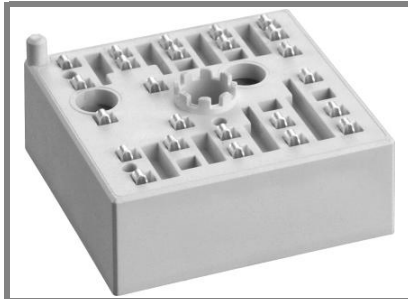


# SKiiP 11AC126V1



MiniSKiiP<sup>®</sup> 1

## 3-phase bridge inverter

### SKiiP 11AC126V1

#### Features

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

#### Typical Applications\*

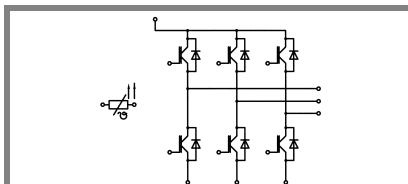
- Inverter up to 8 kVA
- Typical motor power 4 kW

#### Remarks

- $V_{CEsat}$ ,  $V_F$  = chip level value

Absolute Maximum Ratings		$T_s = 25\text{ }^\circ\text{C}$ , unless otherwise specified	
Symbol	Conditions	Values	Units
<b>IGBT - Inverter</b>			
$V_{CES}$		1200	V
$I_C$	$T_s = 25\text{ (70) }^\circ\text{C}$	16 (15)	A
$I_{CRM}$	$t_p \leq 1\text{ ms}$	16	A
$V_{GES}$		$\pm 20$	V
$T_j$		- 40 ... + 150	$^\circ\text{C}$
<b>Diode - Inverter</b>			
$I_F$	$T_s = 25\text{ (70) }^\circ\text{C}$	14 (11)	A
$I_{FRM}$	$t_p \leq 1\text{ ms}$	16	A
$T_j$		- 40 ... + 150	$^\circ\text{C}$
$I_{RMS}$	per power terminal (20 A / spring)	40	A
$T_{stg}$	$T_{op} \leq T_{stg}$	- 40 ... + 125	$^\circ\text{C}$
$V_{isol}$	AC, 1 min.	2500	V

Characteristics		$T_s = 25\text{ }^\circ\text{C}$ , unless otherwise specified			
Symbol	Conditions	min.	typ.	max.	Units
<b>IGBT - Inverter</b>					
$V_{CEsat}$	$I_{Cnom} = 8\text{ A}$ , $T_j = 25\text{ (125) }^\circ\text{C}$		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
$V_{CE(TO)}$	$T_j = 25\text{ (125) }^\circ\text{C}$		1 (0,9)	1,2 (1,1)	V
$r_T$	$T_j = 25\text{ (125) }^\circ\text{C}$		87 (138)	113 (162)	m $\Omega$
$C_{ies}$	$V_{CE} = 25\text{ V}$ , $V_{GE} = 0\text{ V}$ , $f = 1\text{ MHz}$		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		20		ns
$t_r$	$V_{CC} = 600\text{ V}$ , $V_{GE} = \pm 15\text{ V}$		20		ns
$t_{d(off)}$	$I_{Cnom} = 8\text{ A}$ , $T_j = 125\text{ }^\circ\text{C}$		390		ns
$t_f$	$R_{Gon} = R_{Goff} = 50\text{ }\Omega$		105		ns
$E_{on}$	inductive load		0,9		mJ
$E_{off}$			1		mJ
<b>Diode - Inverter</b>					
$V_F = V_{EC}$	$I_{Fnom} = 8\text{ A}$ , $T_j = 25\text{ (125) }^\circ\text{C}$		1,9 (2)	2,2 (2,4)	V
$V_{(TO)}$	$T_j = 25\text{ (125) }^\circ\text{C}$		1 (0,8)	1,1 (0,9)	V
$r_T$	$T_j = 25\text{ (125) }^\circ\text{C}$		112 (150)	138 (187)	m $\Omega$
$R_{th(j-s)}$	per diode		2,5		K/W
$I_{RRM}$	under following conditions		15		A
$Q_{rr}$	$I_{Fnom} = 8\text{ A}$ , $V_R = 600\text{ V}$		1,8		$\mu\text{C}$
$E_{rr}$	$V_{GE} = 0\text{ V}$ , $T_j = 125\text{ }^\circ\text{C}$ $di_F/dt = 750\text{ A}/\mu\text{s}$		0,9		mJ
<b>Temperature Sensor</b>					
$R_{ts}$	3 %, $T_r = 25\text{ (100) }^\circ\text{C}$		1000(1670)		$\Omega$
<b>Mechanical Data</b>					
m			35		g
$M_s$	Mounting torque	2		2,5	Nm



AC

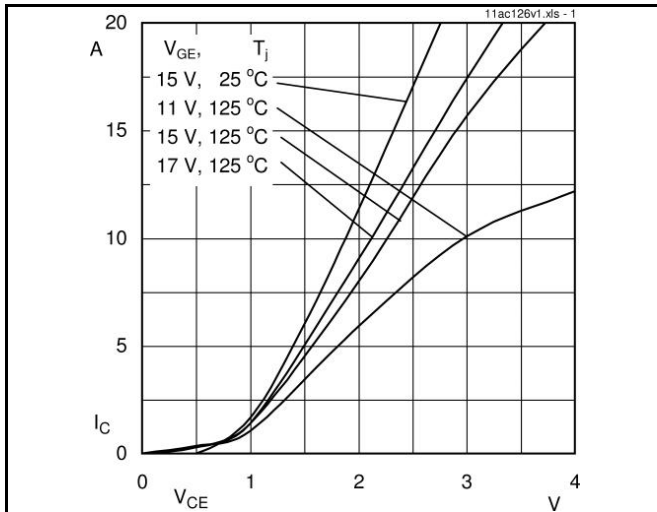


Fig. 1 Typ. output characteristic

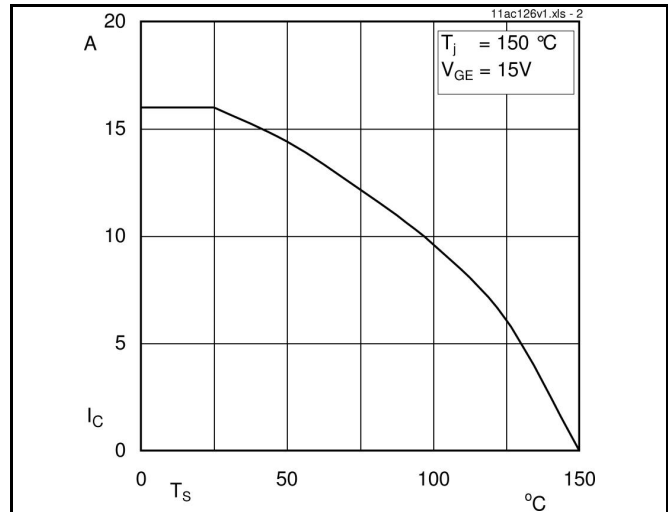


Fig. 2 Typ. rated current vs. temperature

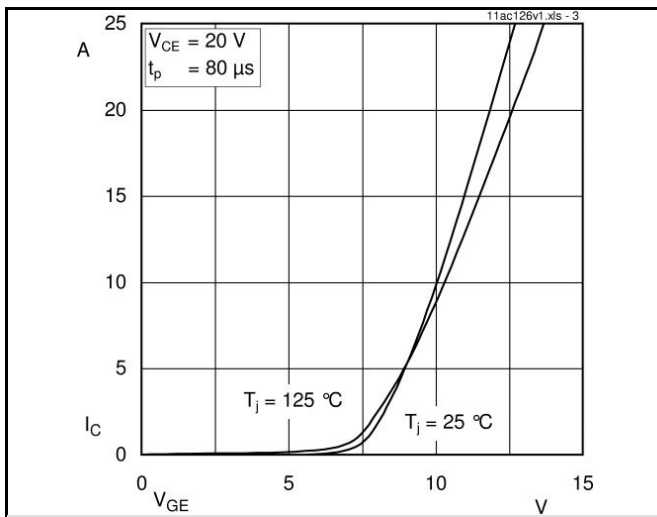


Fig. 3 Typ. transfer characteristic

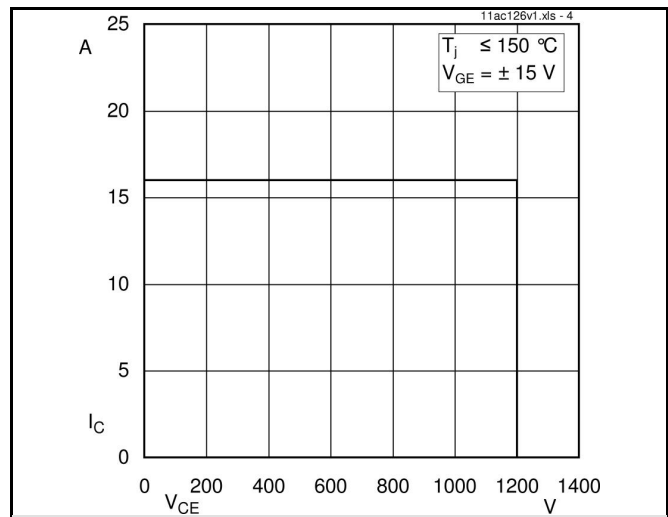


Fig. 4 Reverse bias safe operating area

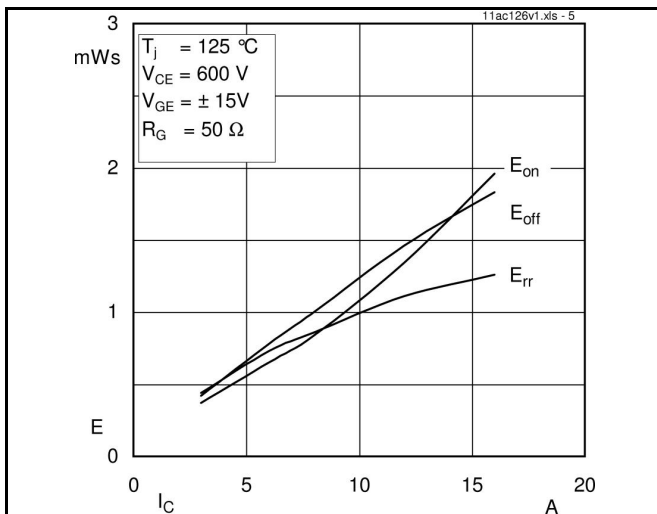


Fig. 5 Typ. Turn-on /-off energy =  $f(I_C)$

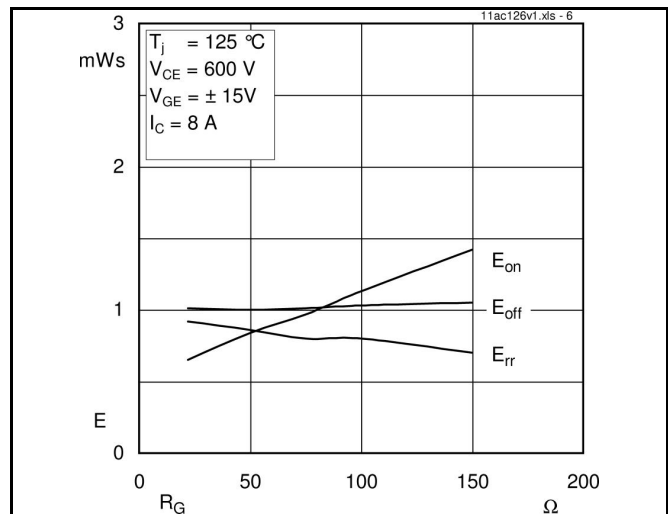


Fig. 6 Typ. Turn-on /-off energy =  $f(R_G)$

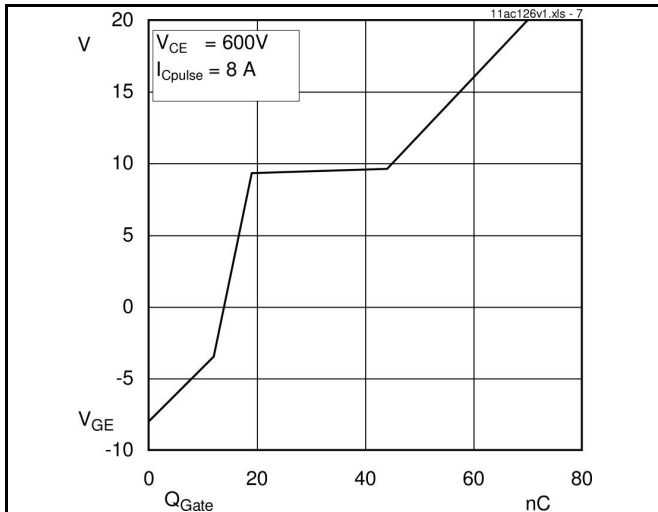


Fig. 7 Typ. gate charge characteristic

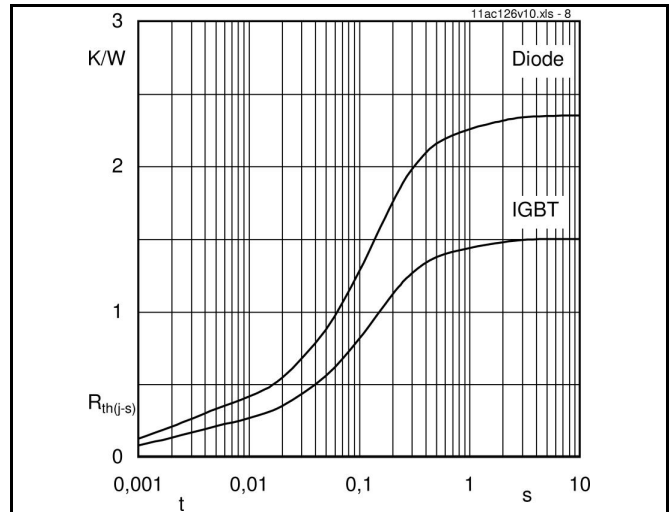


Fig. 8 Typ. thermal impedance

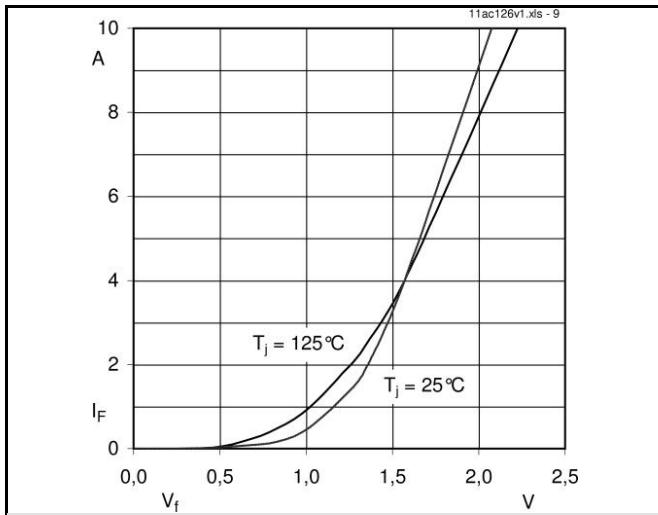
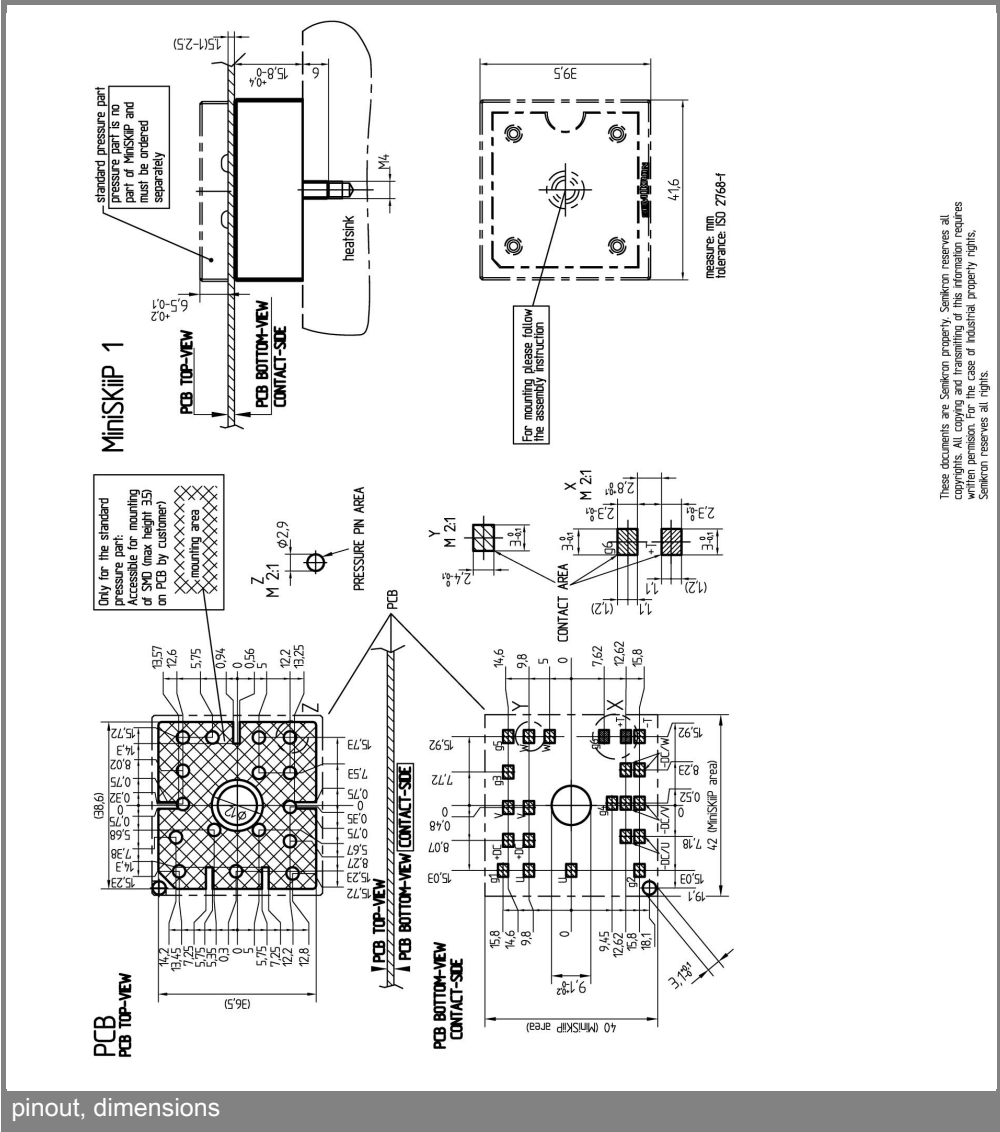
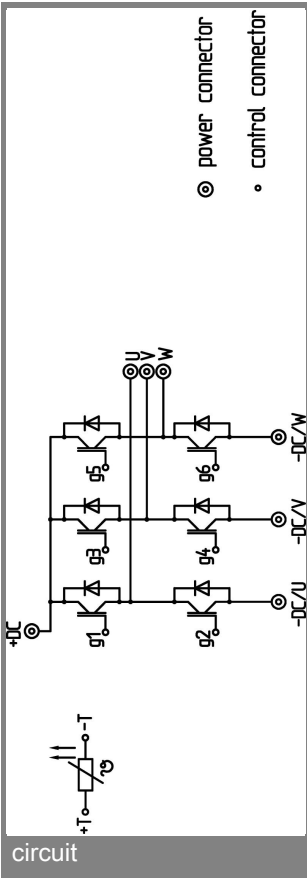


Fig. 9 Typ. freewheeling diode forward characteristic



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

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