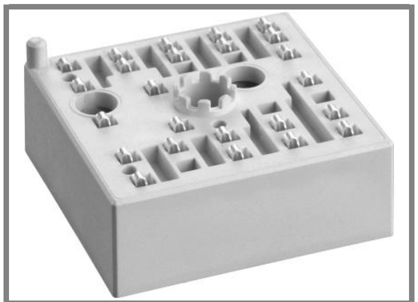


MiniSKiiP® 1

3-phase bridge inverter

SkiiP 15AC066V1

Absolute Maximum Ratings

T_S = 25 °C, unless otherwise specified

Symbol	Conditions	Values	Units
IGBT - Inverter			
V_{CES}		600	V
I_C	T_s = 25 (70) °C ,T_j = 150 °C	39 (27)	A
I_C	T_s = 25 (70) °C ,T_j = 175 °C	40 (32)	A
I_{CRM}	t_p = 1 ms	60	A
V_{GES}		±20	V
T_j		-40 ... +175	°C
Diode - Inverter			
I_F	T_s = 25 (70) °C ,T_j = 150 °C	33 (22)	A
I_F	T_s = 25 (70) °C ,T_j = 175 °C	39 (29)	A
I_{FRM}	t_p = 1 ms	60	A
T_j		-40 ... +175	°C
I_{tRMS}	per power terminal (20 A / spring)	40	A
T_{stg}	$T_{op} \leq T_{stg}$	-40 ... +125	°C
V_{isol}	AC, 1 min.	2500	V

Characteristics

T_S= 25 °C, unless otherwise specified

Symbol	Conditions	min.	typ.	max.	Units
IGBT - Inverter					
V_{CEsat}	I_{Cnom} = 30 A ,T_j = 25 (150) °C	1	1,45 (1,65)	1,9 (2,1)	V
$V_{GE(th)}$	V_{GE} = V_{CE}, I_C = 0,5 mA		5,8		V
$V_{CE(TO)}$	T_j = 25 (150) °C		0,9 (0,85)	1 (0,9)	V
r_T	T_j = 25 (150) °C		20 (28)	30 (40)	mΩ
C_{ies}	V_{CE} = 25 V, V_{GE} = 0 V, f = 1 MHz		1,6		nF
C_{oes}	V_{CE} = 25 V, V_{GE} = 0 V, f = 1 MHz		0,19		nF
C_{res}	V_{CE} = 25 V, V_{GE} = 0 V, f = 1 MHz		0,17		nF
$R_{CC'+EE'}$	spring contact-chip T_s = ( )°C				mΩ
$R_{th(j-s)}$	per IGBT		1,35		K/W
$t_{d(on)}$	under following conditions		20		ns
t_r	V_{CC} = 300 V, V_{GE} = -8V/+15V		20		ns
$t_{d(off)}$	I_{Cnom} = 30 A, T_j = 150 °C		200		ns
t_f	R_{Gon} = R_{Goff} = 12 Ω		50		ns
$E_{on}(E_{off})$	inductive load		1 (1,1)		mJ
Diode - Inverter					
V_F = V_{EC}	I_{Fnom} = 30 A ,T_j = 25 (150) °C		1,5 (1,5)	1,7 (1,7)	V
$V_{(TO)}$	T_j = 25 (150) °C		1 (0,9)	1,1 (1)	V
r_T	T_j = 25 (150) °C		16,7 (20)	20 (23,3)	mΩ
$R_{th(j-s)}$	per diode		2,1		K/W
I_{RRM}	under following conditions		54,4		A
Q_{rr}	I_{Fnom} = 30 A, V_R = 300 V		4		µC
E_{rr}	V_{GE} = 0 V, T_j = 150 °C		1,1		mJ
	di_F/dt = 2150 A/µs				
Temperature Sensor					
R_{ts}	3 %, T_r = 25 (100) °C		1000(1670)		Ω
Mechanical Data					
m			35		g
M_s	Mounting torque	2		2,5	Nm

Features

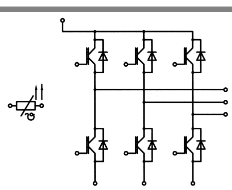
- Trench IGBT`s
- Robust and soft freewheeling diodes in CAL technology
- Highly reliable spring contacts for electrical connections
- UL recognised file no. E63532

Typical Applications

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

Remarks

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



AC

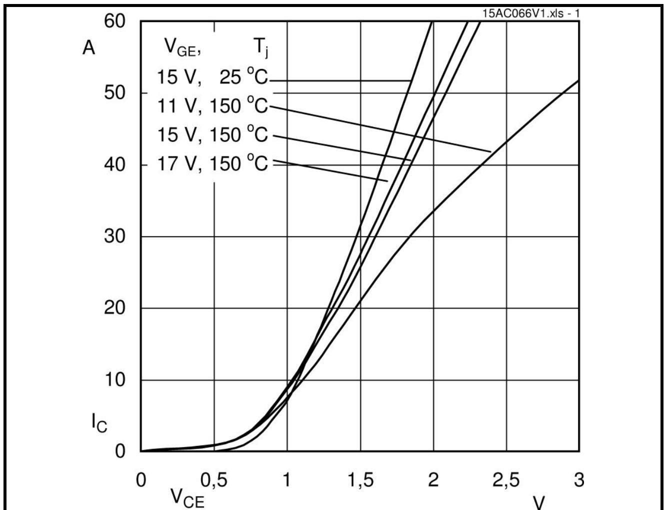


Fig. 1 Output characteristic

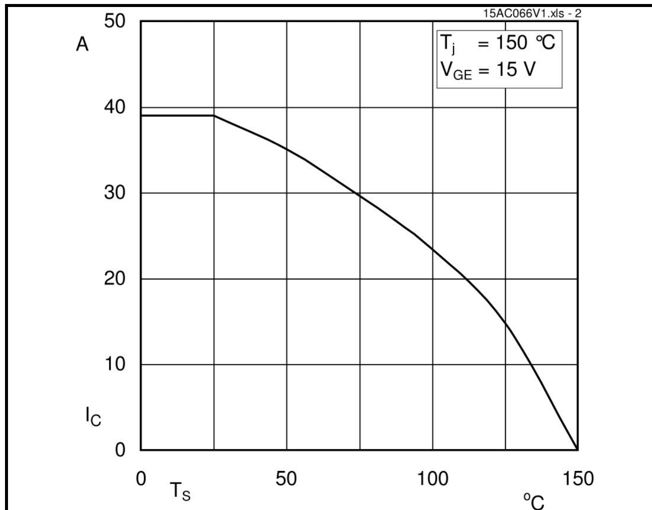


Fig. 2 Rated current vs. temperature

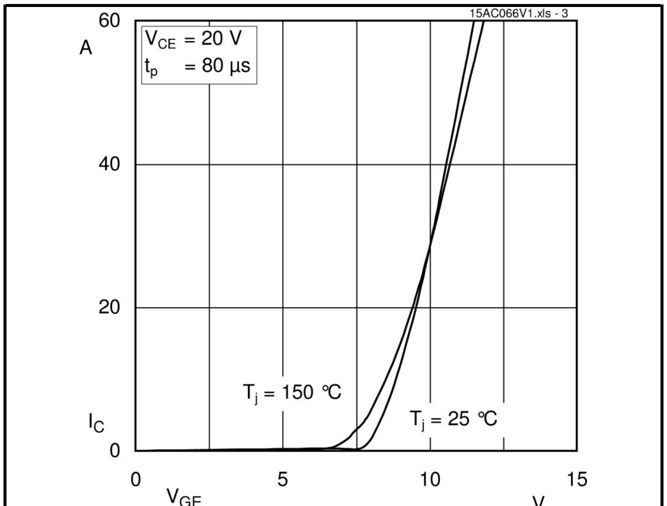


Fig. 3 Typ. transfer characteristic

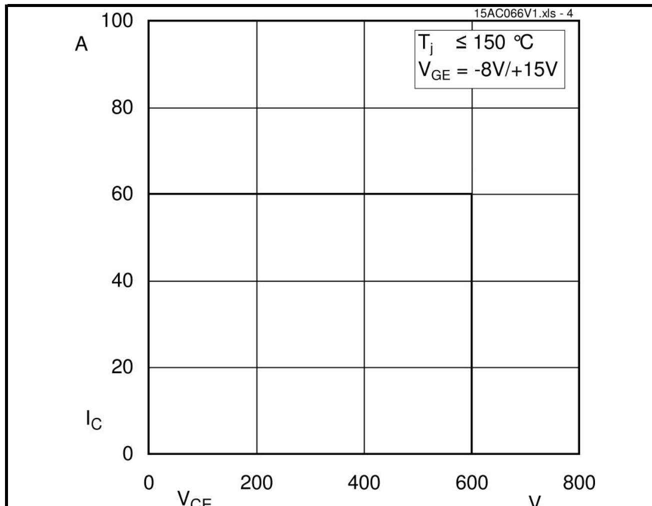


Fig. 4 Reverse bias safe operating area

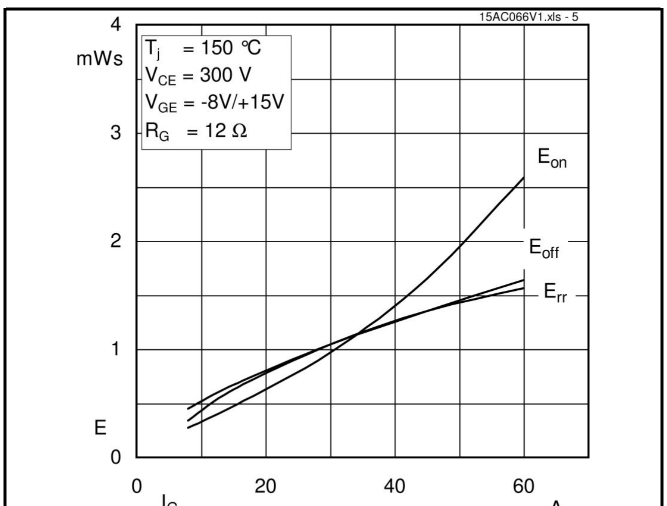


Fig. 5 Typ. Turn-on /-off energy = f (I_C)

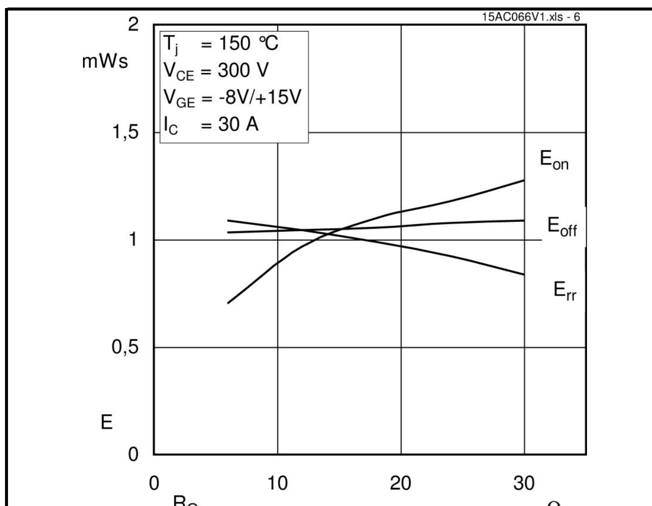


Fig. 6 Turn-on /-off energy = f (R_G)

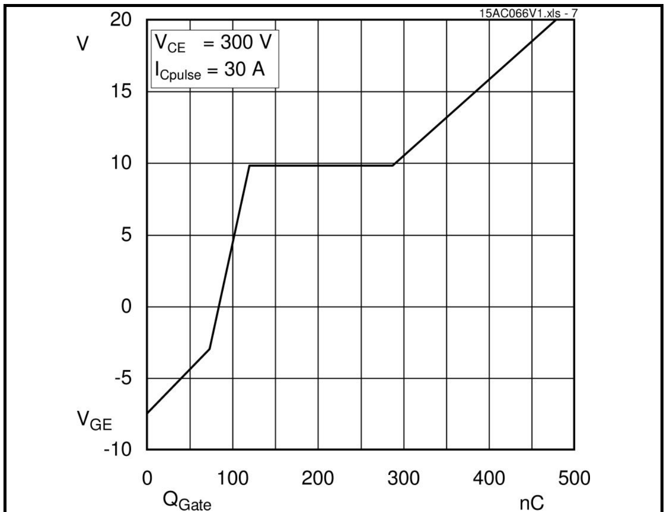


Fig. 7 Typ. gate charge characteristic

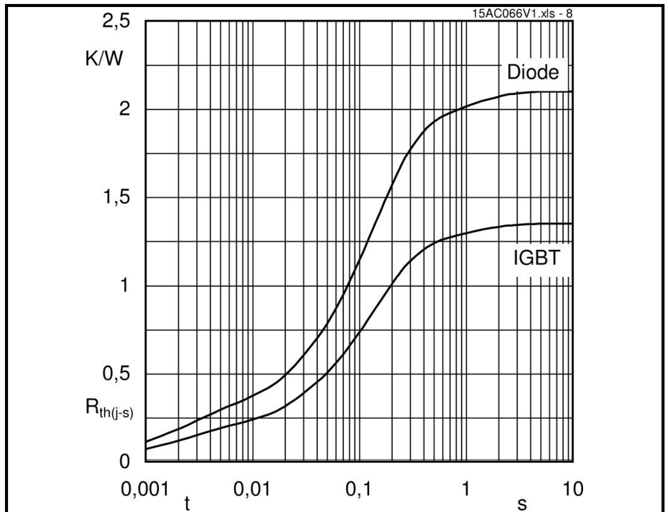


Fig. 8 Typ. Thermal impedance

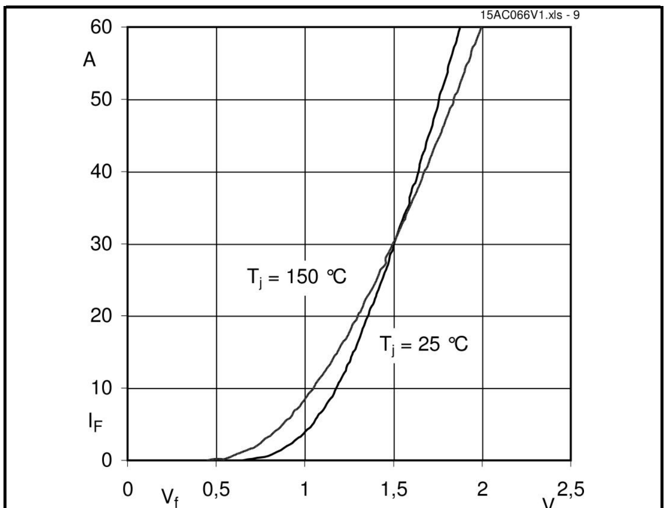
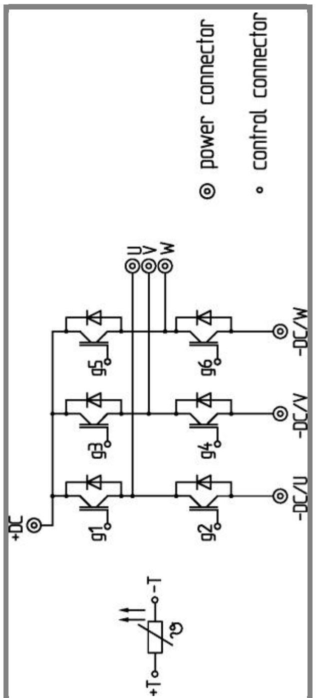
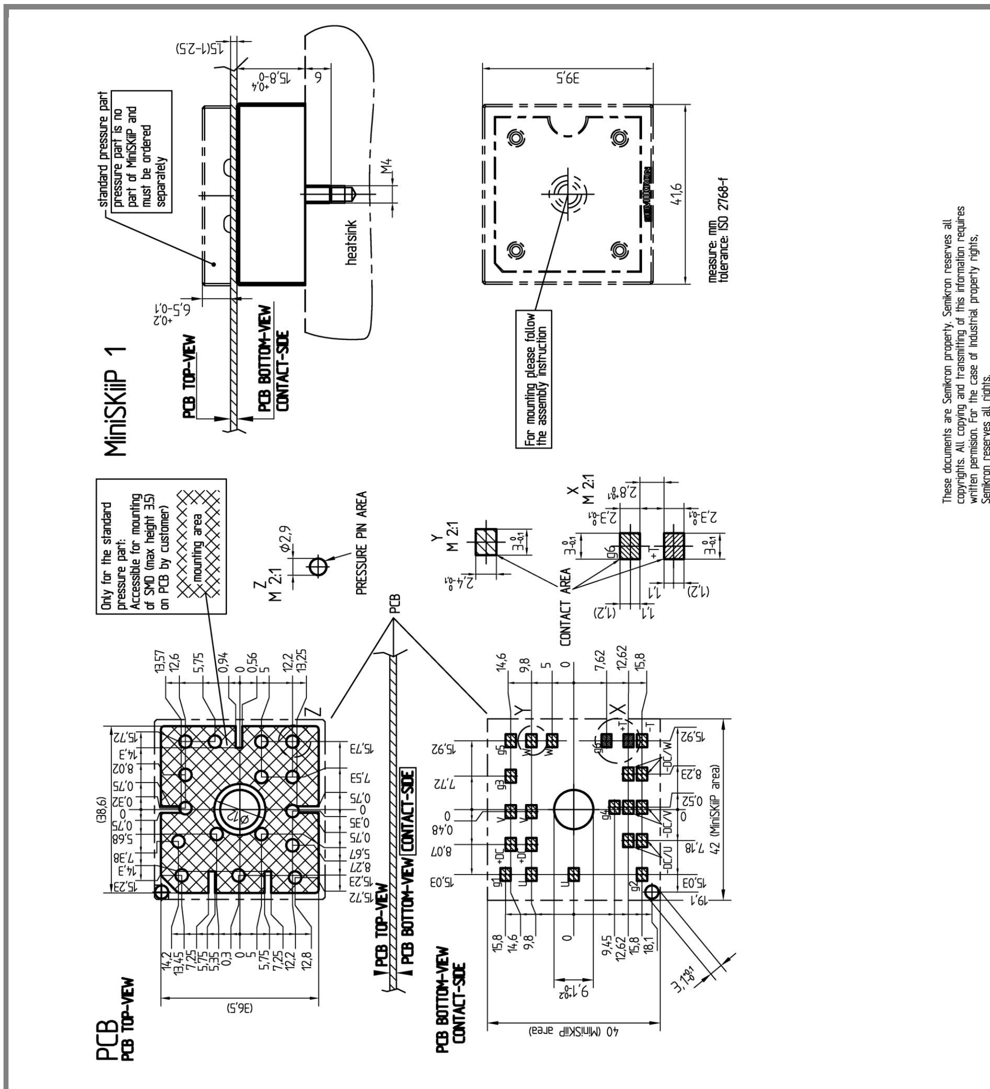


Fig. 9 Typ. freewheeling diode forward characteristic



circuit



pinout, dimension

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

This technical information specifies semiconductor devices but promises no characteristics. No warranty or guarantee expressed or implied is made regarding delivery, performance or suitability.