IDC05S60CE

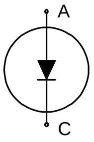
2nd generation thinQ!^{TM} SiC Schottky Diode

Features:

- Revolutionary Semiconductor Material - Silicon Carbide
- Switching Behaviour Benchmark
- No Reverse Recovery / No Forward Recovery
- Temperature Independent Switching Behaviour
- Qualified According to JEDEC1) Based on Target Applications

Applications:

- SMPS, PFC, snubber



Chip Type	V_R	I_{Fn}	Die Size	Package
IDC05S60CE	600V	5A	1.45 x 1.162 mm^2	sawn on foil

Mechanical Parameters

Die size		1.45x 1.162	mm^2
Area total		1.68	
Anode pad size		1.213 x 0.925	
Thickness		355	µm
Wafer size		100	mm
Max. possible chips per wafer		4051	
Passivation frontside		Photoimide	
Pad metal		3200 nm AlSiCu	
Backside metal		Ni Ag –system	
Die bond		Electrically conductive epoxy glue and soft solder	
Wire bond		Al, ≤500µm	
Reject ink dot size		∅ 0.65mm; max 1.2mm	
Storage environment1)	for original and sealed MBB bags	Ambient atmosphere air, Temperature 17°C – 25°C, < 6 month	
	for open MBB bags	Acc. to IEC60721-3-3: Atmosphere >99% Nitrogen or inert gas, Humidity <25%RH, Temperature 17°C – 25°C, < 6 month	

1) Designed for storage conditions according to Infineon TR14 (Application Note “Storage of Products Supplied by Infineon Technologies)

Designed for climate condition under operation according to IEC60721-3-3, class 3K3

Maximum Ratings

Parameter	**Symbol**	**Condition**	**Value**	**Unit**
Repetitive peak reverse voltage	V_{RRM}	T_{vj} =25 °C	600	V
DC blocking voltage	V_{DC}		600	
Continuous forward current, limited by T_{vjmax}	I_F	T_{vj} < 150°C	5	A
Surge non repetitive forward current, sine halfwave	$I_{F,SM}$	T_C =25°C, t_P =10 ms	42	
		T_C =150°C, t_P =10 ms		
Repetitive peak forward current, limited by thermal resistance R_{th}	$I_{F,RM}$	T_C = 100°C, T_{vj} =150°C, D=0.1	21	
Non-repetitive peak forward current	$I_{F,max}$	T_C =25°C, t_P=10µs	180	
i^2t value	$\int i^2\,dt$	T_C =25°C, t_P =10 ms	9	A^2s
		T_C =150°C, t_P =10 ms		
Operating junction and storage temperature range	T_{vj} , T_{stg}		-55...+175	°C

Static Characteristics (tested on wafer), T_{vj} = 25 °C

Parameter	**Symbol**	**Conditions**	**Value**			**Unit**
			min.	Typ.	max.	
Reverse current	I_R	V_R=600V		0.6	70	µA
Diode forward voltage	V_F	I_F=5A		1.5	1.7	V

Static Characteristics (not subject to production test - verified by design / characterization)

Parameter	**Symbol**	**Conditions**	**Value**			**Unit**
			min.	Typ.	max.	
Reverse current	I_R	V_R=600V, T_{vj} =150°C		2.5	700	µA
Diode forward voltage	V_F	I_F=5A, T_{vj} =150°C		1.7	2.1	V

Dynamic Characteristics (not subject to production test - verified by design / characterization)

Parameter	**Symbol**	**Conditions**		**Value**			**Unit**
				min.	Typ.	max.	
Total capacitive charge3)	Q_C	$I_F <= I_{F,max}$ $di/dt = 200 A/\mu s$ $V_R = 400 V$	$T_{vj} = 150°C$		12		nC
Switching time2)	t_c		$T_{vj} = 150°C$			<10	ns
Total capacitance	C	$f = 1 MHz$	$V_R = 1 V$		240		pF
			$V_R = 300 V$		30		
			$V_R = 600 V$		30		

1) J-STD20 and JESD22

2) t_c is the time constant for the capacitive displacement current waveform (independent from $T_{vj} = 150°C$, I_{LOAD} and di/dt), different from t_{rr}, which is dependent on $T_{vj} = 150°C$, I_{LOAD}, di/dt. No reverse recovery time constant t_{rr} due to absence of minority carrier inject.

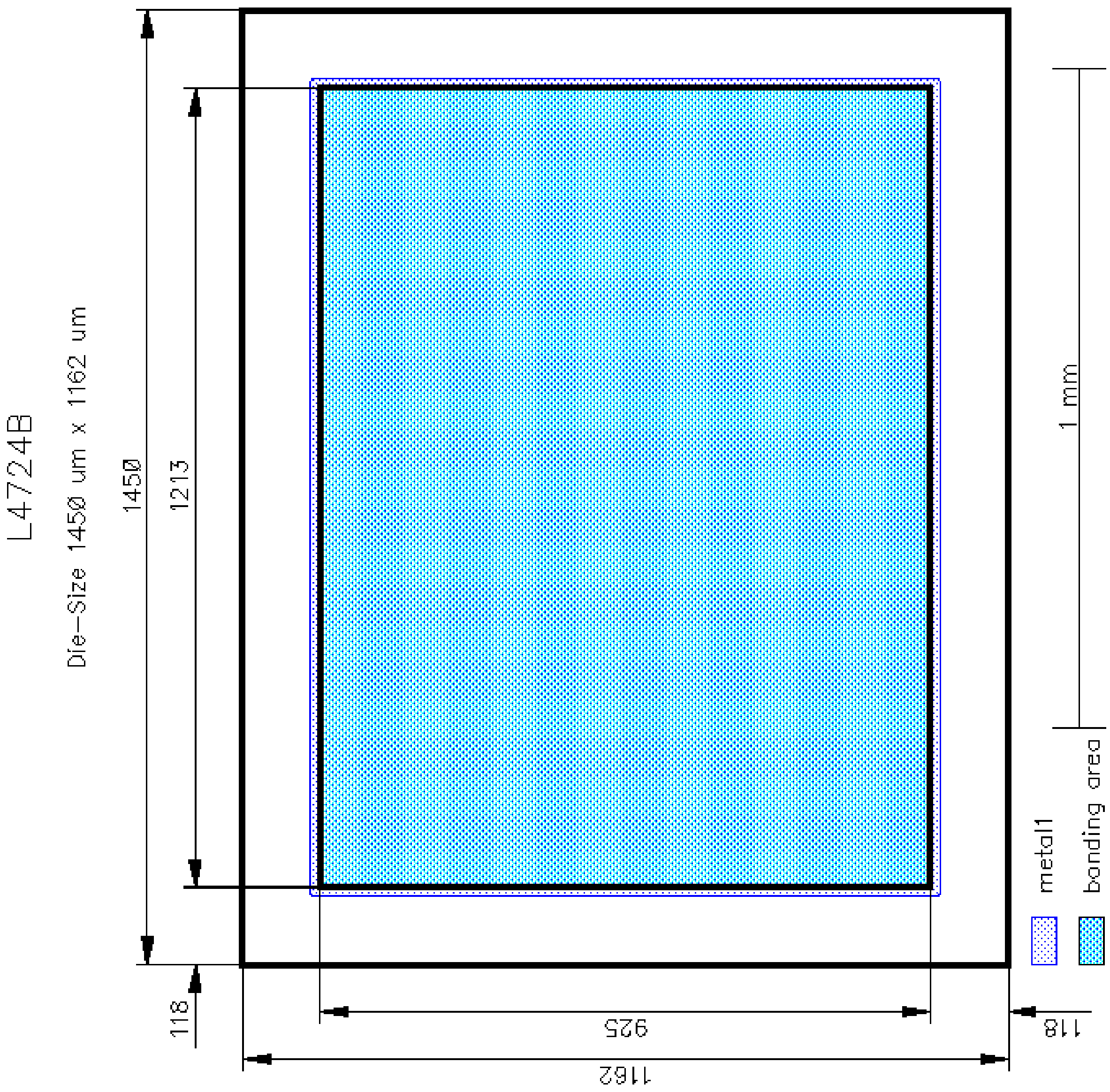
3) Only capacitive charge occurring, guaranteed by design (independent from T_{vj}, I_{LOAD} and di/dt).

Further Electrical Characteristics

Switching characteristics and thermal properties are depending strongly on module design and mounting technology and can therefore not be specified for a bare die.

This chip data sheet refers to the device data sheet	IDT05S60C	Rev. 2.1

Chip Drawing



A: Anode pad

Description

AQL 0,65 for visual inspection according to failure catalogue

Electrostatic Discharge Sensitive Device according to MIL-STD 883

Revision History

Version	Subjects (major changes since last revision)	Date

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