

## IGBT Chip in NPT-technology

### FEATURES:

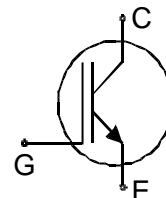
- 600V NPT technology
- 100µm chip
- positive temperature coefficient
- easy paralleling

### This chip is used for:

- IGBT Modules

### Applications:

- drives



Chip Type	V <sub>CE</sub>	I <sub>CN</sub>	Die Size	Package	Ordering Code
SIGC18T60NC	600V	20A	4.3 x 4.3 mm <sup>2</sup>	sawn on foil	Q67050-A4139-A001

### MECHANICAL PARAMETER:

Raster size	4.3 x 4.3	mm <sup>2</sup>
Area total / active	18.49 / 14.3	
Emitter pad size	2.48 x 2.98	
Gate pad size	0.7 x 1.08	
Thickness	100	µm
Wafer size	150	mm
Flat position	270	deg
Max.possible chips per wafer	796	
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, $T_j=25^\circ\text{C}$	$V_{CE}$	600	V
DC collector current, limited by $T_{j\max}$	$I_C$	<sup>1)</sup>	A
Pulsed collector current, $t_p$ limited by $T_{j\max}$	$I_{Cpul}$	60	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), $T_j=25^\circ\text{C}$ , unless otherwise specified:

Parameter	Symbol	Conditions	Value			Unit
			min.	typ.	max.	
Collector-emitter breakdown voltage	$V_{(BR)CES}$	$V_{GE}=0\text{V}, I_C=1\text{mA}$	600			V
Collector-emitter saturation voltage	$V_{CE(sat)}$	$V_{GE}=15\text{V}, I_C=20\text{A}$	1.7	2.0	2.5	
Gate-emitter threshold voltage	$V_{GE(th)}$	$I_C=0.5\text{mA}, V_{GE}=V_{CE}$	4.5	5.5	6.5	
Zero gate voltage collector current	$I_{CES}$	$V_{CE}=600\text{V}, V_{GE}=0\text{V}$			70	$\mu\text{A}$
Gate-emitter leakage current	$I_{GES}$	$V_{CE}=0\text{V}, V_{GE}=20\text{V}$			120	nA

## DYNAMIC CHARACTERISTICS (tested at component):

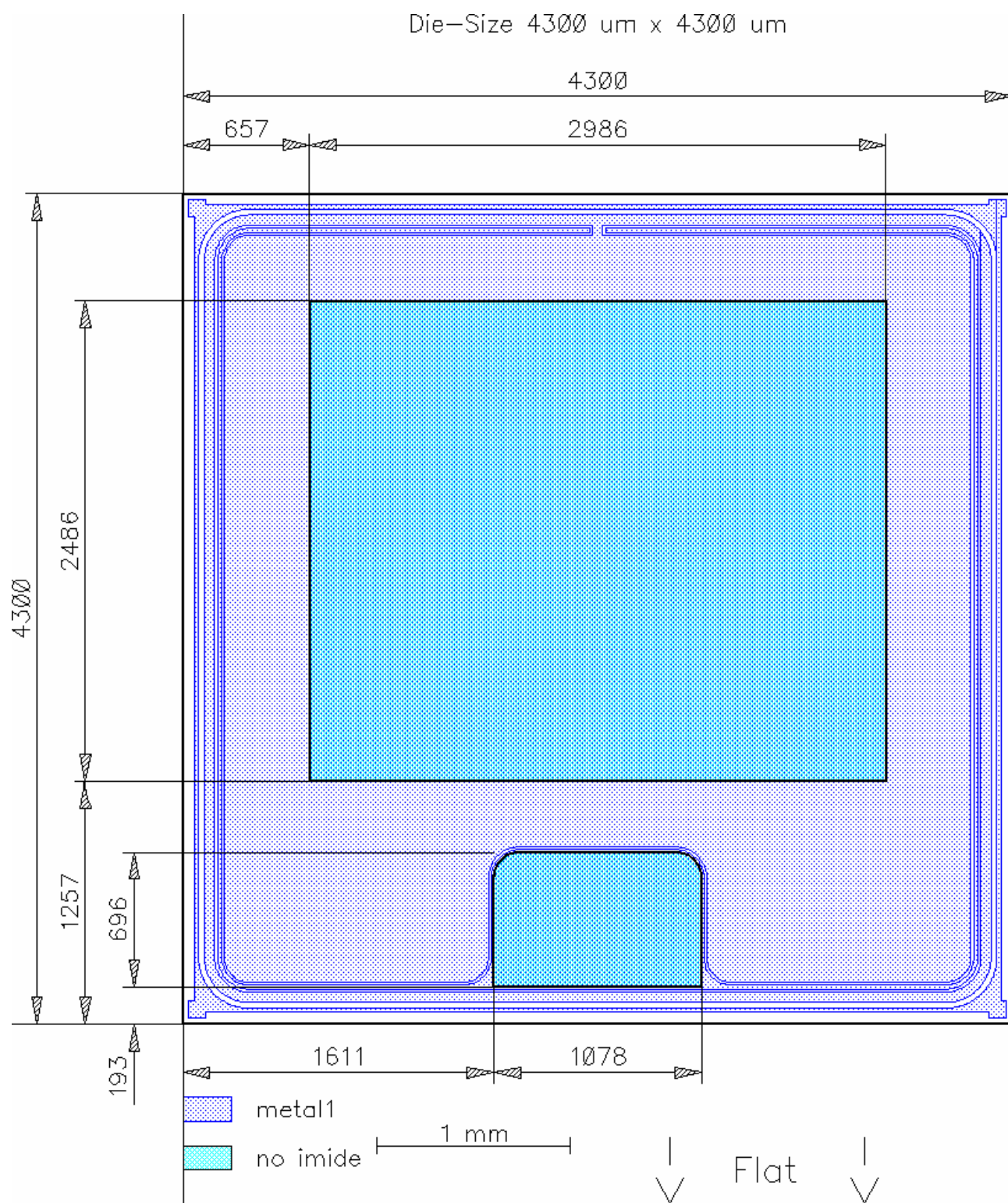
Parameter	Symbol	Conditions	Value			Unit
			min.	typ.	max.	
Input capacitance	$C_{iss}$	$V_{CE}=25\text{V}$	-	900	-	pF
Output capacitance	$C_{oss}$	$V_{GE}=0\text{V}$	-	tbd	-	
Reverse transfer capacitance	$C_{rss}$	$f=1\text{MHz}$	-	80	-	

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

Parameter	Symbol	Conditions <sup>1)</sup>	Value			Unit
			min.	typ.	max.	
Turn-on delay time	$t_{d(on)}$	$T_j=125^\circ\text{C}$ $V_{CC}=300\text{V}$ $I_C=20\text{A}$ $V_{GE}=\pm 15\text{V}$ $R_G=13\Omega$	-	21	-	ns
Rise time	$t_r$		-	8	-	
Turn-off delay time	$t_{d(off)}$		-	110	-	
Fall time	$t_f$		-	25	-	

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

## CHIP DRAWING:



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**FURTHER ELECTRICAL CHARACTERISTICS:**

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This chip data sheet refers to the  
device data sheet

FS 20 R06 XL4

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**Description:**

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AQL 0,65 for visual inspection according to failure catalog

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Electrostatic Discharge Sensitive Device according to MIL-STD 883

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Test-Normen Villach/Prüffeld

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