IDC05S120E

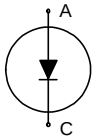
1200V thinQ!™ SiC Schottky Diode

Features:

- Revolutionary Semiconductor Material - Silicon Carbide
- Switching Behaviour Benchmark
- No Reverse Recovery / No Forward Recovery
- Temperature Independent Switching Behaviour
- Qualified According to JEDEC[1)] Based on Target Applications

Applications:

- Motor Drives / Solar Inverters
- High Voltage CCM PFC
- Switch Mode Power Supplies
- High Voltage Multipliers



Chip Type	V_R	I_{Fn}	Die Size	Package
IDC05S120E	1200V	5A	1.692 x 1.692 mm^2	sawn on foil

Mechanical Parameters

Die size		1.692 x 1.692	mm^2
Area total		2.86	
Anode pad size		1.156 x 1.156	
Thickness		362	µm
Wafer size		100	mm
Max. possible chips per wafer		2360	
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[1)]	for original and sealed MBB bags	Ambient atmosphere air, Temperature 17°C – 25°C, < 6 month	
	for open MBB bags	Acc. to IEC60721-3-3: Atmosphere >99% Nitrogen or inert gas, Humidity <25%RH, Temperature 17°C – 25°C, < 6 month	

[1)] Designed for storage conditions according to Infineon TR14 (Application Note “Storage of Products Supplied by Infineon Technologies)

Designed for climate condition under operation according to IEC60721-3-3, class 3K3

Edited by INFINEON Technologies, IFAG IPC TD VLS, L4926E, Edition 2.2, 05.09.2012

Maximum Ratings

Parameter	Symbol	Condition	Value	Unit
Repetitive peak reverse voltage	V_{RRM}	T_{vj} =25 °C	1200	V
DC blocking voltage	V_{DC}		1200	
Continuous forward current, limited by T_{vjmax}	I_F	T_{vj}< 150°C	5	A
Surge non repetitive forward current, sine halfwave	$I_{F,SM}$	T_C =25°C, t_P =10 ms	29	
		T_C =150°C, t_P =10 ms	25	
Repetitive peak forward current, limited by thermal resistance R_{th}	$I_{F,RM}$	T_C = 100°C, T_{vj} =150°C, D=0.1	23	
Non-repetitive peak forward current	$I_{F,max}$	T_C =25°C, t_P=10µs	110	
i^2t value	$\int i^2\,dt$	T_C =25°C, t_P =10 ms	4	A^2s
		T_C =150°C, t_P =10 ms	3	
Operating junction and storage temperature range	T_{vj} , T_{stg}		-55...+175	°C

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

Parameter	Symbol	Conditions	Value			Unit
			min.	Typ.	max.	
Reverse current	I_R	V_R=1200V		5	120	µA
Diode forward voltage	V_F	I_F=5A		1.6	1.8	V

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

Parameter	Symbol	Conditions	Value			Unit
			min.	Typ.	max.	
Reverse current	I_R	V_R=1200V, T_{vj} =150°C		20	1000	µA
Diode forward voltage	V_F	I_F=5A, T_{vj} =150°C		2.5	3	V

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

Parameter	Symbol	Conditions		Value			Unit
				min.	Typ.	max.	
Total capacitive charge[3]	Q_C	$I_F <= I_{F,max}$ di/dt=200A/µs V_R=1200V	T_{vj} =150°C		18		nC
Switching time[2]	t_c		T_{vj} =150°C			<10	ns
Total capacitance	C	f=1MHz	V_R=1V		250		pF
			V_R=300V		20		
			V_R=600V		18		

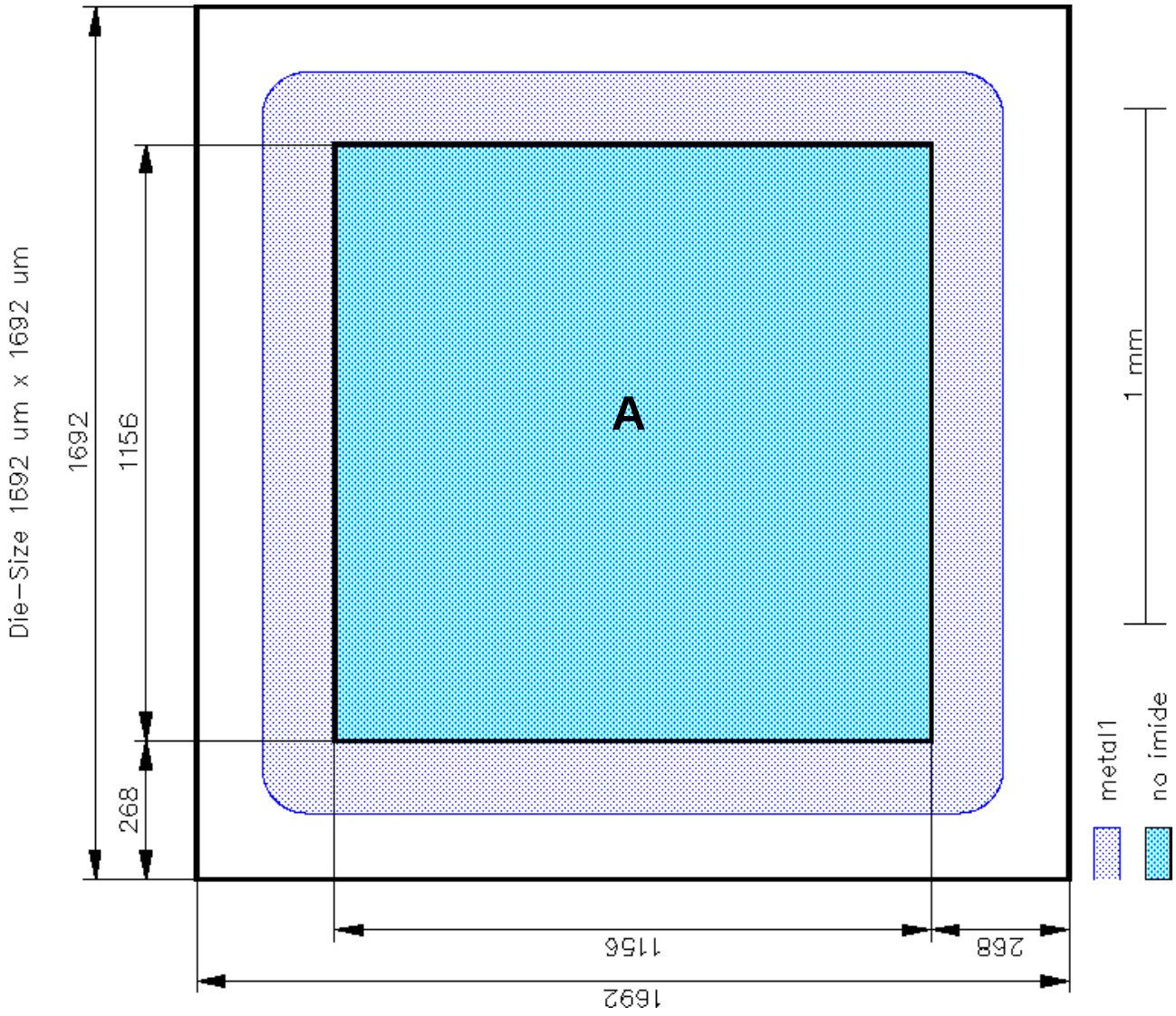
[1] J-STD20 and JESD22
[2] t_c is the time constant for the capacitive displacement current waveform (independent from T_{vj}=150°C, I_{LOAD} and di/dt), different from t_{rr}, which is dependent on T_{vj} =150°C, I_{LOAD}, di/dt. No reverse recovery time constant t_{rr} due to absence of minority carrier inject.
[3] Only capacitive charge occurring, guaranteed by design (independent from T_{vj}, I_{LOAD} and di/dt).

Further Electrical Characteristics

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	IDH05S120	Rev. 1.0

Chip Drawing



IDC05S120E

A: Anode pad

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

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