

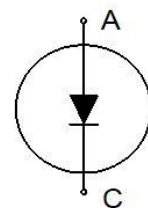
# Emitter Controlled Diode 3rd Generation for Automotive Applications

## Diode

### Quality Requirement Category: Automotive

#### Features

- 750V Emitter Controlled Diode 3<sup>rd</sup> generation technology
- Soft, fast switching
- Low reverse recovery charge
- Small temperature coefficient



#### Applications

- Drives

#### Description

- Recommended for power modules

#### Product Validation

- Technology qualified for automotive applications. Ready for validation for automotive applications according to AEC Q100/101 or AQC324.

#### Key Performance Parameters

Chip Type	$V_{RRM}$	$I_{Fn}$	Die Size	Package
IDC56D75E8A2	750V	225A	56.2mm <sup>2</sup>	Sawn on foil

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## 1 Parameters and Characteristics

**Table 1 Mechanical Parameters**

Raster size		10.070 x 5.580	mm <sup>2</sup>
Area total		56.2	mm <sup>2</sup>
Emitter pad size		See chip drawing	
Gate pad size		See chip drawing	
Silicon thickness		68	μm
Wafer size		200	mm
Maximum possible chips per wafer		470	
Passivation frontside		Photoimide	
Pad metal		AlSiCu	
Backside metal		Ni Ag system	
Die bond <sup>1</sup>		Soft solder Sinter	
Frontside interconnect <sup>1</sup>		Wire bond: Al, ≤500μm	
Reject ink dot size		Inkless	
Storage environment (<6 months)	For original and sealed MBB bags <sup>2</sup>	Ambient atmosphere air, temperature 17°C – 25°C	

<sup>1</sup> Depending on customer specific assembly process

<sup>2</sup> [https://www.infineon.com/dgdl/Storage\\_of\\_Products\\_Supplied\\_by\\_Infineon\\_Technologie.pdf?fileId=5546d461641369bf01643b95d8500011](https://www.infineon.com/dgdl/Storage_of_Products_Supplied_by_Infineon_Technologie.pdf?fileId=5546d461641369bf01643b95d8500011)

**Table 3 Maximum Ratings<sup>1</sup>**

Parameter	Symbol	Conditions	Value	Unit
Maximum reverse voltage	$V_{RRM}$	$25^{\circ}\text{C} \leq T_{vj} \leq 175^{\circ}\text{C}$	750	V
		$T_{vj} = -40^{\circ}\text{C}^2$	700	
Continuous forward current, limited by $T_{vj,max}$	$I_F$		<sup>3</sup>	A
Pulsed forward current, $t_p$ limited by $T_{vj,max}$	$I_{F,pulse}$		675	A
Operating junction temperature	$T_{vj,op}$		-40 ... +175	°C
Safe operating area	SOA	$I_{F,max} = 450\text{A}$ , $V_{R,max} = V_{RRM}$ , $-40^{\circ}\text{C} \leq T_{vj,op} \leq 175^{\circ}\text{C}$		

**Table 4 Static Characteristics (Tested on Wafer),  $T_{vj}=25^{\circ}\text{C}$**

Parameter	Symbol	Conditions	Value			Unit
			min.	typ.	max.	
Forward voltage drop	$V_F$	$I_F = 67\text{A}$	-	1.2	1.5	V
Reverse leakage current	$I_R$	$V_R = 750\text{V}$	-	-	100	μA

**Table 5 Electrical Characteristics<sup>1</sup>**

Parameter	Symbol	Conditions		Value			Unit
				min.	typ.	max.	
Forward voltage drop	$V_F$	$I_F = 225\text{A}$	$T_{vj} = 25^{\circ}\text{C}$	-	1.55	1.9	V
			$T_{vj} = 175^{\circ}\text{C}$	-	1.35	-	

<sup>1</sup> Not subject to production test - verified by design/characterization.

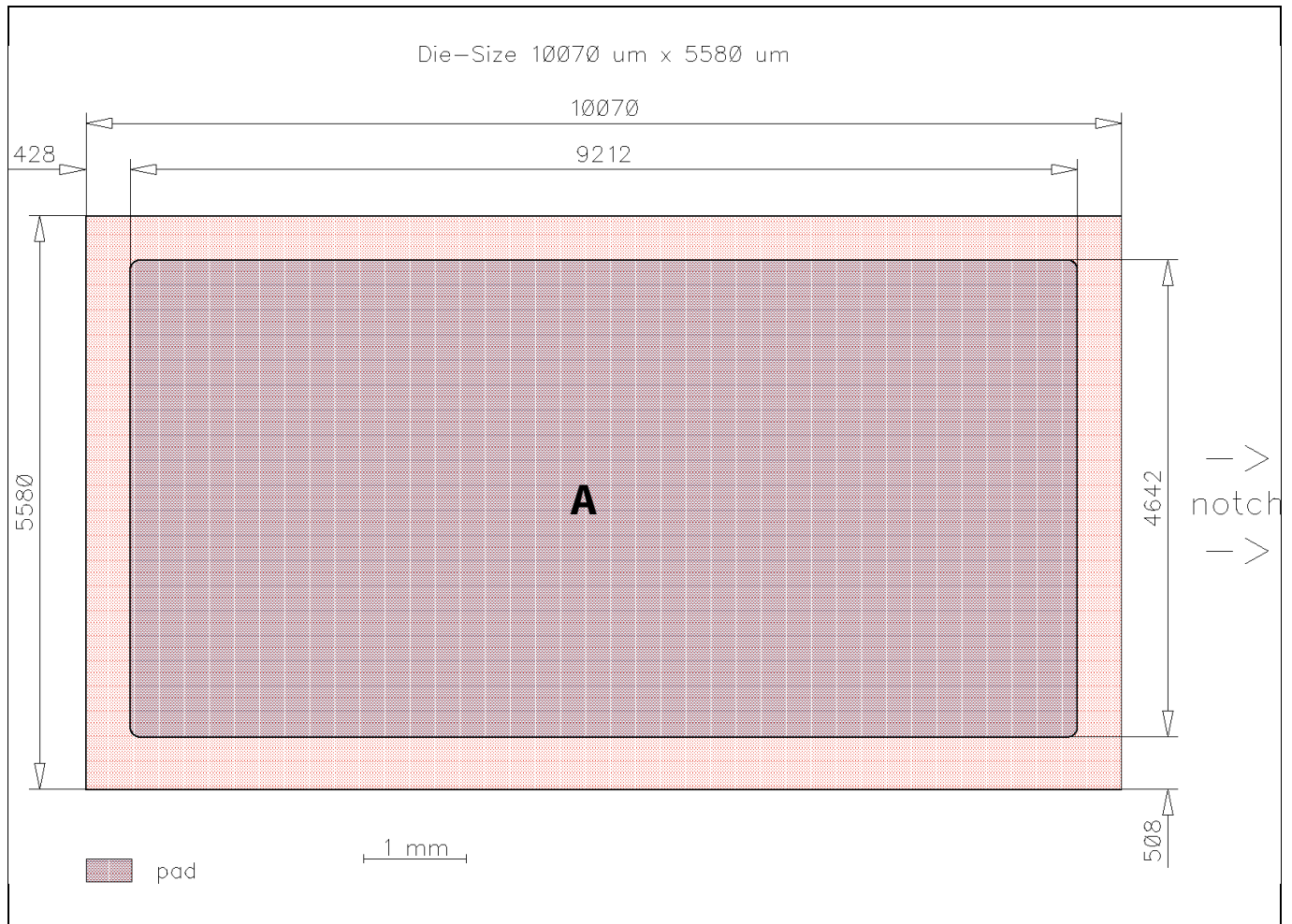
<sup>2</sup>  $V_{RRM}$  increases linearly between  $-40^{\circ}\text{C}$  and  $25^{\circ}\text{C}$ .

<sup>3</sup> Depending on thermal properties of assembly.

## 2 Further Electrical Characteristics

Note: Switching characteristics and thermal properties are dependent on module design and mounting technology and can therefore not be specified for a bare die.

## 3 Chip Drawing



### Key

- A = Anode

## 4 Bare Die Product Specifics

Note: Test coverage at wafer level for diodes cannot cover the full range of customer application conditions. Therefore it is the responsibility of the customer to test all performance characteristics, which are relevant for their specific application, at the package level, including SOA.

### Description

- AQL 0.1 for visual inspection according to failure catalogue
- Electrostatic Discharge Sensitive Device according to MIL-STD 883

## Revision History

Document version	Date of release	Description of changes
V1.00	2020-08-10	Initial Final Datasheet

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**Edition 2020-08-10**

**Published by**

**Infineon Technologies AG  
81726 München, Germany**

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