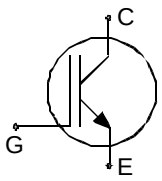
IGC142T120T6RM

IGBT4 Medium Power Chip

Features:
- 1200V Trench + Field stop technology
- low switching losses
- soft turnoff
- positive temperature coefficient
- easy paralleling

This chip is used for:
- medium power modules

Applications:
- medium power drives



Chip Type	V_{CE}	I_{Cn}	Die Size	Package
IGC142T120T6RM	1200V	150A	11.31 x 12.56 mm^2	sawn on foil

MECHANICAL PARAMETER

Raster size	11.31 x 12.56	mm^2
Emitter pad size (incl. gate pad)	11.04 x 9.80	
Gate pad size	1.31 x 0.81	
Area total / active	142.1 / 113.1	
Thickness	120	µm
Wafer size	150	mm
Flat position	90	grd
Max.possible chips per wafer	94	
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 $T_{j\,max}$	$I_{c,puls}$	450	A
Gate-Emitter voltage	V_{GE}	±20	V
Maximum junction temperature	$T_{vj,max}$	-40 ... +175	°C
Short circuit data [2] V_{GE} = 15V, V_{CC} = 800V, T_{vj} = 150°C	$t_{p,max}$	10	µs
Reverse bias safe operating area [2] (RBSOA)	$I_{F,max}$ = 300A, $V_{R,max}$ = 1200V, $T_{vj,op} \leq$ 150°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= 6 mA	1200			V
Collector-Emitter saturation voltage	$V_{CE(sat)}$	V_{GE}=15V, I_C=150A	1.55	1.8	2.05	
Gate-Emitter threshold voltage	$V_{GE(th)}$	I_C=6mA , V_{GE}=V_{CE}	5.0	5.8	6.5	
Zero gate voltage collector current	I_{CES}	V_{CE}=1200V , V_{GE}=0V			20	µA
Gate-Emitter leakage current	I_{GES}	V_{CE}=0V , V_{GE}=20V			600	nA
Integrated gate resistor	R_{Gint}			5		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,		9300		pF
Output capacitance	C_{oss}	V_{GE}=0V,		580		
Reverse transfer capacitance	C_{rss}	f=1MHz		510		

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=150A, V_{GE}=-15/15V, R_G= ---Ω		tbd		ns
Rise time	t_r			tbd		
Turn-off delay time	$t_{d(off)}$			tbd		
Fall time	t_f			tbd		

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

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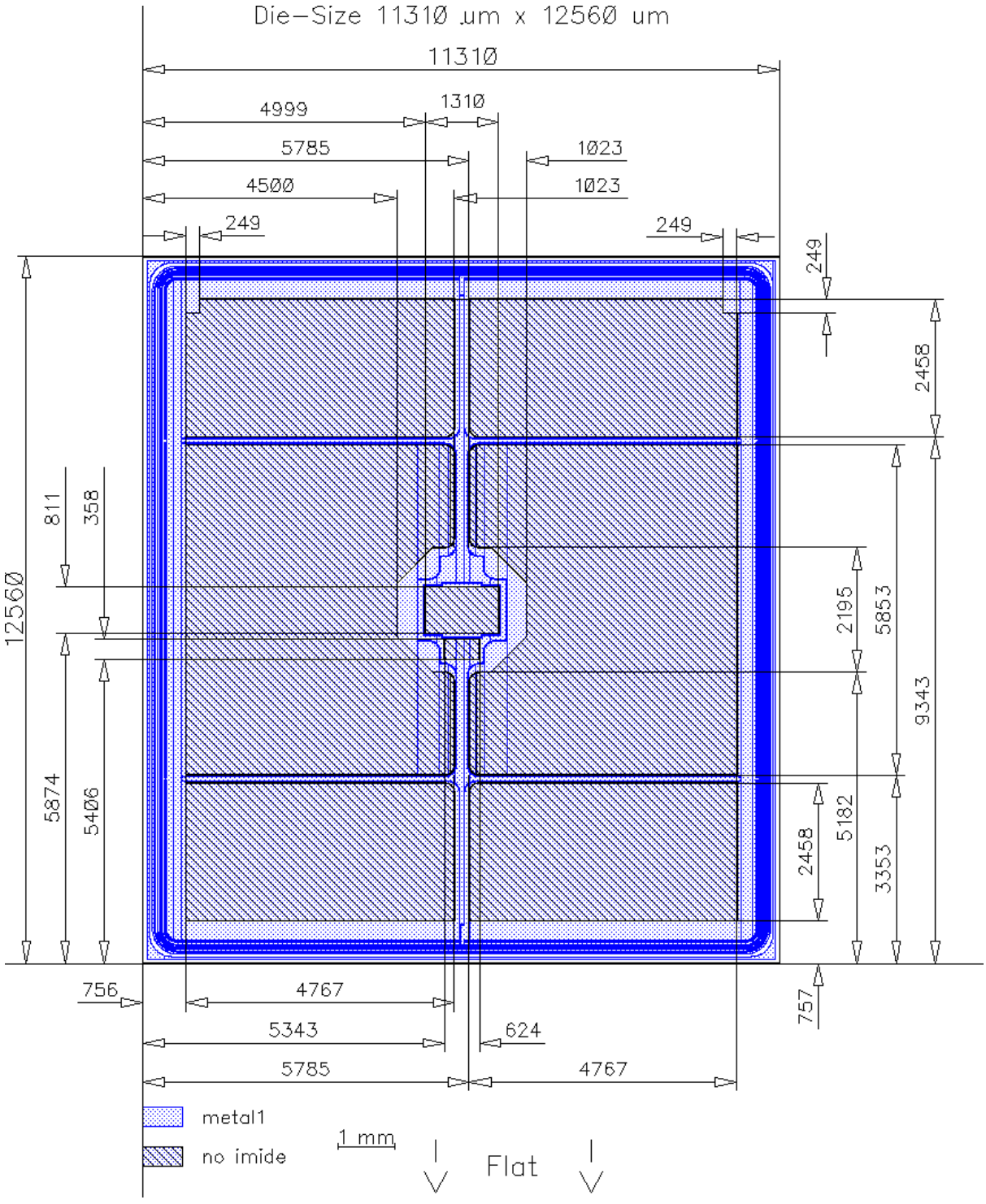
CHIP DRAWING



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FURTHER ELECTRICAL CHARACTERISTICS
Switching characteristics and thermal properties are depending strongly on module design and mounting technology and can therefore not be specified for a bare die.
Further technical information about the performance of this chip in moduletbd is given exemplarily at www.infineon.com/igbtmodules.

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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