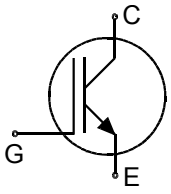
IGC28T65QE

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
IGC28T65QE	650V	50A	6.57 x 4.2 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		6.57 x 4.2	mm^2
Emitter pad size		See chip drawing	
Gate pad size		0.817 x 1.52	
Area total		27.59	
Thickness		70	µm
Wafer size		200	mm
Max.possible chips per wafer		974	
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	

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IGC28T65QE

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)	$I_{c,puls}$	150	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=50A	1.38	1.85	2.22	
Gate-Emitter threshold voltage	$V_{GE(th)}$	I_C=0.8mA , V_{GE}=V_{CE}	4.2	5.1	5.6	
Zero gate voltage collector current	I_{CES}	V_{CE}=650V , V_{GE}=0V			2.8	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=50A, T_{vj} =175 °C		2.25		V
Input capacitance	C_{ies}	V_{CE}=25V, V_{GE}=0V, f=1MHz T_{vj} =25 °C		3100		pF
Reverse transfer capacitance	C_{res}			90		

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.

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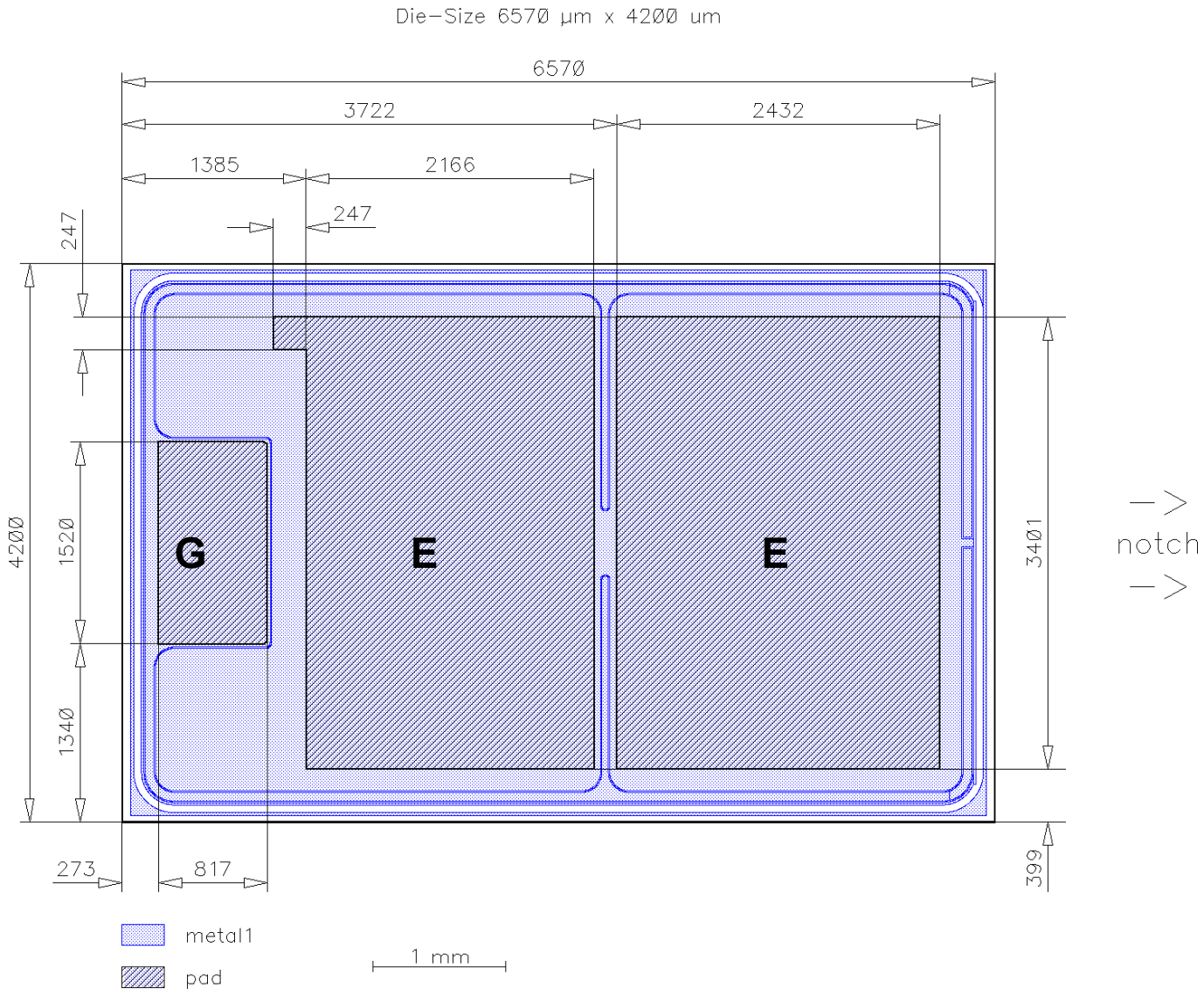
Chip Drawing



E = Emitter
G = Gate

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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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