

# SKiiP 03NAC126V1



MiniSKiiP<sup>®</sup>0

3-phase bridge rectifier +  
3-phase bridge inverter

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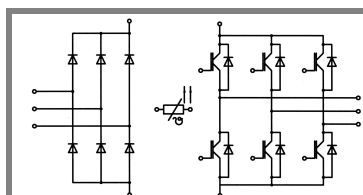
Preliminary Data

## Features

- Fast Trench IGBTs
- Robust and soft freewheeling diodes in CAL technology
- Highly reliable spring contacts for electrical connections

## Remarks

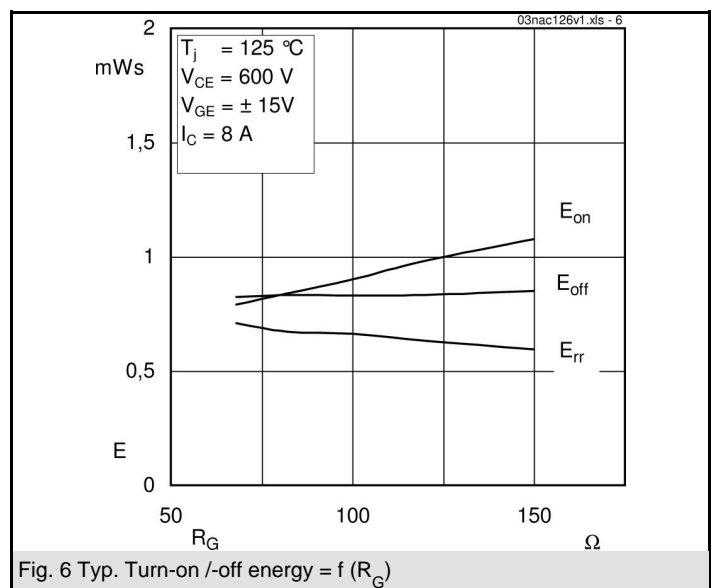
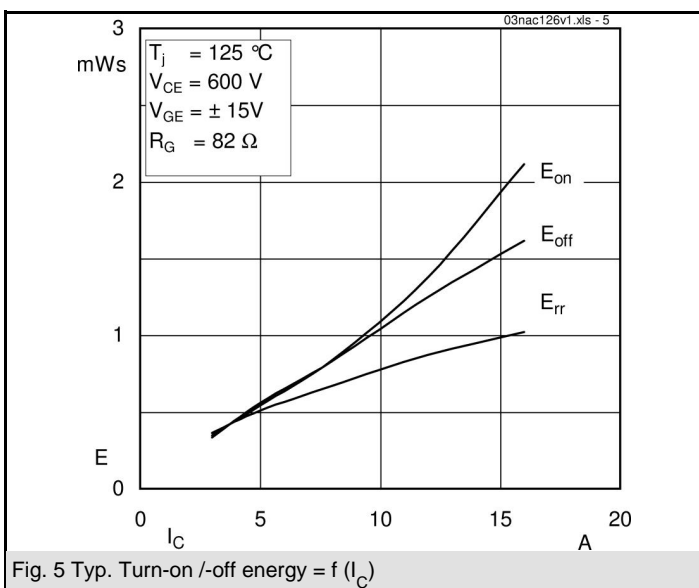
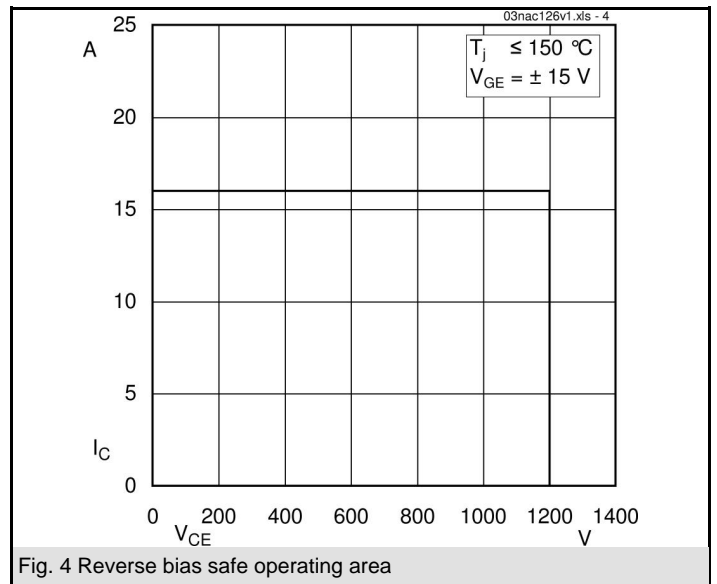
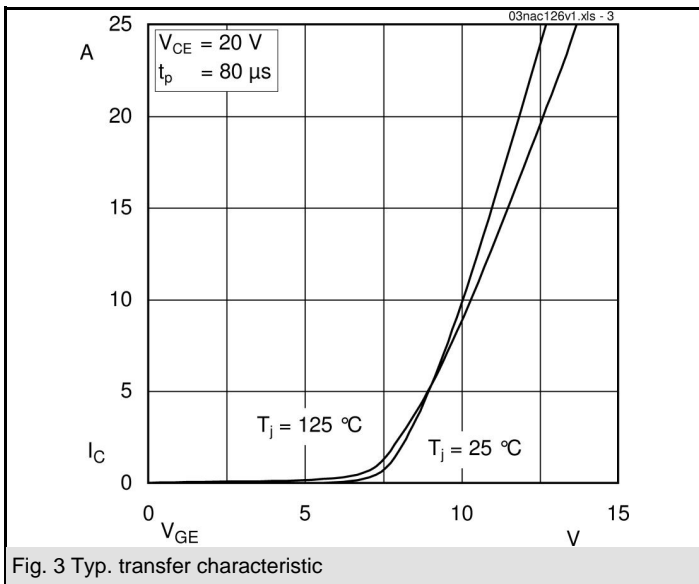
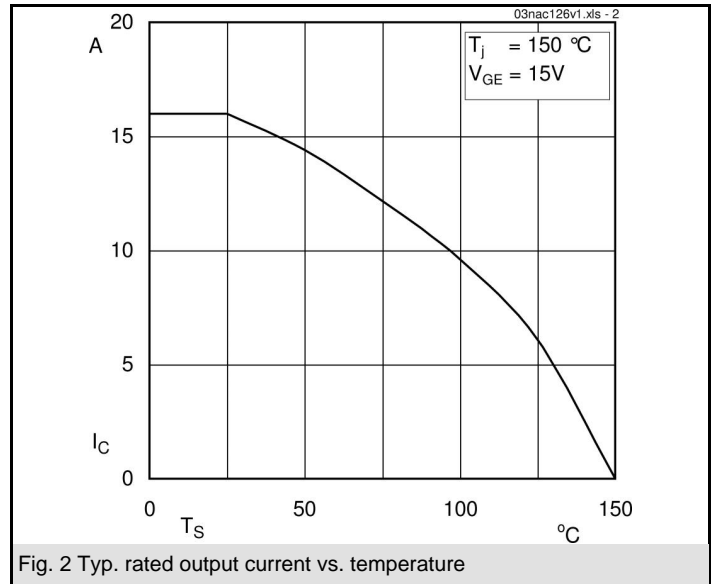
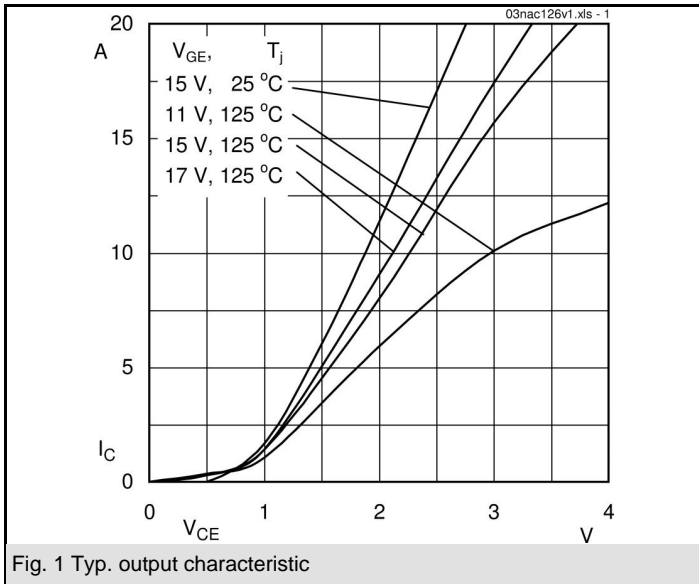
- $V_{CEsat}$ ,  $V_F$  = chip level value
- The Temp. Sensor has no basic insulation to the main circuit. The existing functional insulation allows a maximum potential difference of 850V to -DC.



NAC

Absolute Maximum Ratings		$T_S = 25\text{ °C}$ , unless otherwise specified		
Symbol	Conditions	Values	Units	
<b>IGBT - Inverter</b>				
$V_{CES}$	$T_s = 25\text{ (70) °C}$	1200	V	
$I_C$		16 (15)	A	
$I_{CRM}$		16	A	
$V_{GES}$		$\pm 20$	V	
$T_j$		-40...+150	°C	
<b>Diode - Inverter</b>				
$I_F$	$T_s = 25\text{ (70) °C}$	14 (11)	A	
$I_{FRM}$		16	A	
$T_j$		-40...+150	°C	
<b>Diode - Rectifier</b>				
$V_{RRM}$	$T_s = 70\text{ °C}$	1600	V	
$I_F$		35	A	
$I_{FSM}$		$t_p = 10\text{ ms, sin } 180\text{ °}, T_j = 25\text{ °C}$	220	A
$i^2t$		$t_p = 10\text{ ms, sin } 180\text{ °}, T_j = 25\text{ °C}$	240	A <sup>2</sup> s
$T_j$		-40...+150	°C	
<b>Module</b>				
$I_{RMS}$	per power terminal (20 A / spring)	20	A	
$T_{stg}$		-40...+125	°C	
$V_{isol}$	AC, 1 min.	2500	V	

Characteristics		$T_S = 25\text{ °C}$ , unless otherwise specified			
Symbol	Conditions	min.	typ.	max.	Units
<b>IGBT - Inverter</b>					
$V_{CEsat}$	$I_{Cnom} = 8\text{ A}, T_j = 25\text{ (125) °C}$		1,7 (2)	2,1 (2,4)	V
$V_{GE(th)}$	$V_{GE} = V_{CE}, I_C = 0,3\text{ mA}$	5	5,8	6,5	V
$V_{CE(TO)}$	$T_j = 25\text{ (125) °C}$		1 (0,9)	1,2 (1,1)	V
$r_T$	$T_j = 25\text{ (125) °C}$		87 (138)	113 (162)	mΩ
$C_{ies}$	$V_{CE} = 25\text{ V}, V_{GE} = 0\text{ V}, f = 1\text{ MHz}$		0,7		nF
$C_{oes}$	$V_{CE} = 25\text{ V}, V_{GE} = 0\text{ V}, f = 1\text{ MHz}$		0,1		nF
$C_{res}$	$V_{CE} = 25\text{ V}, V_{GE} = 0\text{ V}, f = 1\text{ MHz}$		0,1		nF
$R_{th(j-s)}$	per IGBT		1,5		K/W
$t_{d(on)}$	under following conditions		40		ns
$t_r$	$V_{CC} = 600\text{ V}, V_{GE} = \pm 15\text{ V}$		25		ns
$t_{d(off)}$	$I_{Cnom} = 8\text{ A}, T_j = 125\text{ °C}$		370		ns
$t_f$	$R_{Gon} = R_{Goff} = 82\text{ Ω}$		85		ns
$E_{on}$	inductive load		0,9		mJ
$E_{off}$			0,9		mJ
<b>Diode - Inverter</b>					
$V_F = V_{EC}$	$I_{Fnom} = 8\text{ A}, T_j = 25\text{ (125) °C}$		1,9 (2)	2,2 (2,4)	V
$V_{(TO)}$	$T_j = 25\text{ (125) °C}$		1 (0,8)	1,1 (0,9)	V
$r_T$	$T_j = 25\text{ (125) °C}$		112 (150)	138 (187)	mΩ
$R_{th(j-s)}$	per diode		2,5		K/W
$I_{RRM}$	under following conditions		13		A
$Q_{rr}$	$I_{Fnom} = 8\text{ A}, V_R = 600\text{ V}$		1,6		μC
$E_{rr}$	$V_{GE} = 0\text{ V}, T_j = 125\text{ °C}$		0,7		mJ
	$di_F/dt = 480\text{ A/μs}$				
<b>Diode - Rectifier</b>					
$V_F$	$I_{Fnom} = 15\text{ A}, T_j = 25\text{ °C}$		1,1		V
$V_{(TO)}$	$T_j = 150\text{ °C}$		0,8		V
$r_T$	$T_j = 150\text{ °C}$		20		mΩ
$R_{th(j-s)}$	per diode		1,5		K/W
<b>Temperature Sensor</b>					
$R_{ts}$	3 %, $T_r = 25\text{ (100) °C}$		1000(1670)		Ω
<b>Mechanical Data</b>					
w			21,5		g
$M_s$	Mounting torque	2		2,5	Nm



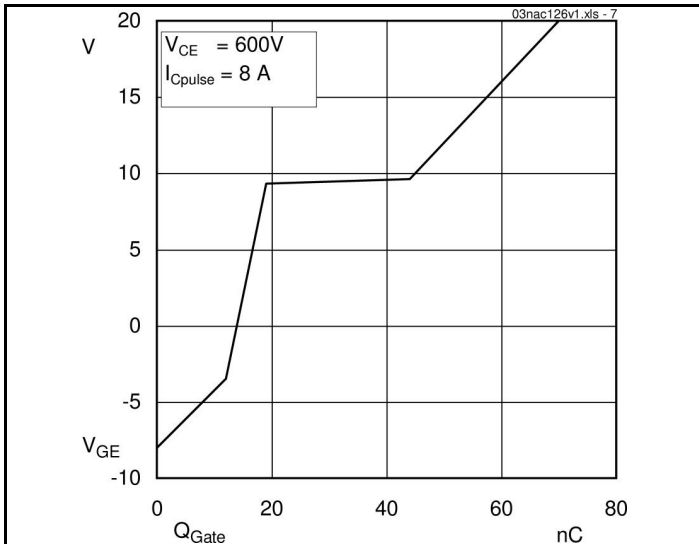


Fig. 7 Typ. gate charge characteristic

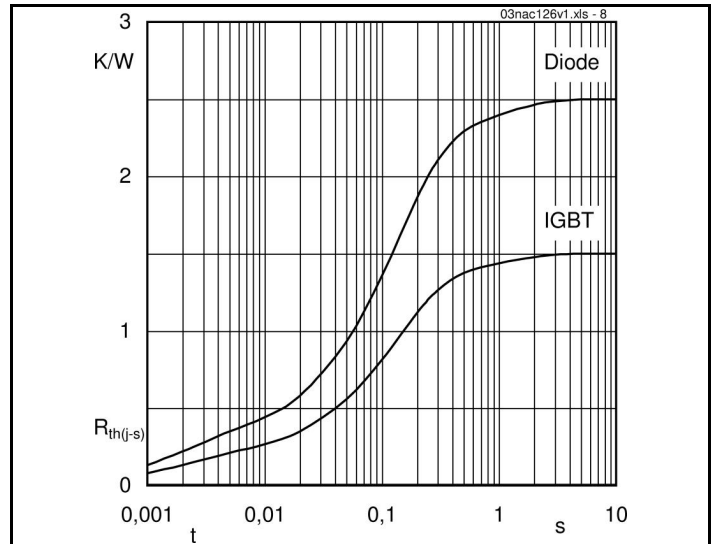


Fig. 8 Typ. thermal impedance

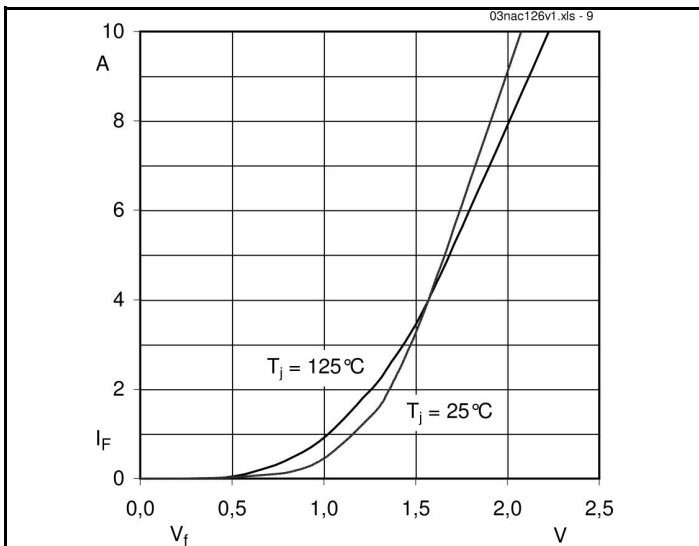


Fig. 9 Typ. freewheeling diode forward characteristic

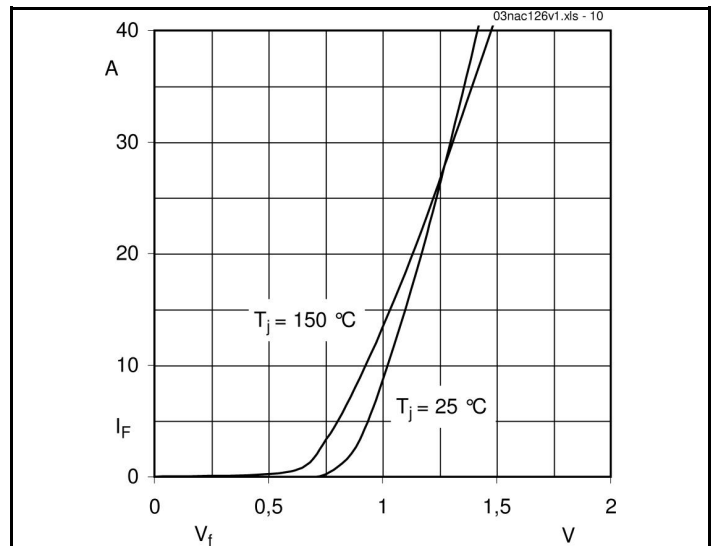
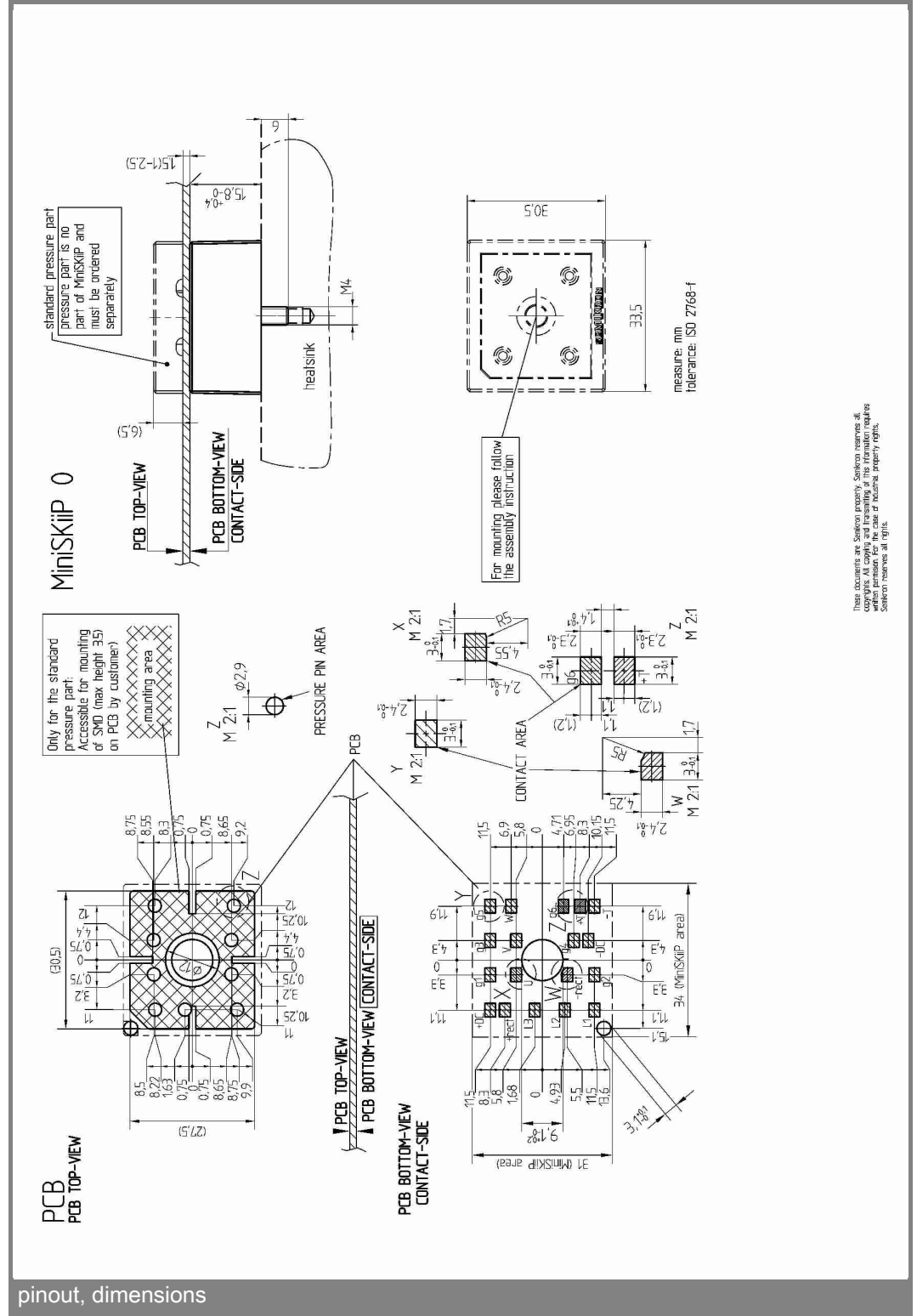
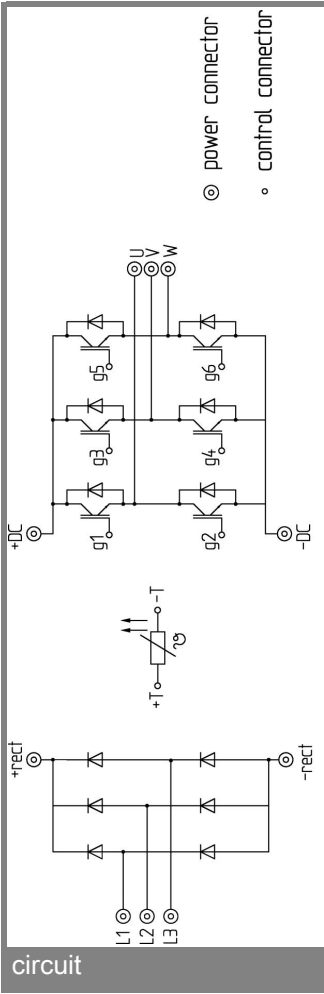


Fig. 10 Typ. input bridge forward characteristic



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