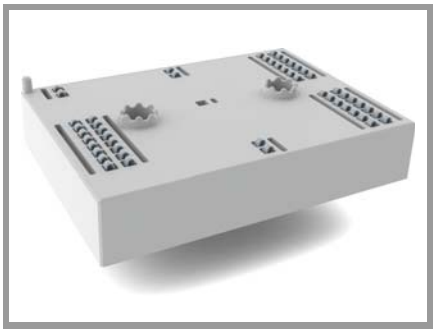
SKiiP 38GB12F4V19



MiniSKiiP® 3 Dual

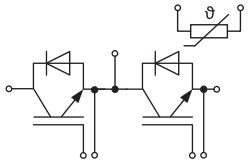
IGBT module

SKiiP 38GB12F4V19

Target Data

Features

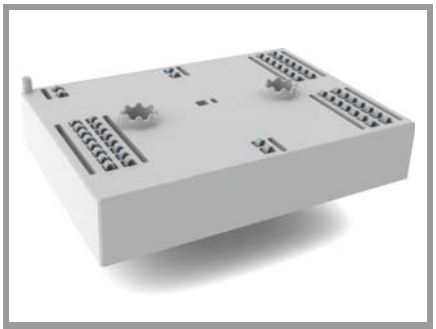
- Fast Trench 4 IGBTs
- SiC Diodes
- Highly reliable spring contacts for electrical connections
- UL recognised: File no. E63532



GB

Absolute Maximum Ratings				
Symbol	**Conditions**		**Values**	**Unit**
Inverter - IGBT				
V_{CES}	T_j = 25 °C		1200	V
I_C	λ_{paste}=0.8 W/(mK)	T_s = 25 °C	303	A
	T_j = 175 °C	T_s = 70 °C	243	A
I_C	λ_{paste}=2.5 W/(mK)	T_s = 25 °C	361	A
	T_j = 175 °C	T_s = 70 °C	291	A
I_{Cnom}			300	A
I_{CRM}	I_{CRM} = 3 x I_{Cnom}		900	A
V_{GES}			-20 ... 20	V
t_{psc}	V_{CC} = 800 V $V_{GE} \leq$ 15 V $V_{CES} \leq$ 1200 V	T_j = 150 °C	10	µs
T_j			-40 ... 175	°C
Inverse - Diode				
I_F	λ_{paste}=0.8 W/(mK)	T_s = 25 °C	133	A
	T_j = 175 °C	T_s = 70 °C	108	A
I_F	λ_{paste}=2.5 W/(mK)	T_s = 25 °C	148	A
	T_j = 175 °C	T_s = 70 °C	120	A
I_{Fnom}			80	A
I_{FRM}			224	A
I_{FSM}	10 ms, sin 180°, T_j = 150 °C		212	A
T_j			-40 ... 175	°C
Module				
$I_{t(RMS)}$	$T_{terminal}$ = 80 °C, 20 A per spring		t.b.d.	A
T_{stg}			-40 ... 125	°C
V_{isol}	AC sinus 50 Hz, t = 1 min		2500	V

Characteristics						
Symbol	**Conditions**		**min.**	**typ.**	**max.**	**Unit**
Inverter - IGBT						
$V_{CE(sat)}$	I_C = 300 A V_{GE} = 15 V chiplevel	T_j = 25 °C		2.05	2.42	V
		T_j = 150 °C		2.59	2.96	V
V_{CE0}	chiplevel	T_j = 25 °C		1.10	1.28	V
		T_j = 150 °C		0.95	1.13	V
r_{CE}	V_{GE} = 15 V chiplevel	T_j = 25 °C		3.2	3.8	mΩ
		T_j = 150 °C		5.5	6.1	mΩ
$V_{GE(th)}$	V_{GE} = V_{CE}, I_C = 10.4 mA		5.2	5.8	6.4	V
I_{CES}	V_{GE} = 0 V, V_{CE} = 1200 V, T_j = 25 °C			0.1	1.6	mA
C_{ies}	V_{CE} = 25 V V_{GE} = 0 V	f = 1 MHz		17.60		nF
C_{oes}		f = 1 MHz		1.16		nF
C_{res}		f = 1 MHz		0.94		nF
Q_G	- 8 V...+ 15 V			1700		nC
R_{Gint}	T_j = 25 °C			0		Ω
$t_{d(on)}$	V_{CC} = 600 V I_C = 300 A	T_j = 150 °C				ns
t_r		T_j = 150 °C				ns
E_{on}		T_j = 150 °C		10		mJ
$t_{d(off)}$		T_j = 150 °C				ns
t_f		T_j = 150 °C				ns
E_{off}	V_{GE} = +15/-15 V	T_j = 150 °C		22		mJ
$R_{th(j-s)}$	per IGBT, λ_{paste}=0.8 W/(mK)			0.16		K/W
$R_{th(j-s)}$	per IGBT, λ_{paste}=2.5 W/(mK)			0.12		K/W



MiniSKiiP® 3 Dual

IGBT module

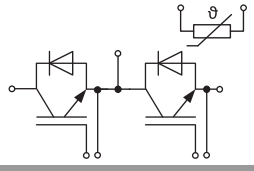
SKiiP 38GB12F4V19

Target Data

Features

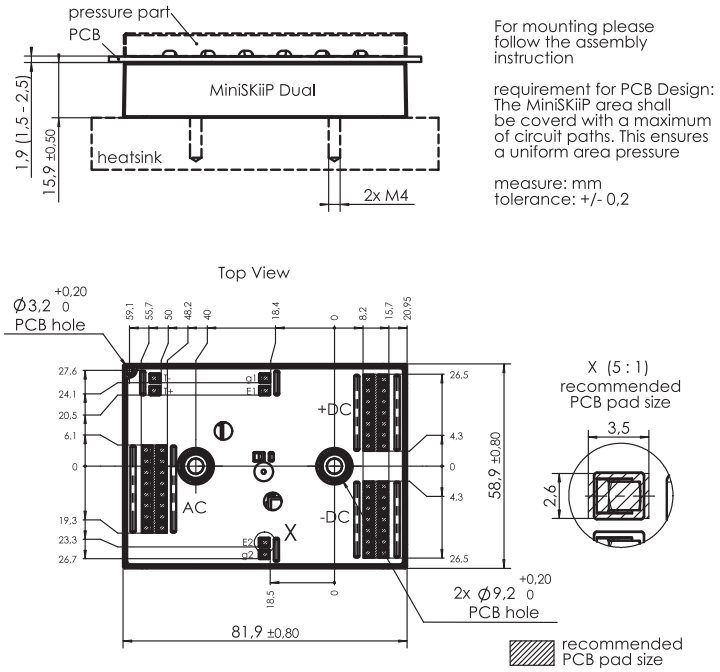
- Fast Trench 4 IGBTs
- SiC Diodes
- Highly reliable spring contacts for electrical connections
- UL recognised: File no. E63532

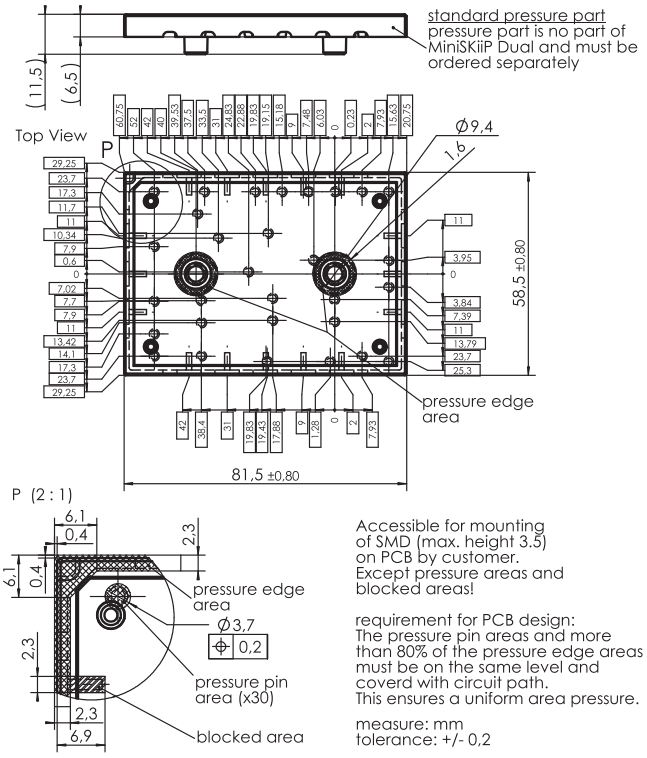
Characteristics						
Symbol	**Conditions**		**min.**	**typ.**	**max.**	**Unit**
Inverse - Diode						
$V_F = V_{EC}$	I_F = 80 A V_{GE} = 0 V chiplevel	T_j = 25 °C		1.40	1.60	V
		T_j = 150 °C		1.80	2.10	V
V_{F0}	chiplevel	T_j = 25 °C		0.95	1.05	V
		T_j = 150 °C		0.83	0.90	V
r_F	chiplevel	T_j = 25 °C		5.6	6.9	mΩ
		T_j = 150 °C		12	15	mΩ
I_{RRM}	I_F = 80 A di/dt_{off} = 500 A/µs V_{GE} = -15 V V_{CC} = 600 V	T_j = 150 °C		-		A
Q_{rr}		T_j = 150 °C		-		µC
E_{rr}		T_j = 150 °C		-		mJ
$R_{th(j-s)}$	per Diode, λ_{paste}=0.8 W/(mK)			0.36		K/W
$R_{th(j-s)}$	per Diode, λ_{paste}=2.5 W/(mK)			0.3		K/W
Module						
L_{CE}				15		nH
M_s	to heat sink		2		2.5	Nm
w				76		g
Temperature Sensor						
R_{100}	T_c=100°C (R_{25}=5 kΩ)			493 ± 5%		Ω
$B_{25/85}$	$R_{(T)}=R_{25}*\exp[B_{25/85}*(1/T-1/298)]$, [T]=K			3420		K



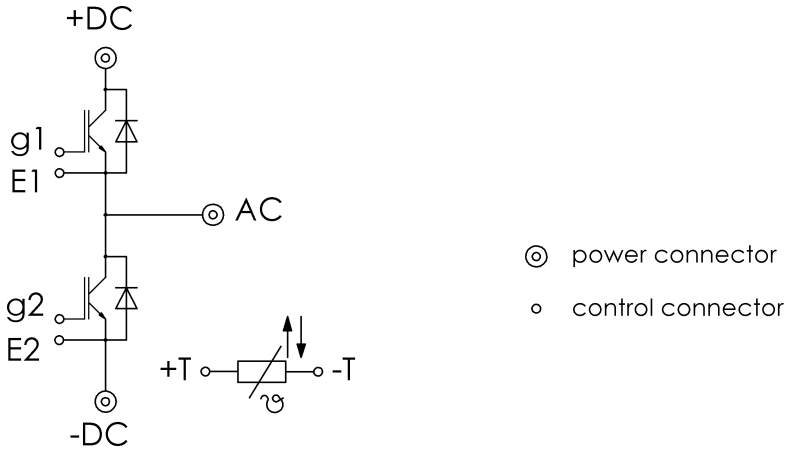
GB

 © by SEMIKRON





pinout, dimensions



pinout

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

***IMPORTANT INFORMATION AND WARNINGS**

The specifications of SEMIKRON products may not be considered as guarantee or assurance of product characteristics ("Beschaffenheitsgarantie"). The specifications of SEMIKRON products describe only the usual characteristics of products to be expected in typical applications, which may still vary depending on the specific application. Therefore, products must be tested for the respective application in advance. Application adjustments may be necessary. The user of SEMIKRON products is responsible for the safety of their applications embedding SEMIKRON products and must take adequate safety measures to prevent the applications from causing a physical injury, fire or other problem if any of SEMIKRON products become faulty. The user is responsible to make sure that the application design is compliant with all applicable laws, regulations, norms and standards. Except as otherwise explicitly approved by SEMIKRON in a written document signed by authorized representatives of SEMIKRON, SEMIKRON products may not be used in any applications where a failure of the product or any consequences of the use thereof can reasonably be expected to result in personal injury. No representation or warranty is given and no liability is assumed with respect to the accuracy, completeness and/or use of any information herein, including without limitation, warranties of non-infringement of intellectual property rights of any third party. SEMIKRON does not assume any liability arising out of the applications or use of any product; neither does it convey any license under its patent rights, copyrights, trade secrets or other intellectual property rights, nor the rights of others. SEMIKRON makes no representation or warranty of non-infringement or alleged non-infringement of intellectual property rights of any third party which may arise from applications. Due to technical requirements our products may contain dangerous substances. For information on the types in question please contact the nearest SEMIKRON sales office. This document supersedes and replaces all information previously supplied and may be superseded by updates. SEMIKRON reserves the right to make changes.

 © by SEMIKRON