

## IGBT Chip in NPT-technology

### FEATURES:

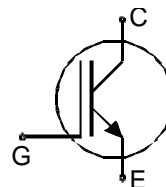
- 1200V NPT technology 175µm chip
- low turn-off losses
- short tail current
- positive temperature coefficient
- easy paralleling
- integrated gate resistor

### 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
SIGC223T120R2CS	1200V	150A	14.4 x 15.5 mm <sup>2</sup>	sawn on foil	tbd

### MECHANICAL PARAMETER:

Raster size	14.4 X 15.5	mm <sup>2</sup>
Emitter pad size	8x( 3.67x6.77 )	
Gate pad size	1.49 x 1.51	
Area total / active	223.5 / 189.9	
Thickness	180	µm
Wafer size	150	mm
Flat position	90	grd
Max.possible chips per wafer	54 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 $T_{jmax}$	$I_{Cpuls}$	450	A
Gate emitter voltage	$V_{GE}$	$\pm 20$	V
Operating junction and storage temperature	$T_j, T_{stg}$	-55 ... +150	$^{\circ}\text{C}$

<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	$V_{(BR)CES}$	$V_{GE}=0V, I_C=4mA$	1200			V
Collector-emitter saturation voltage	$V_{CE(sat)}$	$V_{GE}=15V, I_C=150A$	2.7	3.2	3.7	
Gate-emitter threshold voltage	$V_{GE(th)}$	$I_C=6mA, V_{GE}=V_{CE}$	4.5	5.5	6.5	
Zero gate voltage collector current	$I_{CES}$	$V_{CE}=1200V, V_{GE}=0V$			18	$\mu\text{A}$
Gate-emitter leakage current	$I_{GES}$	$V_{CE}=0V, V_{GE}=20V$			600	nA
Integrated gate resistor	$R_{Gint}$		1.75	2	3.25	$\Omega$

## ELECTRICAL CHARACTERISTICS (tested at component):

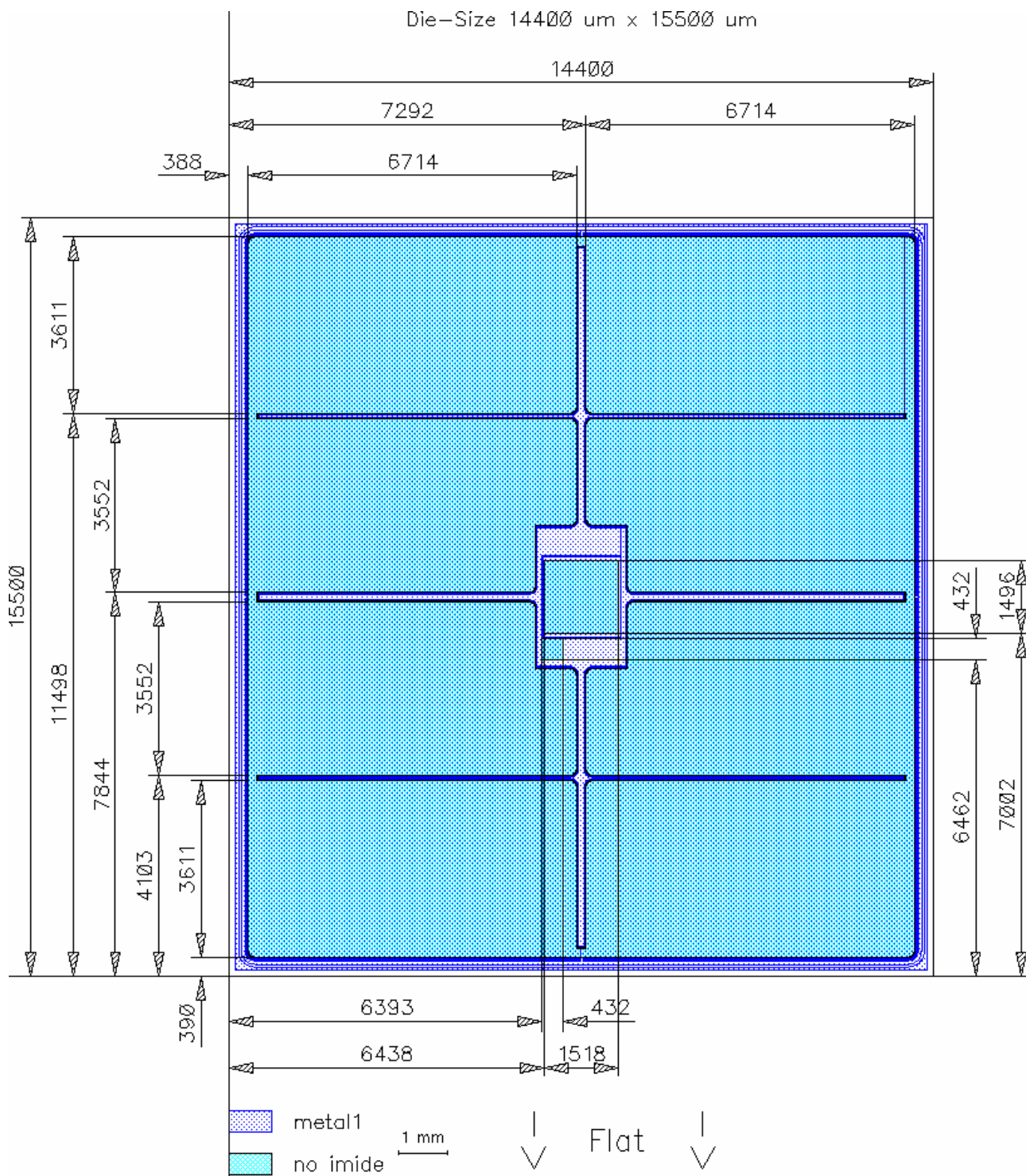
Parameter	Symbol	Conditions	Value			Unit
			min.	typ.	max.	
Input capacitance	$C_{iss}$	$V_{CE}=25V,$	-	9.3		nF
Output capacitance	$C_{oss}$	$V_{GE}=0V,$	-	1.4		
Reverse transfer capacitance	$C_{riss}$	$f=1\text{MHz}$	-	0.7		

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

Parameter	Symbol	Conditions <sup>1)</sup>	Value			Unit
			min.	typ.	max.	
Turn-on delay time	$t_{d(on)}$	$T_j=125\text{ °C}$	-	125		ns
Rise time	$t_r$	$V_{CC}=600V,$	-	100		
Turn-off delay time	$t_{d(off)}$	$I_C=150A,$	-	590		
Fall time	$t_f$	$V_{GE}=-15/15V,$ $R_G=6.8\Omega$	-	70		

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

**CHIP DRAWING:**





# SIGC223T120R2CS

## FURTHER ELECTRICAL CHARACTERISTICS:

This chip data sheet refers to the device data sheet		tbd
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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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