

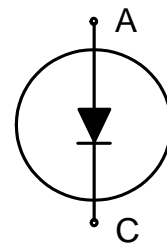
“Emitter Controlled Diode” Chip 3rd Generation for Automotive Applications

Diode

Quality Requirement Category: Automotive

Features

- 750V “Emitter Controlled Diode” 3rd generation technology
- Soft, fast switching
- Low reverse recovery charge
- Small temperature coefficient
- Solderable / sinterable front-side pad



Potential 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_D	I_F	Die Size	Package
IDC56D75E8DA2	750V	225A	56.2mm ²	Sawn on foil

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1 Parameters and characteristics

Table 1 Mechanical parameters

Raster size	10.070 x 5.580	mm ²
Area total	56.2	
Anode pad size	9.212 x 4.642	
Silicon thickness	68	μm
Wafer size	200	mm
Maximum possible chips per wafer	470	
Passivation frontside	Photoimide	
Pad metal	NiP/Pd	
Backside metal	NiP/Pd	
Die bond	Soft solder or sinter	
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, $25^{\circ}\text{C} \leq T_{vj} \leq 175^{\circ}\text{C}$	V_{RRM}	750	V
Repetitive peak reverse voltage, $-40^{\circ}\text{C} \leq T_{vj} < 25^{\circ}\text{C}$ ²	V_{RRM}	700	V
Continuous forward current, limited by $T_{vj\max}$	I_F	- ¹	A
Pulsed forward current, limited by $T_{vj\max}$ ²	$I_{F,puls}$	675	A
Junction temperature	T_{vj}	-40 ... +175	°C
Operating junction temperature	$T_{vj,op}$	-40 ... +175	°C
Safe Operation area (SOA) ²	$I_{F,\max}=450\text{A}, V_{R,\max}=750\text{V}, 25^{\circ}\text{C} \leq T_{vj,op} \leq T_{vj,op,\max}$ $I_{F,\max}=450\text{A}, V_{R,\max}=700\text{V}, -40^{\circ}\text{C} \leq T_{vj,op} < 25^{\circ}\text{C}$		

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
Forward voltage drop	V_F	$I_F=67\text{A}$	-	1.2	1.5	V

Table 4 Electrical characteristics²

Parameter		Symbol	Conditions	Value			Unit
				min.	typ.	max.	
Forward voltage drop	$T_{vj}=25^{\circ}\text{C}$	V_F	$I_F=225\text{A}$	-	1.55	1.9	V
	$T_{vj}=125^{\circ}\text{C}$			-	1.5	-	

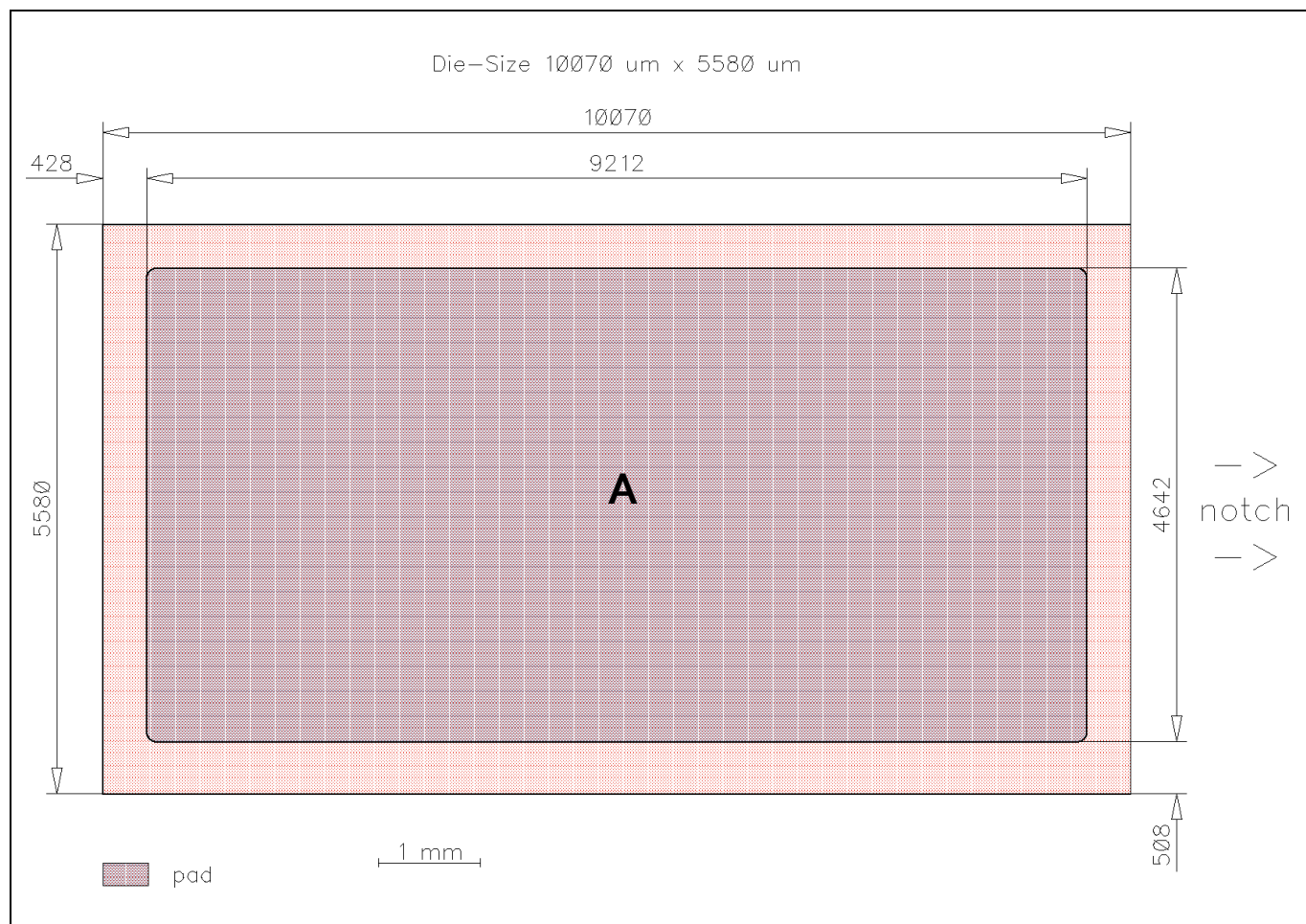
¹ Depending on thermal properties of assembly.

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

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
- Electrostatic Discharge Sensitive Device according to MIL-STD 883

Revision history

Document version	Date of release	Description of changes
V1.0	2019-06-14	Initial Datasheet

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