

# Silicon Diode

## **BY8206**

6kV/10mA

# DATASHEET

OEM – Philips

Source: Philips Databook 1999

## Ultra fast high-voltage soft-recovery controlled avalanche rectifiers

## BY8200 series

### FEATURES

- Plastic package
- Glass passivated
- High maximum operating temperature
- Low leakage current
- Excellent stability
- 40% overvoltage allowed during 5 sec
- Guaranteed avalanche energy absorption capability
- Very low reverse recovery time
- Soft-recovery switching characteristics
- Compact construction.

### APPLICATIONS

- For colour television and monitors up to 90 kHz (indication)
- High-voltage applications for:
  - multipliers
  - diode-split-transformers (FBT's).

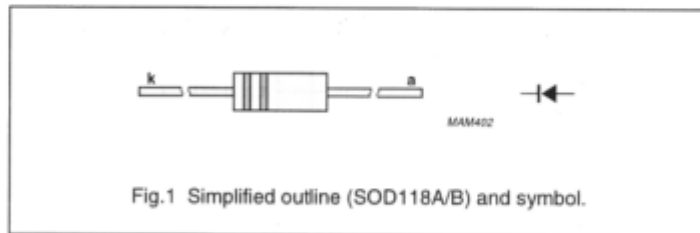
### DESCRIPTION

Plastic package, using glass - passivation and a high temperature alloyed construction.

This package is hermetically sealed and fatigue free as coefficients of

expansion of all used parts are matched.

The package should be used in an insulating medium such as resin, oil or SF6 gas.



### MARKING

#### Cathode band colour codes

TYPE NUMBER	PACKAGE CODE	INNER BAND	OUTER BAND
BY8206	SOD118A	green	green
BY8208	SOD118A	red	green
BY8210	SOD118B	violet	green
BY8212	SOD118B	orange	green

### LIMITING VALUES

In accordance with the Absolute Maximum Rating System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V <sub>RRM1</sub>	repetitive peak reverse voltage				
	BY8206		–	6	kV
	BY8208		–	8	kV
	BY8210		–	10	kV
V <sub>RRM2</sub>	repetitive peak reverse voltage	max. 5 seconds			
	BY8206		–	8.4	kV
	BY8208		–	11.2	kV
	BY8210		–	14.0	kV
	BY8212		–	16.8	kV

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SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
$I_{F(AV)}$	average forward current	averaged over any 20 ms period; see Figs 2 to 5	-	10	mA
	BY8206				
	BY8208				
	BY8210 BY8212				
$I_{FRM}$	repetitive peak forward current	note 1	-	500	mA
$T_{stg}$	storage temperature		-65	+175	°C
$T_j$	junction temperature		-65	+160	°C
	BY8206				
	BY8208				
	BY8210 BY8212				

**Note**

1. Withstands peak currents during flash-over in a picture tube.

**ELECTRICAL CHARACTERISTICS**

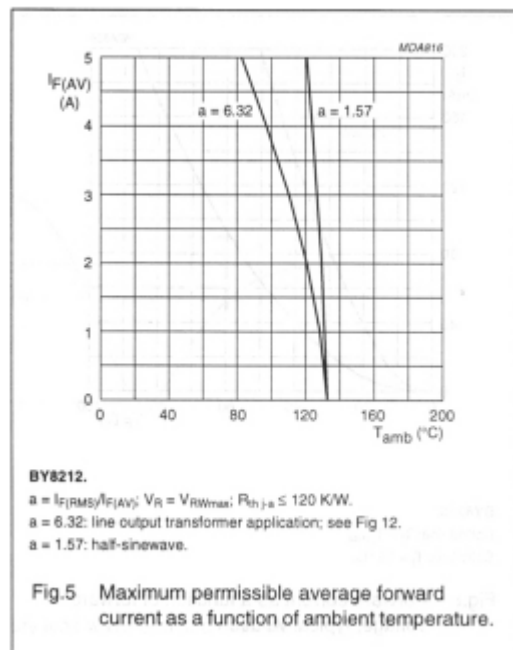
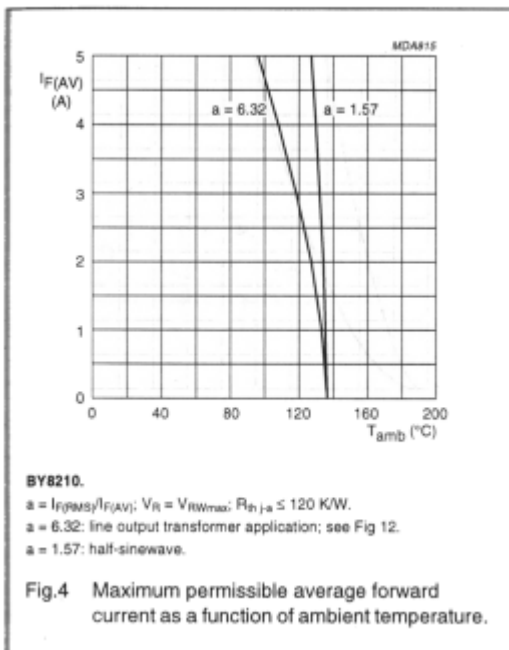
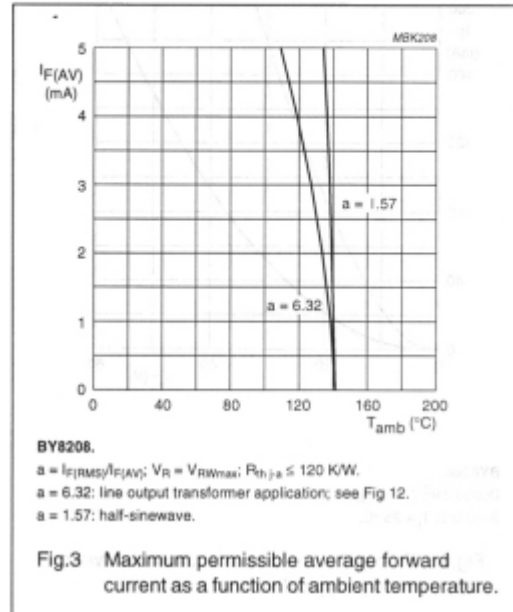
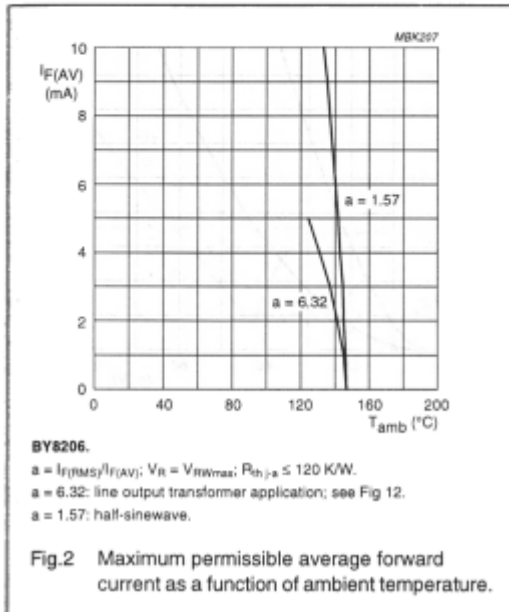
$T_j = 25\text{ °C}$  unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$V_F$	forward voltage	$I_F = 10\text{ mA}$ ; see Figs 6 to 9	-	-	19	V
	BY8206					
	BY8208					
	BY8210 BY8212					
$I_R$	reverse current	$V_R = V_{RRM1}$ ; $T_j = 120\text{ °C}$	-	-	3	μA
$Q_r$	recovery charge	when switched from $I_F = 100\text{ mA}$ to $V_R \geq 100\text{ V}$ and $dI_F/dt = -200\text{ mA}/\mu\text{s}$ ; see Fig 10	-	0.2	-	nC
$t_{rr}$	reverse recovery time	when switched from $I_F = 2\text{ mA}$ to $I_R = 4\text{ mA}$ ; measured at $I_R = 1\text{ mA}$ ; see Fig 11	-	-	< 45	ns
$C_d$	diode capacitance	$V_R = 0\text{ V}$ ; $f = 1\text{ MHz}$	-	0.50	-	pF
	BY8206					
	BY8208					
	BY8210 BY8212					

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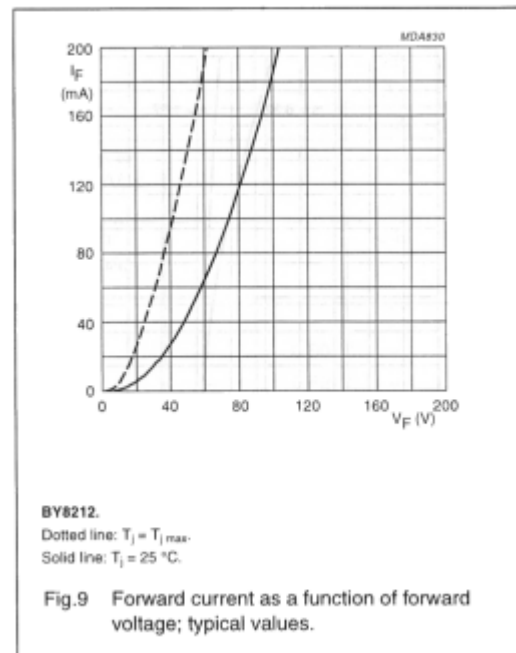
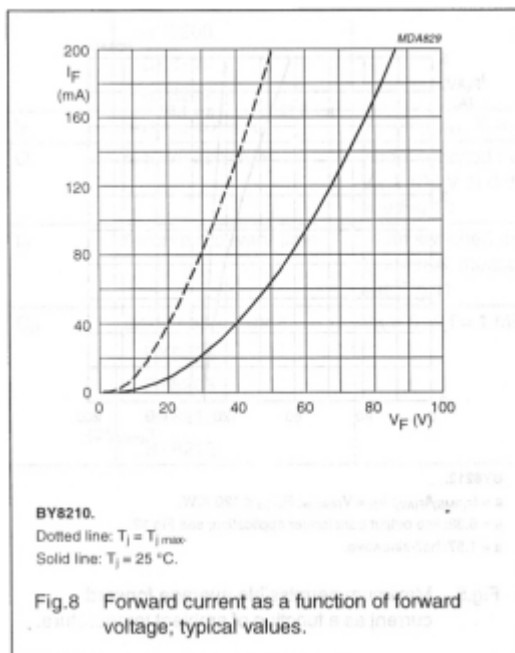
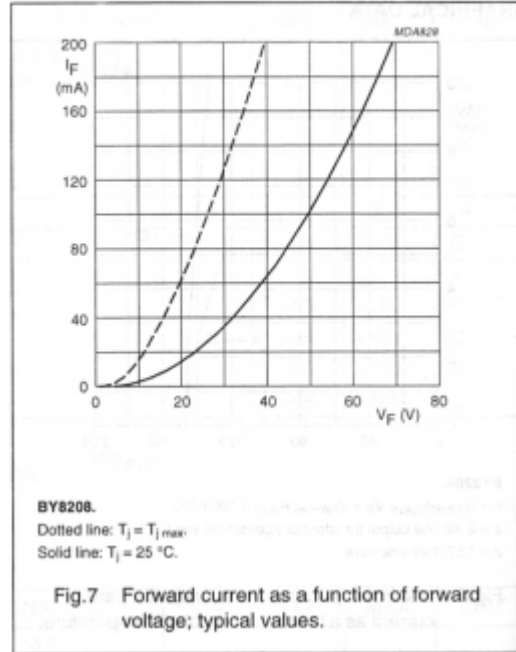
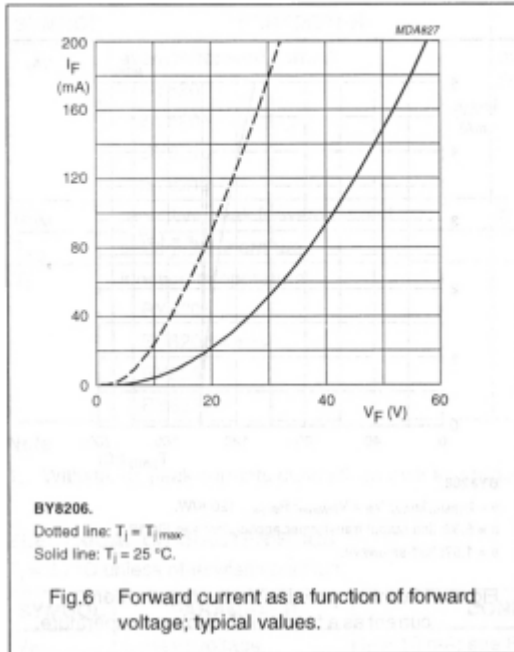
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## GRAPHICAL DATA



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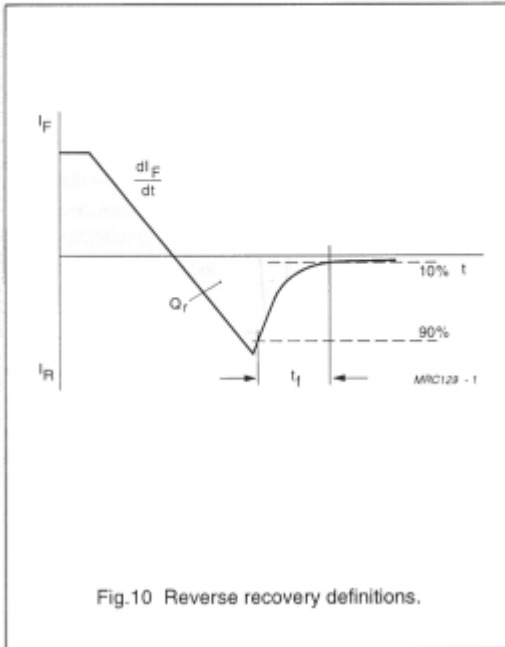
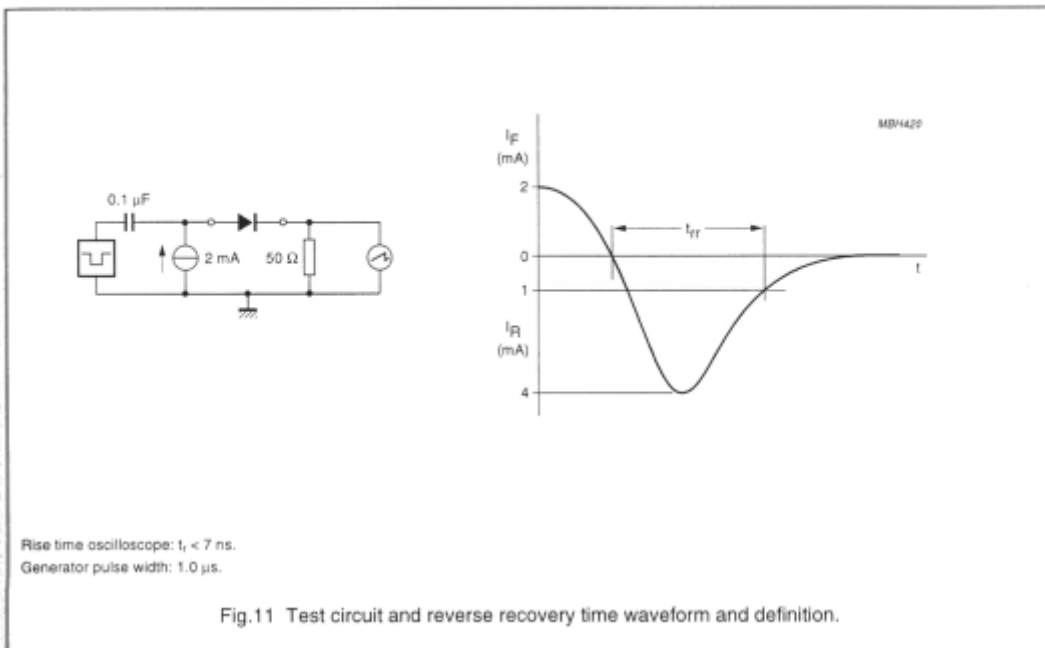


Fig.10 Reverse recovery definitions.



Rise time oscilloscope:  $t_r < 7$  ns.  
 Generator pulse width: 1.0  $\mu\text{s}$ .

Fig.11 Test circuit and reverse recovery time waveform and definition.

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**APPLICATION INFORMATION**