

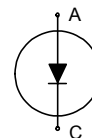
## 1200V thinQ!™ SiC Schottky Diode

### 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>BR</sub>	I <sub>F</sub>	Die Size	Package
IDC08S120E	1200V	7.5A	2.012 x 2.012 mm <sup>2</sup>	sawn on foil

### Mechanical Parameters

Raster size	2.012 x 2.012	mm <sup>2</sup>
Anode pad size	1.476 x 1.476	
Area total	4.05	
Thickness	362	µm
Wafer size	100	mm
Max. possible chips per wafer	1652	
Passivation frontside	Photoimide	
Pad metal	3200 nm Al	
Backside metal	Ni Ag –system suitable for epoxy and soft solder die bonding	
Die bond	Electrically conductive glue or solder	
Wire bond	Al, ≤ 350µm	
Reject ink dot size	Ø ≥ 0.3 mm	
Recommended storage environment	Store in original container, in dry nitrogen, in dark environment, < 6 month at an ambient temperature of 23°C	

## Maximum Ratings

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

## Static Characteristics (tested on wafer)

Parameter	Symbol	Conditions	Value			Unit
			min.	Typ.	max.	
Reverse current	$I_R$	$V_R = 1200\text{V}, T_{vj} = 25^{\circ}\text{C}$		8	180	μA
Diode forward voltage	$V_F$	$I_F = 7.5\text{A}, T_{vj} = 25^{\circ}\text{C}$		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	$I_R$	$V_R = 1200\text{V}, T_{vj} = 150^{\circ}\text{C}$		30	1000	μA
Diode forward voltage	$V_F$	$I_F = 7.5\text{A}, T_{vj} = 150^{\circ}\text{C}$		2.5	3	V

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

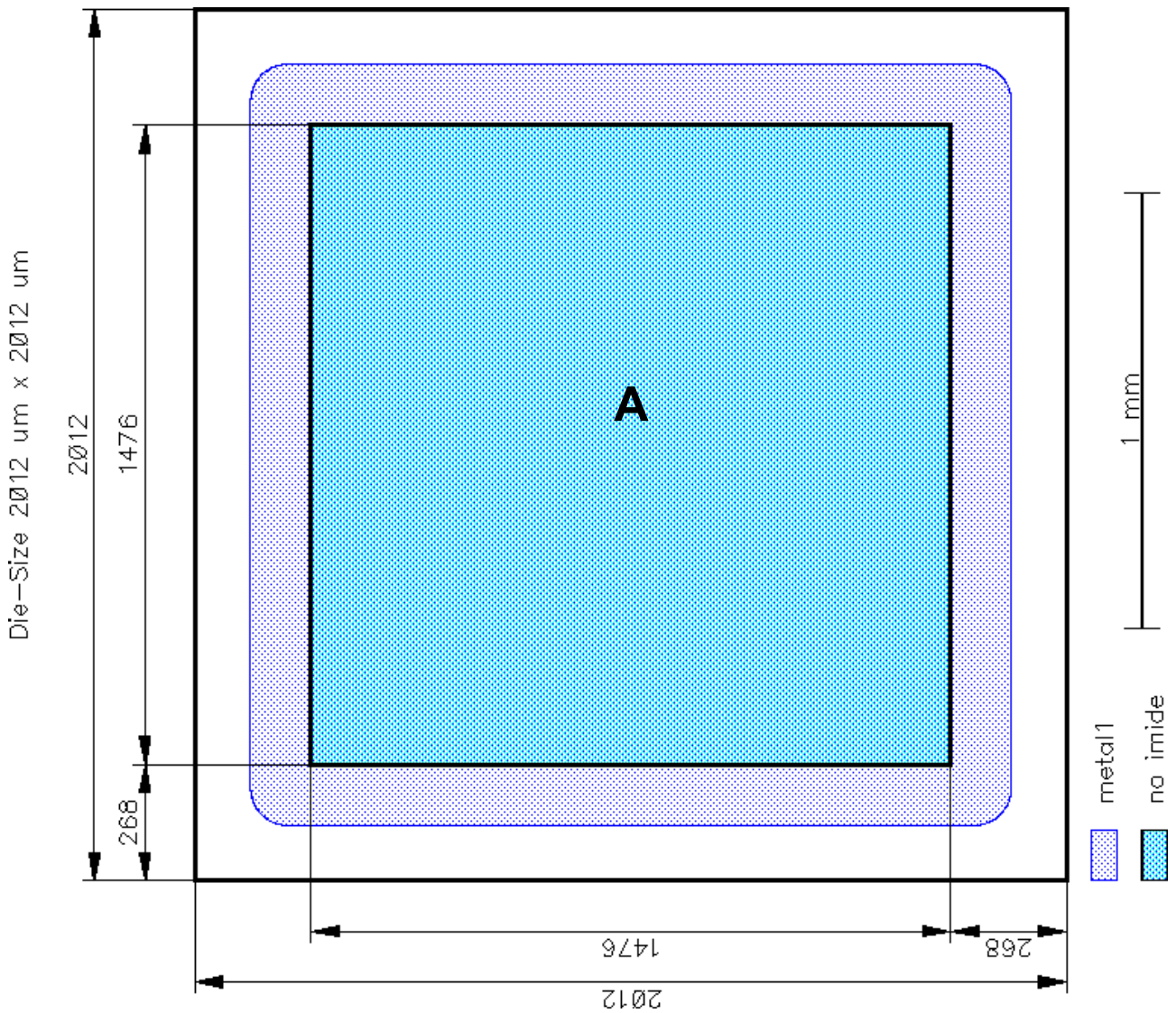
Parameter	Symbol	Conditions	Value			Unit	
			min.	Typ.	max.		
Total capacitive charge <sup>3)</sup>	$Q_C$	$I_F \leq I_{F,max}$ $di/dt = 200 A/\mu s$ $V_R = 1200 V$	$T_{vj} = 150^\circ C$		27		nC
Switching time <sup>2)</sup>	$t_c$		$T_{vj} = 150^\circ C$			<10	
Total capacitance	C	f=1MHz	$V_R = 1V$		380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

## Chip drawing



A: Anode pad



# IDC08S120E

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## Description

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AQL 0,65 for visual inspection according to failure catalogue

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Electrostatic Discharge Sensitive Device according to MIL-STD 883

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