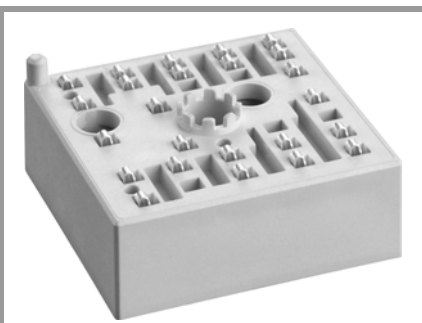


SKiIP 13ACM12V17



MiniSKiIP® 1

SKiIP 13ACM12V17

Target Data

Features

- SiC MOSFETs
- SiC Schottky Diodes
- Highly reliable spring contacts for electrical connections

Typical Applications*

- High frequency inverters
- Power supplies
- High efficiency inverters
- Solar inverters

Remarks

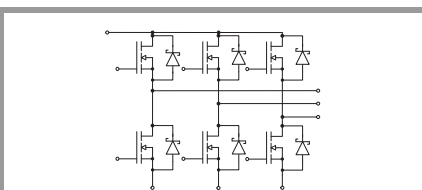
- Max. case temperature limited to $T_C = 125^\circ\text{C}$
- Recommended $T_{j,op} = -40 \dots +150^\circ\text{C}$ for Inverse Diode, $T_{j,op} = -40 \dots +125^\circ\text{C}$ for MOSFET

Absolute Maximum Ratings				
Symbol	Conditions		Values	Unit
MOSFET				
V_{DS}			1200	V
I_D	$T_j = 150^\circ\text{C}$	$T_s = 25^\circ\text{C}$	24	A
		$T_s = 70^\circ\text{C}$	19	A
I_{DRM}			140	A
V_{GS}			-6 ... 22	V
T_j			-40 ... 150	$^\circ\text{C}$
Integrated MOS-diode				
$I_F = -I_S$				A
I_{FRM}				A

Absolute Maximum Ratings				
Symbol	Conditions		Values	Unit
Diode 1				
V_{RRM}	$T_j = 25^\circ\text{C}$		1200	V
I_F	$T_j = 175^\circ\text{C}$	$T_s = 25^\circ\text{C}$	29	A
		$T_s = 70^\circ\text{C}$	24	A
I_{Fnom}			20	A
I_{FRM}	limited by T_j , duty cycle = 10%		77	A
I_{FSM}	8.3 ms sinusoidal	$T_j = 25^\circ\text{C}$	83	A
		$T_j = 150^\circ\text{C}$	62	A
T_j			-40 ... 175	$^\circ\text{C}$

Absolute Maximum Ratings				
Symbol	Conditions		Values	Unit
Module				
$I_{t(RMS)}$	$T_{terminal} = 80^\circ\text{C}$, 20 A per spring		20	A
T_{stg}			-40 ... 125	$^\circ\text{C}$
V_{isol}	AC sinus 50 Hz, $t = 1$ min		2500	V

Characteristics						
Symbol	Conditions		min.	typ.	max.	Unit
Diode 1						
$V_F = V_{EC}$	$I_F = 20$ A $V_{GE} = 0$ V chipelevel	$T_j = 25^\circ\text{C}$	1.40	1.60		V
		$T_j = 150^\circ\text{C}$	1.80	2.12		V
V_{F0}	chipelevel	$T_j = 25^\circ\text{C}$	0.95	1.05		V
		$T_j = 150^\circ\text{C}$	0.80	0.90		V
r_F	chipelevel	$T_j = 25^\circ\text{C}$	23	28		m Ω
		$T_j = 150^\circ\text{C}$	50	61		m Ω
I_{RRM}						A
Q_{rr}						μC
E_{rr}						mJ
$R_{th(j-s)}$	per Diode, $\lambda_{paste} = 0.8$ W/(K*m)		1.8			K/W



ACM

SKiiP 13ACM12V17



MiniSKiiP® 1

SKiiP 13ACM12V17

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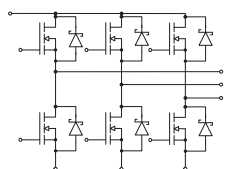
Remarks

- Max. case temperature limited to $T_C = 125^\circ\text{C}$
- Recommended $T_{j,op} = -40 \dots +150^\circ\text{C}$ for Inverse Diode, $T_{j,op} = -40 \dots +125^\circ\text{C}$ for MOSFET

Characteristics					
Symbol	Conditions	min.	typ.	max.	Unit
MOSFET					
$V_{(BR)DSS}$	$V_{GS} = 0\text{ V}, I_D = 1\text{ mA}$	1200			V
$V_{GS(th)}$	$V_{DS} = V_{GS}$	1.7		4	$T_j = 25^\circ\text{C}$
	$I_D = 4.4\text{ mA}$				
I_{DSS}	$V_{GS} = 0\text{ V}, V_{DS} = 1200, T_j = 25^\circ\text{C}$			1	mA
I_{GSS}	$V_{DS} = 0\text{ V}, V_{GS} = 22\text{ V}$			100	nA
$R_{DS(on)}$	$V_{GS} = 18\text{ V}$ $I_D = 10\text{ A}$	$T_j = 25^\circ\text{C}$	80	111	m Ω
		$T_j = 125^\circ\text{C}$	115		m Ω
C_{iss}	$V_{GS} = 0\text{ V}, V_{DS} = 800\text{ V}, f = 1\text{ MHz}$		2070		pF
C_{oss}	$V_{GS} = 0\text{ V}, V_{DS} = 800\text{ V}, f = 1\text{ MHz}$		80		pF
C_{rssi}	$V_{GS} = 0\text{ V}, V_{DS} = 800\text{ V}, f = 1\text{ MHz}$		20		pF
R_{Gint}	$T_j = 25^\circ\text{C}$		9		Ω
Q_G	$V_{GS} = 18\text{ V}$		110		nC
$t_{d(on)}$	$V_{DD} = 600\text{ V}$ $V_{GS} = 20\text{ V}$	$T_j = 150^\circ\text{C}$			ns
$t_{d(off)}$		$T_j = 150^\circ\text{C}$			ns
t_r	$I_D = 20\text{ A}$	$T_j = 150^\circ\text{C}$			ns
t_f		$T_j = 150^\circ\text{C}$			ns
E_{on}			0.5		mJ
E_{off}			0.2		mJ
$R_{th(j-s)}$	per MOSFET, $\lambda_{paste} = 0.8\text{ W}/(\text{K}^*\text{m})$		1.5		K/W
Integrated MOS-diode					
V_{SD}	$V_{GS} = 0\text{ V}$				V
t_{rr}					μs
Q_C					μC
I_{rr}					A

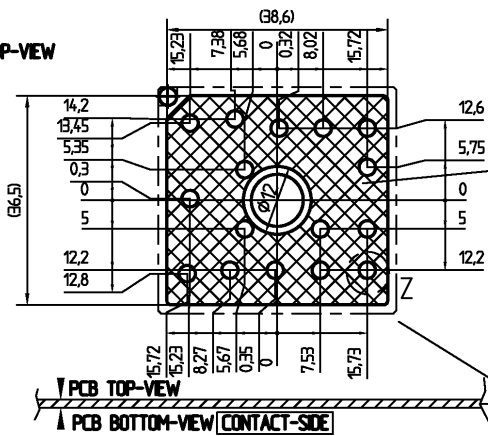
Characteristics					
Symbol	Conditions	min.	typ.	max.	Unit
Module					
M_s	to heat sink	2		2.5	Nm
w	weight		30		g

Characteristics					
Symbol	Conditions	min.	typ.	max.	Unit
Temperature Sensor					
R_{100}	$T_r = 100^\circ\text{C}$ ($R_{25} = 1000\Omega$)		$1670 \pm 3\%$		Ω
$R(T)$	$R(T) = 1000\Omega [1 + A(T - 25^\circ\text{C}) + B(T - 25^\circ\text{C})^2]$ $A = 7.635 \cdot 10^{-3} \text{ }^\circ\text{C}^{-1}$, $B = 1.731 \cdot 10^{-5} \text{ }^\circ\text{C}^{-2}$				

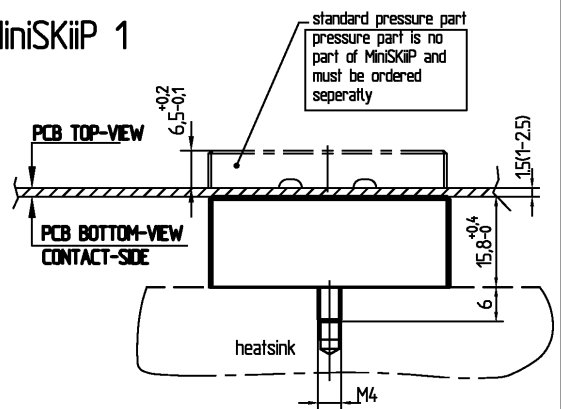


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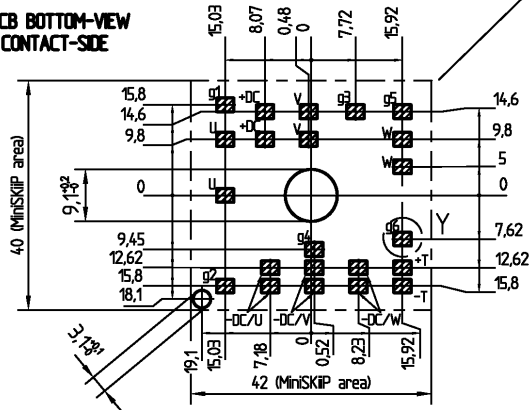
PCB PCB TOP-VIEW



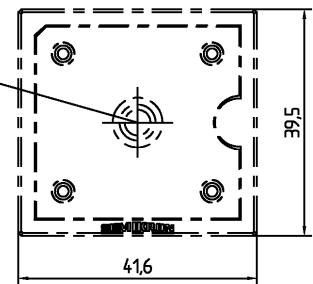
MiniSKiiP 1



PCB BOTTOM-VIEW CONTACT-SIDE

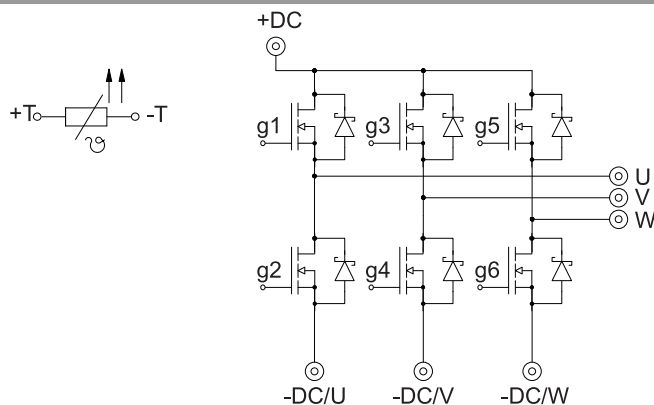


For mounting please follow the assembly instruction



measure: mm
tolerance: ISO 2768-f

pinout, dimensions



pinout

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 staff.