text{C}$		1.30	1.50	V
		$T_j = 150\text{ }^{\circ}\text{C}$		0.90	1.10	V
r_F	chiplevel	$T_j = 25\text{ }^{\circ}\text{C}$		4.5	5.1	mΩ
		$T_j = 150\text{ }^{\circ}\text{C}$		6.3	6.9	mΩ
I_{RRM}	$I_F = 200\text{ A}$	$T_j = 150\text{ }^{\circ}\text{C}$		189		A
Q_{rr}	$di/dt_{off} = 3840\text{ A}/\mu\text{s}$	$T_j = 150\text{ }^{\circ}\text{C}$		28.7		μC
E_{rr}	$V_{GE} = -15\text{ V}$ $V_{CC} = 600\text{ V}$	$T_j = 150\text{ }^{\circ}\text{C}$		11.7		mJ
$R_{th(j-s)}$	per Diode, $\lambda_{paste}=0.8\text{ W}/(\text{mK})$			0.34		K/W
$R_{th(j-s)}$	per Diode, $\lambda_{paste}=2.5\text{ W}/(\text{mK})$			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}	$T_c=100^{\circ}\text{C}$ ($R_{25}=5\text{ k}\Omega$)			493 ± 5%		Ω
$B_{25/85}$	$R(T)=R_{25}*\exp[B_{25/85}*(1/T-1/298)]$, [T]=K			3420		K



GB

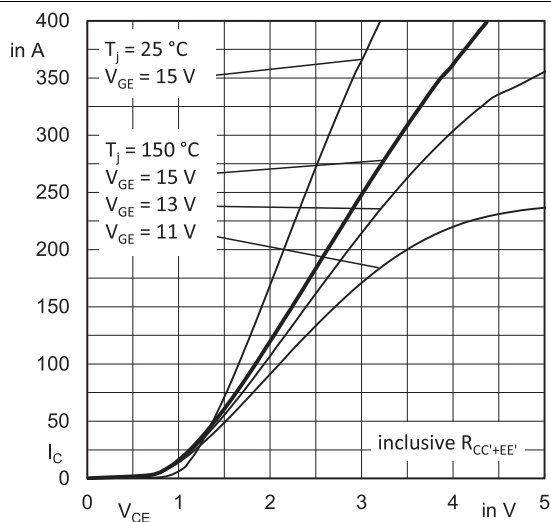


Fig. 1: Typ. output characteristic, inclusive $R_{CC'+EE'}$

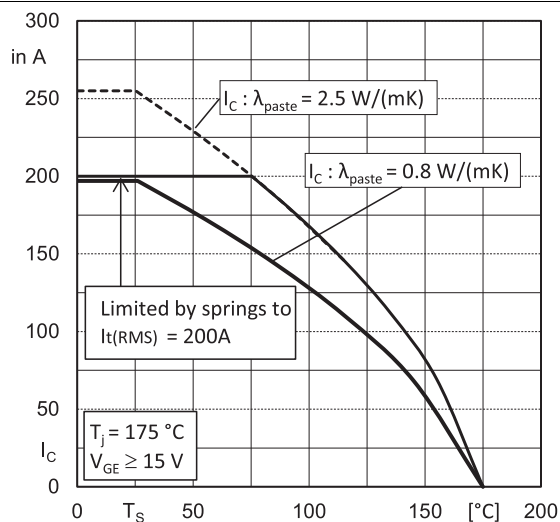


Fig. 2: Rated current vs. temperature $I_C = f(T_S)$

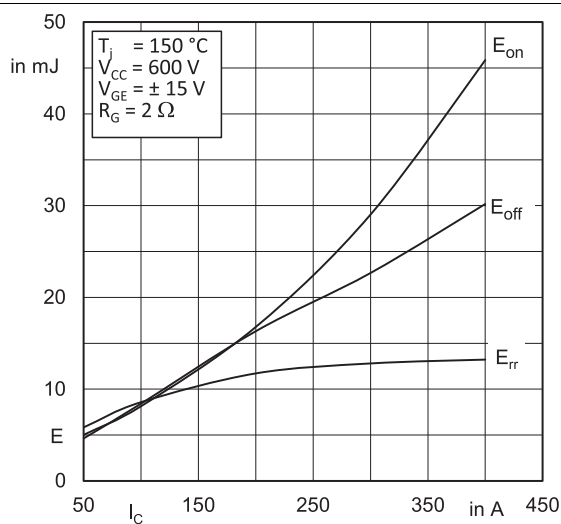


Fig. 3: Typ. turn-on /-off energy = $f(I_C)$

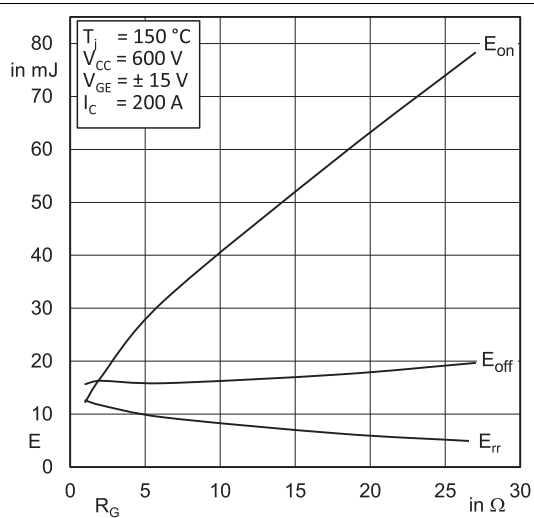


Fig. 4: Typ. turn-on /-off energy = $f(R_G)$

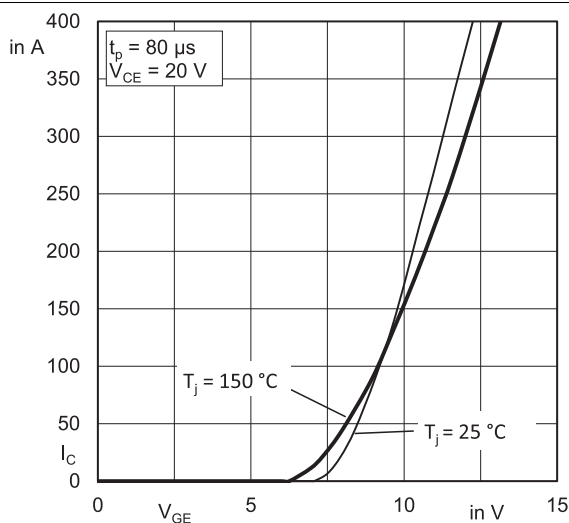


Fig. 5: Typ. transfer characteristic

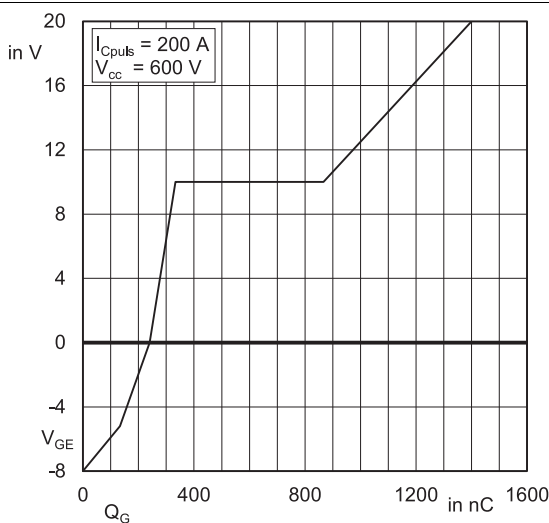


Fig. 6: Typ. gate charge characteristic

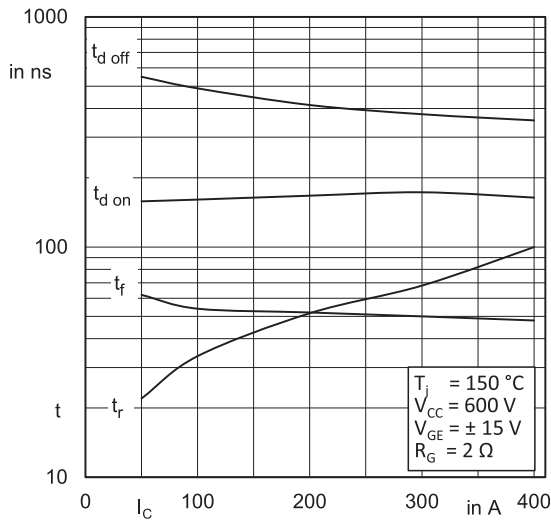


Fig. 7: Typ. switching times vs. I_C

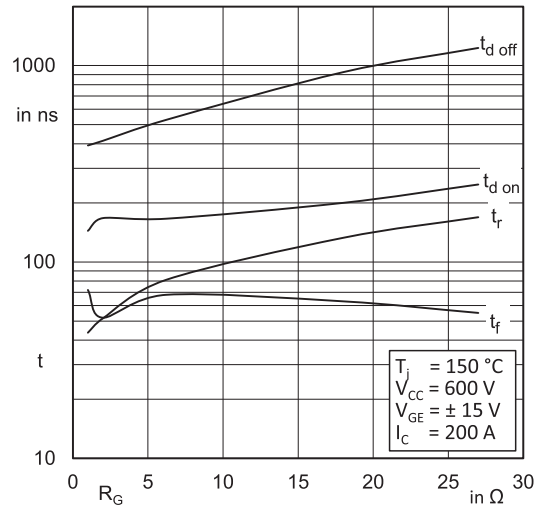


Fig. 8: Typ. switching times vs. gate resistor R_G

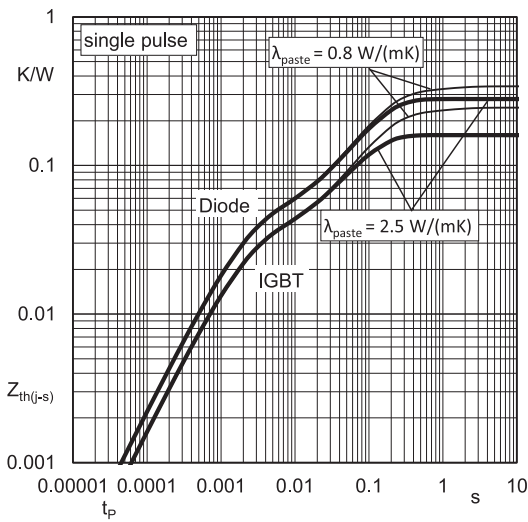


Fig. 9: Transient thermal impedance of IGBT and Diode

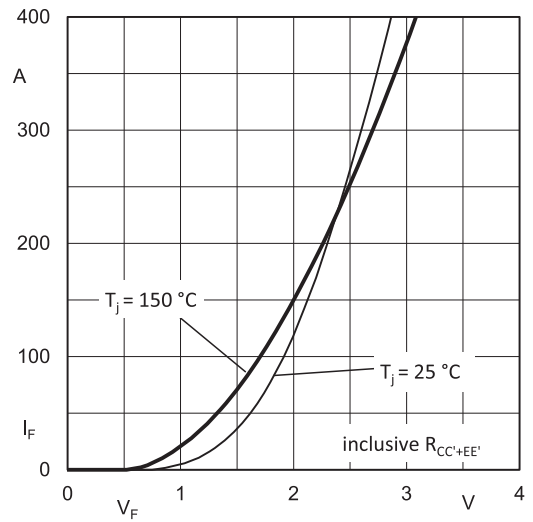


Fig. 10: Typ. CAL diode forward charact., incl. $R_{CC'+EE'}$

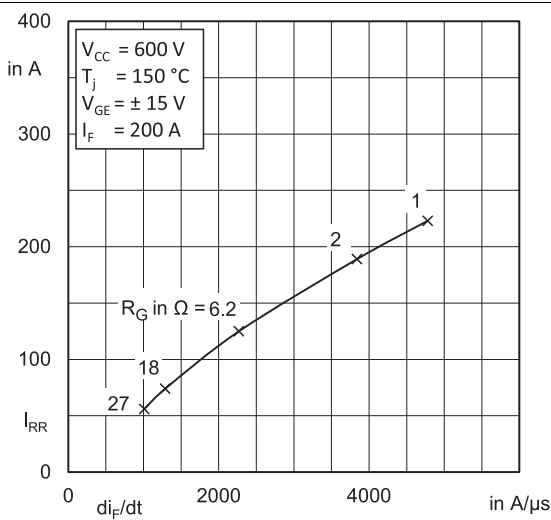


Fig. 11: Typ. CAL diode peak reverse recovery current

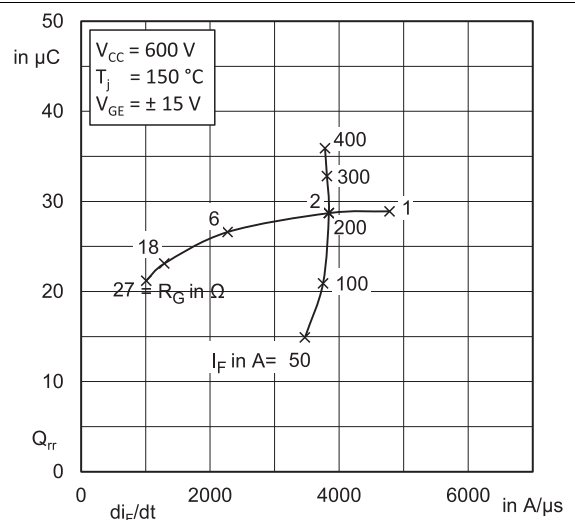
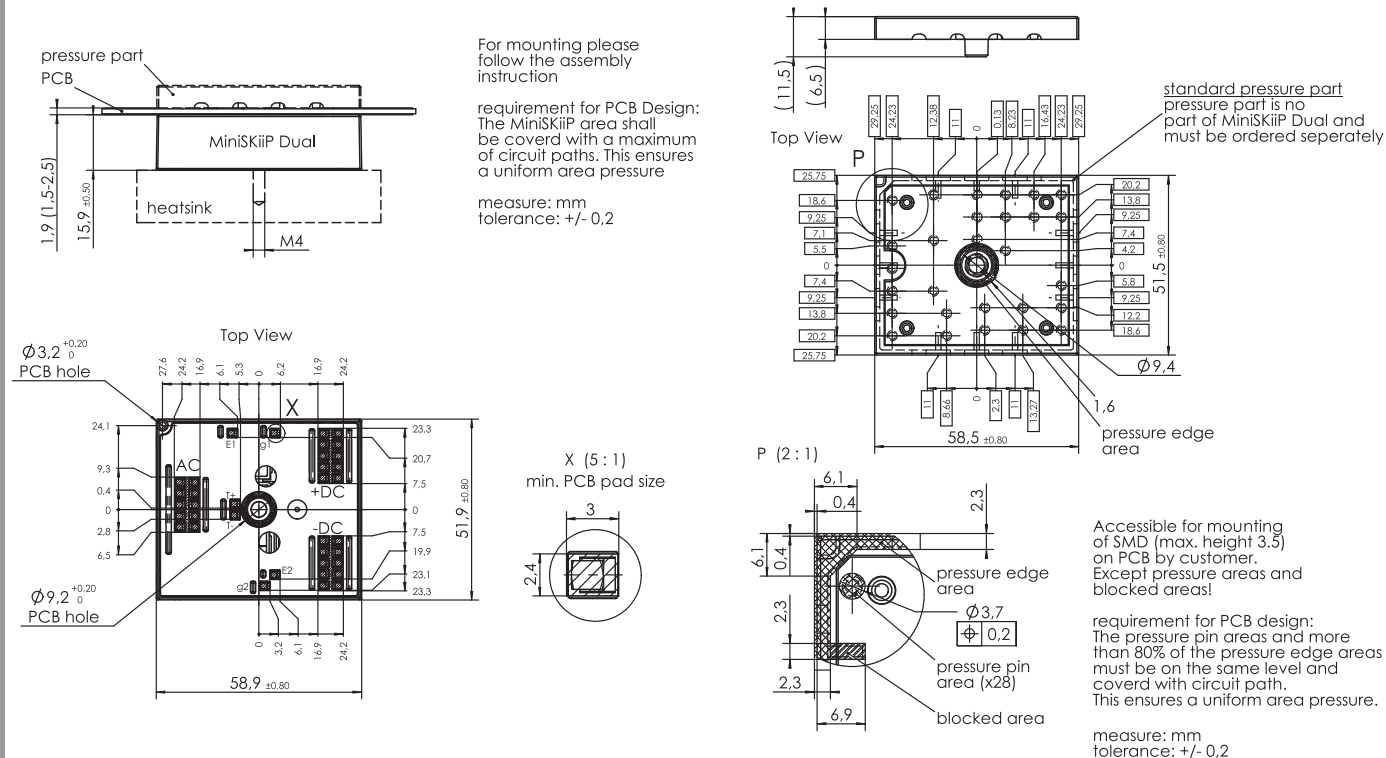
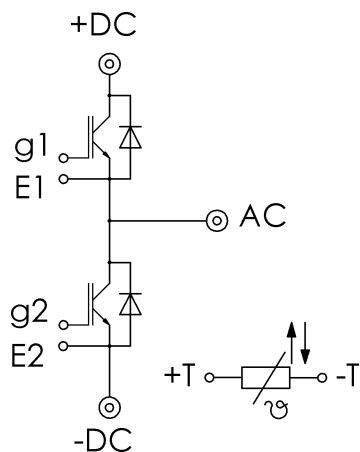


Fig. 12: Typ. CAL diode recovery charge



pinout, dimensions



- ⊙ power connector
- control connector

pinout

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

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