

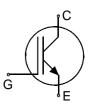
IGBT Chip in NPT-technology

Features:

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

This chip is used for:

- power module
- BSM100GD120DN2
- Applications:
- drives



Chip Type	V _{CE}	<i>I</i> c	Die Size	Package
SIGC156T120R2C	1200V	100A	12.59 X 12.59 mm ²	sawn on foil

Mechanical Parameter

Mechanical Parameter	1				
Raster size	12.59 X 12.59	mm ²			
Emitter pad size	8 x (3.98 x 2.38)				
Gate pad size	1.46 x 0.8				
Area total	158.5				
Thickness	200	μm			
Wafer size	150	mm			
Max.possible chips per wafer	82				
Passivation frontside	Photoimide				
Pad metal	3200 nm AlSiCu				
Backside metal	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, in dark environment, < 6 month at an ambient temperature of 23°C				

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Maximum Ratings

Parameter	Symbol	Value	Unit		
Collector-Emitter voltage, <i>T</i> _{vj} =25 °C	V _{CE}	1200	V		
DC collector current, limited by $T_{vj max}$	I _C	1)	А		
Pulsed collector current, t_p limited by $T_{vj max}$	I _{c,puls}	300	А		
Gate emitter voltage	V _{GE}	±20	V		
Junction temperature range	T _{vj}	-55 +175	°C		
Operating junction temperature	T _{vj}	-55+150	°C		
Short circuit data ²⁾ V_{GE} = 15V, V_{CC} = 900V, T_{vj} = 150°C	t _{SC}	10	μs		
Reverse bias safe operating area ²⁾ (RBSOA)	$I_{C,max} = 200A, V_{CE,max} = 1200V$ $T_{vi} \le 150^{\circ}C$				

¹⁾ depending on thermal properties of assembly

²) not subject to production test - verified by design/characterization

Static Characteristic (tested on wafer), T_{vj} =25 °C

Parameter	Symbol	Conditions	Value			Unit
	Cymbol	Conditions	min.	typ.	max.	
Collector-Emitter breakdown voltage	V _{(BR)CES}	V _{GE} =0V , <i>I</i> _C = 5mA	1200			
Collector-Emitter saturation voltage	V _{CEsat}	V _{GE} =15V, <i>I</i> _C =100A	2.0	2.5	3.0	V
Gate-Emitter threshold voltage	V _{GE(th)}	$I_{\rm C}$ =4mA , $V_{\rm GE}$ = $V_{\rm CE}$	4.5	5.5	6.5	
Zero gate voltage collector current	I _{CES}	V _{CE} =1200V , V _{GE} =0V			12.2	μA
Gate-Emitter leakage current	I _{GES}	<i>V</i> _{CE} =0V , <i>V</i> _{GE} =20V			600	nA
Integrated gate resistor	r _G			5		Ω

Dynamic Characteristic (not subject to production test - verified by design / characterization),

*T*_{vj} =25 °C

Parameter	Symbol	Conditions	Value			Unit
Farallieler	Symbol	Conditions	min.	typ.	max.	Unit
Input capacitance	Cies	$V_{CE}=25V$,		6500		
Output capacitance	Coes	$V_{GE}=0V$,		1000		pF
Reverse transfer capacitance	Cres	f=1MHz		500		

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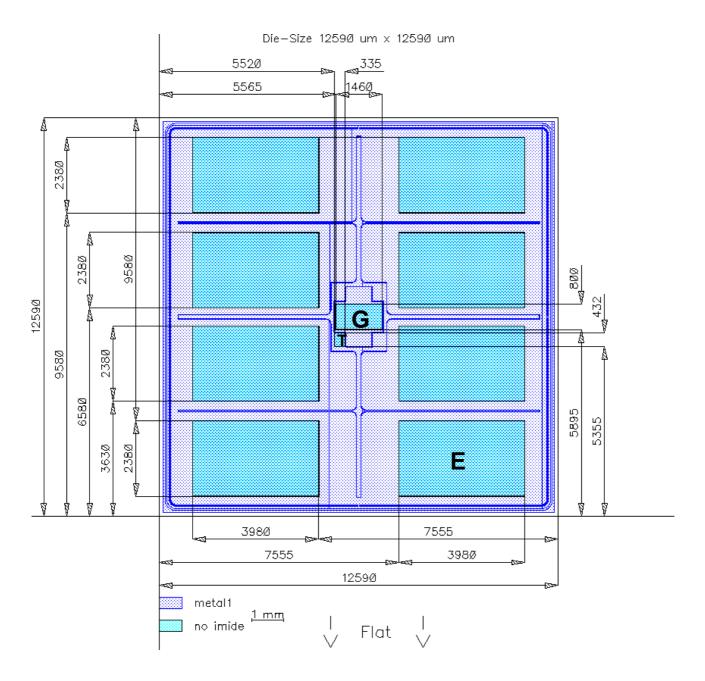


Further Electrical Characteristic

Switching characteristics and thermal properties are depending strongly on module design and mounting technology and can therefore not be specified for a bare die.



Chip Drawing



E = Emitter pad

 $\mathbf{G} = \text{Gate pad}$

T = Test pad do not contact

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Description

AQL 0,65 for visual inspection according to failure catalogue

Electrostatic Discharge Sensitive Device according to MIL-STD 883

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