

## IGBT4 Medium Power Chip

### Features:

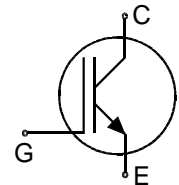
- 1200V Trench & Field stop technology
- low switching losses
- soft turn off
- positive temperature coefficient
- easy paralleling
- Qualified according to JEDEC for target applications

### Recommended for:

- medium power modules

### Applications:

- medium power drives



Chip Type	V <sub>CE</sub>	I <sub>Cn</sub> <sup>1)</sup>	Die Size	Package
IGC109T120T8RM	1200V	110A	7.48 x 14.61 mm <sup>2</sup>	sawn on foil

<sup>1)</sup> nominal collector current at T<sub>c</sub> = 100°C, not subject to production test - verified by design/characterization

### Mechanical Parameters

Die size		7.48 x 14.61	mm <sup>2</sup>
Emitter pad size (incl. gate pad)		See chip drawing	
Gate pad size		0.81 x 1.31	
Area total		109.3	
Thickness		120	µm
Wafer size		200	mm
Max.possible chips per wafer		227	
Passivation frontside		Photoimide	
Pad metal		3200 nm AlSiCu	
Backside metal		Ni Ag –system	
Die bond		Electrically conductive epoxy glue and soft solder	
Wire bond		Al, <500µm	
Reject ink dot size		Ø 0.65mm ; max 1.2mm	
Storage environment	for original and sealed MBB bags	Ambient atmosphere air, Temperature 17°C – 25°C, < 6 month	
	for open MBB bags	Acc. to IEC62258-3: Atmosphere >99% Nitrogen or inert gas, Humidity <25%RH, Temperature 17°C – 25°C, < 6 month	

## Maximum Ratings

Parameter	Symbol	Value	Unit
Collector-Emitter voltage, $T_{vj} = 25\text{ °C}$	$V_{CE}$	1200	V
DC collector current, limited by $T_{vj\text{ max}}$	$I_C$	<sup>1)</sup>	A
Pulsed collector current, $t_p$ limited by $T_{vj\text{ max}}$ <sup>2)</sup>	$I_{C,puls}$	330	A
Gate emitter voltage	$V_{GE}$	$\pm 20$	V
Operating junction temperature	$T_{vj}$	-40 ... +175	°C
Short circuit data <sup>2)3)</sup> $V_{GE} = 15V$ , $V_{CC} = 800V$ , $T_{vj} = 150\text{ °C}$	$t_{SC}$	10	$\mu s$

<sup>1)</sup> depending on thermal properties of assembly

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

<sup>3)</sup> allowed number of short circuits: <1000; time between short circuits: >1s.

## Static Characteristics (tested on wafer), $T_{vj} = 25\text{ °C}$

Parameter	Symbol	Conditions	Value			Unit
			min.	typ.	max.	
Collector-Emitter breakdown voltage	$V_{(BR)CES}$	$V_{GE}=0V$ , $I_C=4.1\text{ mA}$	1200			V
Collector-Emitter saturation voltage	$V_{CEsat}$	$V_{GE}=15V$ , $I_C=73A$	1.35	1.55	1.74	
Gate-Emitter threshold voltage	$V_{GE(th)}$	$I_C=4.1mA$ , $V_{GE}=V_{CE}$	5.3	5.8	6.3	
Zero gate voltage collector current	$I_{CES}$	$V_{CE}=1200V$ , $V_{GE}=0V$			1.4	$\mu A$
Gate-Emitter leakage current	$I_{GES}$	$V_{CE}=0V$ , $V_{GE}=20V$			120	nA
Integrated gate resistor	$r_G$			7.5		$\Omega$

## Electrical Characteristics (not subject to production test - verified by design / characterization)

Parameter		Symbol	Conditions	Value			Unit
				min.	typ.	max.	
Collector-Emitter saturation voltage	$T_{vj} = 25\text{ °C}$	$V_{CEsat}$	$V_{GE}=15V$ , $I_C=110A$	1.55	1.8	2.05	V
	$T_{vj} = 150\text{ °C}$				2.05		
Input capacitance		$C_{ies}$	$V_{CE}=25V$ , $V_{GE}=0V$ , $f=1MHz$ $T_{vj}=25\text{ °C}$		6900		pF
Reverse transfer capacitance		$C_{res}$			275		



# IGC109T120T8RM

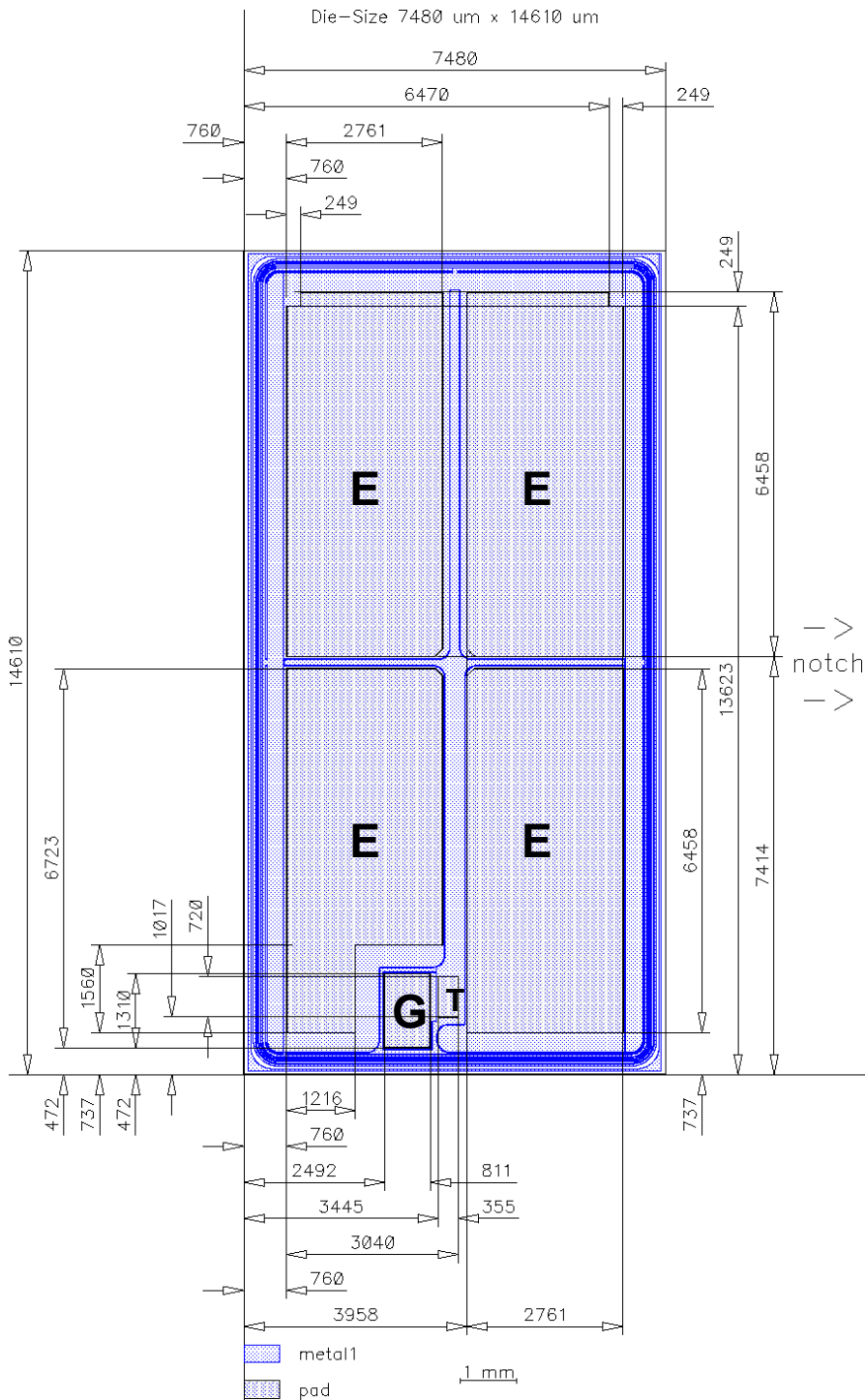
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## Further Electrical Characteristic

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

This chip data sheet refers to the device data sheet	FF450R12KE4	Rev 2.2
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## Chip Drawing



**E** = Emitter

**G** = Gate

**T** = Test pad do not contact



# IGC109T120T8RM

## Description

AQL 0,65 for visual inspection according to failure catalogue

Electrostatic Discharge Sensitive Device according to MIL-STD 883

## Revision History

Version	Subjects (major changes since last revision)	Date

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