
MiniSKiiP[®] 1

3-phase bridge inverter

SKiiP 15AC065V1

Features

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

Typical Applications*

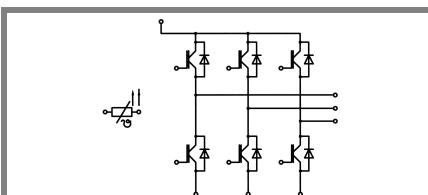
- Inverter up to 10,0 kVA
- Typical motor power 4,0 kW

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
IGBT - Inverter			
V_{CES}	$T_s = 25\text{ (70) }^\circ\text{C}$ $t_p \leq 1\text{ ms}$	600	V
I_C		38 (28)	A
I_{CRM}		60	A
V_{GES}		± 20	V
T_j		- 40 ... + 150	$^\circ\text{C}$
Diode - Inverter			
I_F	$T_s = 25\text{ (70) }^\circ\text{C}$ $t_p \leq 1\text{ ms}$	40 (30)	A
I_{FRM}		60	A
T_j		- 40 ... + 150	$^\circ\text{C}$
I_{tRMS}	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
IGBT - Inverter					
V_{CEsat}	$I_{Cnom} = 30\text{ A}$, $T_j = 25\text{ (125) }^\circ\text{C}$		2 (2,2)	2,5 (2,7)	V
$V_{GE(th)}$	$V_{GE} = V_{CE}$, $I_C = 0,5\text{ mA}$	3	4	5	V
$V_{CE(TO)}$	$T_j = 25\text{ (125) }^\circ\text{C}$		1,2 (1,1)	1,3 (1,2)	V
r_T	$T_j = 25\text{ (125) }^\circ\text{C}$		27 (37)	40 (50)	m Ω
C_{ies}	$V_{CE} = 25\text{ V}$, $V_{GE} = 0\text{ V}$, $f = 1\text{ MHz}$		1,5		nF
C_{oes}	$V_{CE} = 25\text{ V}$, $V_{GE} = 0\text{ V}$, $f = 1\text{ MHz}$		0,2		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		1,05		K/W
$t_{d(on)}$	under following conditions		20		ns
t_r	$V_{CC} = 300\text{ V}$, $V_{GE} = \pm 15\text{ V}$		15		ns
$t_{d(off)}$	$I_{Cnom} = 30\text{ A}$, $T_j = 125\text{ }^\circ\text{C}$		185		ns
t_f	$R_{Gon} = R_{Goff} = 20\text{ }\Omega$		10		ns
E_{on}	inductive load		1		mJ
E_{off}			0,5		mJ
Diode - Inverter					
$V_F = V_{EC}$	$I_{Fnom} = 30\text{ A}$, $T_j = 25\text{ (125) }^\circ\text{C}$		1,5 (1,5)	1,8 (1,8)	V
$V_{(TO)}$	$T_j = 25\text{ (125) }^\circ\text{C}$		1 (0,9)	1,1 (1)	V
r_T	$T_j = 25\text{ (125) }^\circ\text{C}$		18 (20)	23 (27)	m Ω
$R_{th(j-s)}$	per diode		1,5		K/W
I_{RRM}	under following conditions		58		A
Q_{rr}	$I_{Fnom} = 30\text{ A}$, $V_R = 300\text{ V}$		3,5		μC
E_{rr}	$V_{GE} = 0\text{ V}$, $T_j = 125\text{ }^\circ\text{C}$		0,8		mJ
	$di_F/dt = 2500\text{ A}/\mu\text{s}$				
Temperature Sensor					
R_{ts}	3 %, $T_r = 25\text{ (100) }^\circ\text{C}$		1000(1670)		Ω
Mechanical Data					
m			35		g
M_s	Mounting torque	2		2,5	Nm


AC

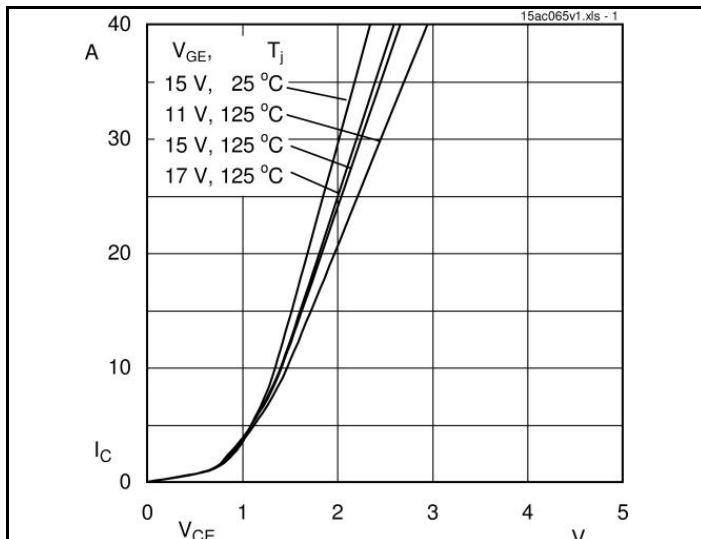


Fig. 1 Output characteristic

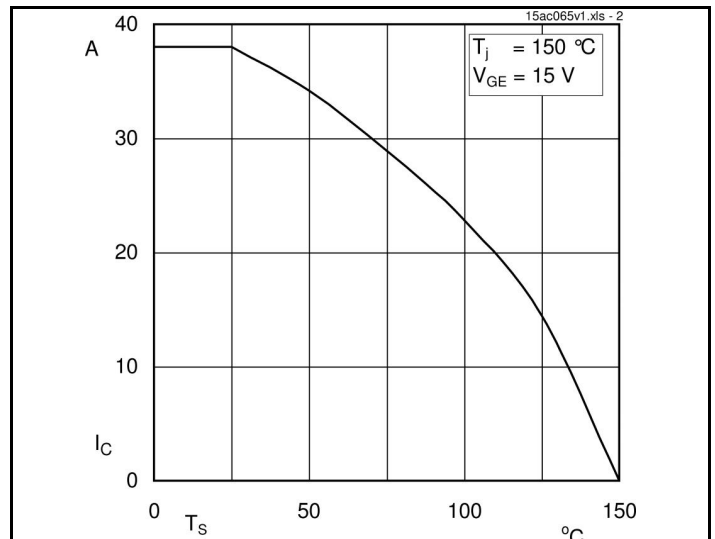


Fig. 2 Rated current vs. temperature

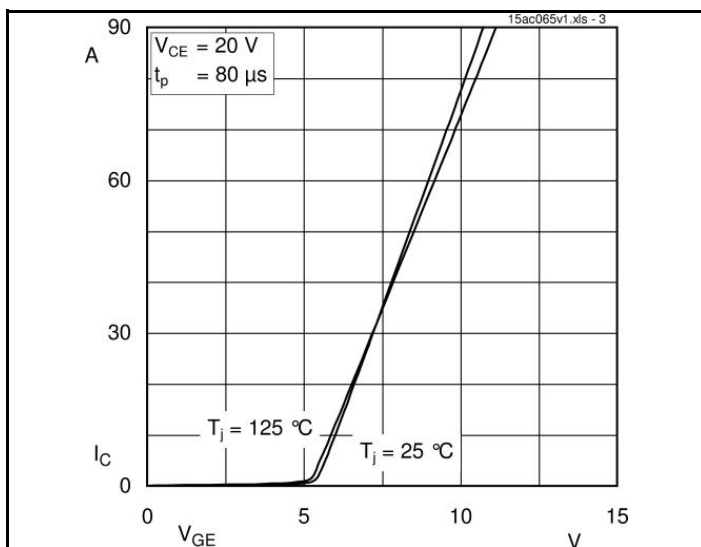


Fig. 3 Typ. transfer characteristic

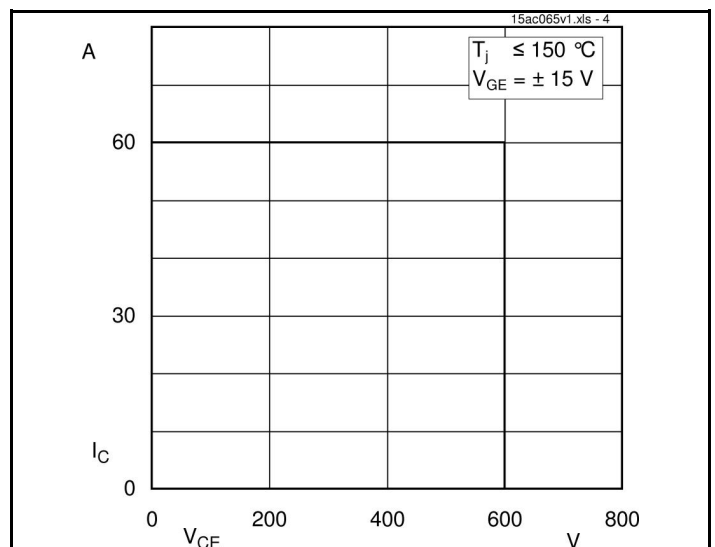


Fig. 4 Reverse bias safe operating area

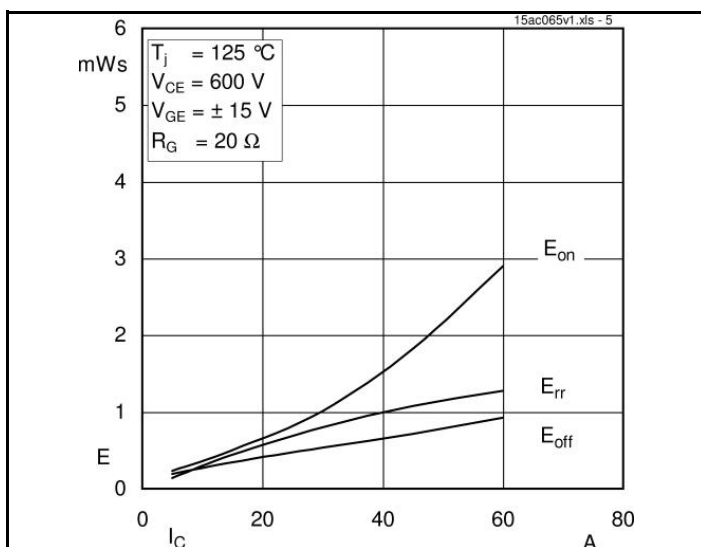


Fig. 5 Typ. Turn-on /-off energy = $f(I_C)$

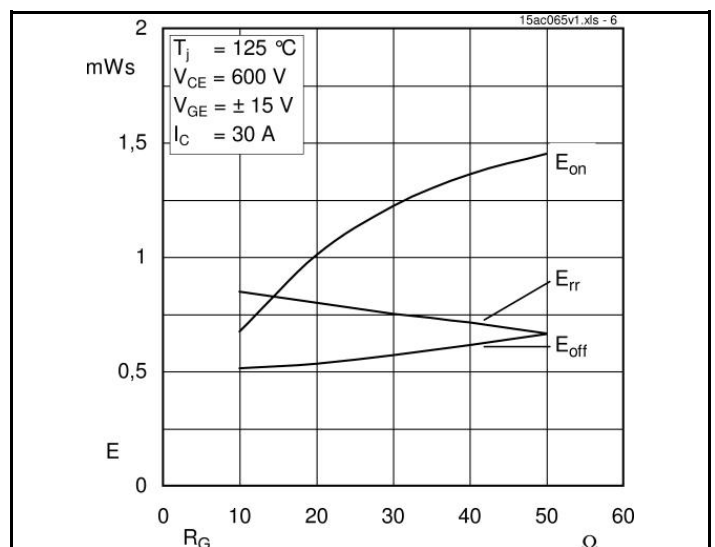


Fig. 6 Typ. Turn-on /-off energy = $f(R_G)$

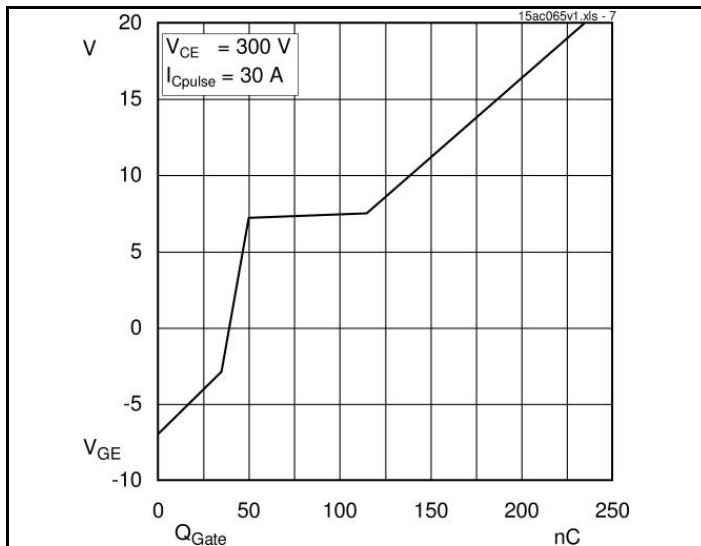


Fig. 7 Typ. gate charge characteristic

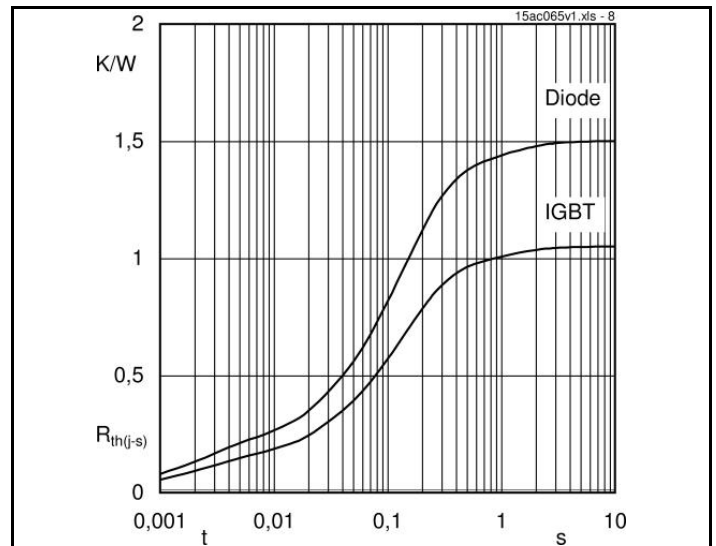


Fig. 8 Typ. thermal impedance

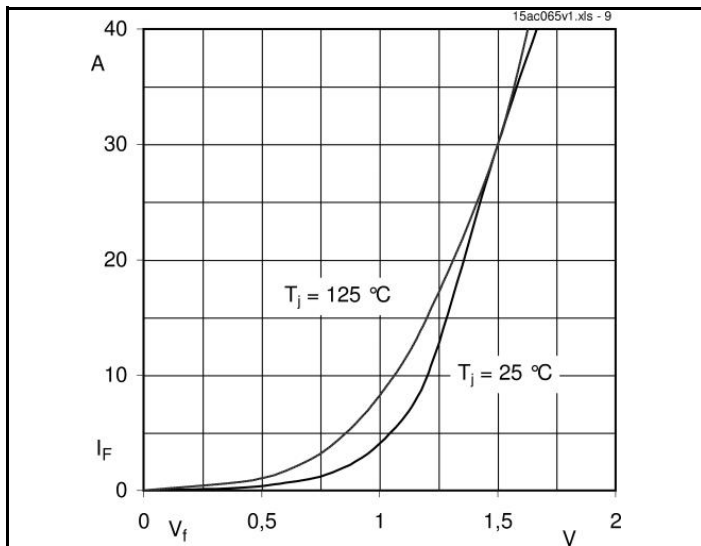
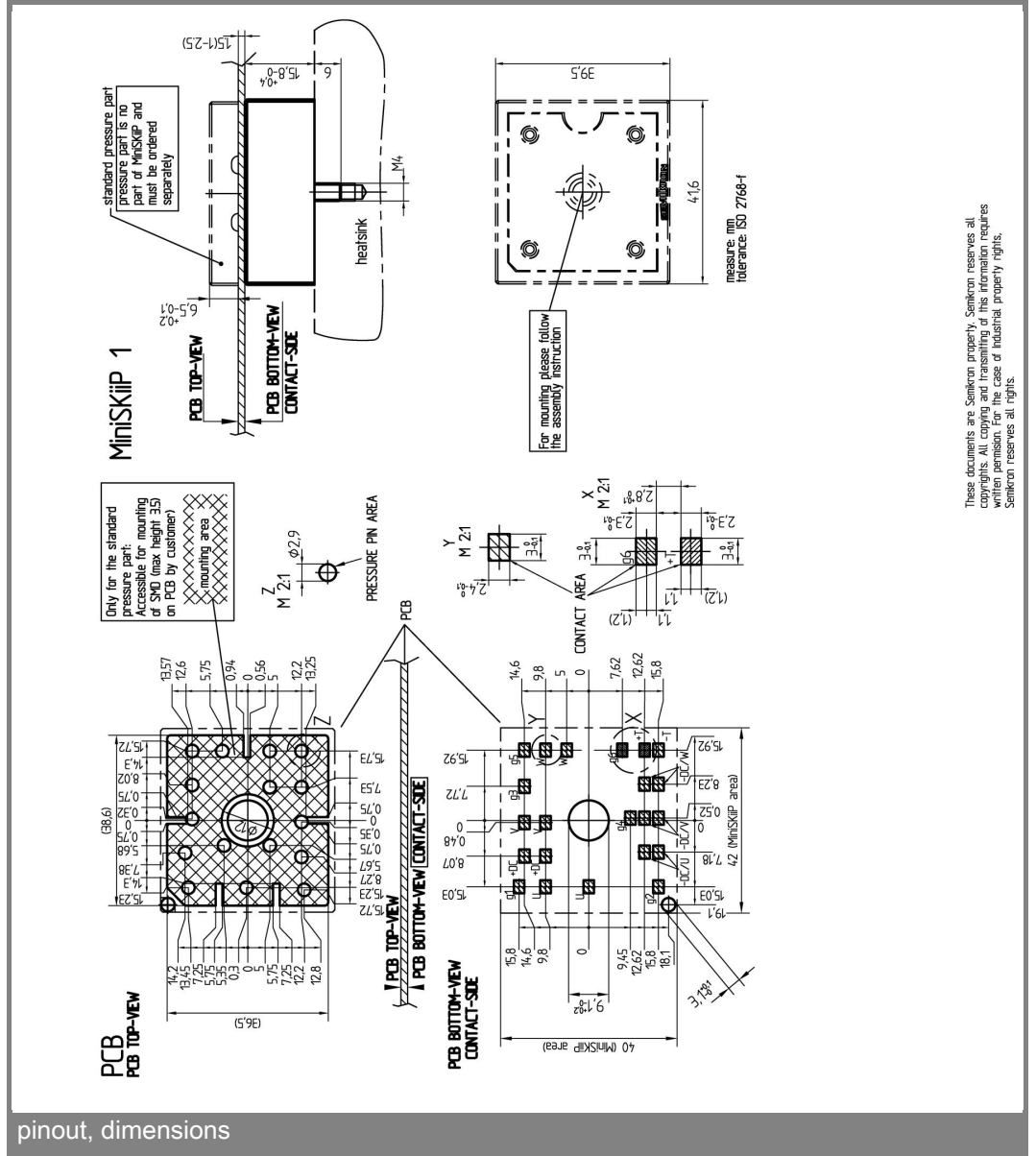
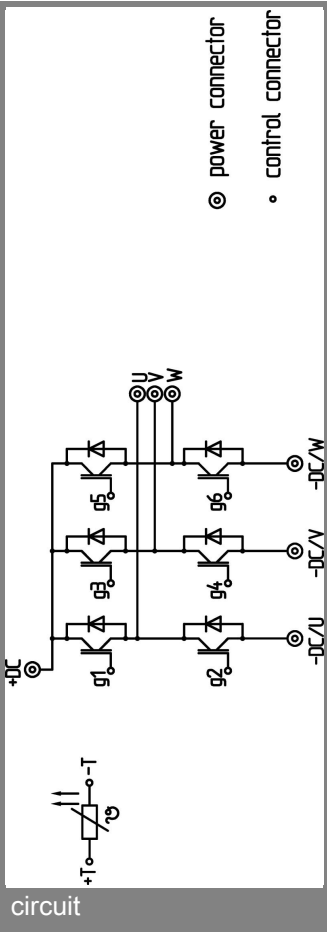


Fig. 9 Typ. freewheeling diode forward characteristic



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

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