

# SKiiP 15AC066V1



MiniSKiiP<sup>®</sup> 1

## 3-phase bridge inverter

SKiiP 15AC066V1

### Features

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

### Typical Applications

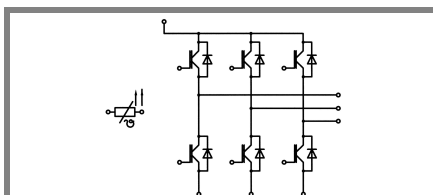
- Inverter up to 10,0 kVA
- Typical motor power 4,0 kW

### Remarks

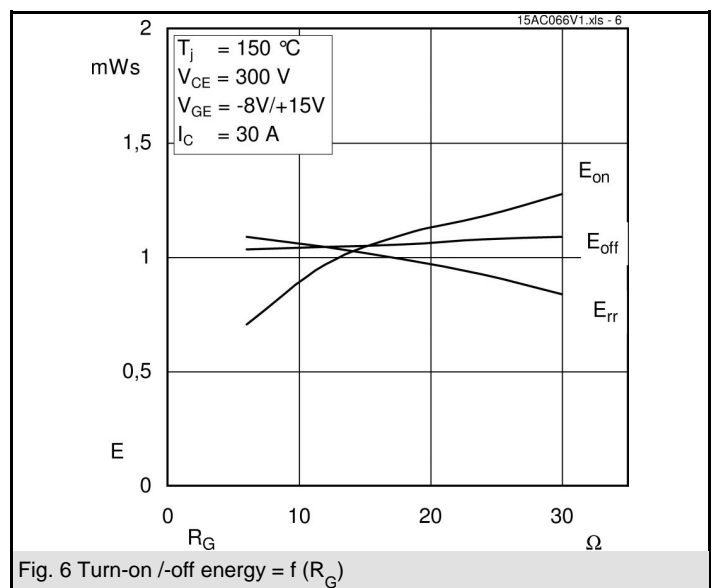
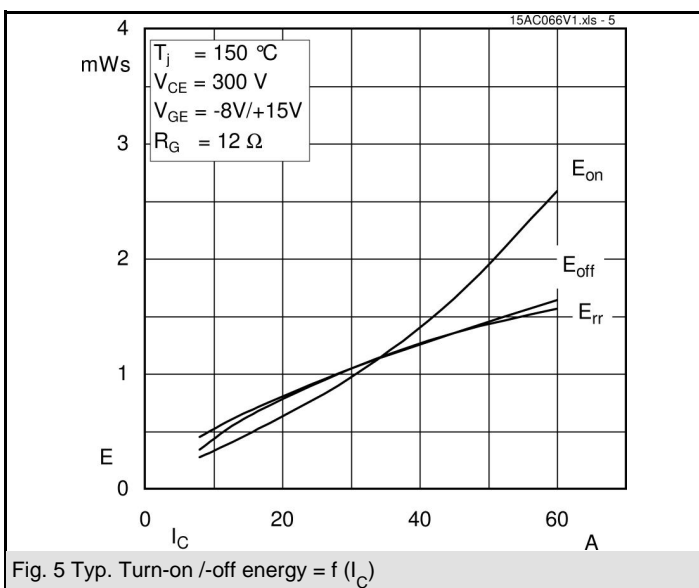
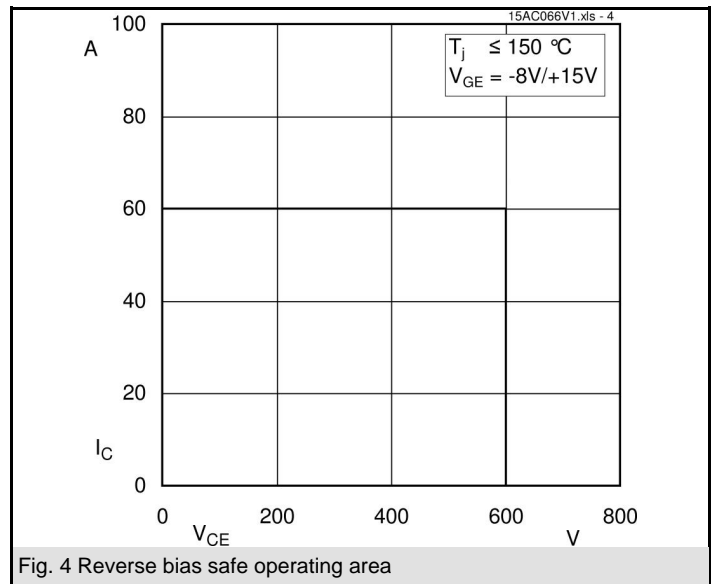
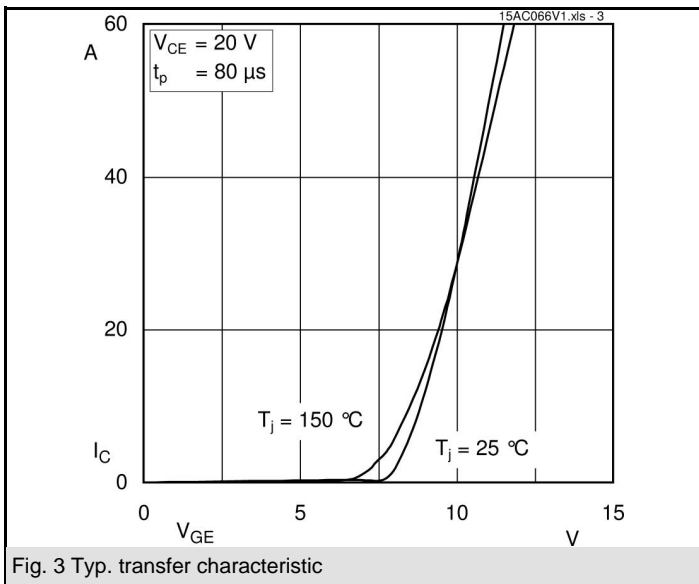
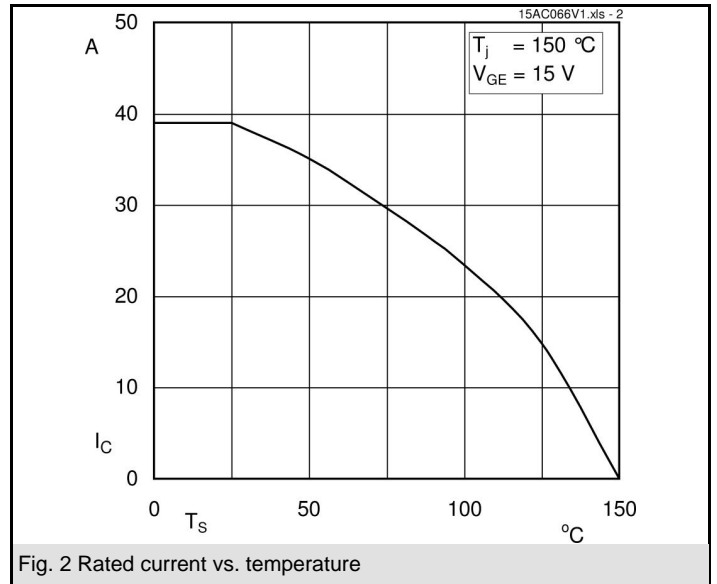
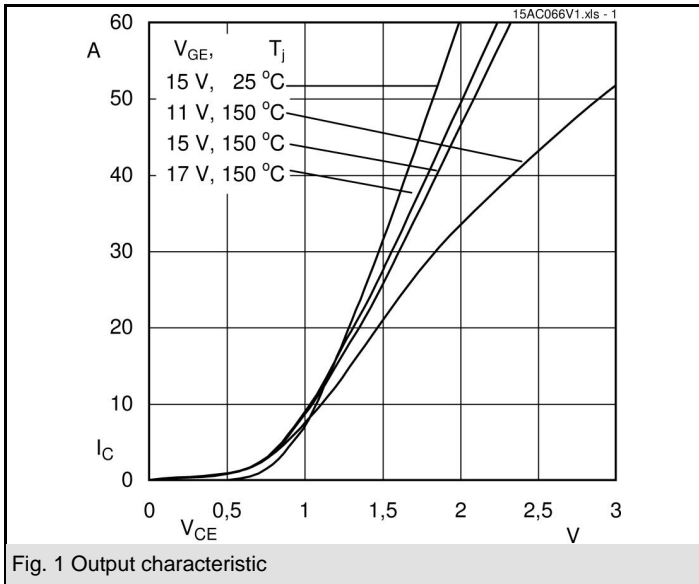
- Case temperature limited to  $T_C = 125^\circ\text{C}$  max.
- Product reliability results are valid for  $T_j = 150^\circ\text{C}$
- SC data:  $t_p \leq 6 \mu\text{s}$ ;  $V_{GE} \leq 15 \text{ V}$ ;  $T_j = 150^\circ\text{C}$ ;  $V_{CC} = 360 \text{ V}$
- $V_{CEsat}$ ,  $V_F$  = chip level value

Absolute Maximum Ratings		$T_S = 25^\circ\text{C}$ , unless otherwise specified	
Symbol	Conditions	Values	Units
<b>IGBT - Inverter</b>			
$V_{CES}$		600	V
$I_C$	$T_S = 25 (70)^\circ\text{C}, T_j = 150^\circ\text{C}$	39 (27)	A
$I_C$	$T_S = 25 (70)^\circ\text{C}, T_j = 175^\circ\text{C}$	40 (32)	A
$I_{CRM}$	$t_p = 1 \text{ ms}$	60	A
$V_{GES}$		$\pm 20$	V
$T_j$		-40 ... +175	$^\circ\text{C}$
<b>Diode - Inverter</b>			
$I_F$	$T_S = 25 (70)^\circ\text{C}, T_j = 150^\circ\text{C}$	33 (22)	A
$I_F$	$T_S = 25 (70)^\circ\text{C}, T_j = 175^\circ\text{C}$	39 (29)	A
$I_{FRM}$	$t_p = 1 \text{ ms}$	60	A
$T_j$		-40 ... +175	$^\circ\text{C}$
$I_{RMS}$	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		$T_S = 25^\circ\text{C}$ , unless otherwise specified			
Symbol	Conditions	min.	typ.	max.	Units
<b>IGBT - Inverter</b>					
$V_{CEsat}$	$I_{Cnom} = 30 \text{ A}, T_j = 25 (150)^\circ\text{C}$	1	1,45 (1,65)	1,9 (2,1)	V
$V_{GE(th)}$	$V_{GE} = V_{CE}, I_C = 0,5 \text{ mA}$		5,8		V
$V_{CE(TO)}$	$T_j = 25 (150)^\circ\text{C}$		0,9 (0,85)	1 (0,9)	V
$r_T$	$T_j = 25 (150)^\circ\text{C}$		20 (28)	30 (40)	m $\Omega$
$C_{ies}$	$V_{CE} = 25 \text{ V}, V_{GE} = 0 \text{ V}, f = 1 \text{ MHz}$		1,6		nF
$C_{oes}$	$V_{CE} = 25 \text{ V}, V_{GE} = 0 \text{ V}, f = 1 \text{ MHz}$		0,19		nF
$C_{res}$	$V_{CE} = 25 \text{ V}, V_{GE} = 0 \text{ V}, f = 1 \text{ MHz}$		0,17		nF
$R_{CC'+EE'}$	spring contact-chip $T_s = ( )^\circ\text{C}$				m $\Omega$
$R_{th(j-s)}$	per IGBT		1,35		K/W
$t_{d(on)}$	under following conditions		20		ns
$t_r$	$V_{CC} = 300 \text{ V}, V_{GE} = -8\text{V}/+15\text{V}$		20		ns
$t_{d(off)}$	$I_{Cnom} = 30 \text{ A}, T_j = 150^\circ\text{C}$		200		ns
$t_f$	$R_{Gon} = R_{Goff} = 12 \Omega$		50		ns
$E_{on}(E_{off})$	inductive load		1 (1,1)		mJ
<b>Diode - Inverter</b>					
$V_F = V_{EC}$	$I_{Fnom} = 30 \text{ A}, T_j = 25 (150)^\circ\text{C}$		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
$r_T$	$T_j = 25 (150)^\circ\text{C}$		16,7 (20)	20 (23,3)	m $\Omega$
$R_{th(j-s)}$	per diode		2,1		K/W
$I_{RRM}$	under following conditions		54,4		A
$Q_{rr}$	$I_{Fnom} = 30 \text{ A}, V_R = 300 \text{ V}$		4		$\mu\text{C}$
$E_{rr}$	$V_{GE} = 0 \text{ V}, T_j = 150^\circ\text{C}$		1,1		mJ
	$di_F/dt = 2150 \text{ A}/\mu\text{s}$				
<b>Temperature Sensor</b>					
$R_{ts}$	3 %, $T_r = 25 (100)^\circ\text{C}$		1000(1670)		$\Omega$
<b>Mechanical Data</b>					
m			35		g
$M_s$	Mounting torque	2		2,5	Nm



AC



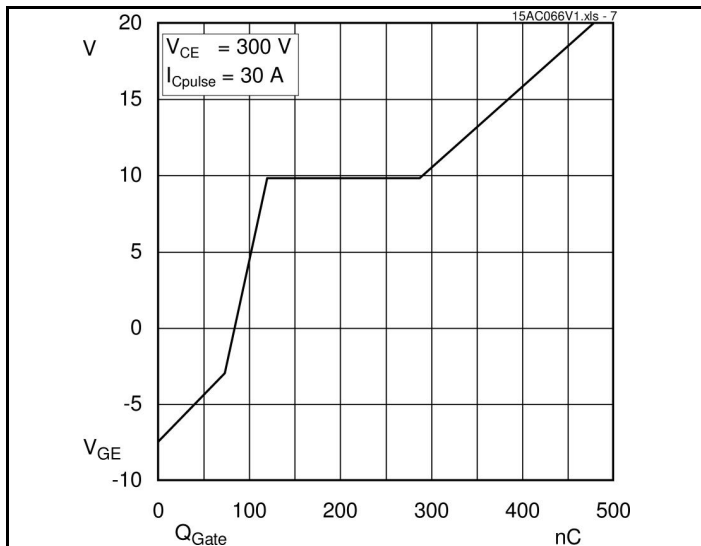


Fig. 7 Typ. gate charge characteristic

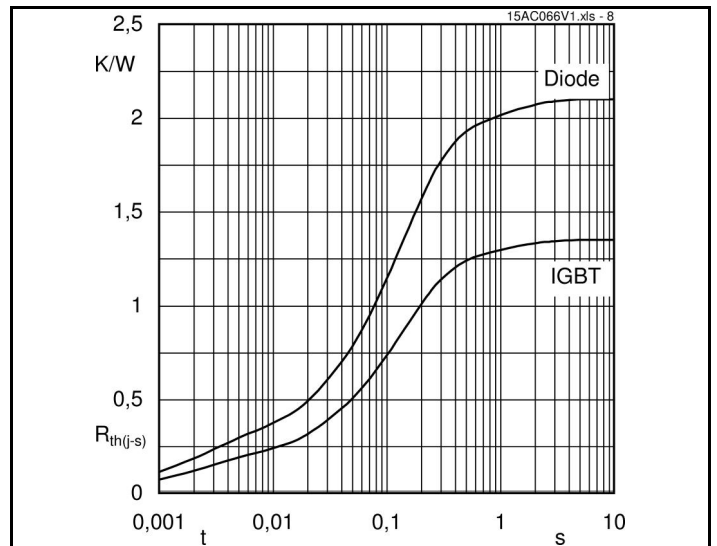


Fig. 8 Typ. Thermal impedance

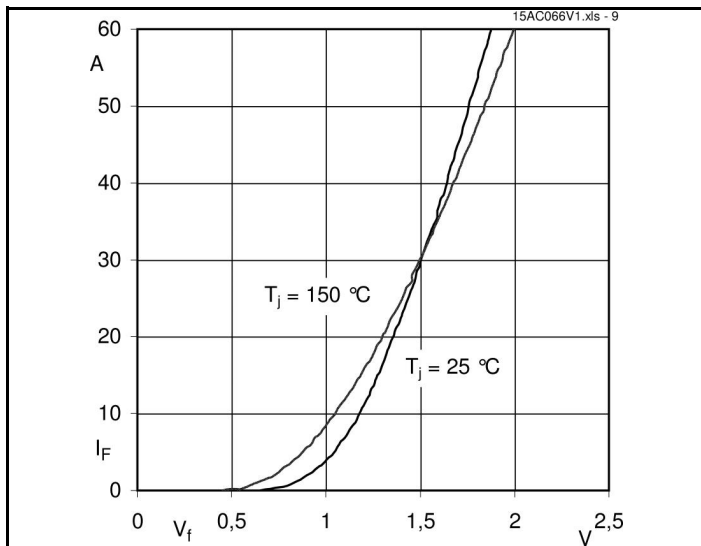
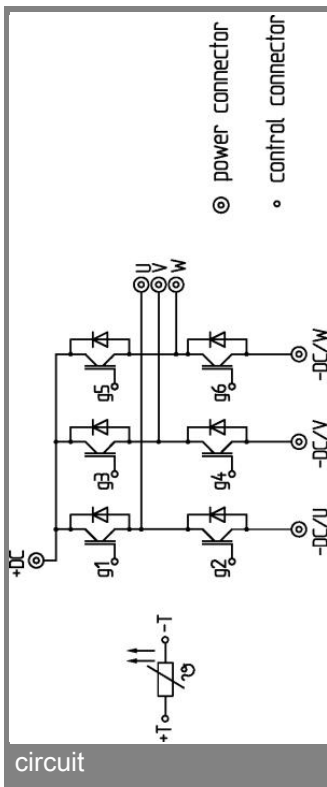
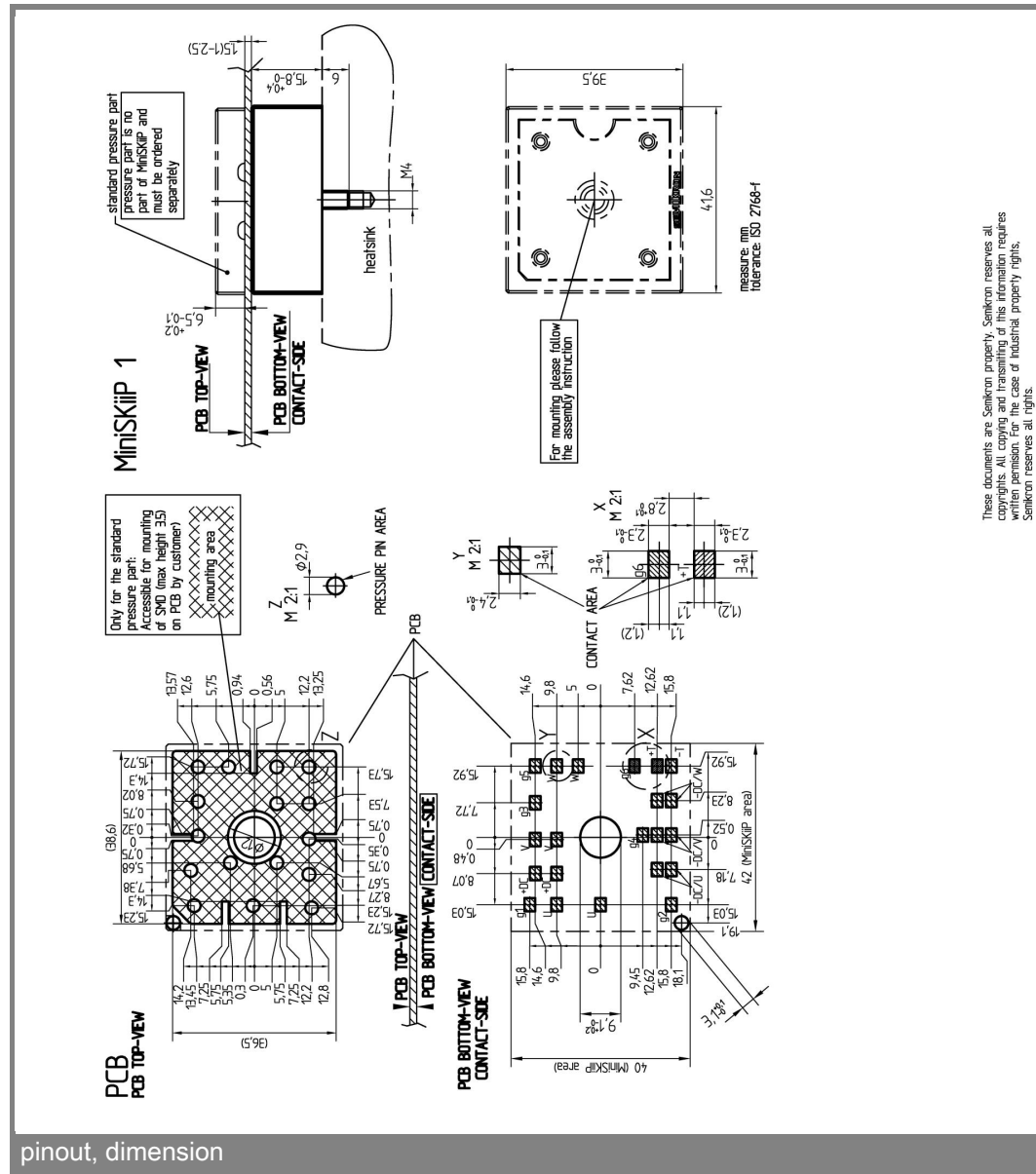


Fig. 9 Typ. freewheeling diode forward characteristic



power connector  
 control connector

circuit



pinout, dimension

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