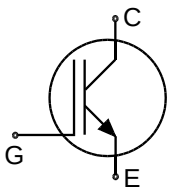
SIGC12T120LE

IGBT3 Power Chip

Features:
- 1200V Trench + Field Stop technology
- low turn-off losses
- short tail current
- positive temperature coefficient
- easy paralleling

This chip is used for:
- power module

Applications:
- drives



Chip Type	V_{CE}	I_{Cn}	Die Size	Package
SIGC12T120LE	1200V	8A	3.54 x 3.5 mm^2	sawn on foil

MECHANICAL PARAMETER

Raster size	3.54 x 3.5	mm^2
Emitter pad size (incl. gate pad)	2.028 x 2.028	
Gate pad size	1.107 x 0.702	
Area total / active	12.39 / 6.82	
Thickness	120	µm
Wafer size	200	mm
Max.possible chips per wafer	2243 pcs	
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	∅ 0.65mm ; max 1.2mm	
Recommended storage environment	Store in original container, in dry nitrogen, < 6 month at an ambient temperature of 23°C	

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MAXIMUM RATINGS

Parameter	Symbol	Value	Unit
Collector-Emitter voltage, T_j=25 °C	V_{CE}	1200	V
DC collector current, limited by $T_{j\,max}$	I_C	[1]	A
Pulsed collector current, t_p limited by $T_{j\,max}$	$I_{c,puls}$	24	A
Gate emitter voltage	V_{GE}	±20	V
Maximum junction and storage temperature	$T_{vj,max}$, T_{stg}	-55 ... +150	°C
Short circuit data [2] V_{GE} = 15V, V_{CC} = 900V, T_{vj} = 125°C	$t_{p,max}$	10	µs
Reverse bias safe operating area [2] (RBSOA)	$I_{C,max}$ = 16A, $V_{CE,max}$ = 1200V, $T_{vj,op} \leq$ 125°C		

[1] depending on thermal properties of assembly

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

STATIC CHARACTERISTICS (tested on wafer), T_j=25 °C

Parameter	Symbol	Conditions	Value			Unit
			min.	typ.	max.	
Collector-Emitter breakdown voltage	$V_{(BR)CES}$	V_{GE}=0V , I_C= 0.5mA	1200			V
Collector-Emitter saturation voltage	$V_{CE(sat)}$	V_{GE}=15V, I_C=8A	1.4	1.7	2.1	
Gate-Emitter threshold voltage	$V_{GE(th)}$	I_C=0.3mA , V_{GE}=V_{CE}	5.0	5.8	6.5	
Zero gate voltage collector current	I_{CES}	V_{CE}=1200V , V_{GE}=0V			1.23	µA
Gate-Emitter leakage current	I_{GES}	V_{CE}=0V , V_{GE}=20V			120	nA
Integrated gate resistor	R_{Gint}			none		Ω

ELECTRICAL CHARACTERISTICS (not subject to production test - verified by design / characterization)

Parameter	Symbol	Conditions	Value			Unit
			min.	typ.	max.	
Input capacitance	C_{iss}	V_{CE}=25V, V_{GE}=0V, f=1MHz		600		pF
Output capacitance	C_{oss}			36		
Reverse transfer capacitance	C_{rss}			28		

SWITCHING CHARACTERISTICS inductive load (not subject to production test - verified by design / characterization)

Parameter	Symbol	Conditions [1]	Value			Unit
			min.	typ.	max.	
Turn-on delay time	$t_{d(on)}$	T_j=125°C V_{CC}=600V, I_C=8A, V_{GE}=0/15V, R_G= 81Ω		40		µs
Rise time	t_r			26		
Turn-off delay time	$t_{d(off)}$			570		
Fall time	t_f			140		

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

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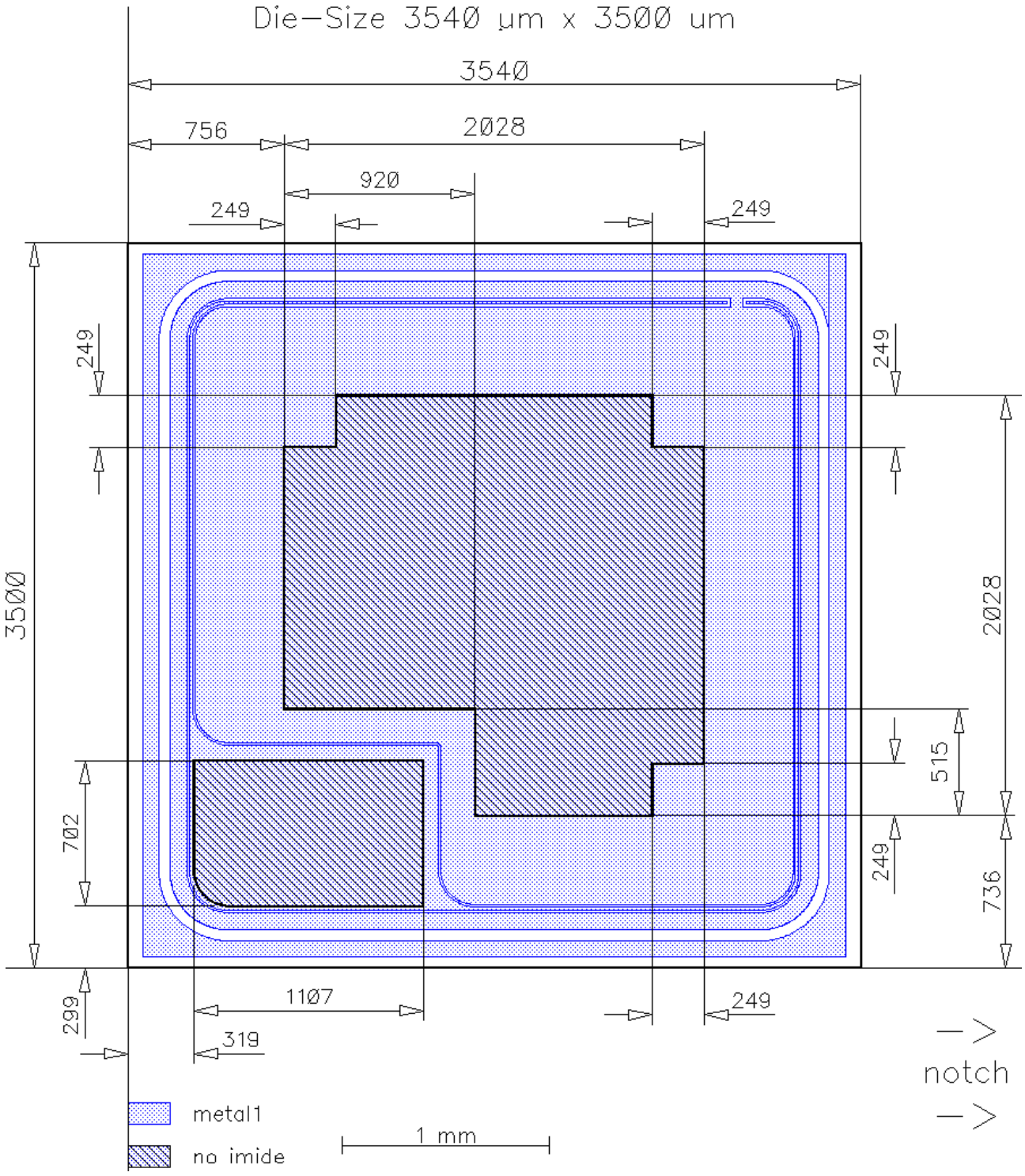
CHIP DRAWING



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FURTHER ELECTRICAL CHARACTERISTICS

This chip data sheet refers to the device data sheet	IGW08T120	

DESCRIPTION

AQL 0,65 for visual inspection according to failure catalogue
Electrostatic Discharge Sensitive Device according to MIL-STD 883
Test-Normen Villach/Prüffeld

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