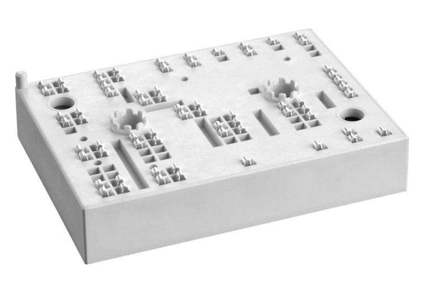
SKiiP 39AC066V4



MiniSKiiP® 3

3-phase bridge inverter

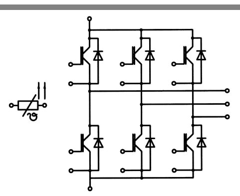
SKiiP 39AC066V4

Features

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

Remarks

- Case temperature limited to T_C = 125°C
- 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} = 360 V
- V_{CEsat}, V_F = chip level value



AC

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	131 (87)	A
I_C	T_s = 25 (70) °C ,T_j = 175 °C	146 (107)	A
I_{CRM}	t_p = 1 ms	300	A
V_{GES}		±20	V
T_j		-40...+175	°C
Diode - Inverter			
I_F	T_s = 25 (70) °C ,T_j = 150 °C	151 (98)	A
I_F	T_s = 25 (70) °C ,T_j = 175 °C	164 (119)	A
I_{FRM}	t_p = 1 ms	300	A
T_j		-40...+175	°C
I_{tRMS}	per power terminal (20 A / spring)	160	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} = 150 A ,T_j = 25 (150) °C	1,05	1,45 (1,65)	1,85 (2,05)	V
$V_{GE(th)}$	V_{GE} = V_{CE}, I_C = 3 mA		5,8		V
$V_{CE(TO)}$	T_j = 25 (150) °C		0,85 (0,7)	1,1 (1)	V
r_T	T_j = 25 (150) °C		4 (6,3)	5 (7)	mΩ
C_{ies}	V_{CE} = 25 V, V_{GE} = 0 V, f = 1 MHz		9		nF
C_{oes}	V_{CE} = 25 V, V_{GE} = 0 V, f = 1 MHz		1,7		nF
C_{res}	V_{CE} = 25 V, V_{GE} = 0 V, f = 1 MHz		1,4		nF
$R_{CC'+EE'}$	spring contact-chip T_s = 25 (150)°C				mΩ
$R_{th(j-s)}$	per IGBT		0,5		K/W
$t_{d(on)}$	under following conditions		135		ns
t_r	V_{CC} = 300 V, V_{GE} = -8V/+15V		55		ns
$t_{d(off)}$	I_{Cnom} = 150 A, T_j = 150 °C		450		ns
t_f	R_{Gon} = R_{Goff} = 4,3 Ω		50		ns
$E_{on}(E_{off})$	inductive load		7,9 (5,6)		mJ
Diode - Inverter					
$V_F = V_{EC}$	I_{Fnom} = 150 A ,T_j = 25 (150) °C		1,3 (1,3)	1,5 (1,5)	V
$V_{(TO)}$	T_j = 25 (150) °C		0,9 (0,8)	1 (0,9)	V
r_T	T_j = 25 (150) °C		2,7 (3,3)	3,3 (4)	mΩ
$R_{th(j-s)}$	per diode		0,55		K/W
I_{RRM}	under following conditions		150		A
Q_{rr}	I_{Fnom} = 150 A, V_R = 300 V		17		µC
E_{rr}	V_{GE} = 0 V, T_j = 150 °C		3,5		mJ
	di_F/dt = 3000 A/µs				
Temperature Sensor					
R_{ts}	3 %, T_r = 25 (100) °C		1000(1670)		Ω
Mechanical Data					
m			97		g
M_s	Mounting torque	2		2,5	Nm

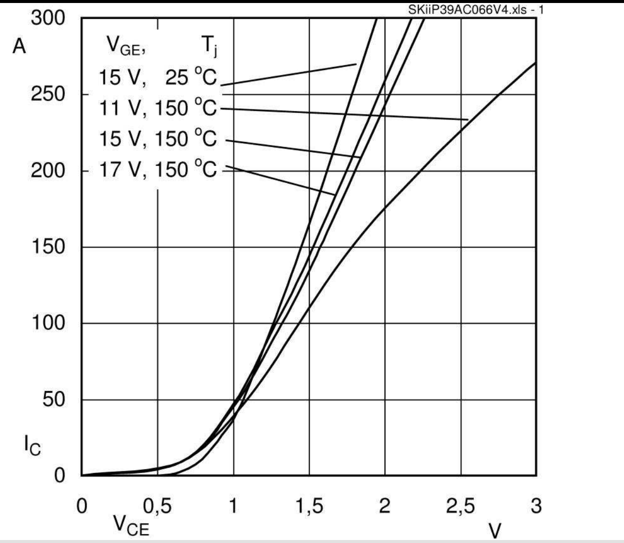


Fig. 1 Output characteristic

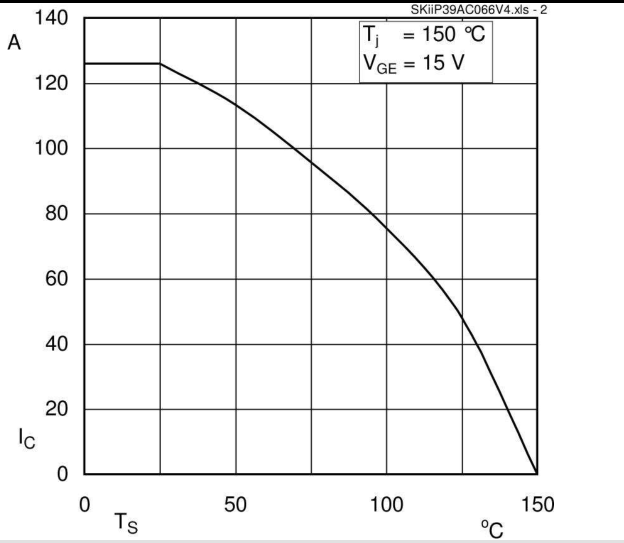


Fig. 2 Rated current vs. temperature

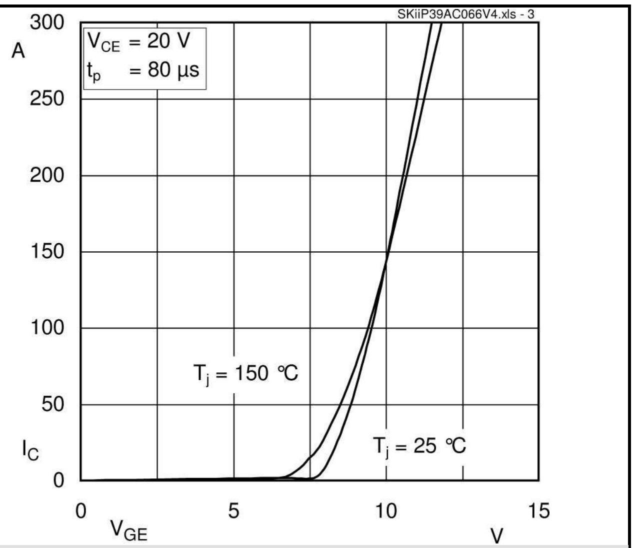


Fig. 3 Typ. transfer characteristic

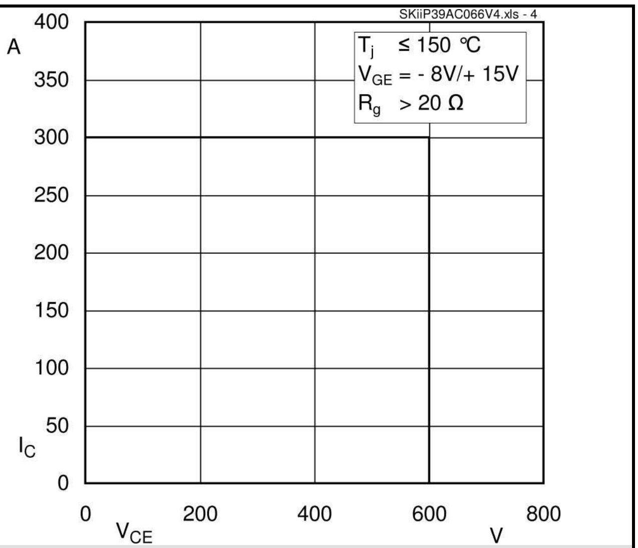


Fig. 4 Reverse bias safe operating area

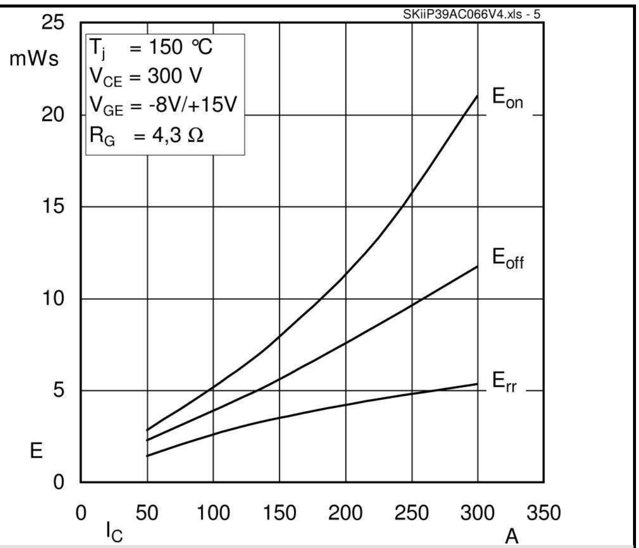


Fig. 5 Turn-on /-off energy = f (I_C)

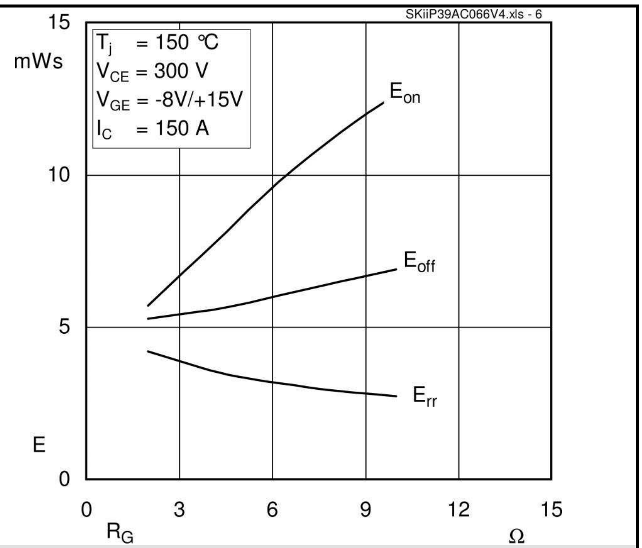


Fig. 6 Turn-on /-off energy = f (R_G)

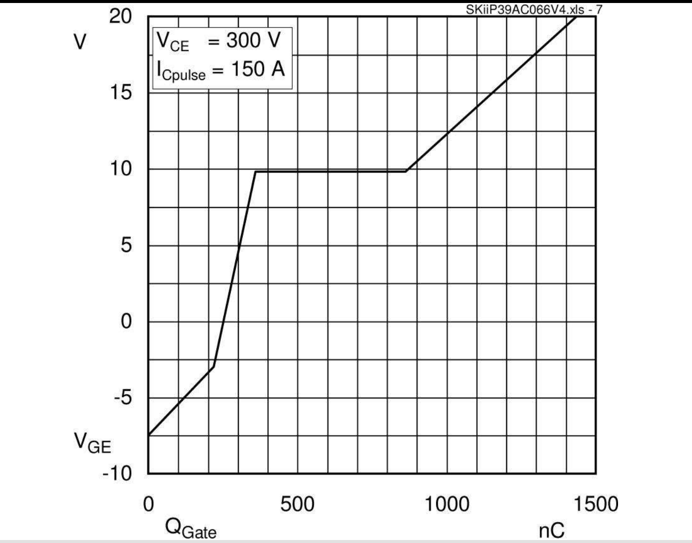


Fig. 7 Typ. Gate charge characteristic

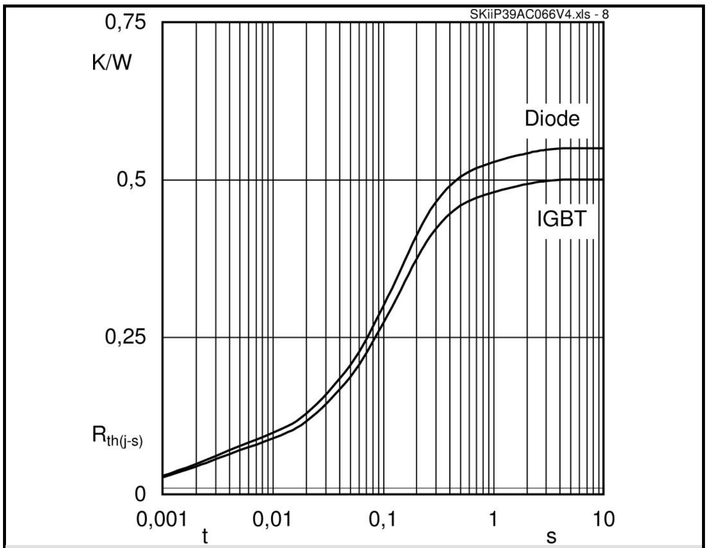


Fig. 8 Thermal impedance

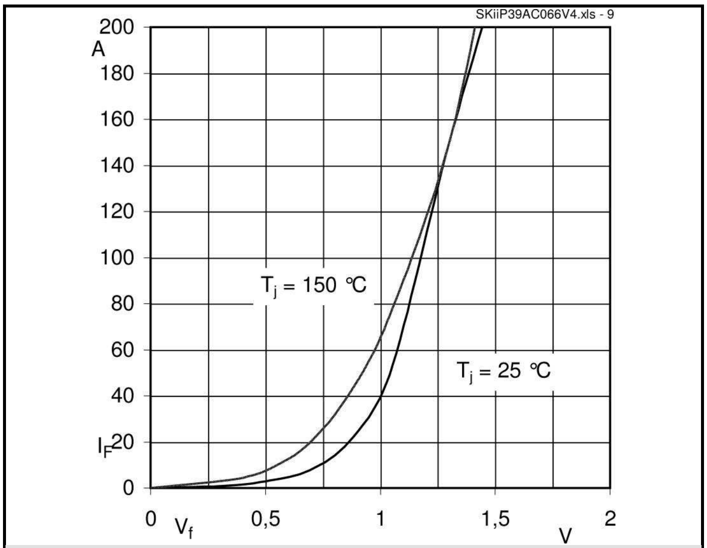
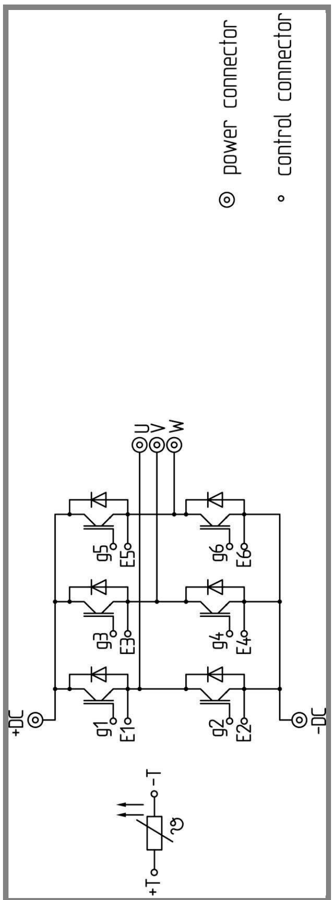
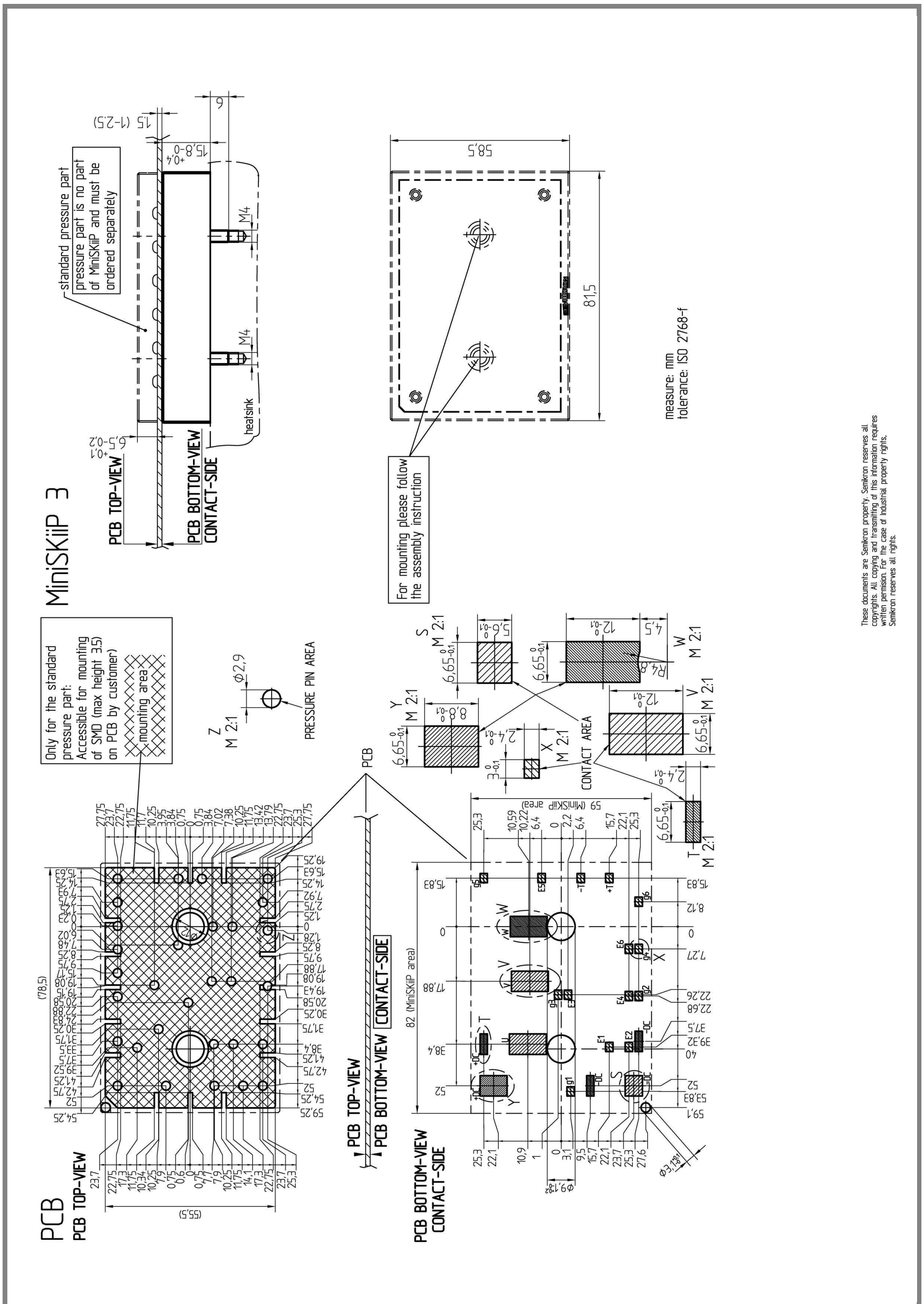


Fig. 9 Freewheeling diode forward characteristic



circuit



pinout,dimensions

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

* The specifications of our components may not be considered as an assurance of component characteristics. Components have to be tested for the respective application. Adjustments may be necessary. The use of SEMIKRON products in life support appliances and systems is subject to prior specification and written approval by SEMIKRON. We therefore strongly recommend prior consultation of our personal.