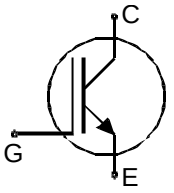
SIGC42T120CQ

IGBT Chip in Fieldstop -technology

FEATURES:
- 1200V Fieldstop technology 120µm chip
- low turn-off losses
- short tail current
- positive temperature coefficient

This chip is used for:
- IGBT Modules

Applications:
- welding, SMPS, resonant applications



Chip Type	V_{CE}	I_{Cn}	Die Size	Package	Ordering Code
SIGC42T120CQ	1200V	25A	6.59 x 6.49 mm^2	sawn on foil	SP0002-04966

MECHANICAL PARAMETER:

Raster size	6.59 x 6.49	mm^2
Emitter pad size	2 x (2.18 x 1.58)	
Gate pad size	1.06 x 0.65	
Area total / active	42.8 / 33.5	
Thickness	120	µm
Wafer size	150	mm
Flat position	90	grd
Max.possible chips per wafer	332 pcs	
Passivation frontside	Photoimide	
Emitter metallization	3200 nm Al Si Cu	
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	∅ 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 °C	V_{CE}	1200	V
DC collector current, limited by T_{jmax}	I_C	1)	A
Pulsed collector current, t_p limited by T_{jmax}	I_{cpuls}	75	A
Gate emitter voltage	V_{GE}	±20	V
Operating junction and storage temperature	T_j, T_{stg}	-55 ... +150	°C

1) depending on thermal properties of assembly

STATIC CHARACTERISTICS (tested on chip), T_j=25 °C, unless otherwise specified:

Parameter	Symbol	Conditions	Value			Unit
			min.	typ.	max.	
Collector-emitter breakdown voltage	$V_{(BR)CES}$	V_{GE}=0V , I_C= 1.5mA	1200			V
Collector-emitter saturation voltage	$V_{CE(sat)}$	V_{GE}=15V, I_C=25A		2.1		
Gate-emitter threshold voltage	$V_{GE(th)}$	I_C=1mA , V_{GE}=V_{CE}		5.5		
Zero gate voltage collector current	I_{CES}	V_{CE}=1200V , V_{GE}=0V			3	µA
Gate-emitter leakage current	I_{GES}	V_{CE}=0V , V_{GE}=20V			120	nA

ELECTRICAL CHARACTERISTICS (tested at component):

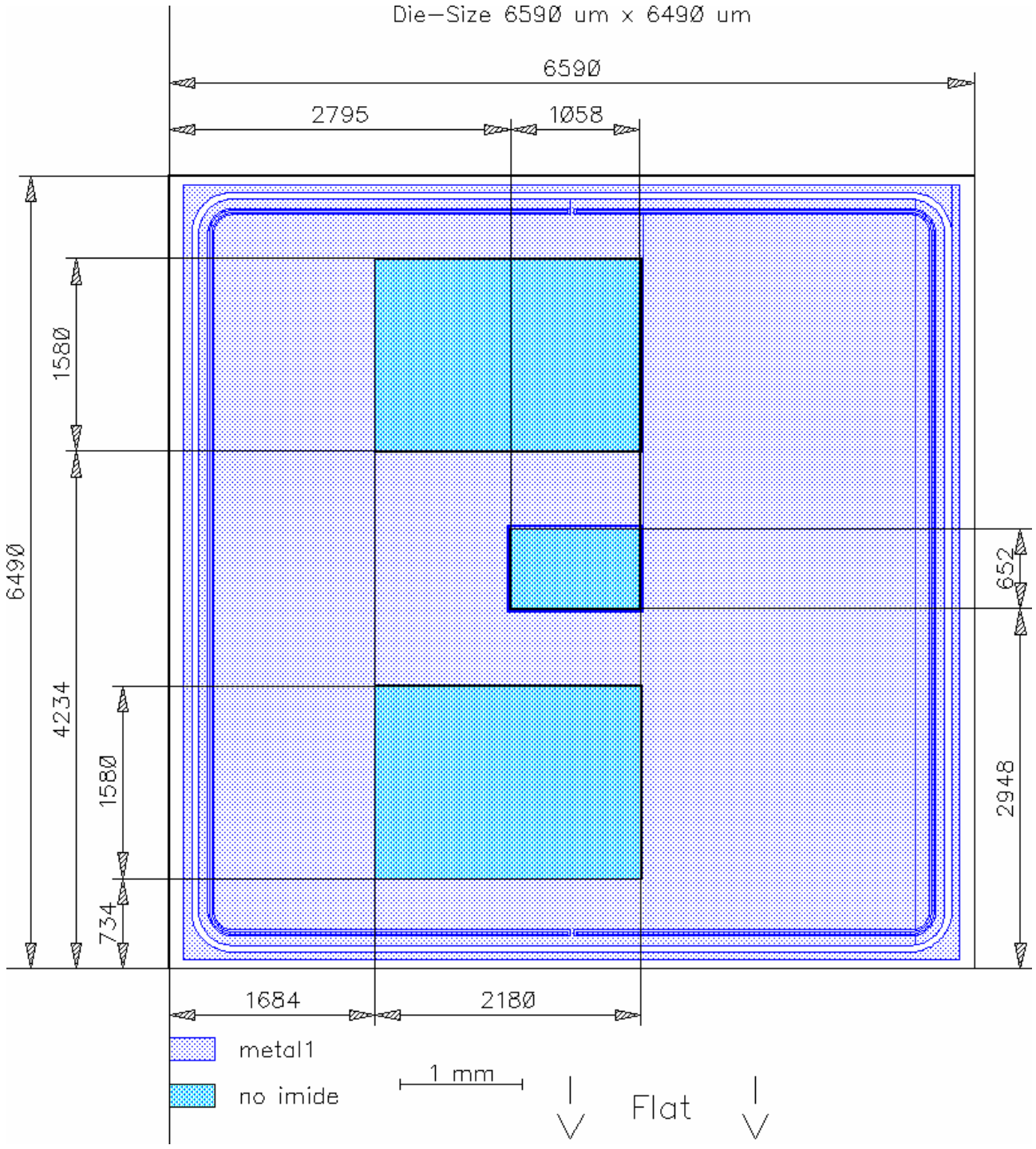
Parameter	Symbol	Conditions	Value			Unit
			min.	typ.	max.	
Input capacitance	C_{iss}	V_{CE}=25V,	-	2020		pF
Output capacitance	C_{oss}	V_{GE}=0V,	-	193		
Reverse transfer capacitance	C_{rss}	f=1MHz	-	64		

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=125°C	-	38		ns
Rise time	t_r	V_{CC}=600V,	-	25		
Turn-off delay time	$t_{d(off)}$	I_C=25A, V_{GE}=-15/15V,	-	250		
Fall time	t_f	R_G= 22Ω	-	96		

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

CHIP DRAWING:



FURTHER ELECTRICAL CHARACTERISTICS:

This chip data sheet refers to the device data sheet		

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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