

## IGBT Chip in NPT-technology

### FEATURES:

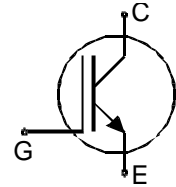
- 1200V NPT technology 175µm chip
- low turn-off losses
- short tail current
- positive temperature coefficient
- easy paralleling
- integrated gate resistor

### This chip is used for:

- IGBT Modules

### Applications:

- drives, SMPS, resonant applications



Chip Type	V <sub>CE</sub>	I <sub>Cn</sub>	Die Size	Package	Ordering Code
SIGC81T120R2CS	1200V	50A	9.08 X 8.98 mm <sup>2</sup>	sawn on foil	Q67050-A4050-A001

### MECHANICAL PARAMETER:

Raster size	9.08 X 8.98	mm <sup>2</sup>
Emitter pad size	8 x (2.6 x 1.78)	
Gate pad size	1.46 x 0.8	
Area total / active	81.5 / 63.5	
Thickness	180	µm
Wafer size	150	mm
Flat position	90	grd
Max.possible chips per wafer	167 pcs	
Passivation frontside	Photoimide	
Emitter metallization	3200 nm Al Si 1%	
Collector metallization	1400 nm Ni Ag –system suitable for epoxy and soft solder die bonding	
Die bond	electrically conductive glue or solder	
Wire bond	Al, <500µm	
Reject Ink Dot Size	Ø 0.65mm ; max 1.2mm	
Recommended Storage Environment	store in original container, in dry nitrogen, < 6 month at an ambient temperature of 23°C	

## MAXIMUM RATINGS:

Parameter	Symbol	Value	Unit
Collector-emitter voltage, $T_j=25\text{ °C}$	$V_{CE}$	1200	V
DC collector current, limited by $T_{jmax}$	$I_C$	<sup>1)</sup>	A
Pulsed collector current, $t_p$ limited by $T_{jmax}$	$I_{cpuls}$	150	A
Gate emitter voltage	$V_{GE}$	$\pm 20$	V
Operating junction and storage temperature	$T_j, T_{stg}$	-55 ... +150	°C

<sup>1)</sup> depending on thermal properties of assembly

## STATIC CHARACTERISTICS (tested on chip), $T_j=25\text{ °C}$ , unless otherwise specified:

Parameter	Symbol	Conditions	Value			Unit
			min.	typ.	max.	
Collector-emitter breakdown voltage	$V_{(BR)CES}$	$V_{GE}=0V, I_C=3mA$	1200			V
Collector-emitter saturation voltage	$V_{CE(sat)}$	$V_{GE}=15V, I_C=50A$	2.7	3.2	3.7	
Gate-emitter threshold voltage	$V_{GE(th)}$	$I_C=2mA, V_{GE}=V_{CE}$	4.5	5.5	6.5	
Zero gate voltage collector current	$I_{CES}$	$V_{CE}=1200V, V_{GE}=0V$			6	$\mu A$
Gate-emitter leakage current	$I_{GES}$	$V_{CE}=0V, V_{GE}=20V$			300	nA
Integrated gate resistor	$R_{Gint}$			5	7	$\Omega$

## ELECTRICAL CHARACTERISTICS (tested at component):

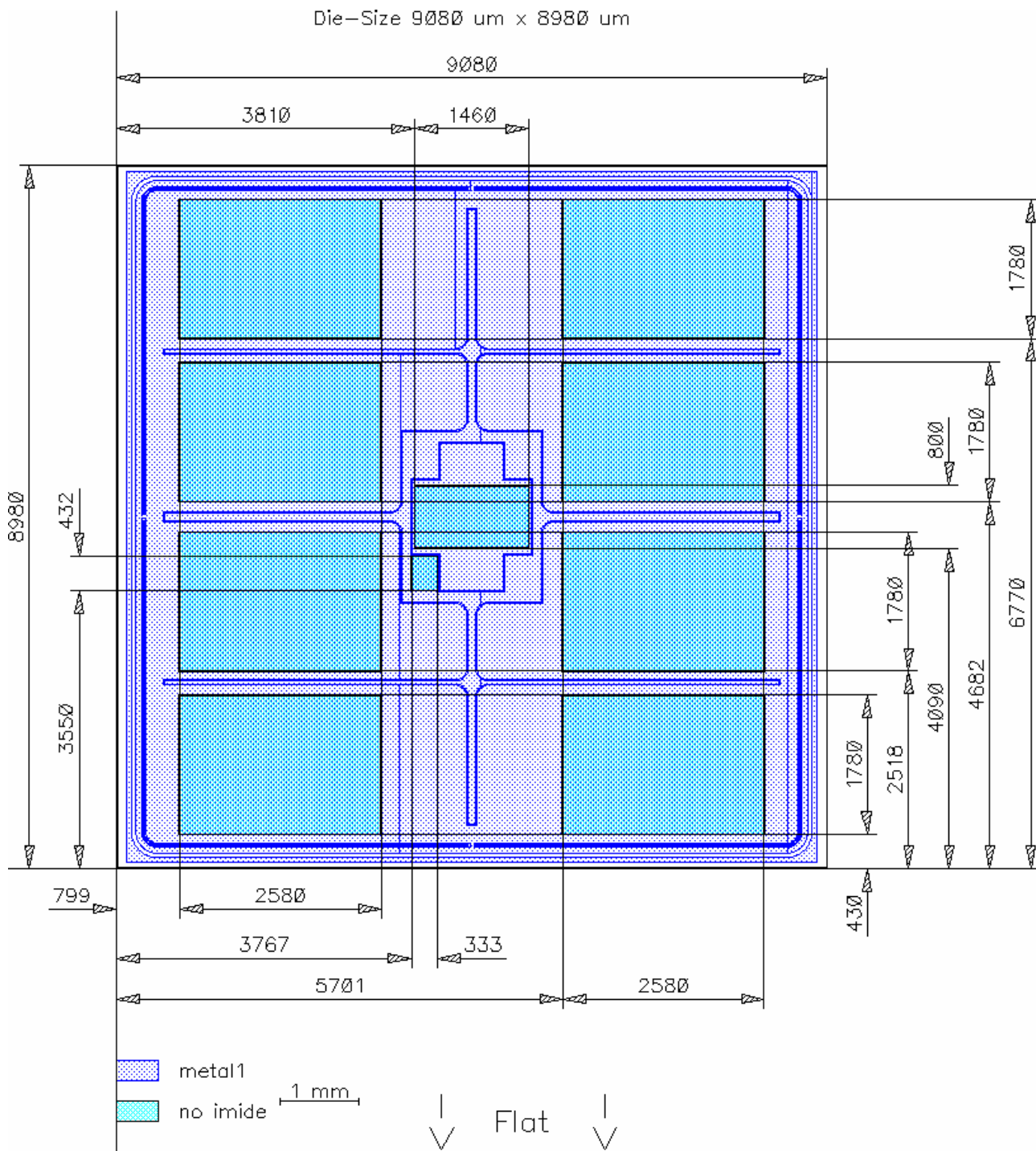
Parameter	Symbol	Conditions	Value			Unit
			min.	typ.	max.	
Input capacitance	$C_{iss}$	$V_{CE}=25V,$	-	3.3		nF
Output capacitance	$C_{oss}$	$V_{GE}=0V,$	-	0.5		
Reverse transfer capacitance	$C_{riss}$	$f=1MHz$	-	0.22		

## SWITCHING CHARACTERISTICS (tested at component), Inductive Load

Parameter	Symbol	Conditions <sup>1)</sup>	Value			Unit
			min.	typ.	max.	
Turn-on delay time	$t_{d(on)}$	$T_j=125\text{ °C}$	-	60		ns
Rise time	$t_r$	$V_{CC}=600V,$	-	50		
Turn-off delay time	$t_{d(off)}$	$I_C=50A,$	-	400		
Fall time	$t_f$	$V_{GE}=-15/15V,$ $R_G=15\Omega$	-	60		

<sup>1)</sup> values also influenced by parasitic L- and C- in measurement and package.

CHIP DRAWING:





# SIGC81T120R2CS

## FURTHER ELECTRICAL CHARACTERISTICS:

This chip data sheet refers to the device data sheet	Eupec	FP50R12KS4C
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## DESCRIPTION:

AQL 0,65 for visual inspection according to failure catalog

Electrostatic Discharge Sensitive Device according to MIL-STD 883

Test-Normen Villach/Prüffeld

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