

IGBT4 Low Power Chip

Features:

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

This chip is used for:

• low/medium power modules



Applications:

• low/medium power drives

Chip Type	V _{CE}	I Cn	Die Size	Package
IGC109T120T6RL	1200V	110A	7.48 x 14.61 mm ²	sawn on foil

MECHANICAL PARAMETER

Raster size	7.48 x 14.61			
Emitter pad size (incl. gate pad)	4 x (2.761 x 6.458)	mm ²		
Gate pad size	0.811 x 1.31] '''''		
Area total / active	109.3 / 82.6			
Thickness	115	μm		
Wafer size	150	mm		
Flat position	90	grd		
Max.possible chips per wafer	126			
Passivation frontside	Photoimide			
Pad metal Pad metal	3200 nm AlSiCu			
Backside metal Ni Ag -system suitable for epoxy and soft solder die bo				
Die bond	Electrically conductive glue or solder			
Wire bond	AI, <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)	Α	
Pulsed collector current, t _p limited by T _{jmax}	I _{cpuls}	330	Α	
Gate-Emitter voltage	V _{GE}	±20	V	
Operating junction temperature	T_j	-40 +175	°C	
Short circuit data ²) $V_{GE} = 15V$, $V_{CC} = 800V$, $Tvj = 150$ °C	tp	10	μs	
Reverse bias safe operating area 2 (RBSOA) $I_{C max} = 220A$, $V_{CE max} = 1200V$, Tvj max= 150				

¹⁾ depending on thermal properties of assembly

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

Parameter	Symbol	Conditions	Value			Unit
- dramoto		Containone	min.	typ.	max.	
Collector-Emitter breakdown voltage	V _{(BR)CES}	V_{GE} =0V , I_{C} = 4.1 m A	1200			
Collecto r-Emitter saturation voltage	V _{CE(sat)}	V _{GE} =15V, I _C =110A	1.55	1.8	2.05	V
Gate-Emitter threshold voltage	V _{GE(th)}	I_C =4.1 mA , V_{GE} = V_{CE}	5.0	5.8	6.5	
Zero gate voltage collector current	I _{CES}	V _{CE} =1200V , V _{GE} =0V			14	μΑ
Gate-Emitter leakage current	I_{GES}	$V_{CE}=0V$, $V_{GE}=20V$			600	nA
Integrated gate resistor	R _{Gint}			7.5		Ω

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

Parameter	Symbol	Conditions	Value			Unit
	Cynnbon	Conditions	min.	typ.	max.	
Input capacitance	Ciss	V _{CE} =25V,		6800		
Output capacitance	Coss	$V_{GE} = 0 V$,		440		pF
Reverse transfer capacitance	C _{rss}	f=1MHz		375		

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



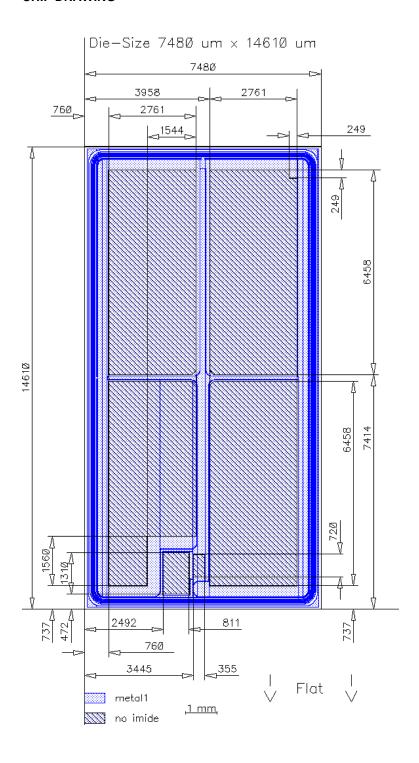
SWITCHING CHARACTERISTICS inductive load (not subject to production test - verified by design /characterization)

Parameter	Symbol	Conditions 1)	Value			Unit
raiametei	Symbol	Conditions	min.	typ.	max.	Joint
Turn-on delay time	$t_{d(on)}$	T _j =125°C		tbd		
Rise time	t _r	$V_{CC}=600V$, $I_{C}=110A$,		tbd		ns
Turn-off delay time	$t_{d(off)}$	V _{GE} =-15/15V,		tbd		113
Fall time	t _f	R _G =Ω		tbd		

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	tbd	

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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