

Features

- $V_{CES} = 650\text{ V}$
- $I_{Cn} = 150\text{ A}$
- 650 V trench & field stop technology
- High short circuit capability, self limiting short circuit current
- Positive temperature coefficient
- Easy paralleling

Potential applications

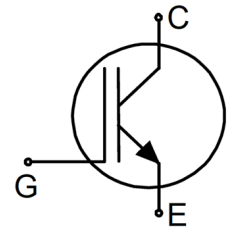
- Drives

Product validation

- Technology qualified for industrial applications. Ready for validation in industrial applications according to the relevant tests of IEC 60747 and 60749 or alternatively JEDEC47/20/22

Description

- Recommended for power modules



Type	Die size	Delivery form
IGC76T65T8RM	7.87 mm x 9.69 mm	Sawn on foil

Table of contents

	Description	1
	Features	1
	Potential applications	1
	Product validation	1
	Table of contents	2
1	Mechanical parameters	3
2	Characteristics	4
3	Chip drawing	6
4	Bare die product specifics	7
	Revision history	8
	Disclaimer	9

1 Mechanical parameters

Table 1 Mechanical parameters

Parameter	Values
Die size	7.87 mm x 9.69 mm
Area total	76.26 mm ²
Emitter pad size	See chip drawing
Gate pad size	See chip drawing
Silicon thickness	80 μm
Wafer size	200 mm
Maximum possible chips per wafer	335
Passivation frontside	Photoimide
Pad metal	3.2 μm AlSiCu
Backside metal	Ni Ag - system
Die attach	Electrically conductive epoxy glue and soft solder
Frontside interconnect	Wire bond: Al ≤ 500 μm
Reject ink dot size (valid for inked delivery form only)	Ø 0.65 mm; max. 1.2 mm
Storage environment (<12 months) for original and sealed MBB bags	Ambient atmosphere air, temperature 17°C – 25°C
Storage environment (<12 months) for open MBB bags	Acc. to IEC62258-3: Atmosphere >99% Nitrogen or inert gas, Humidity <25%RH, Temperature 17°C – 25°C

2 Characteristics

Table 2 Maximum ratings

Parameter	Symbol	Note or test condition		Values			Unit
				Min.	Typ.	Max.	
Collector-emitter voltage	V_{CES}		$T_{vj} = 25\text{ °C}$	650			V
DC collector current, limited by T_{vjmax}	I_C			-1)			A
Pulsed collector current, t_p limited by T_{vjmax} 2)	I_{Cpulse}			450			A
Gate-emitter voltage	V_{GE}			±20			V
Operating junction temperature	T_{vjop}			-40...175			°C
Short-circuit withstand time 2) 3)	t_{SC}	$V_{CC} = 360\text{ V}, V_{GE} = 15\text{ V}$	$T_{vj} = 150\text{ °C}$	10			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

Table 3 Static characteristics (tested on wafer), $T_{vj} = 25\text{ °C}$

Parameter	Symbol	Note or test condition		Values			Unit
				Min.	Typ.	Max.	
Collector-emitter breakdown voltage	V_{BRCES}	$I_C = 4\text{ mA}, V_{GE} = 0\text{ V}$		650			V
Collector-emitter saturation voltage	V_{CESat}	$V_{GE} = 15\text{ V}, I_C = 45\text{ A}$		0.89	1.06	1.23	V
Gate-emitter threshold voltage	V_{GEth}	$I_C = 2.4\text{ mA}, V_{GE} = V_{CE}$		5.1	5.8	6.4	V
Zero gate-voltage collector current	I_{CES}	$V_{CE} = 650\text{ V}, V_{GE} = 0\text{ V}$				0.76	µA
Gate-emitter leakage current	I_{GES}	$V_{CE} = 0\text{ V}, V_{GE} = 20\text{ V}$				600	nA
Internal gate resistance	$R_{G,int}$				2		Ω

Table 4 Electrical characteristics

Parameter	Symbol	Note or test condition		Values			Unit
				Min.	Typ.	Max.	
Collector-emitter saturation voltage	V_{CESat}	$V_{GE} = 15\text{ V}, I_C = 150\text{ A}$	$T_{vj} = 25\text{ °C}$		1.55		V
			$T_{vj} = 150\text{ °C}$		1.75		
Input capacitance	C_{ies}	$V_{CE} = 25\text{ V}, V_{GE} = 0\text{ V}, f = 1000\text{ kHz}, T_{vj} = 25\text{ °C}$			9240		pF
Reverse transfer capacitance	C_{res}	$V_{CE} = 25\text{ V}, V_{GE} = 0\text{ V}, f = 1000\text{ kHz}, T_{vj} = 25\text{ °C}$			274		pF

*Note: In general, from reliability and lifetime point of view, the lower the operating junction temperature and/or the applied voltage, the greater the expected lifetime of any semiconductor device.
For "Maximum ratings" and "Electrical characteristics": Not subject to production test, specified by design.*

3 Chip drawing

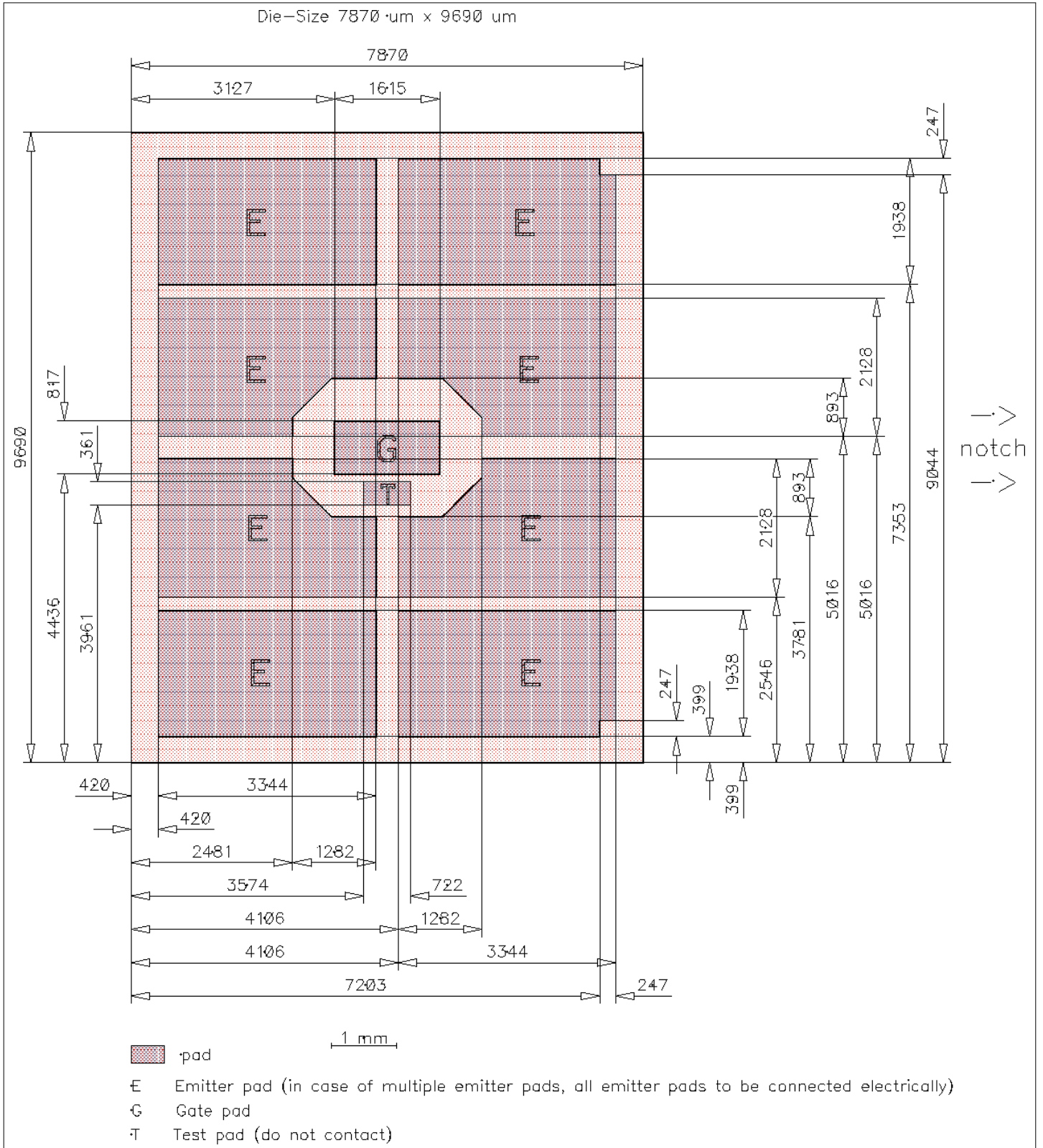


Figure 1

4 Bare die product specifics

- Switching characteristics and thermal properties are dependent on module design and mounting technology and can therefore not be specified for a bare die.
- AQL 0.65 for visual inspection according to failure catalogue.
- Electrostatic discharge sensitive device according to MIL-STD 883.
- The example application may be subject to change without prior notice. It is intended for information purposes only, and should not be interpreted as a commitment.
- Example application: FS150R07N3E4

Revision history

Document revision	Date of release	Description of changes
1.00	2023-04-28	Final datasheet ***Legacy Revisions*** V1.1 2012-04-05

Trademarks

All referenced product or service names and trademarks are the property of their respective owners.

Edition 2023-04-28

Published by

Infineon Technologies AG

81726 Munich, Germany

© 2023 Infineon Technologies AG

All Rights Reserved.

Do you have a question about any aspect of this document?

Email: erratum@infineon.com

Document reference

IFX-ABG927-001

Important notice

The information given in this document shall in no event be regarded as a guarantee of conditions or characteristics ("Beschaffheitsgarantie").

With respect to any examples, hints or any typical values stated herein and/or any information regarding the application of the product, 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.

In addition, any information given in this document is subject to customer's compliance with its obligations stated in this document and any applicable legal requirements, norms and standards concerning customer's products and any use of the product of Infineon Technologies in customer's applications.

The data contained in this document is exclusively intended for technically trained staff. It is the responsibility of customer's technical departments to evaluate the suitability of the product for the intended application and the completeness of the product information given in this document with respect to such application.

Please note that this product is not qualified according to the AEC Q100 or AEC Q101 documents of the Automotive Electronics Council.

Warnings

Due to technical requirements products may contain dangerous substances. For information on the types in question please contact your nearest Infineon Technologies office.

Except as otherwise explicitly approved by Infineon Technologies in a written document signed by authorized representatives of Infineon Technologies, Infineon Technologies' products may not be used in any applications where a failure of the product or any consequences of the use thereof can reasonably be expected to result in personal injury.