

# 5SLY 12F1700

## Fast-Diode Die

$V_{RRM} = 1700\text{ V}$   
 $I_F = 75\text{ A}$

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	$V_{RRM}$	$T_{vj} \geq 25\text{ °C}$		1700	V
DC forward current	$I_F$			75	A
Peak forward current	$I_{FRM}$	Limited by $T_{vjmax}$		150	A
Junction temperature	$T_{vj}$			175	°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	$V_F$	$I_F = 75\text{ A}$	$T_{vj} = 25\text{ °C}$		1.8	2.25	V
			$T_{vj} = 125\text{ °C}$		1.95		V
			$T_{vj} = 150\text{ °C}$		1.9		V
Continuous reverse current	$I_R$	$V_R = 1700\text{ V}$	$T_{vj} = 25\text{ °C}$			0.1	mA
			$T_{vj} = 125\text{ °C}$		0.44		mA
			$T_{vj} = 150\text{ °C}$		1.5		mA
Reverse recovery current	$I_{rr}$		$T_{vj} = 25\text{ °C}$		75		A
			$T_{vj} = 125\text{ °C}$		76		A
			$T_{vj} = 150\text{ °C}$		80		A
Recovered charge	$Q_{rr}$	$V_{CC} = 900\text{ V},$ $I_F = 75\text{ A},$ $di/dt = 690\text{ A}/\mu\text{s}$ $L_{\sigma} = 400\text{ nH}$ inductive load	$T_{vj} = 25\text{ °C}$		21		$\mu\text{C}$
			$T_{vj} = 125\text{ °C}$		33		$\mu\text{C}$
			$T_{vj} = 150\text{ °C}$		38		$\mu\text{C}$
Reverse recovery time	$t_{rr}$	Switch: 5SMY 12J1721	$T_{vj} = 25\text{ °C}$		520		ns
			$T_{vj} = 125\text{ °C}$		720		ns
			$T_{vj} = 150\text{ °C}$		800		ns
Reverse recovery energy	$E_{rec}$		$T_{vj} = 25\text{ °C}$		12.6		mJ
			$T_{vj} = 125\text{ °C}$		20.8		mJ
			$T_{vj} = 150\text{ °C}$		24.3		mJ

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

## Mechanical properties

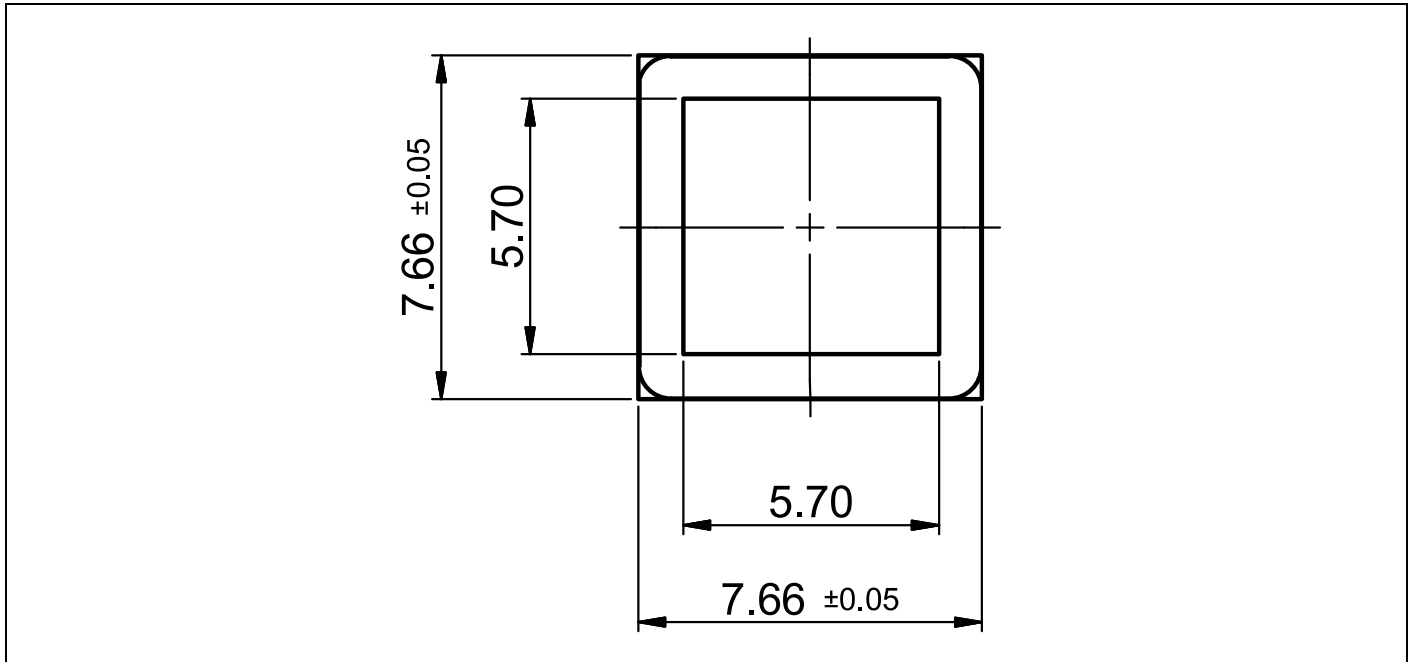
Parameter	Symbol	Conditions	min	Unit
Dimensions	Overall die	L x W	7.66 x 7.66	mm
	exposed front metal thickness	L x W	5.7 x 5.7	mm
			390 ± 15	µm
Metallization <sup>3)</sup>	front (E)	AlSi1	4	µm
	back (C)	Al / Ti / Ni / Ag	1.2	µm

<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 86F1700

## 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.

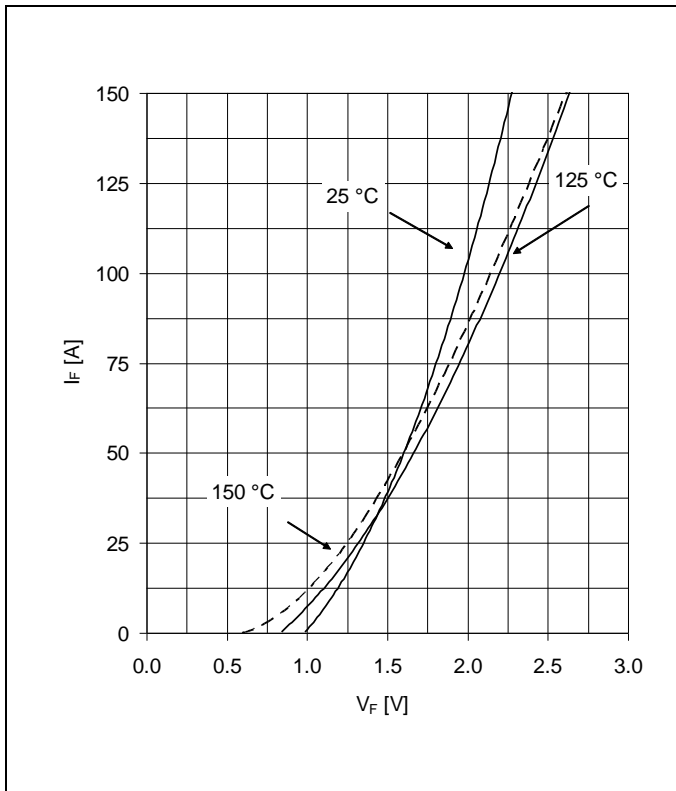


Fig. 1 Typical diode forward characteristics, chip level

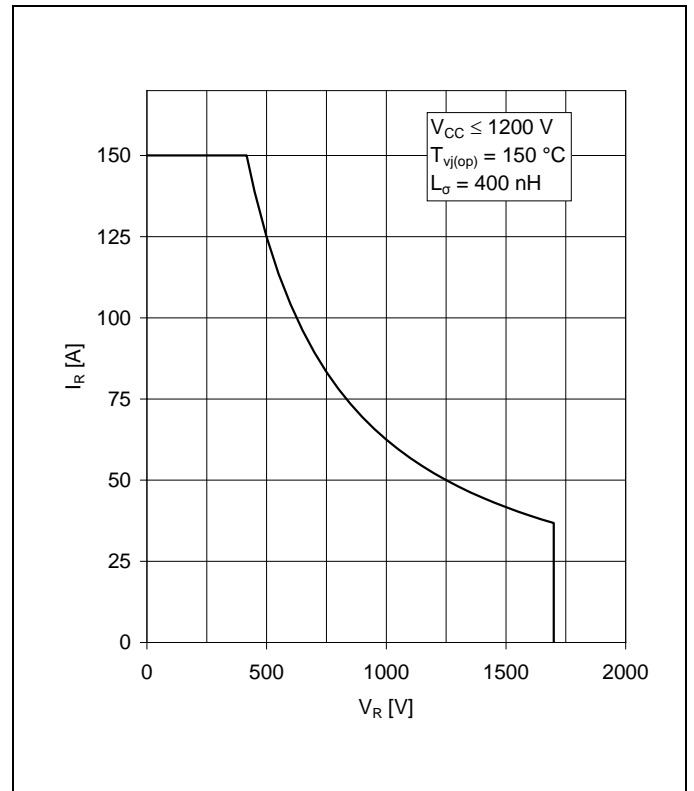


Fig. 2 Safe operating area (FBSOA)

**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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