



# THE DATASHEET OF SIGC18T60UNX1SA1



High Speed IGBT Chip in NPT-technology

**FEATURES:**

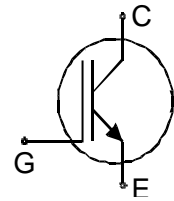
- **low Eoff**
- 600V NPT technology
- 100µm chip
- short circuit prove
- positive temperature coefficient
- easy paralleling

**This chip is used for:**

- SGP20N60HS

**Applications:**

- Welding
- PFC
- UPS



Chip Type	V <sub>CE</sub>	I <sub>Cn</sub>	Die Size	Package	Ordering Code
SIGC18T60UN	600V	20A	4.3 x 4.3 mm <sup>2</sup>	sawn on foil	Q67050-A4222-A101

**MECHANICAL PARAMETER:**

Raster size	4.3 x 4.3	mm <sup>2</sup>
Area total / active	18.5 / 14.2	
Emitter pad size	2.986 x 2.486	
Gate pad size	1.078 x 0.696	
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, $T_j=25\text{ °C}$	$V_{CE}$	600	V
DC collector current, limited by $T_{jmax}$	$I_C$	1)	A
Pulsed collector current, $t_p$ limited by $T_{jmax}$	$I_{Cpuls}$	60	A
Gate emitter voltage	$V_{GE}$	$\pm 20$	V
Operating junction and storage temperature	$T_j, T_{stg}$	-55 ... +150	$^{\circ}\text{C}$

1) 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	$V_{(BR)CES}$	$V_{GE}=0\text{V}, I_C=500\mu\text{A}$	600			V
Collector-emitter saturation voltage	$V_{CE(sat)}$	$V_{GE}=15\text{V}, I_C=20\text{A}$		2.8	3.15	
Gate-emitter threshold voltage	$V_{GE(th)}$	$I_C=500\mu\text{A}, V_{GE}=V_{CE}$	3	4	5	
Zero gate voltage collector current	$I_{CES}$	$V_{CE}=600\text{V}, V_{GE}=0\text{V}$			1.5	$\mu\text{A}$
Gate-emitter leakage current	$I_{GES}$	$V_{CE}=0\text{V}, V_{GE}=20\text{V}$			100	nA

## DYNAMIC CHARACTERISTICS (tested at component):

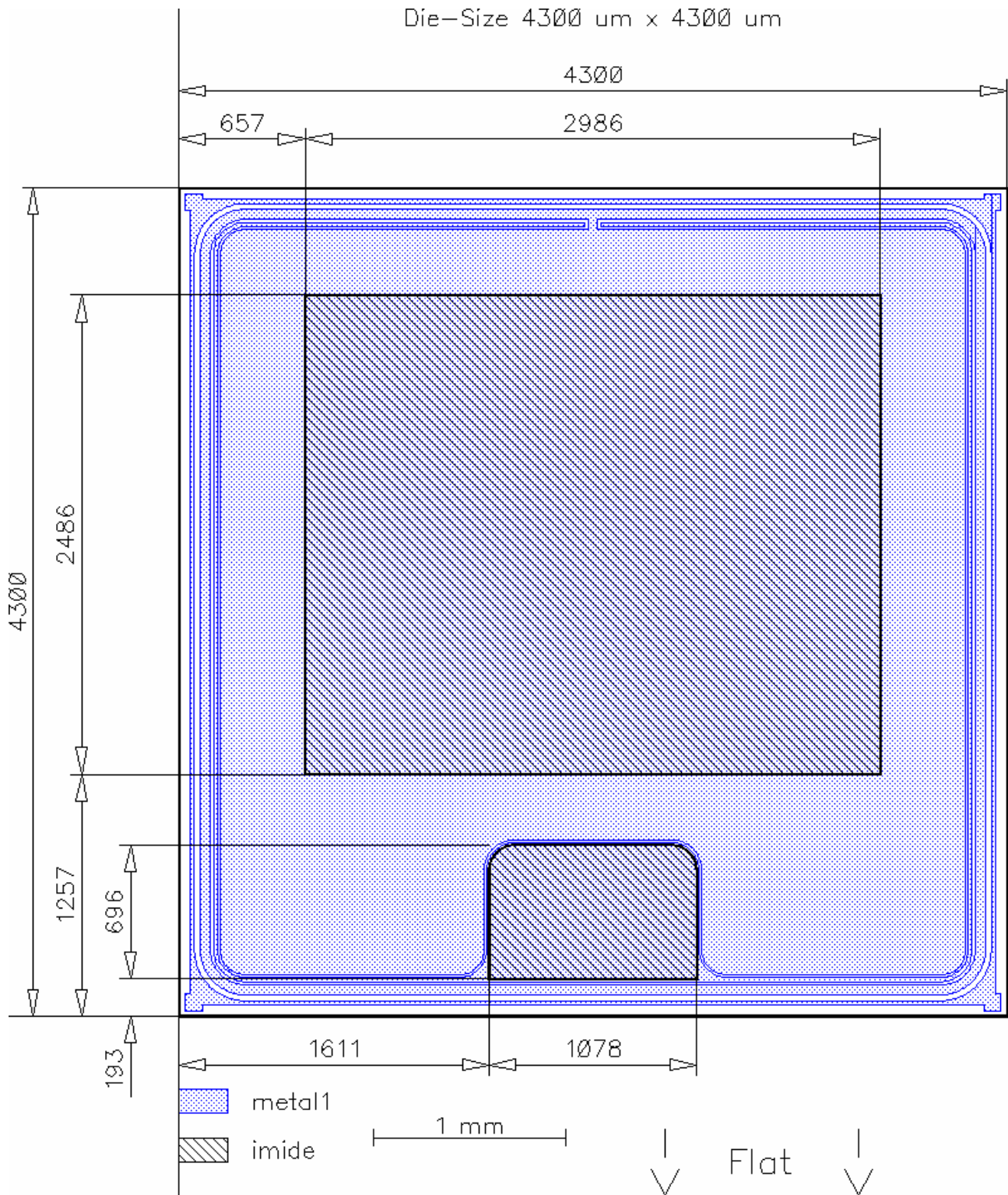
Parameter	Symbol	Conditions	Value			Unit
			min.	typ.	max.	
Input capacitance	$C_{iss}$	$V_{CE}=25\text{V}$	-	1100		pF
Output capacitance	$C_{oss}$	$V_{GE}=0\text{V}$	-	105		
Reverse transfer capacitance	$C_{riss}$	$f=1\text{MHz}$	-	64		

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

Parameter	Symbol	Conditions 1)	Value			Unit
			min.	typ.	max.	
Turn-on delay time	$t_{d(on)}$	$T_j=150\text{ °C}$	-	15		ns
Rise time	$t_r$	$V_{CC}=400\text{V}$	-	8.5		
Turn-off delay time	$t_{d(off)}$	$I_C=20\text{A}$	-	65		
Fall time	$t_f$	$V_{GE}=+15/0\text{V}$	-	35		
		$R_G=2.2\Omega$				

1) values also influenced by parasitic L- and C- in measurement and package.

**CHIP DRAWING:**





# SIGC18T60UN

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**FURTHER ELECTRICAL CHARACTERISTICS:**

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This chip data sheet refers to the  
device data sheet

SGP20N60HS

Package :TO220

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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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