

MiniSKiiP[®] 3

Evaluation Sample SKiiP38AC12F4V19

Target Data

Features

- Fast switching Trench 4 IGBT
- SiC Schottky Diode
- Highly reliable spring contacts for electrical connections

Typical Applications*

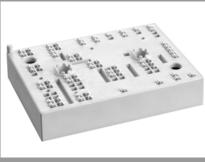
- High frequency inverters
- Power supplies
- High efficiency inverters
- Solar inverters

Remarks

Max. case temperature limited to T_{C} = 125°C Recommended $T_{j,op}$ =-40...+150°C

Absolute	Maximum Ratings	6				
Symbol	Conditions	Values			Unit	
Inverter -	IGBT					
V _{CES}	T _j = 25 °C			1200		V
lc	λ _{paste} =0.8 W/(mK)	T _s = 25 °C	105			Α
	T _j = 175 °C	T _s = 70 °C		85		Α
lc	λ _{paste} =2.5 W/(mK)	T _s = 25 °C		128		Α
	T _j = 175 °C	T _s = 70 °C		105		Α
I _{Cnom}				100		А
I _{CRM}	I _{CRM} = 3 x I _{Cnom}			300		Α
V _{GES}				-20 20		V
t _{psc}	$V_{CC} = 800 V$ $V_{GE} \le 15 V$ $V_{CES} \le 1200 V$	T _j = 150 °C	10			μs
Tj				-40 175		°C
Inverse -	Diode					1
l _F	λ _{paste} =0.8 W/(mK)	T _s = 25 °C		62		Α
	T _j = 175 °C	T _s = 70 °C		50		Α
I _F	λ _{paste} =2.5 W/(mK)	T _s = 25 °C		71		Α
	T _j = 175 °C	T _s = 70 °C		57		Α
I _{Fnom}				50		Α
I _{FRM}				169		Α
I _{FSM}	8.3 ms, sin 180°, T _j = 150 °C		156			Α
Tj		-40 175		°C		
Module	·					
I _{t(RMS)}	T _{terminal} = 80 °C, 20 A per spring			t.b.d.		
T _{stq}	_		-40 125		°C	
V _{isol}	AC sinus 50 Hz, t =	1 min	2500			V
Characte	eristics					
Symbol	Conditions		min.	typ.	max.	Unit
Inverter -	IGBT					

o y mooi	Contaitions			Cyp.	max.	Onit
Inverter -	IGBT					
V _{CE(sat)}	$I_{\rm C} = 100 {\rm A}$	T _j = 25 °C		2.05	2.40	V
V _{GE} = 15 V chiplevel	0.2	T _j = 150 °C		2.50	2.85	V
V _{CE0} chiplev	chinlevel	T _j = 25 °C		0.80	0.90	V
		T _j = 150 °C		0.70	0.80	V
r _{CE}	V _{GE} = 15 V chiplevel	T _j = 25 °C		13	15	mΩ
		T _j = 150 °C		18	21	mΩ
$V_{\text{GE(th)}}$	$V_{GE} = V_{CE}$, $I_C = 3.8 \text{ mA}$		5.2	5.8	6.4	V
I _{CES}	$V_{GE} = 0 V, V_{CE} = 1200 V, T_j = 25 \ ^{\circ}C$			0.1	0.3	mA
Cies		f = 1 MHz		6.15		nF
C _{oes}	V _{CE} = 25 V V _{GE} = 0 V	f = 1 MHz				nF
C _{res}		f = 1 MHz		0.35		nF
Q _G	- 8 V+ 15 V			630		nC
R _{Gint}	T _j = 25 °C			7.5		Ω
t _{d(on)}	$V_{CC} = 600 V$ $I_{C} = 100 A$	T _j = 150 °C				ns
t _r		T _j = 150 °C				ns
Eon		T _j = 150 °C		6.4		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		6.3		mJ
R _{th(j-s)}	per IGBT, λ _{paste} =0.8 W/(mK)			0.47		K/W
R _{th(j-s)}	per IGBT, λ_{paste} =2.5 W/(mK)		İ	0.33		K/W



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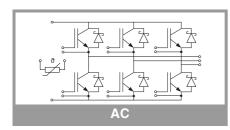
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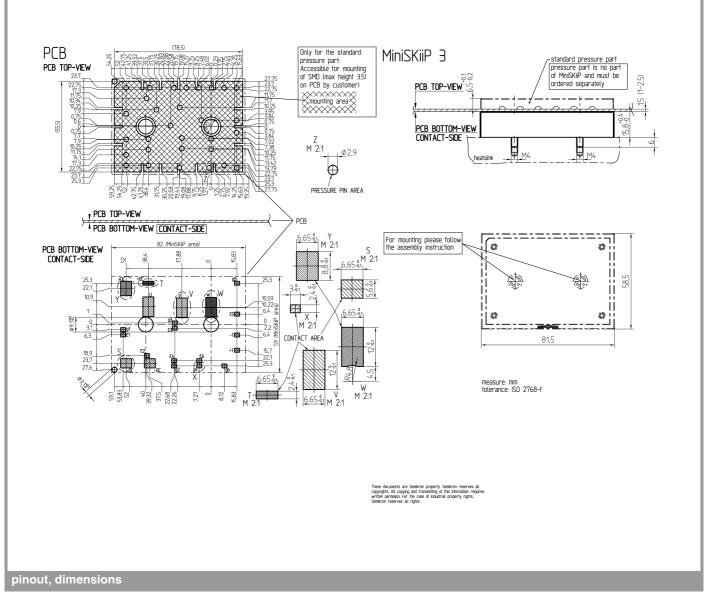
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Remarks

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Characte	eristics					
Symbol	Conditions		min.	typ.	max.	Unit
Inverse -	Diode					
$V_F = V_{EC}$	I _F = 50 A	T _j = 25 °C		1.40	1.60	V
	V _{GE} = 0 V chiplevel	T _j = 150 °C		1.80	2.20	V
V _{F0} chipl	chiplevel	T _j = 25 °C		0.95	1.05	V
	chiplevel	T _j = 150 °C		0.80	0.90	V
r _F	chiplevel	T _j = 25 °C		9.0	11	mΩ
	chipievei	T _j = 150 °C		20	26	mΩ
Cj	V _R = 800 V, f = 1	V _R = 800 V, f = 1 MHz, T _j = 25 °C		0.0		nF
Q _c	V_R = 800 V, di/dt _{off} = 500 A/µs, T _i = 25 °C			0.167		μC
R _{th(j-s)}	per Diode, λ_{paste} =0.8 W/(mK)			0.9		K/W
R _{th(j-s)}	per Diode, λ_{paste} =2.5 W/(mK)			0.72		K/W
Module						
L _{CE}				-		nH
Ms	to heat sink		2		2.5	Nm
w				82		g
Temperat	ture Sensor					
R ₁₀₀	T _r =100°C (R ₂₅ =1000Ω)			1670 ± 3%		Ω
R(T)	R(T)=1000Ω[1+,], A = 7.635*10 ⁻³ B = 1.731*10 ⁻⁵ °					





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

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