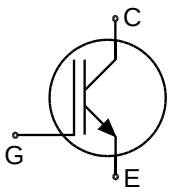
SIGC42T170R3GE

IGBT3 Power Chip

Features:
- 1700V Trench + Field Stop technology
- low turn-off losses
- short tail current
- positive temperature coefficient
- easy paralleling

This chip is used for:
- power module

Applications:
- drives



Chip Type	V_{CE}	I_{Cn}	Die Size	Package
SIGC42T170R3GE	1700V	29A	6.5 x 6.46 mm^2	sawn on foil

MECHANICAL PARAMETER

Raster size	6.5 x 6.46	mm^2
Emitter pad size (incl. gate pad)	4.27 x 4.27	
Gate pad size	1.18 x 1.09	
Area total / active	42 / 28.7	
Thickness	190	µm
Wafer size	200	mm
Max.possible chips per wafer	641 pcs	
Passivation frontside	Photoimide	
Pad metal	3200 nm AlSiCu	
Backside metal	Ni Ag –system suitable for epoxy and soft solder die bonding	
Die bond	Electrically conductive glue or solder	
Wire bond	Al, <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	

SIGC42T170R3GE

MAXIMUM RATINGS

Parameter	Symbol	Value	Unit
Collector-Emitter voltage, T_j=25 °C	V_{CE}	1700	V
DC collector current, limited by $T_{j\,max}$	I_C	[1]	A
Pulsed collector current, t_p limited by $T_{j\,max}$	$I_{c,puls}$	87	A
Gate emitter voltage	V_{GE}	±20	V
Maximum junction and storage temperature	$T_{vj,max}$, T_{stg}	-55 ... +150	°C
Short circuit data [2] V_{GE} = 15V, V_{CC} = 1200V, T_{vj} = 125°C	$t_{p,max}$	10	µs
Reverse bias safe operating area [2] (RBSOA)	$I_{C,max}$ = 58A, $V_{CE,max}$ = 1700V, $T_{vj,op} \leq$ 125°C		

[1] depending on thermal properties of assembly

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

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

Parameter	Symbol	Conditions	Value			Unit
			min.	typ.	max.	
Collector-Emitter breakdown voltage	$V_{(BR)CES}$	V_{GE}=0V , I_C= 1.5mA	1700			V
Collector-Emitter saturation voltage	$V_{CE(sat)}$	V_{GE}=15V, I_C=29A	1.6	2	2.4	
Gate-Emitter threshold voltage	$V_{GE(th)}$	I_C=1.2mA , V_{GE}=V_{CE}	5.2	5.8	6.4	
Zero gate voltage collector current	I_{CES}	V_{CE}=1700V , V_{GE}=0V			2	µA
Gate-Emitter leakage current	I_{GES}	V_{CE}=0V , V_{GE}=20V			600	nA
Integrated gate resistor	R_{Gint}			32		Ω

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

Parameter	Symbol	Conditions	Value			Unit
			min.	typ.	max.	
Input capacitance	C_{iss}	V_{CE}=25V, V_{GE}=0V, f=1MHz		2500		pF
Output capacitance	C_{oss}			105		
Reverse transfer capacitance	C_{rss}			84		

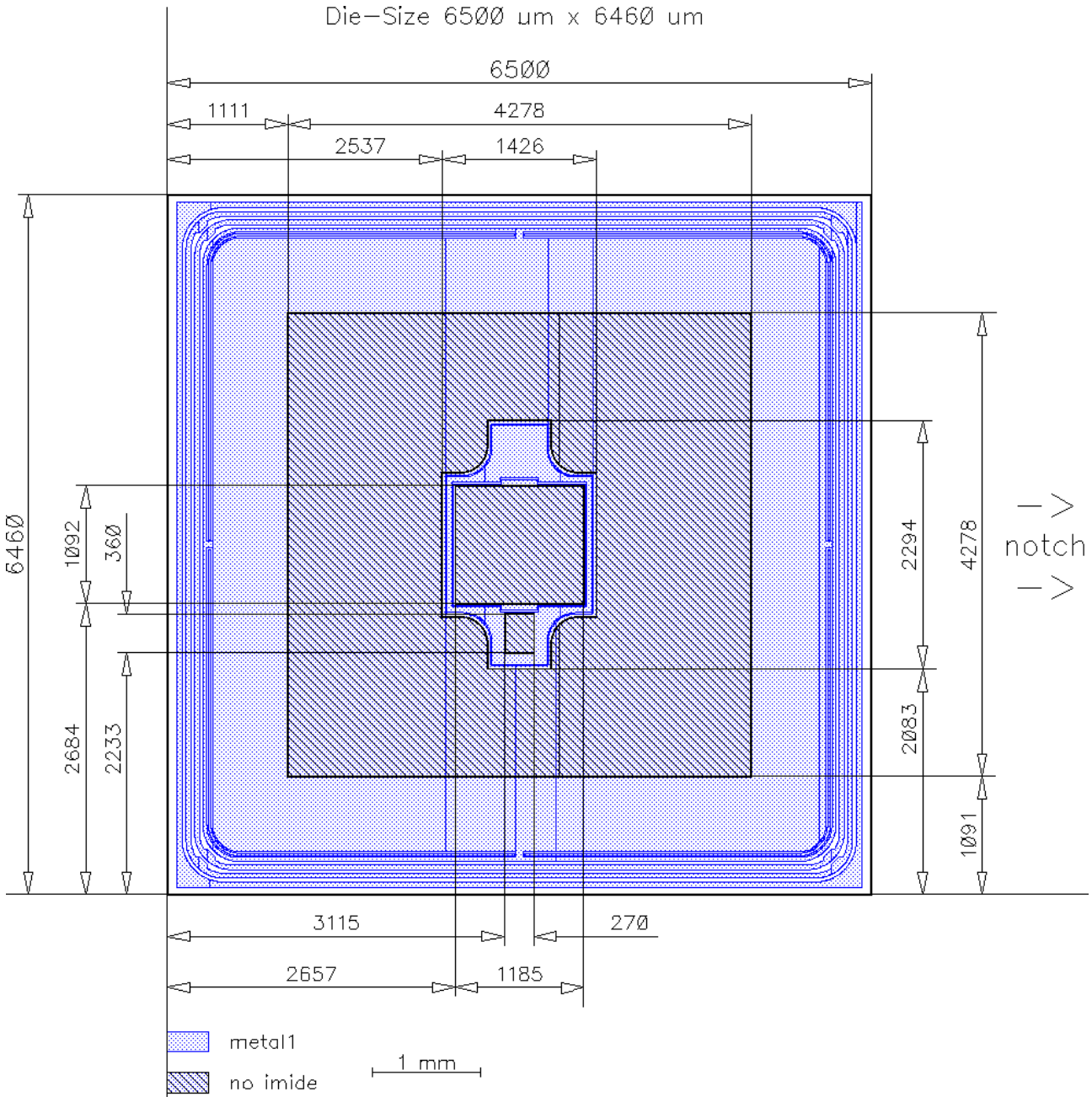
SWITCHING CHARACTERISTICS inductive load (not subject to production test - verified by design / characterization)

Parameter	Symbol	Conditions [1]	Value			Unit
			min.	typ.	max.	
Turn-on delay time	$t_{d(on)}$	T_j=125°C V_{CC}=900V, I_C=29A, V_{GE}=0/15V, R_G= 18Ω		400		µs
Rise time	t_r			50		
Turn-off delay time	$t_{d(off)}$			800		
Fall time	t_f			300		

[1] values also influenced by parasitic L- and C- in measurement and package.

SIGC42T170R3GE

CHIP DRAWING



SIGC42T170R3GE

FURTHER ELECTRICAL CHARACTERISTICS

This chip data sheet refers to the device data sheet		

DESCRIPTION

AQL 0,65 for visual inspection according to failure catalogue
Electrostatic Discharge Sensitive Device according to MIL-STD 883
Test-Normen Villach/Prüffeld

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.