



# IDC08S120E

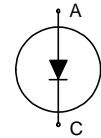
## 1200V thinQ!™ SiC Schottky Diode

### Features:

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

### Applications:

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



Chip Type	V <sub>R</sub>	I <sub>Fn</sub>	Die Size	Package
IDC08S120E	1200V	7.5A	2.012 x 2.012 mm <sup>2</sup>	sawn on foil

### Mechanical Parameters

Die size	2.012 x 2.012		mm <sup>2</sup>
Area total	4.05		
Anode pad size	1.476 x 1.476		
Thickness	362		µm
Wafer size	100		mm
Max. possible chips per wafer	1652		
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	Ø 0.65mm; max 1.2mm		
Storage environment <sup>1)</sup>	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	

<sup>1)</sup> 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



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## Maximum Ratings

Parameter	Symbol	Condition	Value	Unit
Repetitive peak reverse voltage	$V_{RRM}$	$T_{vj} = 25\text{ °C}$	1200	V
DC blocking voltage	$V_{DC}$		1200	
Continuous forward current, limited by $T_{vjmax}$	$I_F$	$T_{vj} < 150\text{ °C}$	7.5	A
Surge non repetitive forward current, sine halfwave	$I_{F,SM}$	$T_C = 25\text{ °C}, t_p = 10\text{ ms}$	39	
		$T_C = 150\text{ °C}, t_p = 10\text{ ms}$	33	
Repetitive peak forward current, limited by thermal resistance $R_{th}$	$I_{F,RM}$	$T_C = 100\text{ °C}, T_{vj} = 150\text{ °C}, D = 0.1$	32	
Non-repetitive peak forward current	$I_{F,max}$	$T_C = 25\text{ °C}, t_p = 10\text{ }\mu\text{s}$	160	
$i^2t$ value	$\int i^2 dt$	$T_C = 25\text{ °C}, t_p = 10\text{ ms}$	7	A <sup>2</sup> s
		$T_C = 150\text{ °C}, t_p = 10\text{ ms}$	5	
Operating junction and storage temperature range	$T_{vj}, T_{stg}$		-55...+175	°C

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

Parameter	Symbol	Conditions	Value			Unit
			min.	Typ.	max.	
Reverse current	$I_R$	$V_R = 1200\text{ V}$		8	180	$\mu\text{A}$
Diode forward voltage	$V_F$	$I_F = 7.5\text{ A}$		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	$I_R$	$V_R = 1200\text{ V}, T_{vj} = 150\text{ °C}$		30	1000	$\mu\text{A}$
Diode forward voltage	$V_F$	$I_F = 7.5\text{ A}, T_{vj} = 150\text{ °C}$		2.5	3	V



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

Parameter	Symbol	Conditions		Value			Unit
				min.	Typ.	max.	
Total capacitive charge <sup>3)</sup>	$Q_C$	$I_F \leq I_{F,max}$ $di/dt = 200A/\mu s$ $V_R = 1200V$	$T_{vj} = 150^\circ C$		27		nC
Switching time <sup>2)</sup>	$t_c$		$T_{vj} = 150^\circ C$			<10	ns
Total capacitance	$C$	$f = 1MHz$	$V_R = 1V$		380		pF
			$V_R = 300V$		30		
			$V_R = 600V$		27		

<sup>1)</sup> J-STD20 and JESD22

<sup>2)</sup>  $t_c$  is the time constant for the capacitive displacement current waveform (independent from  $T_{vj} = 150^\circ C$ ,  $I_{LOAD}$  and  $di/dt$ ), different from  $t_{tr}$ , which is dependent on  $T_{vj} = 150^\circ C$ ,  $I_{LOAD}$ ,  $di/dt$ . No reverse recovery time constant  $t_{rr}$  due to absence of minority carrier inject.

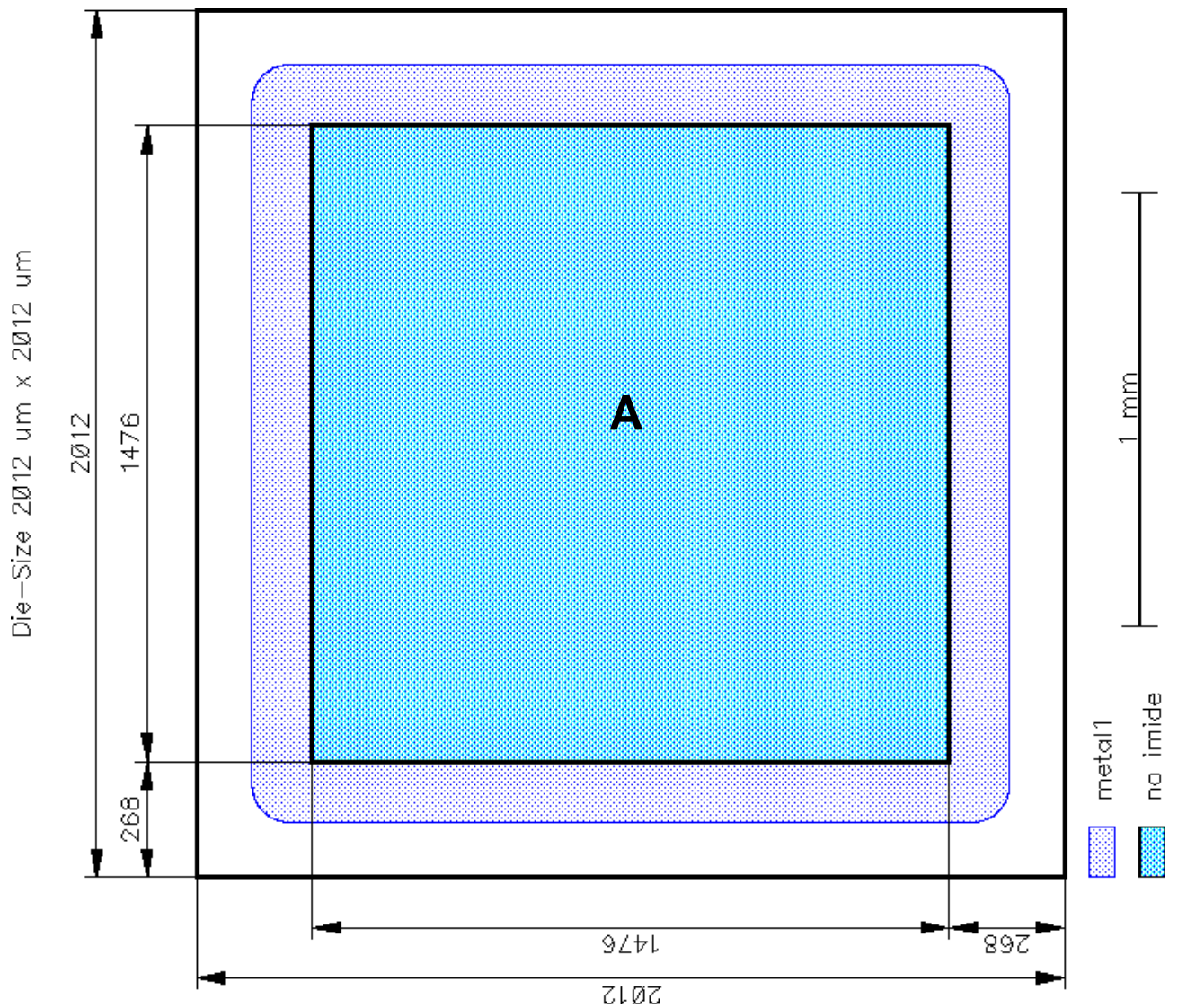
<sup>3)</sup> Only capacitive charge occurring, guaranteed by design (independent from  $T_{vj}$ ,  $I_{LOAD}$  and  $di/dt$ ).

## 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	IDH08S120	Rev. 1.0
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## Chip Drawing



A: Anode pad



# IDC08S120E

## 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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