

# 5SLY 12E1700

## Fast-Diode Die

 $V_{RRM} = 1700 \text{ V}$ 
 $I_F = 50 \text{ A}$ 

Ultra low losses

Fast and soft reverse-recovery

Large SOA

Passivation: SIPOS, Nitride plus polyimide



### Maximum rated values <sup>1)</sup>

Parameter	Symbol	Conditions	min	max	Unit
Repetitive peak reverse voltage	$V_{RRM}$	$T_{vj} \geq 25 \text{ }^\circ\text{C}$		1700	V
DC forward current	$I_F$			50	A
Peak forward current	$I_{FRM}$	Limited by $T_{vjmax}$		100	A
Junction temperature	$T_{vj}$			175	$^\circ\text{C}$
	$T_{vj(op)}$		-40	150	

<sup>1)</sup> Maximum rated values indicate limits beyond which damage to the device may occur per IEC 60747

### Diode characteristic values <sup>2)</sup>

Parameter	Symbol	Conditions	min	typ	max	Unit	
Forward voltage	$V_F$	$I_F = 50 \text{ A}$	$T_{vj} = 25 \text{ }^\circ\text{C}$		1.8	2.25	V
			$T_{vj} = 125 \text{ }^\circ\text{C}$		1.95		V
			$T_{vj} = 150 \text{ }^\circ\text{C}$		1.9		V
Continuous reverse current	$I_R$	$V_R = 1700 \text{ V}$	$T_{vj} = 25 \text{ }^\circ\text{C}$			0.1	mA
			$T_{vj} = 125 \text{ }^\circ\text{C}$		0.3		mA
			$T_{vj} = 150 \text{ }^\circ\text{C}$		1.1		mA
Reverse recovery current	$I_{rr}$		$T_{vj} = 25 \text{ }^\circ\text{C}$		40		A
			$T_{vj} = 125 \text{ }^\circ\text{C}$		45		A
			$T_{vj} = 150 \text{ }^\circ\text{C}$		50		A
Recovered charge	$Q_{rr}$	$V_{CC} = 900 \text{ V}$ , $I_F = 50 \text{ A}$ , $di/dt = 370 \text{ A}/\mu\text{s}$ $L_\sigma = 540 \text{ nH}$ inductive load	$T_{vj} = 25 \text{ }^\circ\text{C}$		14		$\mu\text{C}$
			$T_{vj} = 125 \text{ }^\circ\text{C}$		21		$\mu\text{C}$
			$T_{vj} = 150 \text{ }^\circ\text{C}$		25		$\mu\text{C}$
Reverse recovery time	$t_{rr}$	Switch: 5SMY 12G1721	$T_{vj} = 25 \text{ }^\circ\text{C}$		540		ns
			$T_{vj} = 125 \text{ }^\circ\text{C}$		720		ns
			$T_{vj} = 150 \text{ }^\circ\text{C}$		780		ns
Reverse recovery energy	$E_{rec}$		$T_{vj} = 25 \text{ }^\circ\text{C}$		8.4		mJ
			$T_{vj} = 125 \text{ }^\circ\text{C}$		13.9		mJ
			$T_{vj} = 150 \text{ }^\circ\text{C}$		16.2		mJ

<sup>2)</sup> Characteristic values according to IEC 60747 - 2

## Mechanical properties

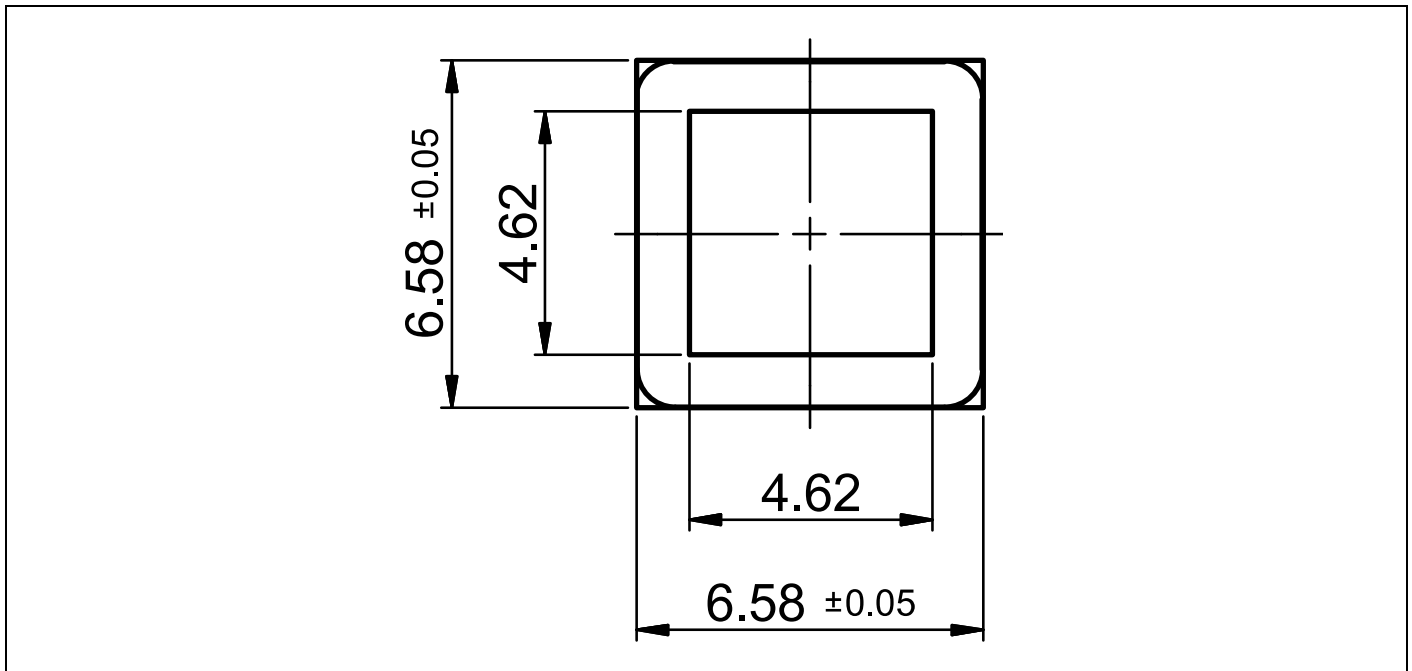
Parameter	Symbol	Conditions	min	Unit
Dimensions	Overall die	L x W	6.58 x 6.58	mm
	exposed front metal	L x W	4.62 x 4.62	mm
	thickness		390 ± 15	µm
Metallization <sup>3)</sup>	front (E)	AlSi1	4	µm
	back (C)	Al / Ti / Ni / Ag	1.2	µm

<sup>3)</sup> For assembly instructions refer to: IGBT and Diode chips from ABB Switzerland Ltd, Semiconductors, Doc. No. 5SYA 2033.

## Form of delivery

Description	Part number
Sawn 6" wafer die (on blue tape)	5SLY 86E1700

## Outline drawing



Note: all dimensions are shown in millimeters

This is an electrostatic sensitive device, please observe the international standard IEC 60747-1, chap. IX.  
This product has been designed and qualified for Industrial Level.

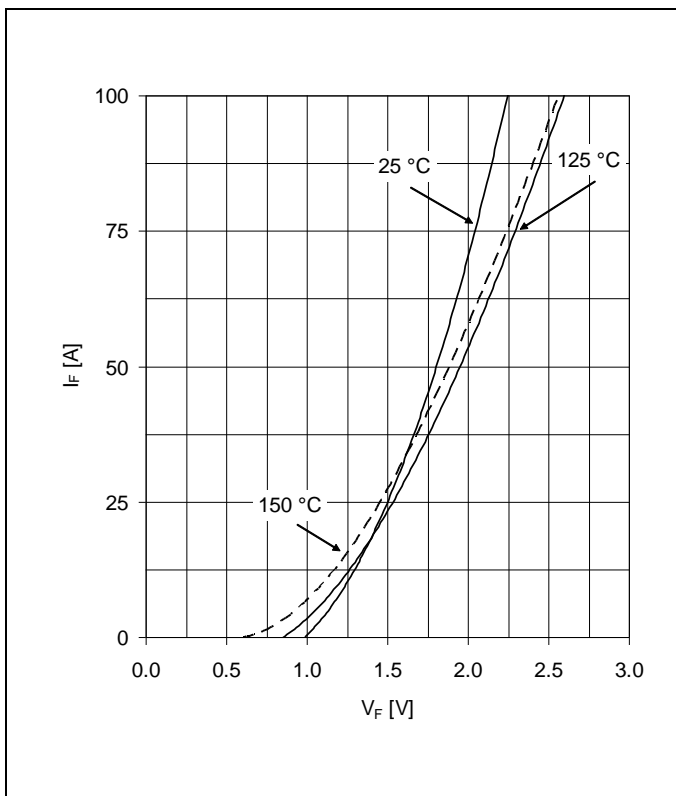


Fig. 1 Typical diode forward characteristics, chip level

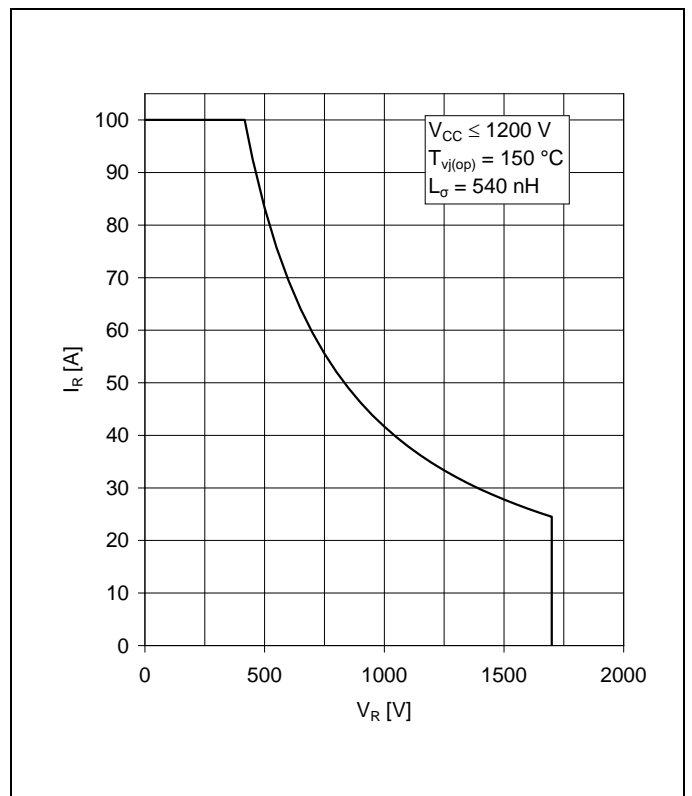


Fig. 2 Safe operating area (FSOA)

**Related documents:**

- 5SYA 2045 Thermal runaway during blocking
- 5SYA 2059 Applying IGBT and Diode dies
- 5SYA 2093-00 Thermal design of IGBT Modules

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