

MiniSKiiP[®]2

3-phase bridge inverter

SKiiP 27AC066V1

Features

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

Typical Applications*

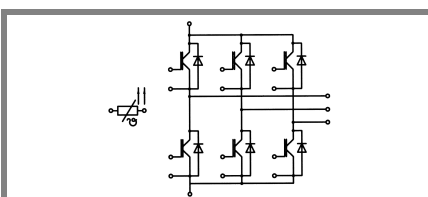
- Inverter up to 18 kVA
- Typical motor power 7,5 kW

Remarks

- Case temperature limited to $T_C = 125^\circ\text{C}$
- Product reliability results are valid for $T_j = 150^\circ\text{C}$
- SC data: $t_p \leq 6 \mu\text{s}$; $V_{GE} \leq 15 \text{ V}$; $T_j = 150^\circ\text{C}$, $V_{CC} = 360 \text{ V}$
- V_{CEsat} , $V_F =$ chip level value

Absolute Maximum Ratings		$T_S = 25^\circ\text{C}$, unless otherwise specified	
Symbol	Conditions	Values	Units
IGBT - Inverter			
V_{CES}		600	V
I_C	$T_S = 25 (70)^\circ\text{C}, T_j = 150^\circ\text{C}$	79 (53)	A
I_C	$T_S = 25 (70)^\circ\text{C}, T_j = 175^\circ\text{C}$	88 (65)	A
I_{CRM}	$t_p = 1 \text{ ms}$	150	A
V_{GES}		± 20	V
T_j		-40...+175	$^\circ\text{C}$
Diode - Inverter			
I_F	$T_S = 25 (70)^\circ\text{C}, T_j = 150^\circ\text{C}$	65 (42)	A
I_F	$T_S = 25 (70)^\circ\text{C}, T_j = 175^\circ\text{C}$	77 (56)	A
I_{FRM}	$t_p = 1 \text{ ms}$	150	A
T_j		-40...+175	$^\circ\text{C}$
I_{RMS}	per power terminal (20 A / spring)	100	A
T_{stg}	$T_{op} \leq T_{stg}$	-40...+125	$^\circ\text{C}$
V_{isol}	AC, 1 min.	2500	V

Characteristics		$T_S = 25^\circ\text{C}$, unless otherwise specified			
Symbol	Conditions	min.	typ.	max.	Units
IGBT - Inverter					
V_{CEsat}	$I_{Cnom} = 75 \text{ A}, T_j = 25 (150)^\circ\text{C}$	1,05	1,45 (1,65)	1,85 (2,05)	V
$V_{GE(th)}$	$V_{GE} = V_{CE}, I_C = 1 \text{ mA}$		5,8		V
$V_{CE(TO)}$	$T_j = 25 (150)^\circ\text{C}$		0,85 (0,7)	1,1 (1)	V
r_T	$T_j = 25 (150)^\circ\text{C}$		8 (12,7)	10,7 (14)	m Ω
C_{ies}	$V_{CE} = 25 \text{ V}, V_{GE} = 0 \text{ V}, f = 1 \text{ MHz}$		4,4		nF
C_{oes}	$V_{CE} = 25 \text{ V}, V_{GE} = 0 \text{ V}, f = 1 \text{ MHz}$		0,78		nF
C_{res}	$V_{CE} = 25 \text{ V}, V_{GE} = 0 \text{ V}, f = 1 \text{ MHz}$		0,66		nF
$R_{CC+EE'}$	spring contact-chip $T_S = 25 (150)^\circ\text{C}$				m Ω
$R_{th(j-s)}$	per IGBT		0,75		K/W
$t_{d(on)}$	under following conditions		115		ns
t_r	$V_{CC} = 300 \text{ V}, V_{GE} = -8\text{V}/+15\text{V}$		45		ns
$t_{d(off)}$	$I_{Cnom} = 75 \text{ A}, T_j = 150^\circ\text{C}$		475		ns
t_f	$R_{Gon} = R_{Goff} = 8,2 \Omega$		60		ns
$E_{on}(E_{off})$	inductive load		2,7 (3)		mJ
Diode - Inverter					
$V_F = V_{EC}$	$I_{Fnom} = 75 \text{ A}, T_j = 25 (150)^\circ\text{C}$		1,5 (1,5)	1,7 (1,7)	V
$V_{(TO)}$	$T_j = 25 (150)^\circ\text{C}$		1 (0,9)	1,1 (1)	V
r_T	$T_j = 25 (150)^\circ\text{C}$		6,7 (8)	8 (9,3)	m Ω
$R_{th(j-s)}$	per diode		1,2		K/W
I_{RRM}	under following conditions		52		A
Q_{rr}	$I_{Fnom} = 75 \text{ A}, V_R = 300 \text{ V}$		8		μC
E_{rr}	$V_{GE} = 0 \text{ V}, T_j = 150^\circ\text{C}$		1,8		mJ
	$di_F/dt = 1480 \text{ A}/\mu\text{s}$				
Temperature Sensor					
R_{ts}	3 %, $T_r = 25 (100)^\circ\text{C}$		1000(1670)		Ω
Mechanical Data					
m			65		g
M_s	Mounting torque	2		2,5	Nm



AC

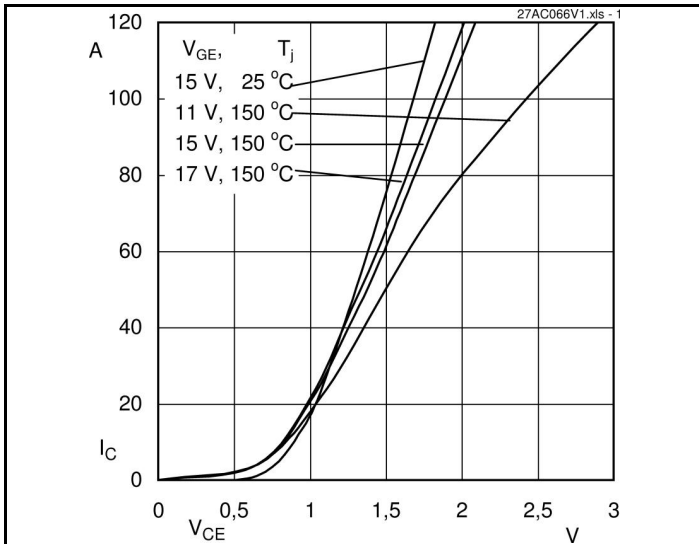


Fig. 1 Typ. output characteristic

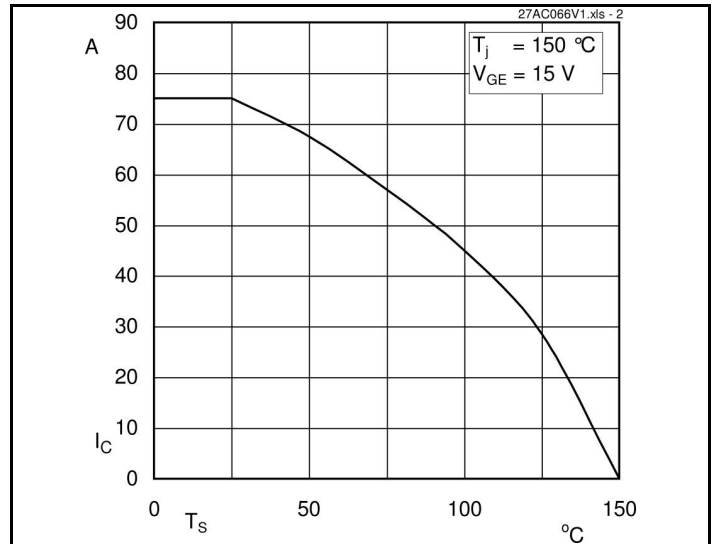


Fig. 2 Typ. rated current vs. temperature

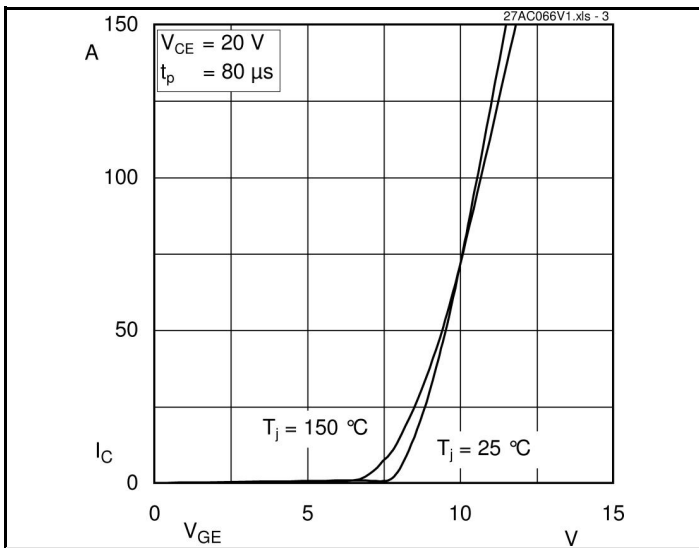


Fig. 3 Typ. transfer characteristic

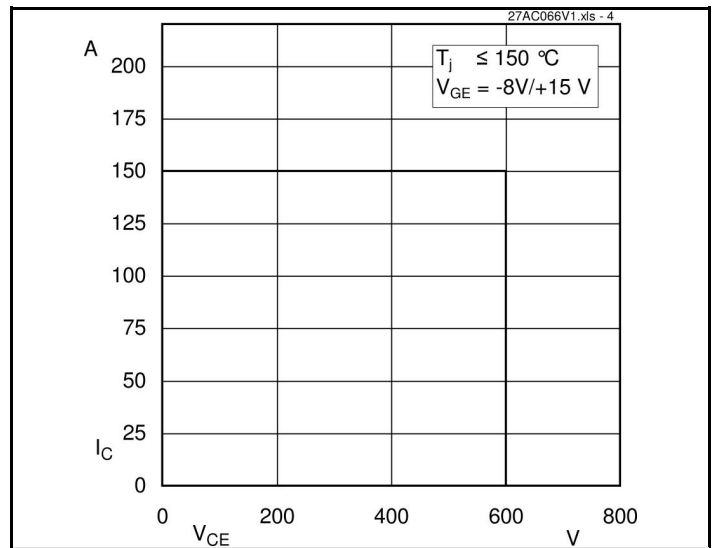


Fig. 4 Reverse bias safe operating area

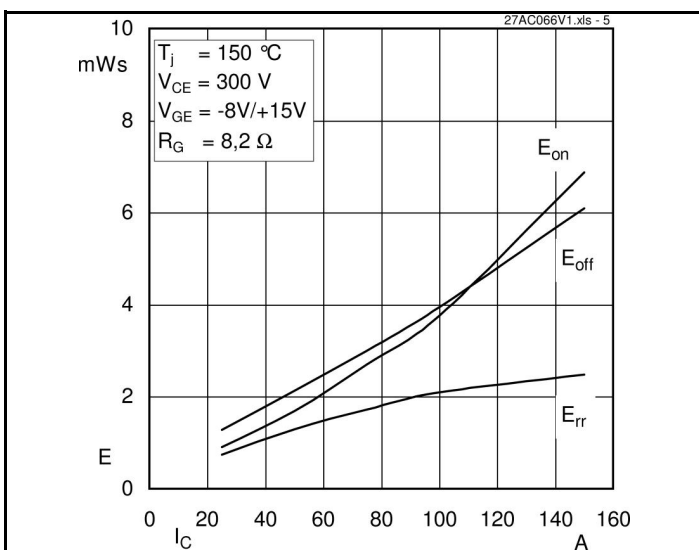


Fig. 5 Typ. turn-on /-off energy = $f(I_C)$

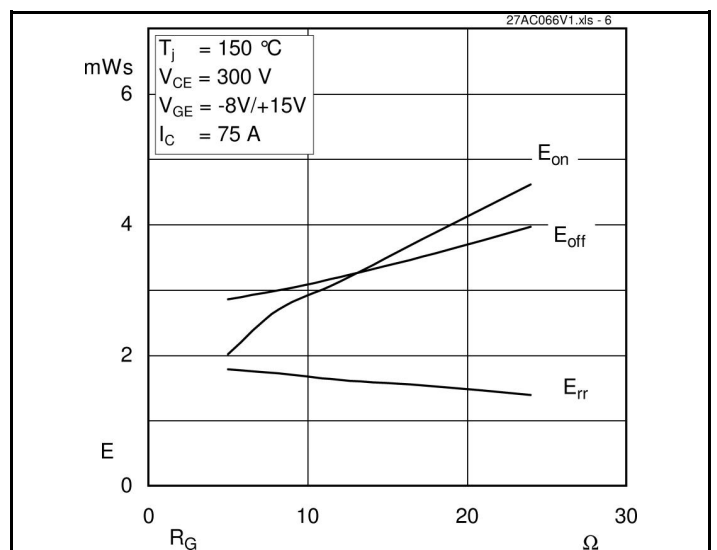
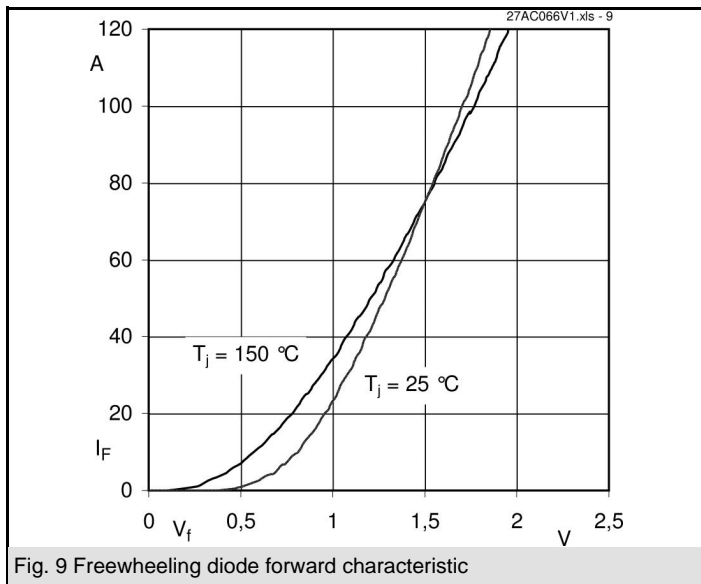
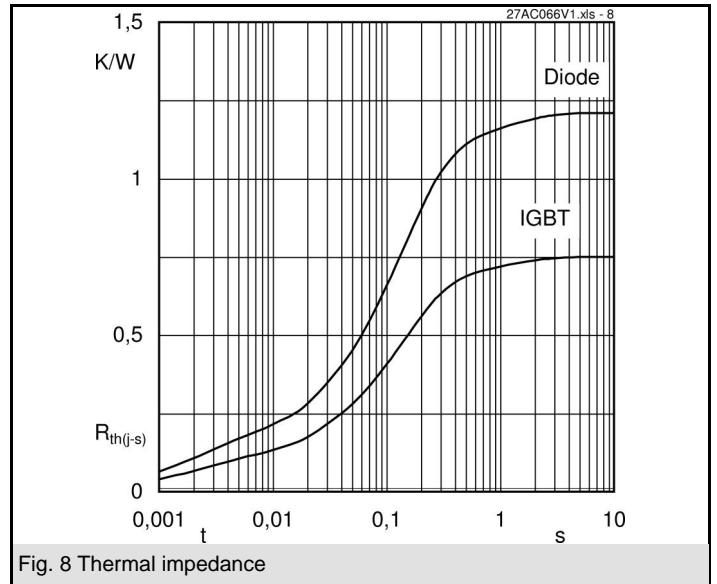
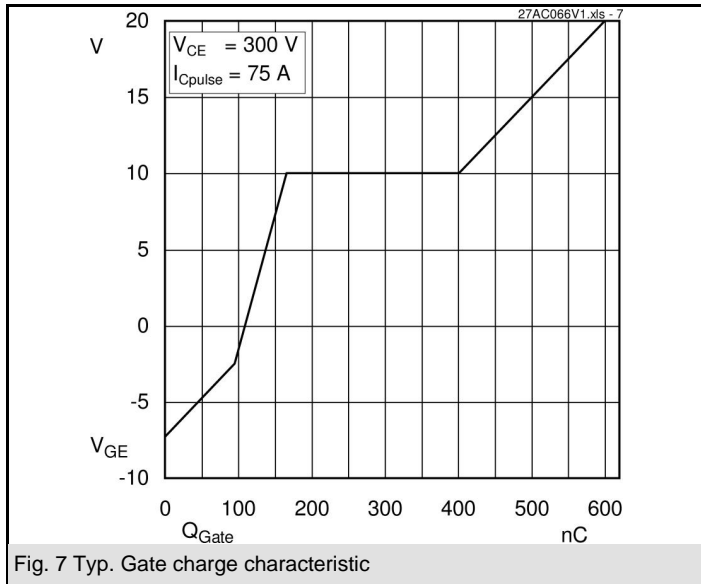
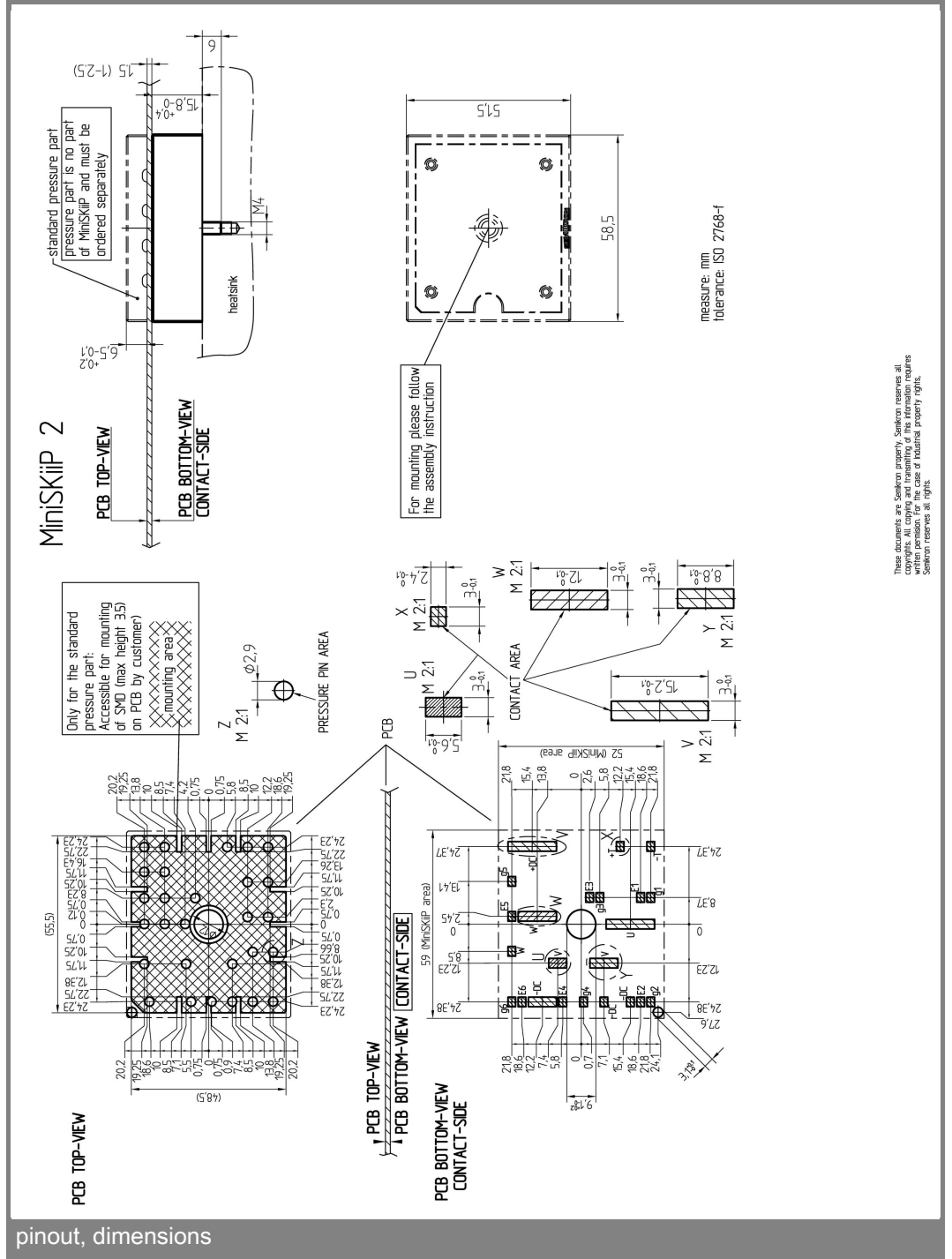
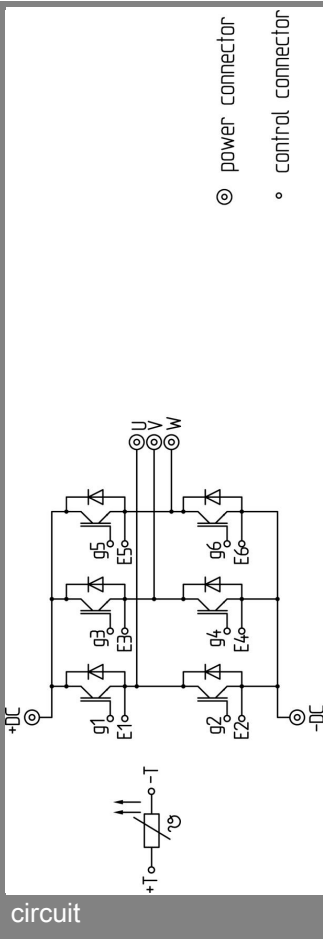


Fig. 6 Typ. turn-on /-off energy = $f(R_G)$





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

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