

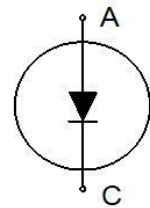
# Emitter Controlled Diode 3rd Generation for Automotive Applications

## 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
- Solderable / sinterable front side pads<sup>1</sup>



#### 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 <sub>RRM</sub>	I <sub>Fn</sub>	Die Size	Package
IDC61D75E8DA	750V	240A	60.8mm <sup>2</sup>	Sawn on foil

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

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## 1 Parameters and Characteristics

**Table 1 Mechanical Parameters**

Raster size	7.8 x 7.8	mm <sup>2</sup>
Area total	60.8	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	431	
Passivation frontside	Photoimide	
Pad metal	NiP/Pd	
Backside metal	NiP/Pd	
Die bond <sup>1</sup>	Soft solder Sinter	
Frontside interconnect <sup>1</sup>	Soft solder Sinter	
Reject ink dot size	Typ.: 0.6, max.: 1.2	mm
Storage environment (<6 months)	For original and sealed MBB bags <sup>2</sup>	Ambient atmosphere air, temperature 17°C – 25°C

**Table 2 Maximum Ratings<sup>3</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
		$T_{vj} = -40^{\circ}\text{C}^4$	700	
Continuous forward current, limited by $T_{vj\ max}$	$I_F$		_5	A
Pulsed forward current, $t_p$ limited by $T_{vj\ max}$	$I_{F,pulse}$		720	A
Operating junction temperature	$T_{vj,op}$		-40 ... +175	°C
Safe operating area	SOA	$I_{F,max} = 480\text{A}$ , $V_{R,max} = V_{RRM}$ , $-40^{\circ}\text{C} \leq T_{vj,op} \leq 175^{\circ}\text{C}$		

<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)

<sup>3</sup> Not subject to production test - verified by design/characterization.

<sup>4</sup>  $V_{RRM}$  increases linearly between -40°C and 25°C.

<sup>5</sup> Depending on thermal properties of assembly.

**Table 3 Static Characteristics (Tested on Wafer),  $T_{vj}=25^{\circ}\text{C}$**

Parameter	Symbol	Conditions	Value			Unit
			min.	typ.	max.	
Forward voltage drop	$V_F$	$I_F = 72\text{A}$	-	1.2	1.5	V
Reverse leakage current	$I_R$	$V_R = 750\text{V}$	-	-	100	$\mu\text{A}$

**Table 4 Electrical Characteristics<sup>1</sup>**

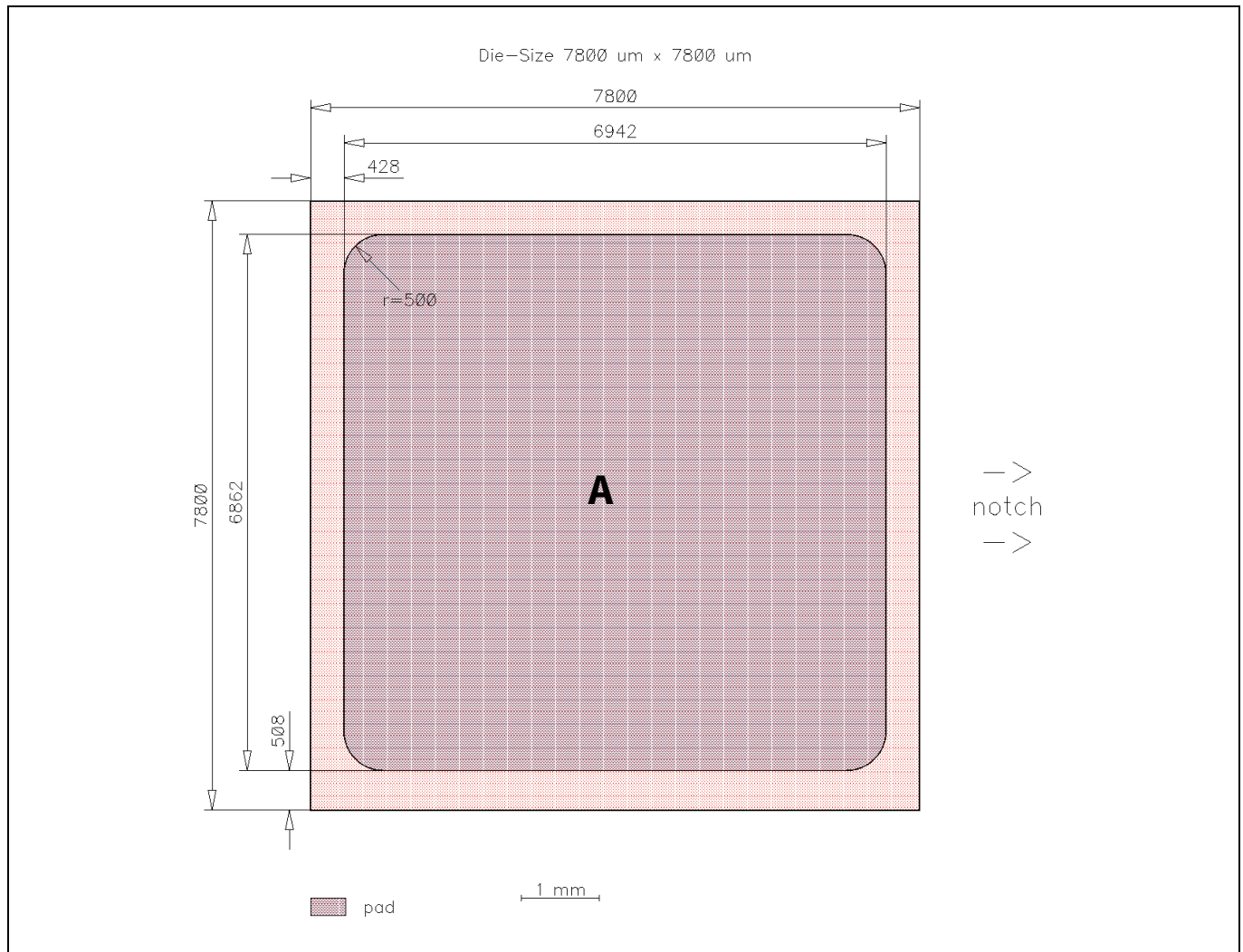
Parameter	Symbol	Conditions		Value			Unit
				min.	typ.	max.	
Forward voltage drop	$V_F$	$I_F = 240\text{A}$	$T_{vj} = 25^{\circ}\text{C}$	-	1.55	1.9	V
			$T_{vj} = 175^{\circ}\text{C}$	-	1.35	-	

## 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.

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

### 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.

Note: This chip product with palladium surface is not recommended and might not be capable for wire bonding after solder or sinter processes.

#### 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	2021-02-01	Initial Final Datasheet

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**Edition 2021-02-01**

**Published by**

**Infineon Technologies AG  
81726 München, Germany**

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