

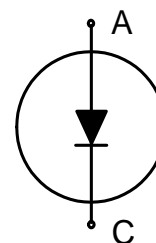
"Emitter Controlled Diode" Chip 3rd Gen. for Automotive Applications

Diode

Quality Requirement Category: Automotive

Features

- 750V "Emitter Controlled Diode" 3rd 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
IDC131D75E8DA	750V	540A	131mm ²	Sawn on foil

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1 Parameters and characteristics

Table 1 Mechanical parameters

Raster size	15.050 x 8.700	mm ²
Area total	131	
Anode pad size	See chip drawing	
Silicon thickness	68	μm
Wafer size	200	mm
Maximum possible chips per wafer	194	
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	- ¹	A
Maximum repeatitive forward current, limited by $T_{vj\max}$ ²	I_{FRM}	1620	A
Junction temperature	T_{vj}	-40 ... +175	$^{\circ}\text{C}$
Operating junction temperature	$T_{vj,op}$	-40 ... +150 ³	$^{\circ}\text{C}$
Safe Operation area (SOA) ²	$I_{F,\max}=1080\text{A}, V_{R,\max}=750\text{V}, 25^{\circ}\text{C} \leq T_{vj,op} \leq T_{vj,op,\max}$ $I_{F,\max}=1080\text{A}, V_{R,\max}=700\text{V}, -40^{\circ}\text{C} \leq T_{vj,op} \leq 25^{\circ}\text{C}$		

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	μA
Cathode-Anode breakdown voltage	V_{BR}	-	750	-	-	V
Forward voltage drop	V_F	$I_F=90\text{A}$	-	1.05	-	V

Table 4 Electrical characteristics²

Parameter		Symbol	Conditions	Value			Unit
				min.	typ.	max.	
Forward voltage drop	$T_{vj}=25^{\circ}\text{C}$	V_F	$I_F=540\text{A}$	-	1.55	1.9	V
	$T_{vj}=125^{\circ}\text{C}$			-	1.5	-	

¹ Depending on thermal properties of assembly.

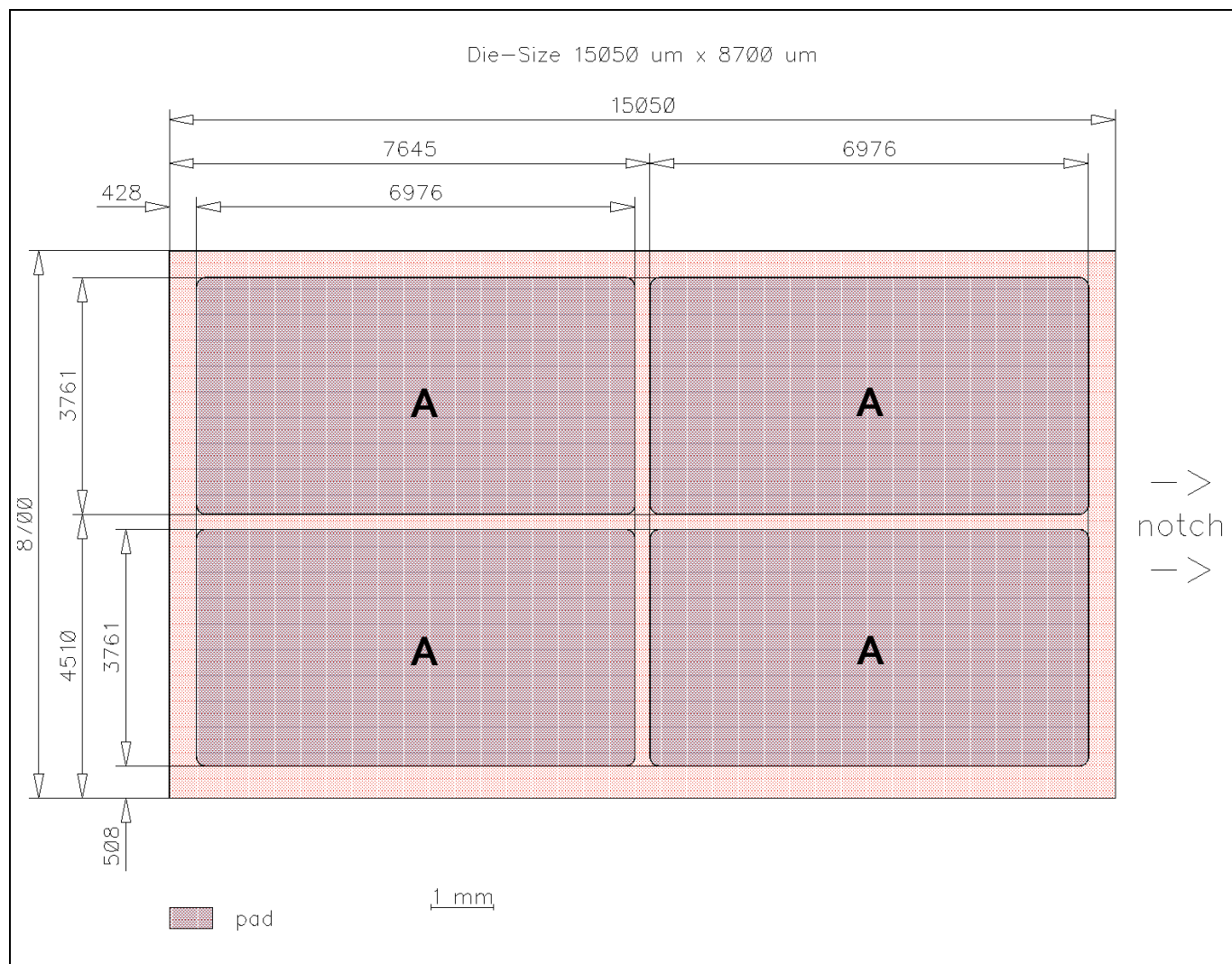
² Not subject to production test - verified by design/characterization.

³ $T_{vj,op}=175^{\circ}\text{C}$ 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.

3 Chip Drawing



Key

- A = Anode pad

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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