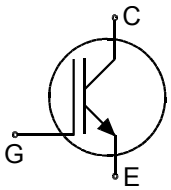
IGC39T65QE

High Speed IGBT3 Chip

Features:
- 650V Trench & Field Stop technology
- high speed switching series third generation
- low $V_{CE(sat)}$
- low EMI
- low turn-off losses
- positive temperature coefficient
- qualified according to JEDEC for target applications

Recommended for:
- discrete components and modules

Applications:
- uninterruptible power supplies
- welding converters
- converters with high switching frequency



Chip Type	V_{CE}	I_{Cn} [1)]	Die Size	Package
IGC39T65QE	650V	75A	6.59 x 5.91 mm^2	sawn on foil

[1)] nominal collector current at Tc = 100°C, not subject to production test - verified by design/characterization

Mechanical Parameters

Die size		6.59 x 5.91	mm^2
Emitter pad size		See chip drawing	
Gate pad size		1.52 x 0.817	
Area total		38.9	
Thickness		70	µm
Wafer size		200	mm
Max.possible chips per wafer		686	
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		∅ 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	

Edited by INFINEON Technologies, IFAG IPC TD VLS, L7571E, Edition 1.0, 01.08.2012

IGC39T65QE

Maximum Ratings

Parameter	Symbol	Value	Unit
Collector-Emitter voltage, T_{vj} =25 °C	V_{CE}	650	V
DC collector current, limited by $T_{vj\,max}$	I_C	[1]	A
Pulsed collector current, t_p limited by $T_{vj\,max}$ [2]	$I_{c,puls}$	225	A
Gate emitter voltage	V_{GE}	±20	V
Operating junction temperature	T_{vj}	-40 ... +175	°C
Short circuit data [2] [3] V_{GE} = 15V, V_{CC} = 400V, T_{vj} = 150°C	t_{SC}	5	µs

[1] depending on thermal properties of assembly

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

[3] allowed number of short circuits: <1000; time between short circuits: >1s.

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

Parameter	Symbol	Conditions	Value			Unit
			min.	typ.	max.	
Collector-Emitter breakdown voltage	$V_{(BR)CES}$	V_{GE}=0V , I_C=2 mA	650			V
Collector-Emitter saturation voltage	V_{CEsat}	V_{GE}=15V, I_C=75A	1.38	1.85	2.22	
Gate-Emitter threshold voltage	$V_{GE(th)}$	I_C=1.2mA , V_{GE}=V_{CE}	4.2	5.1	5.6	
Zero gate voltage collector current	I_{CES}	V_{CE}=650V , V_{GE}=0V			3.8	µA
Gate-Emitter leakage current	I_{GES}	V_{CE}=0V , V_{GE}=20V			150	nA
Integrated gate resistor	r_G			none		Ω

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

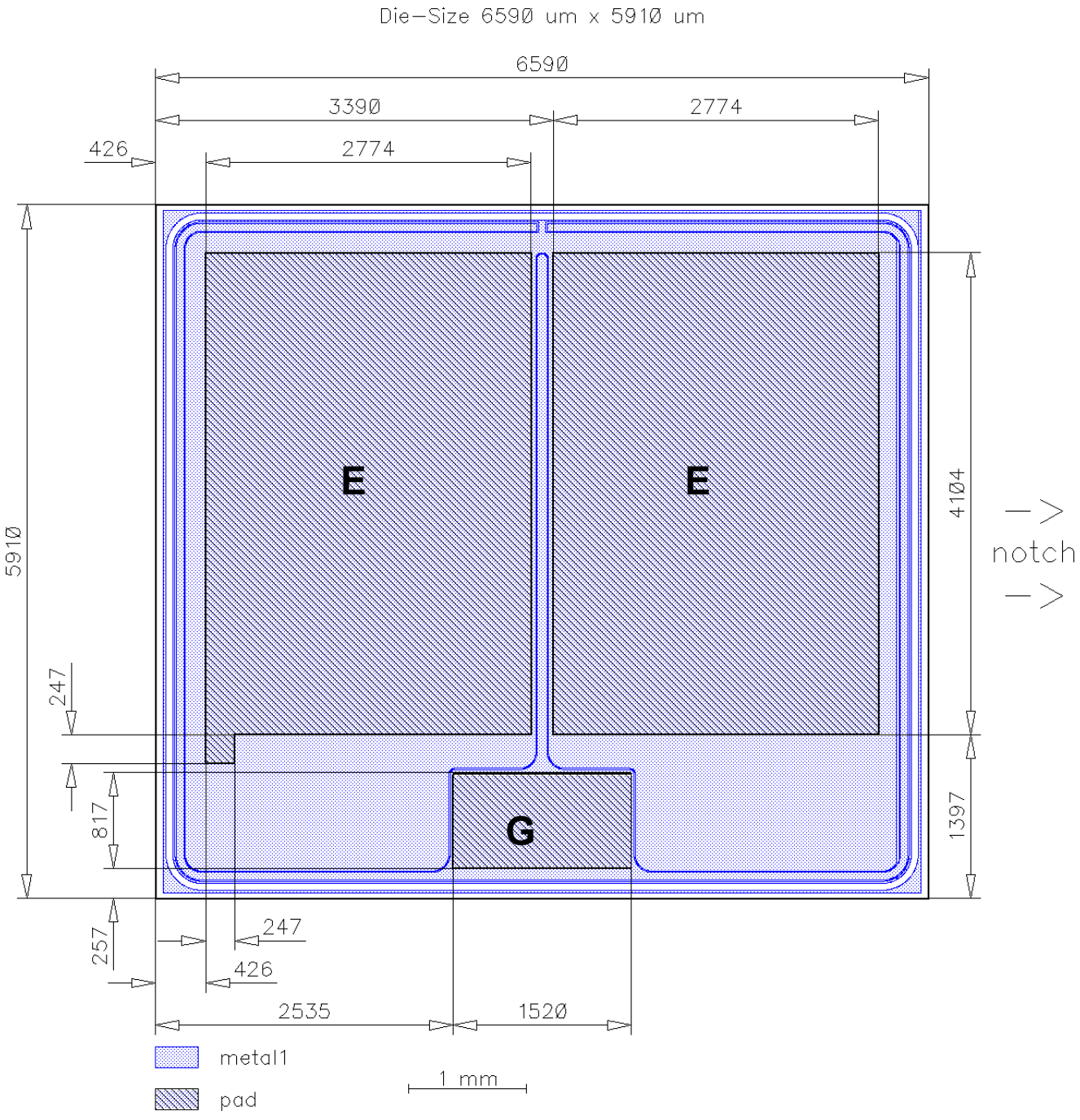
Parameter	Symbol	Conditions	Value			Unit
			min.	typ.	max.	
Collector-Emitter saturation voltage	V_{CEsat}	V_{GE}=15V, I_C=75A, T_{vj} =175 °C		2.25		V
Input capacitance	C_{ies}	V_{CE}=25V, V_{GE}=0V, f=1MHz T_{vj} =25 °C		4620		pF
Reverse transfer capacitance	C_{res}			137		

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.

Edited by INFINEON Technologies, IFAG IPC TD VLS, L7571E, Edition 1.0, 01.08.2012

Chip Drawing



E = Emitter
G = Gate

IGC39T65QE

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

Published by
Infineon Technologies AG
81726 Munich, Germany

Legal Disclaimer

The information given in this document shall in no event be regarded as a guarantee of conditions or characteristics. With respect to any examples or hints given herein, any typical values stated herein and/or any information regarding the application of the device, Infineon Technologies hereby disclaims any and all warranties and liabilities of any kind, including without limitation, warranties of non-infringement of intellectual property rights of any third party.

Information

For further information on technology, delivery terms and conditions and prices, please contact the nearest Infineon Technologies Office (**www.infineon.com**).

Warnings

Due to technical requirements, components may contain dangerous substances. For information on the types in question, please contact the nearest Infineon Technologies Office.
The Infineon Technologies component described in this Data Sheet may be used in life-support devices or systems and/or automotive, aviation and aerospace applications or systems only with the express written approval of Infineon Technologies, if a failure of such components can reasonably be expected to cause the failure of that life-support, automotive, aviation and aerospace device or system or to affect the safety or effectiveness of that device or system. Life support devices or systems are intended to be implanted in the human body or to support and/or maintain and sustain and/or protect human life. If they fail, it is reasonable to assume that the health of the user or other persons may be endangered.

Edited by INFINEON Technologies, IFAG IPC TD VLS, L7571E, Edition 1.0, 01.08.2012