

2nd generation thinQ![™] SiC Schottky Diode

Features:

Applications:

SMPS, PFC, snubber

- 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

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		
Area total		1.68	mm²	
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		Ø 0.65mm; max 1.2mm		
Storage environment ¹⁾	for original and sealed MBB bags	Ambient atmosphere air, Temperature 17°C – 2 < 6 month	25°C,	
	for open MBB bags	Acc. to IEC60721-3-3: Atmosphere >99% Nitroger gas, Humidity <25%RH, Temperature 17°C – 25°C,		

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}	<i>T</i> _{vj} =25 °C	600		
DC blocking voltage	V _{DC}		600		
Continuous forward current, limited by T_{vjmax}	I _F	<i>T</i> _{vj} < 150°C	5		
Surge non repetitive forward current,	,	$T_{\rm C} = 25^{\circ} {\rm C}, t_{\rm P} = 10 {\rm ms}$	42	╡.	
sine halfwave	I _{F,SM}	$T_{\rm C} = 150^{\circ}{\rm C}, t_{\rm P} = 10 {\rm ms}$		A	
Repetitive peak forward current, limited by thermal resistance $R_{\rm th}$	I _{F,RM}	$T_{\rm C} = 100^{\circ}{\rm C}, \ T_{\rm vj} = 150^{\circ}{\rm C}, \ D=0.1$	21		
Non-repetitive peak forward current	I _{F,max}	$T_{\rm C} = 25^{\circ} {\rm C}, t_{\rm P} = 10 {\rm \mu s}$	180		
i ² t value	$\int i^2 dt$	$T_{\rm C} = 25^{\circ} {\rm C}, t_{\rm P} = 10 {\rm ms}$	9	– A ² s	
i t value	J ⁱ al	$T_{\rm C} = 150^{\circ}{\rm C}$, $t_{\rm P} = 10 {\rm ms}$		AS	
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.	Тур.	max.	Unit
Reverse current	I _R	V _R =600V		0.6	70	μA
Diode forward voltage	V _F	<i>I</i> _F =5A		1.5	1.7	V

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

Parameter	Symbol	Conditions	Value			Unit
Falameter		Conditions	min.	Тур.	max.	Unit
Reverse current	I _R	$V_{\rm R}$ =600V, $T_{\rm vj}$ =150°C		2.5	700	μA
Diode forward voltage	V _F	I _F =5A, T _{vj} =150°C		1.7	2.1	V



Parameter	Symbol	Conditions		Value			Unit
	Symbol			min.	Тур.	max.	Unit
Total capacitive charge ³⁾	Q _C	$I_{\rm F} <= I_{\rm F,max}$	<i>T</i> _{vj} =150°C		12		nC
Switching time ²⁾	t _c	− di/dt=200A/μs V _R =400V	<i>T</i> _{vj} =150°C			<10	ns
			V _R =1V		240		
Total capacitance	С	f=1MHz	V _R =300V		30		pF
			V _R =600V		30		

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

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
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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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