

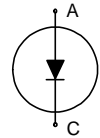
## 2<sup>nd</sup> generation thinQ!™ SiC Schottky Diode

### 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:

- SMPS, PFC, snubber



Chip Type	$V_R$	$I_{Fn}$	Die Size	Package
IDC06S60CE	600V	6A	1.45 x 1.354 mm <sup>2</sup>	sawn on foil

### Mechanical Parameters

Mechanical Parameters		
Die size	1.45x 1.354	mm <sup>2</sup>
Area total	1.96	
Anode pad size	1.213 x 1.117	
Thickness	355	µm
Wafer size	100	mm
Max. possible chips per wafer	3449	
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



# IDC06S60CE

## Maximum Ratings

Parameter	Symbol	Condition	Value	Unit
Repetitive peak reverse voltage	$V_{RRM}$	$T_{vj} = 25^{\circ}\text{C}$	600	V
DC blocking voltage	$V_{DC}$		600	
Continuous forward current, limited by $T_{vjmax}$	$I_F$	$T_{vj} < 150^{\circ}\text{C}$	6	A
Surge non repetitive forward current, sine halfwave	$I_{F,SM}$	$T_C = 25^{\circ}\text{C}, t_p = 10\text{ ms}$	49	
		$T_C = 150^{\circ}\text{C}, t_p = 10\text{ ms}$		
Repetitive peak forward current, limited by thermal resistance $R_{th}$	$I_{F,RM}$	$T_C = 100^{\circ}\text{C}, T_{vj} = 150^{\circ}\text{C}, D = 0.1$	28	
Non-repetitive peak forward current	$I_{F,max}$	$T_C = 25^{\circ}\text{C}, t_p = 10\mu\text{s}$	210	A <sup>2</sup> s
$i^2t$ value	$\int i^2 dt$	$T_C = 25^{\circ}\text{C}, t_p = 10\text{ ms}$	12	
		$T_C = 150^{\circ}\text{C}, t_p = 10\text{ ms}$		
Operating junction and storage temperature range	$T_{vj}, T_{stg}$		-55...+175	$^{\circ}\text{C}$

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

Parameter	Symbol	Conditions	Value			Unit
			min.	Typ.	max.	
Reverse current	$I_R$	$V_R = 600\text{V}$		0.7	80	$\mu\text{A}$
Diode forward voltage	$V_F$	$I_F = 6\text{A}$		1.5	1.7	V

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

Parameter	Symbol	Conditions	Value			Unit
			min.	Typ.	max.	
Reverse current	$I_R$	$V_R = 600\text{V}, T_{vj} = 150^{\circ}\text{C}$		3	800	$\mu\text{A}$
Diode forward voltage	$V_F$	$I_F = 6\text{A}, T_{vj} = 150^{\circ}\text{C}$		1.7	2.1	V



# IDC06S60CE

## 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>	$Q_C$	$I_F \leq I_{F,max}$ $di/dt = 200 A/\mu s$ $V_R = 400 V$	$T_{vj} = 150^\circ C$		15		nC
Switching time <sup>2)</sup>	$t_c$		$T_{vj} = 150^\circ C$			<10	ns
Total capacitance	$C$	$f = 1 MHz$	$V_R = 1 V$		280		pF
			$V_R = 300 V$		35		
			$V_R = 600 V$		35		

<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.

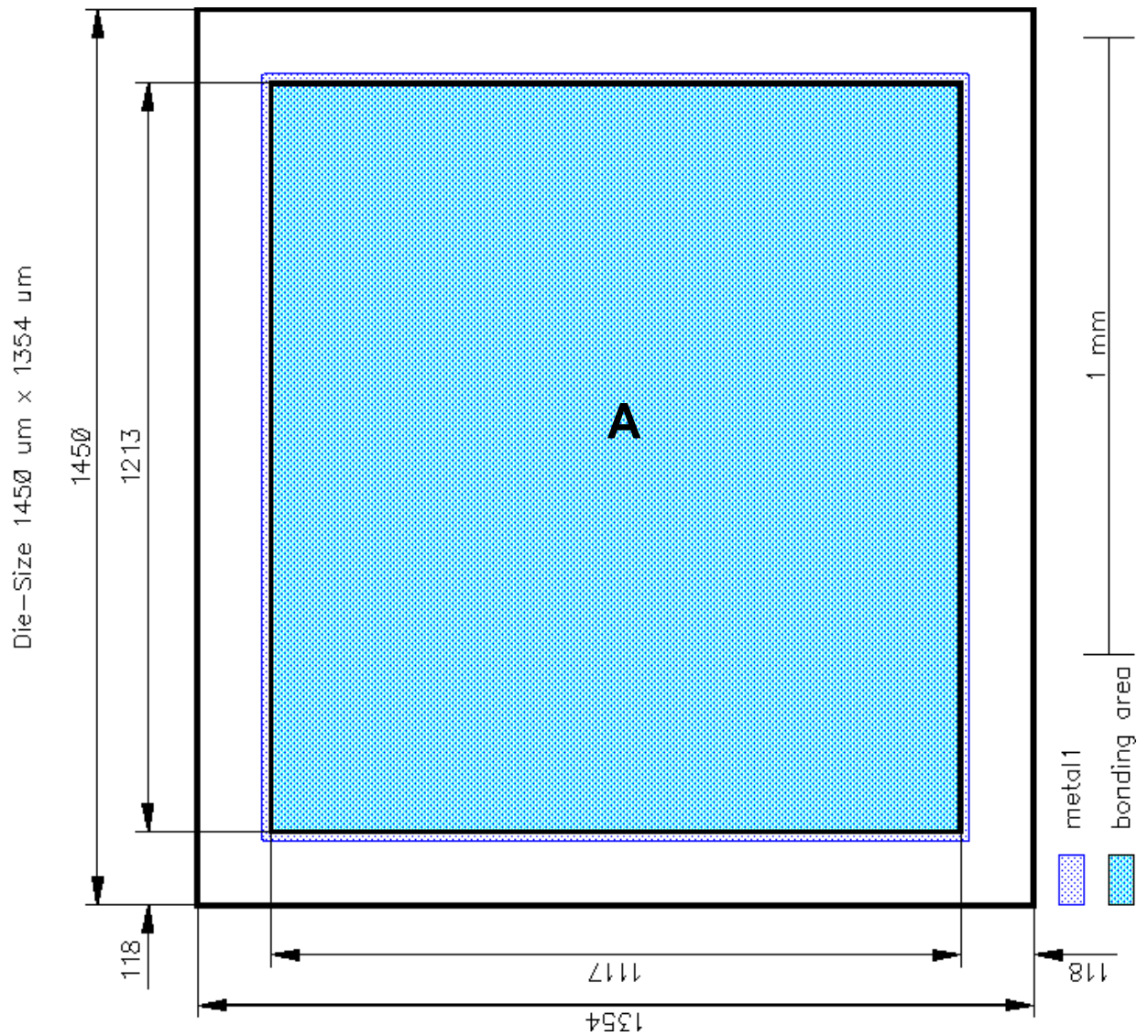
<sup>3)</sup> Only capacitive charge occurring, guaranteed by design (independent from  $T_{vj}$ ,  $I_{LOAD}$  and  $di/dt$ ).

## 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	IDT06S60C	Rev. 2.1
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## Chip Drawing



A: Anode pad



# IDC06S60CE

## 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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