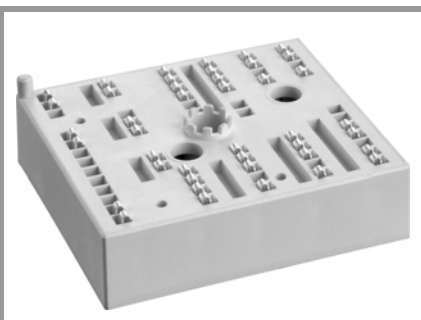


SKiiP 26GH12T4V11



MiniSKiiP® 2

H-bridge inverter

SKiiP 26GH12T4V11

Features*

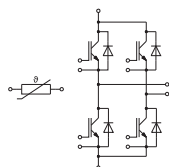
- Trench 4 IGBTs
- Robust and soft switching freewheeling diodes in CAL technology
- Highly reliable spring contacts for electrical connections
- UL recognized: File no. E63532

Typical Applications

- Single phase inverter

Remarks

- Case temperature limited to $T_C=125^\circ\text{C}$ max.; $T_C = T_S$ (valid for baseplateless modules)
- Product reliability results valid for $T_j \leq 150^\circ\text{C}$ (recommended $T_{op} = -40 \dots +150^\circ\text{C}$)

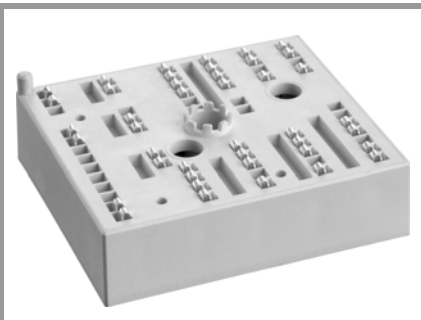


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Absolute Maximum Ratings				
Symbol	Conditions	Values	Unit	
Inverter - IGBT				
V_{CES}	$T_j = 25^\circ\text{C}$	1200	V	
I_C	$T_j = 175^\circ\text{C}$	$T_s = 25^\circ\text{C}$	90	A
		$T_s = 70^\circ\text{C}$	73	A
I_{Cnom}		70	A	
I_{CRM}		210	A	
V_{GES}		-20 ... 20	V	
t_{psc}	$V_{CC} = 800\text{ V}$	$T_j = 150^\circ\text{C}$	10	μs
	$V_{GE} \leq 15\text{ V}$			
	$V_{CES} \leq 1200\text{ V}$			
T_j		-40 ... 175	$^\circ\text{C}$	
Inverse - Diode				
I_F	$T_j = 175^\circ\text{C}$	$T_s = 25^\circ\text{C}$	83	A
		$T_s = 70^\circ\text{C}$	66	A
I_{FRM}		225	A	
I_{FSM}	10 ms, sin 180°, $T_j = 150^\circ\text{C}$	430	A	
T_j		-40 ... 175	$^\circ\text{C}$	
Module				
$I_{t(RMS)}$	$T_{terminal} = 80^\circ\text{C}$, 20 A per spring	100	A	
T_{stg}	module without TIM	-40 ... 125	$^\circ\text{C}$	
V_{isol}	AC sinus 50 Hz, $t = 1\text{ min}$	2500	V	

Characteristics					
Symbol	Conditions	min.	typ.	max.	Unit
Inverter - IGBT					
$V_{CE(sat)}$	$I_C = 70\text{ A}$ $V_{GE} = 15\text{ V}$ chipelevel	$T_j = 25^\circ\text{C}$	1.85	2.10	V
		$T_j = 150^\circ\text{C}$	2.25	2.45	V
V_{CE0}	chipelevel	$T_j = 25^\circ\text{C}$	0.80	0.90	V
		$T_j = 150^\circ\text{C}$	0.70	0.80	V
r_{CE}	$V_{GE} = 15\text{ V}$ chipelevel	$T_j = 25^\circ\text{C}$	15	17	m Ω
		$T_j = 150^\circ\text{C}$	22	24	m Ω
$V_{GE(th)}$	$V_{GE} = V_{CE}$, $I_C = 2\text{ mA}$	5	5.8	6.5	V
I_{CES}	$V_{GE} = 0\text{ V}$ $V_{CE} = 1200\text{ V}$	$T_j = 25^\circ\text{C}$		1	mA
					mA
C_{ies}	$V_{CE} = 25\text{ V}$	$f = 1\text{ MHz}$	3.90		nF
C_{oes}	$V_{GE} = 0\text{ V}$	$f = 1\text{ MHz}$	0.31		nF
C_{res}		$f = 1\text{ MHz}$	0.23		nF
Q_G	$V_{GE} = -8\text{ V} \dots +15\text{ V}$		400		nC
R_{Gint}	$T_j = 25^\circ\text{C}$		0		Ω
$t_{d(on)}$	$V_{CC} = 600\text{ V}$	$T_j = 150^\circ\text{C}$	26		ns
t_r	$I_C = 75\text{ A}$	$T_j = 150^\circ\text{C}$	36		ns
		$T_j = 150^\circ\text{C}$			
E_{on}	$R_{G\ on} = 9.1\ \Omega$ $R_{G\ off} = 9.1\ \Omega$	$T_j = 150^\circ\text{C}$	9.5		mJ
$t_{d(off)}$	$di/dt_{on} = 1820\text{ A}/\mu\text{s}$	$T_j = 150^\circ\text{C}$	320		ns
t_f	$di/dt_{off} = 900\text{ A}/\mu\text{s}$	$T_j = 150^\circ\text{C}$	175		ns
E_{off}	$V_{GE} = +15/-15\text{ V}$	$T_j = 150^\circ\text{C}$	7.1		mJ
$R_{th(j-s)}$	per IGBT, $\lambda_{paste} = 0.8\text{ W}/(\text{K} \cdot \text{m})$		0.55		K/W

SKiiP 26GH12T4V11



MiniSKiiP® 2

H-bridge inverter

SKiiP 26GH12T4V11

Features*

- Trench 4 IGBTs
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- Highly reliable spring contacts for electrical connections
- UL recognized: File no. E63532

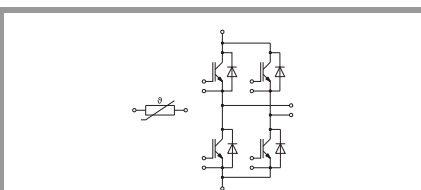
Typical Applications

- Single phase inverter

Remarks

- Case temperature limited to $T_C=125^\circ\text{C}$ max.; $T_C = T_S$ (valid for baseplateless modules)
- Product reliability results valid for $T_j \leq 150^\circ\text{C}$ (recommended)
 $T_{op} = -40 \dots +150^\circ\text{C}$

Characteristics						
Symbol	Conditions		min.	typ.	max.	Unit
Inverse - Diode						
$V_F = V_{EC}$	$I_F = 75 \text{ A}$ $V_{GE} = 0 \text{ V}$ chiplevel	$T_j = 25^\circ\text{C}$		2.17	2.49	V
		$T_j = 150^\circ\text{C}$		2.11	2.42	V
V_{F0}	chiplevel	$T_j = 25^\circ\text{C}$		1.30	1.50	V
		$T_j = 150^\circ\text{C}$		0.90	1.10	V
r_F	chiplevel	$T_j = 25^\circ\text{C}$		12	13	m Ω
		$T_j = 150^\circ\text{C}$		16	18	m Ω
I_{RRM}	$I_F = 75 \text{ A}$	$T_j = 150^\circ\text{C}$		80		A
Q_{rr}	$di/dt_{off} = 2120 \text{ A}/\mu\text{s}$ $V_{GE} = -15 \text{ V}$	$T_j = 150^\circ\text{C}$		13.3		μC
E_{rr}	$V_{CC} = 600 \text{ V}$	$T_j = 150^\circ\text{C}$		5.6		mJ
$R_{th(j-s)}$	per Diode, $\lambda_{paste} = 0.8 \text{ W}/(\text{K}\cdot\text{m})$			0.75		K/W
Module						
L_{CE}				-		nH
M_s	to heat sink		2		2.5	Nm
w				55		g
Temperature Sensor						
R_{100}	$T_r = 100^\circ\text{C}$ ($R_{25} = 1000\Omega$)			$1670 \pm 3\%$		Ω
$B_{100/125}$	$R(T) = R_{100} \exp[B_{100/125}(1/T - 1/T_{100})]$; T[K]			$3550 \pm 2\%$		K



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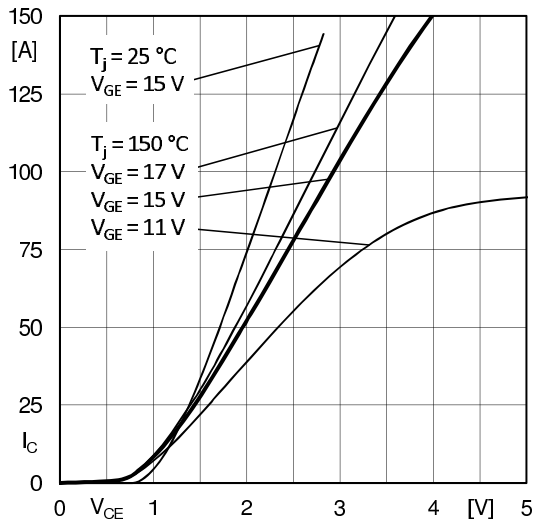


Fig. 1: Typ. output characteristic

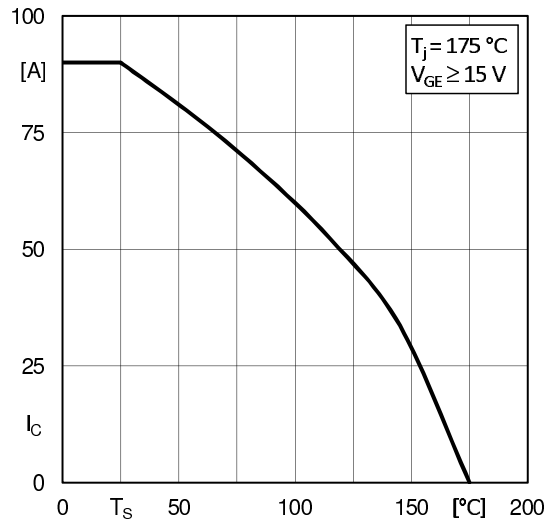


Fig. 2: Rated current vs. temperature $I_c = f(T_s)$

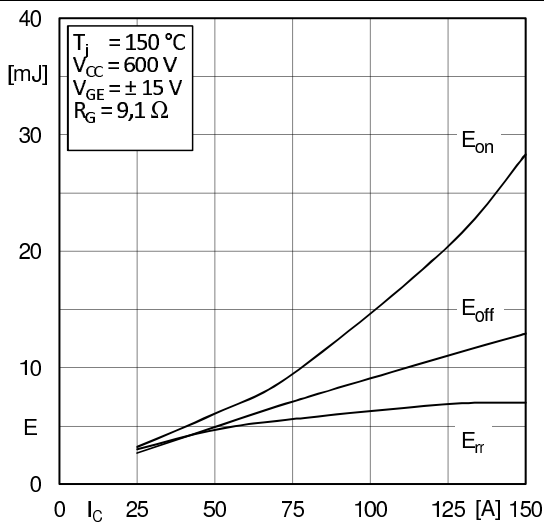


Fig. 3: Typ. turn-on /-off energy = $f(I_c)$

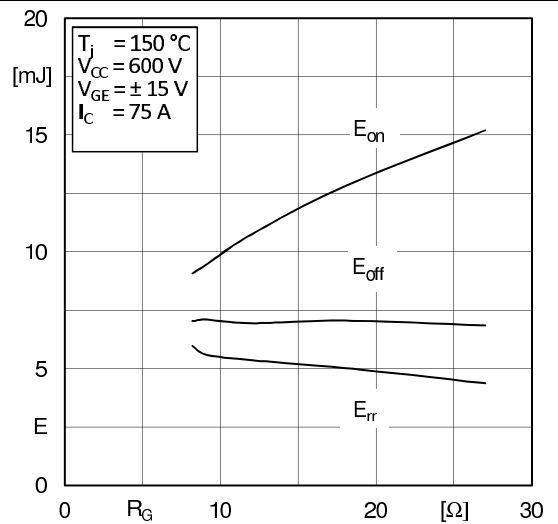


Fig. 4: Typ. turn-on /-off energy = $f(R_G)$

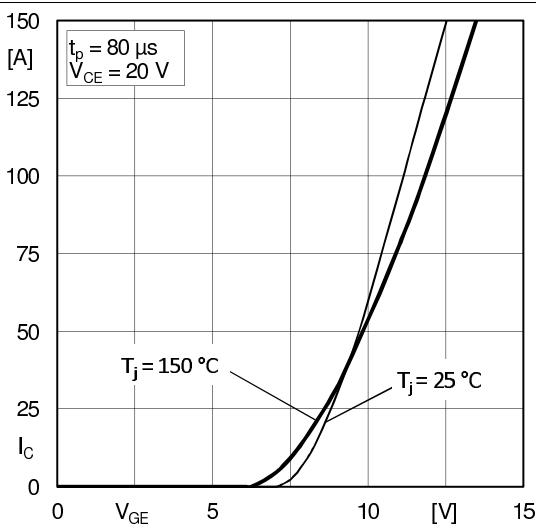


Fig. 5: Typ. transfer characteristic

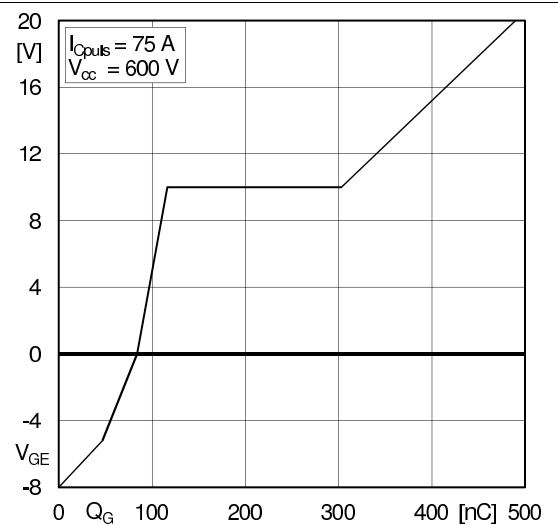


Fig. 6: Typ. gate charge characteristic

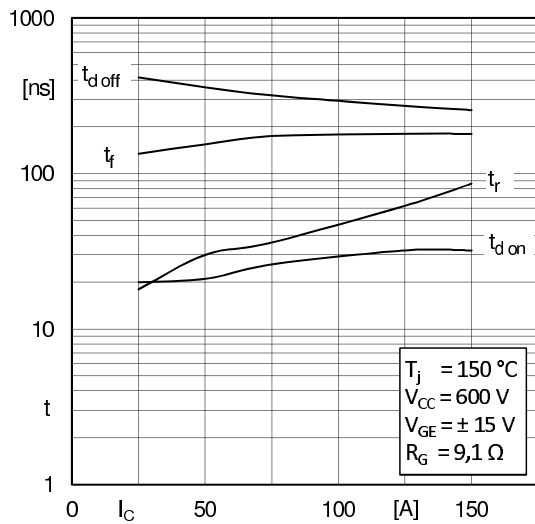


Fig. 7: Typ. switching times vs. I_C

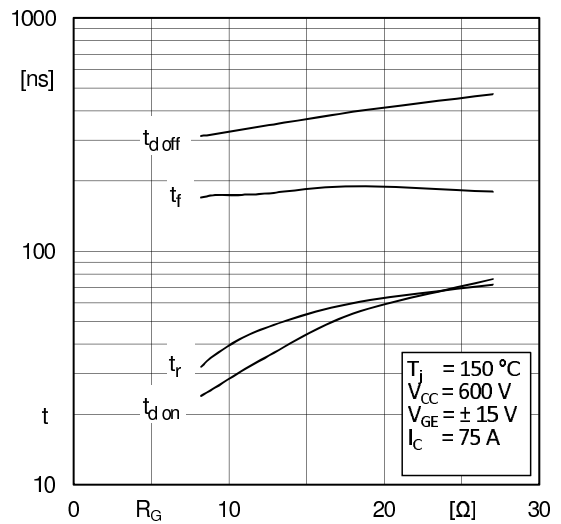


Fig. 8: Typ. switching times vs. gate resistor R_G

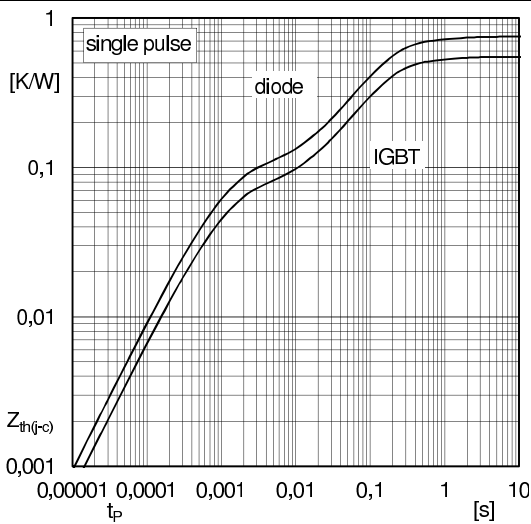


Fig. 9: Typ. transient thermal impedance

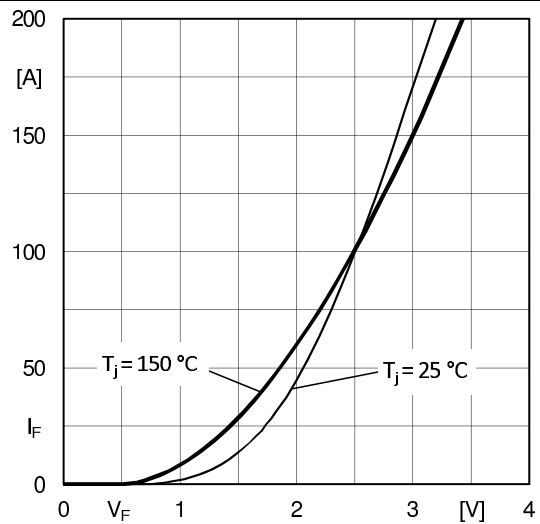


Fig. 10: Typ. CAL diode forward characteristic

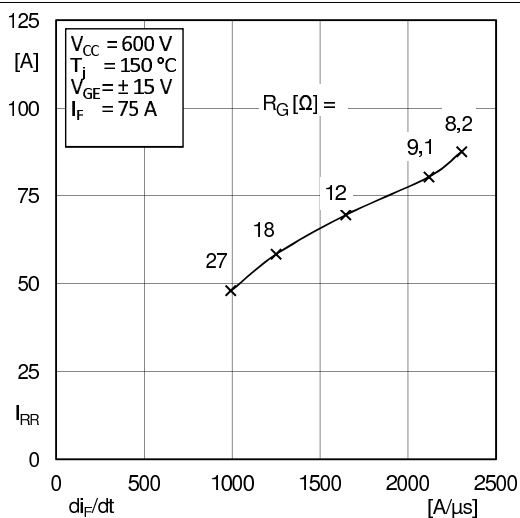


Fig. 11: Typ. CAL diode peak reverse recovery current

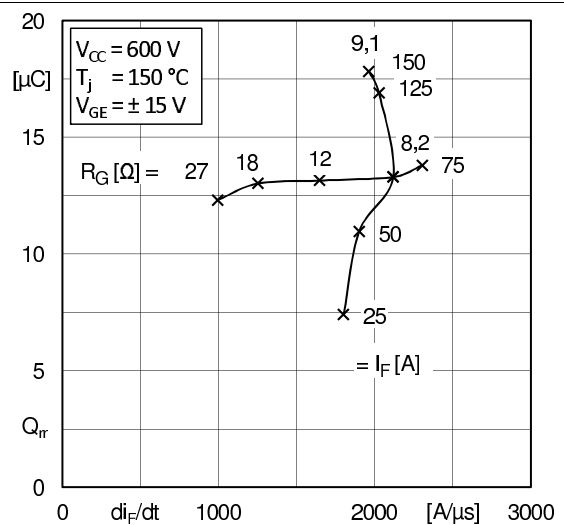
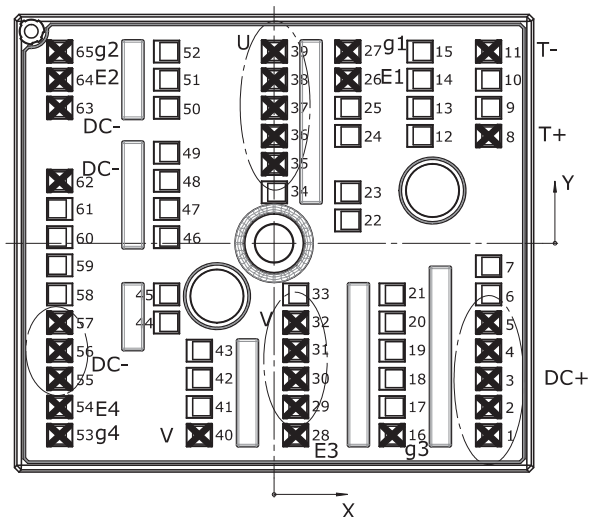


Fig. 12: Typ. CAL diode recovery charge

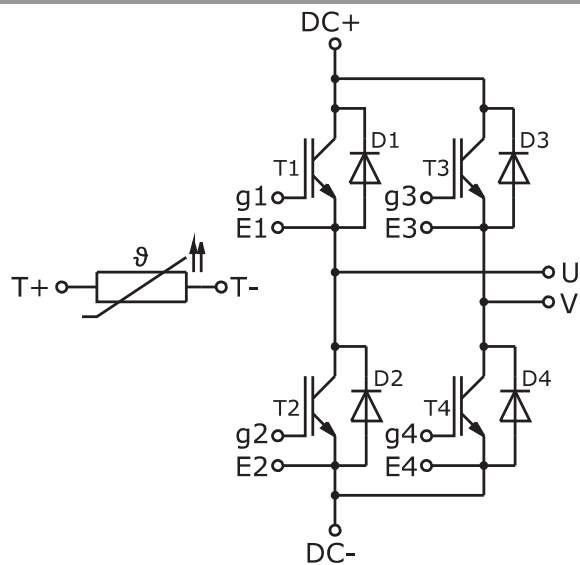
SKiP 26GH12T4V11

Pin out											
Pin	X	Y	Function	Pin	X	Y	Function	Pin	X	Y	Function
1	24,38	-21,80	DC+	23	8,38	5,80		45	-12,23	-5,80	
2	24,38	-18,60	DC+	24	8,38	12,20		46	-12,23	0,70	
3	24,38	-15,40	DC+	25	8,38	15,40		47	-12,23	3,90	
4	24,38	-12,20	DC+	26	8,38	18,60	E1	48	-12,23	7,10	
5	24,38	-9,00	DC+	27	8,38	21,80	g1	49	-12,23	10,30	
6	24,38	-5,80		28	2,46	-21,80	E3	50	-12,23	15,40	
7	24,38	-2,60		29	2,46	-18,60	V	51	-12,23	18,60	
8	24,38	12,20	T+	30	2,46	-15,40	V	52	-12,23	21,80	
9	24,38	15,40		31	2,46	-12,20	V	53	-24,38	-21,80	g4
10	24,38	18,60		32	2,46	-9,00	V	54	-24,38	-18,60	E4
11	24,38	21,80	T-	33	2,46	-5,80		55	-24,38	-15,40	DC-
12	16,58	12,20		34	0,03	5,80		56	-24,38	-12,20	DC-
13	16,58	15,40		35	0,03	9,00	U	57	-24,38	-9,00	DC-
14	16,58	18,60		36	0,03	12,20	U	58	-24,38	-5,80	
15	16,58	21,80		37	0,03	15,40	U	59	-24,38	-2,50	
16	13,42	-21,80	g3	38	0,03	18,60	U	60	-24,38	0,70	
17	13,42	-18,60		39	0,03	21,80	U	61	-24,38	3,90	
18	13,42	-15,40		40	-8,51	-21,80	V	62	-24,38	7,10	DC-
19	13,42	-12,20		41	-8,51	-18,60		63	-24,38	15,40	DC-
20	13,42	-9,00		42	-8,51	-15,40		64	-24,38	18,60	E2
21	13,42	-5,80		43	-8,51	-12,20		65	-24,38	21,80	g2
22	8,38	2,60		44	-12,23	-9,00					

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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