

$V_{RRM} = 6500 \text{ V}$

$I_F = 50 \text{ A}$

## Fast-Diode Die

# 5SLX 12M6500



Die size: 13.6 x 13.6 mm

Doc. No. 5SYA1666-01 July 07

- Fast and soft reverse recovery
- Low losses
- Large SOA
- Passivation: SIPOS and Silicon Nitride plus Polyimide

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

Parameter	Symbol	Conditions	min	max	Unit
Repetitive peak reverse voltage	$V_{RRM}$	$T_{vj} \geq 25 \text{ °C}$		6500	V
Continuous forward current	$I_F$			50	A
Repetitive peak forward current	$I_{FRM}$	Limited by $T_{vjmax}$		100	A
Junction temperature	$T_{vj}$		-40	125	°C

<sup>1)</sup> Maximum rated values indicate limits beyond which damage to the device may occur per IEC 60747 - 2

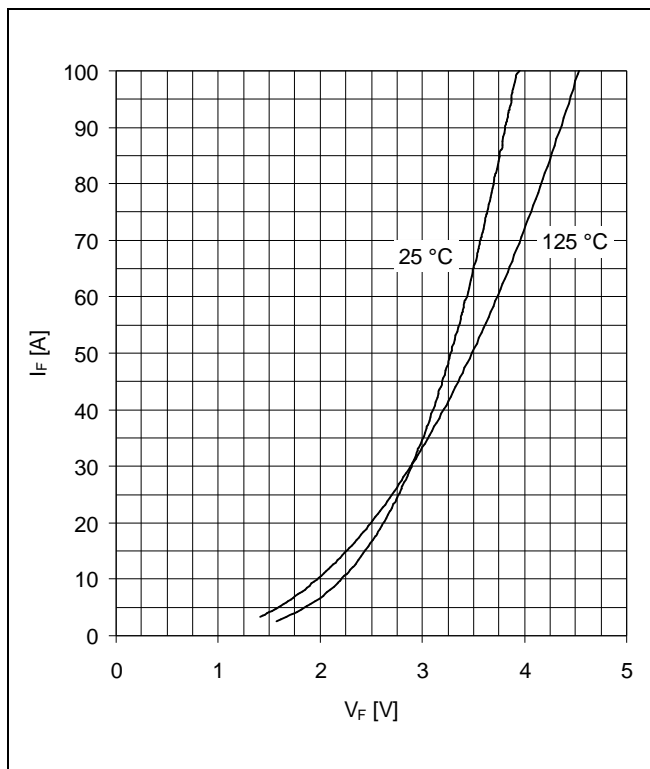
### Diode characteristic values <sup>2)</sup>

Parameter	Symbol	Conditions	min	typ	max	Unit
Continuous forward voltage	$V_F$	$I_F = 50 \text{ A}$	$T_{vj} = 25 \text{ °C}$		3.2	V
			$T_{vj} = 125 \text{ °C}$		3.4	V
Continuous reverse current	$I_R$	$V_R = 6500 \text{ V}$	$T_{vj} = 25 \text{ °C}$		20	μA
			$T_{vj} = 125 \text{ °C}$		3	6
Peak reverse recovery current	$I_{rr}$	$I_F = 50 \text{ A},$ $V_R = 3600 \text{ V},$ $di/dt = 230 \text{ A}/\mu\text{s},$ $L_\sigma = 3400 \text{ nH},$ Inductive load, Switch: 2x 5SMX12M6500	$T_{vj} = 25 \text{ °C}$		70	A
			$T_{vj} = 125 \text{ °C}$		80	A
Recovered charge	$Q_{rr}$	$I_F = 50 \text{ A},$ $V_R = 3600 \text{ V},$ $di/dt = 230 \text{ A}/\mu\text{s},$ $L_\sigma = 3400 \text{ nH},$ Inductive load, Switch: 2x 5SMX12M6500	$T_{vj} = 25 \text{ °C}$		65	μC
			$T_{vj} = 125 \text{ °C}$		100	μC
Reverse recovery time	$t_{rr}$	$I_F = 50 \text{ A},$ $V_R = 3600 \text{ V},$ $di/dt = 230 \text{ A}/\mu\text{s},$ $L_\sigma = 3400 \text{ nH},$ Inductive load, Switch: 2x 5SMX12M6500	$T_{vj} = 25 \text{ °C}$		1700	ns
			$T_{vj} = 125 \text{ °C}$		2250	ns
Reverse recovery energy	$E_{rec}$	$I_F = 50 \text{ A},$ $V_R = 3600 \text{ V},$ $di/dt = 230 \text{ A}/\mu\text{s},$ $L_\sigma = 3400 \text{ nH},$ Inductive load, Switch: 2x 5SMX12M6500	$T_{vj} = 25 \text{ °C}$		100	mJ
			$T_{vj} = 125 \text{ °C}$		180	mJ

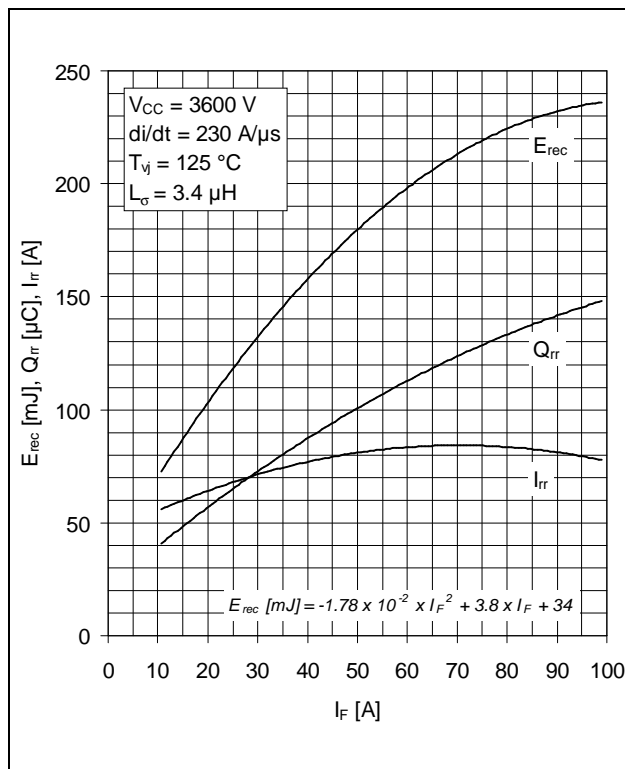
<sup>2)</sup> Characteristic values according to IEC 60747 - 2

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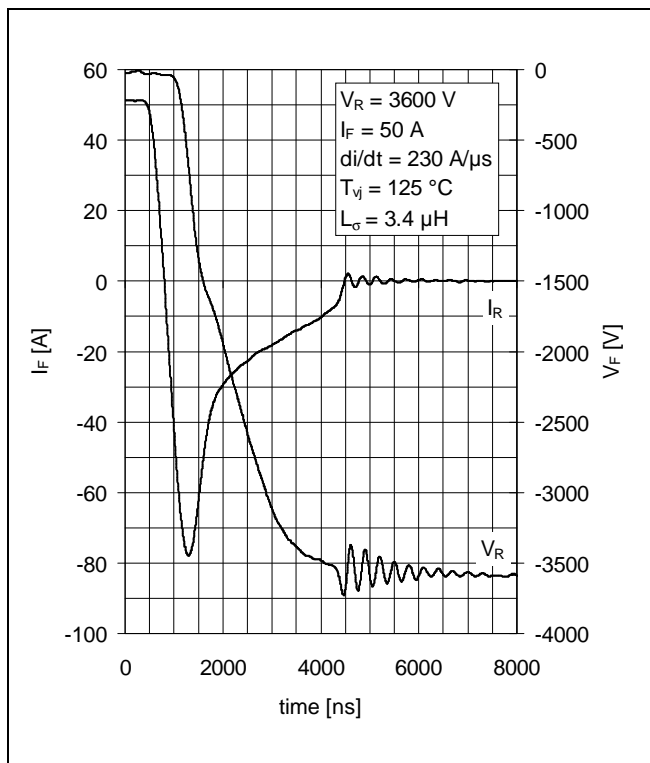




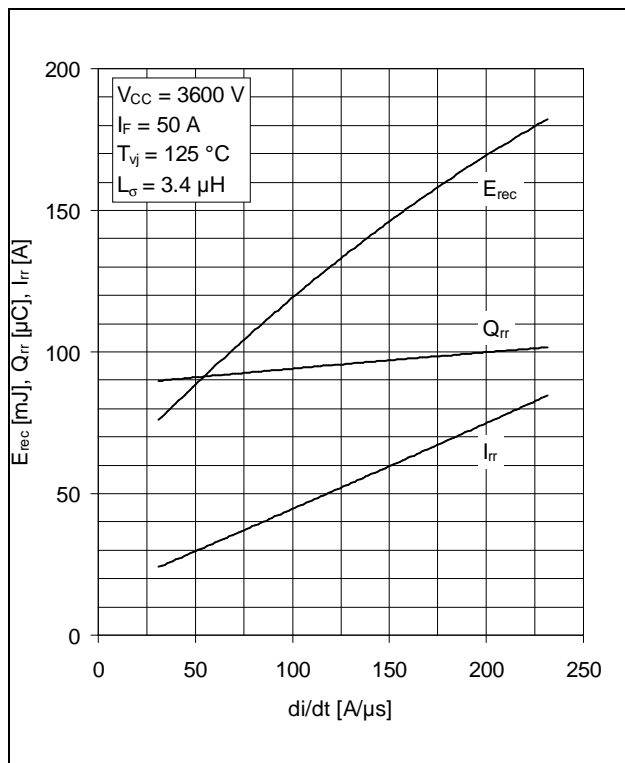
**Fig. 1** Typical diode forward characteristics



**Fig. 2** Typical reverse recovery characteristics vs. forward current



**Fig. 3** Typical diode reverse recovery behaviour



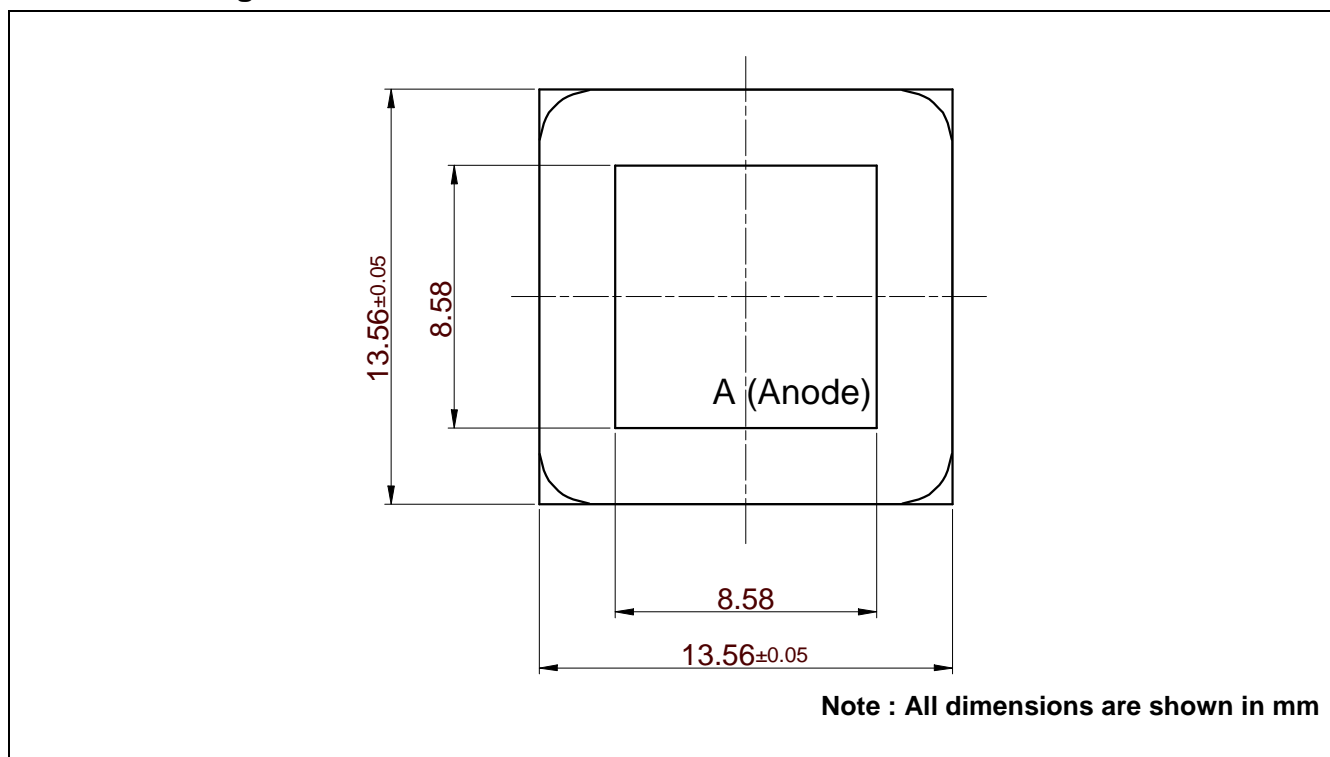
**Fig. 4** Typical reverse recovery vs.  $di/dt$

## Mechanical properties

Parameter				Unit
Dimensions	Overall die	L x W	13.6 x 13.6	mm
	exposed front metal	L x W	8.58 x 8.58	mm
	thickness		670 ± 20	µm
Metallization <sup>3)</sup>	front (A)	AlSi1	4	µm
	back (K)	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.

## Outline Drawing



This product has been designed and qualified for Industrial Level.

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