

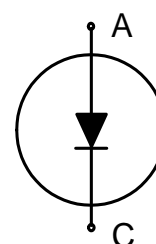
# "Emitter Controlled Diode" Chip 3rd Gen. for Automotive Applications

## 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
- Double side cooling



### 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 LV324

### Key Performance Parameters

Chip Type	$V_D$	$I_F$	Die Size	Package
IDC110D75E8DA	750V	450A	110mm <sup>2</sup>	Sawn on foil



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## 1 Parameters and characteristics

**Table 1 Mechanical parameters**

Raster size	13.750 x 8.000	mm <sup>2</sup>
Area total	110	
Anode pad size	See chip drawing	
Silicon thickness	68	μm
Wafer size	200	mm
Maximum possible chips per wafer	231	
Passivation frontside	Photoimide	
Pad metal	NiP/Pd	
Backside metal	NiP/Pd	
Die bond	Electrically conductive epoxy glue and soft solder	
Wire bond	Al, ≤500μm	
Reject ink dot size	Inkless	
Storage environment (<6 months)	for original and sealed MBB bags	Ambient atmosphere air, temperature 17°C – 25°C

**Table 2 Maximum ratings**

Parameter	Symbol	Value	Unit
Repetitive peak reverse voltage, $T_{vj}=25^{\circ}\text{C}$	$V_{RRM}$	750	V
Continuous forward current, limited by $T_{vj\max}$	$I_F$	- <sup>1</sup>	A
Maximum repeatitive forward current, limited by $T_{vj\max}$ <sup>2</sup>	$I_{FRM}$	1350	A
Junction temperature	$T_{vj}$	-40 ... +175	$^{\circ}\text{C}$
Operating junction temperature	$T_{vj,op}$	-40 ... +150 <sup>3</sup>	$^{\circ}\text{C}$
Safe Operation area (SOA) <sup>2</sup>	$I_{F,\max}=900\text{A}, V_{R,\max}=750\text{V}, 25^{\circ}\text{C} \leq T_{vj,op} \leq T_{vj,op,\max}$ $I_{F,\max}=900\text{A}, V_{R,\max}=700\text{V}, -40^{\circ}\text{C} \leq T_{vj,op} \leq 25^{\circ}\text{C}$		

**Table 3 Static characteristics (tested on wafer),  $T_{vj}=25^{\circ}\text{C}$**

Parameter	Symbol	Conditions	Value			Unit
			min.	typ.	max.	
Reverse leakage current	$I_R$	$V_R=450\text{V}$	-	-	27	$\mu\text{A}$
Cathode-Anode breakdown voltage	$V_{BR}$	-	750	-	-	V
Forward voltage drop	$V_F$	$I_F=90\text{A}$	-	1.1	-	V

**Table 4 Electrical characteristics<sup>2</sup>**

Parameter		Symbol	Conditions	Value			Unit
				min.	typ.	max.	
Forward voltage drop	$T_{vj}=25^{\circ}\text{C}$	$V_F$	$I_F=450\text{A}$	-	1.55	1.9	V
	$T_{vj}=125^{\circ}\text{C}$			-	1.5	-	

<sup>1</sup> Depending on thermal properties of assembly.

<sup>2</sup> Not subject to production test - verified by design/characterization.

<sup>3</sup>  $T_{vj,op}=175^{\circ}\text{C}$  for 100 hours.

## **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.*



## **4 Bare die product specifics**

*Note: Test coverage at wafer level cannot cover all application conditions. Therefore it is recommended to test all characteristics which are relevant for the application at package level, including RBSOA and SCSOA.*

### **Description**

- AQL 0.1 for visual inspection according to “Failure Catalogue For Bare Die Delivery”
- Electrostatic Discharge Sensitive Device according to MIL-STD 883

## Revision history

Revision	Description of change
V1.0	Initial Datasheet.



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Email: [erratum@infineon.com](mailto:erratum@infineon.com)

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