

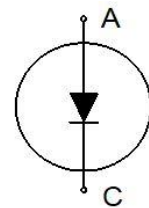
Emitter Controlled Diode 3rd Generation for Automotive Applications

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 pads



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
IDC45D75E8DA2	750V	170A	45mm ²	Sawn on foil

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1 Parameters and Characteristics

Table 1 Mechanical Parameters

Raster size	9.000 x 5.000	mm ²
Area total	45	mm ²
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	590	
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 ¹	Ambient atmosphere air, temperature 17°C – 25°C

Table 2 Maximum Ratings²

Parameter	Symbol	Conditions	Value	Unit
Maximum reverse voltage	V_{RRM}	$25^{\circ}\text{C} \leq T_{vj} \leq 175^{\circ}\text{C}$	750	V
		$T_{vj} = -40^{\circ}\text{C}^3$	700	
Continuous forward current, limited by $T_{vj\max}$	I_F		- ⁴	A
Pulsed forward current, t_p limited by $T_{vj\max}$	$I_{F,pulse}$		510	A
Operating junction temperature	$T_{vj,op}$		-40 ... +175	°C
Safe operating area	SOA	$I_{F,max} = 340\text{A}$, $V_{R,max} = V_{RRM}$, $-40^{\circ}\text{C} \leq T_{vj,op} \leq 175^{\circ}\text{C}$		

¹ https://www.infineon.com/dgdl/Storage_of_Products_Supplied_by_Infineon_Technologie.pdf?fileId=5546d461641369bf01643b95d8500011

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

³ V_{RRM} increases linearly between -40°C and 25°C .

⁴ 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	$I_F = 51\text{A}$	-	1.2	1.5	V
Reverse leakage current	I_R	$V_R = 750\text{V}$	-	-	100	μA

Table 4 Electrical Characteristics¹

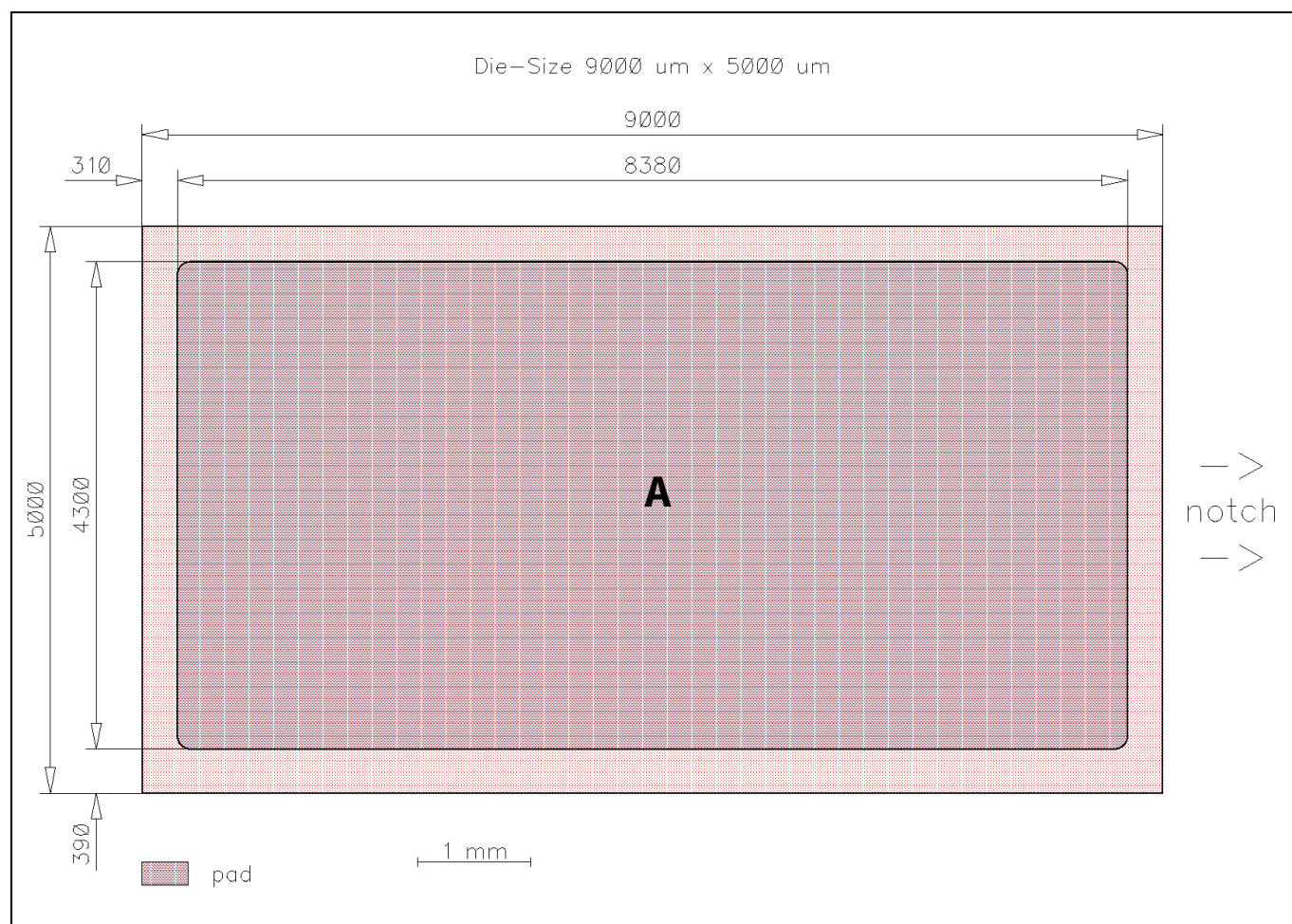
Parameter	Symbol	Conditions		Value			Unit
				min.	typ.	max.	
Forward voltage drop	V_F	$I_F = 170\text{A}$	$T_{vj} = 25^{\circ}\text{C}$	-	1.55	1.9	V
			$T_{vj} = 175^{\circ}\text{C}$	-	1.35	-	

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.

¹ 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.

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	2020-06-15	Initial Datasheet

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