

Philips

Diode BY9208

Datasheet

Silicon Diode

BY9208

8kV/5mA

DATASHEET

OEM – Philips

Source: Philips Databook 1999

Ultra fast high-voltage soft-recovery controlled avalanche rectifier

BY9200 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.

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.



MAM402

Fig.1 Simplified outline (SOD118A; SOD118B) and symbol.

APPLICATIONS

- Colour television and monitors up to 130 kHz (indication)
- High-voltage applications for:
 - multipliers
 - diode-split-transformers (FBT's)

MARKING

Cathode band colour codes

TYPE NUMBER	PACKAGE CODE	INNER BAND	OUTER BAND
BY9206	SOD118A	green	light blue
BY9208	SOD118A	red	light blue
BY9210	SOD118B	violet	light blue
BY9212	SOD118B	orange	light blue

LIMITING VALUES

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V _{RRM1}	repetitive peak reverse voltage BY9206		–	6	kV
	BY9208		–	8	kV
	BY9210		–	10	kV
	BY9212		–	12	kV
V _{RRM2}	repetitive peak reverse voltage BY9206	max. 5 sec.	–	8.4	kV
	BY9208		–	11.2	kV
	BY9210		–	14.0	kV
	BY9212		–	16.8	kV

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SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
$I_{F(AV)}$	average forward current BY9206 BY9208 BY9210 BY9212	averaged over any 20 ms period; see Figs 2, 3, 4 and 5	—	10	mA
I_{FRM}	repetitive peak forward current	note 1	—	500	mA
T_{stg}	storage temperature		-65	+175	°C
T_j	junction temperature BY9206 BY9208 BY9210 BY9212		-65	+160	°C
			-65	+155	°C
			-65	+150	°C
			-65	+145	°C

Note

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

ELECTRICAL CHARACTERISTICS

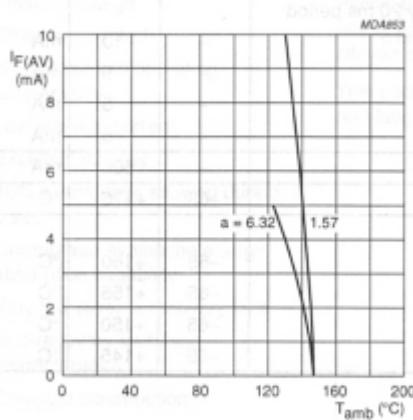
$T_j = 25^\circ\text{C}$ unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	TYP.	MAX.	UNIT
V_F	forward voltage BY9206 BY9208 BY9210 BY9212	$I_F = 10 \text{ mA}$; see Figs 6, 7, 8 and 9	—	18	V
I_R	reverse current	$V_R = V_{RRM1}; T_j = 120^\circ\text{C}$	—	3	μA
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 10	—	< 35	ns
C_d	diode capacitance BY9206 BY9208 BY9210 BY9212	$V_R = 0; f = 1 \text{ MHz}$	0.34 0.29 0.27 0.23	— — — —	pF

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GRAPHICAL DATA



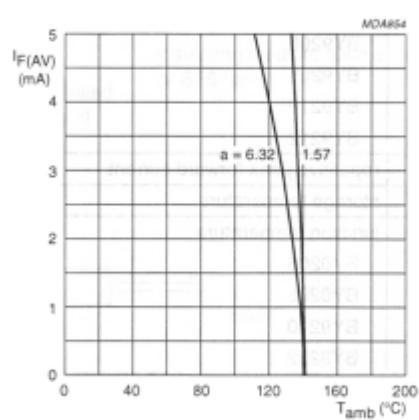
BY9206.

$a = I_{F(RMS)} / I_{F(AV)}$; $V_R = V_{RWmax}$; $R_{th(j-a)} \leq 120 \text{ K/W}$.

$a = 6.32$: line output transformer application; see Fig 11.

$a = 1.57$: half-sinewave.

Fig.2 Maximum permissible average forward current as a function of ambient temperature.



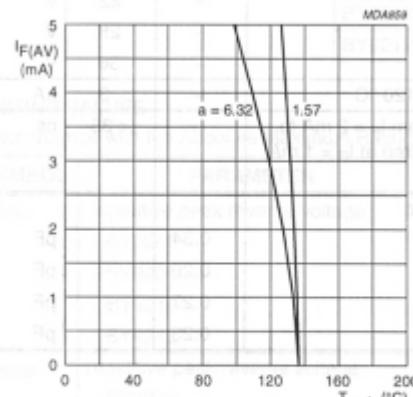
BY9208.

$a = I_{F(RMS)} / I_{F(AV)}$; $V_R = V_{RWmax}$; $R_{th(j-a)} \leq 120 \text{ K/W}$.

$a = 6.32$: line output transformer application; see Fig 11.

$a = 1.57$: half-sinewave.

Fig.3 Maximum permissible average forward current as a function of ambient temperature.



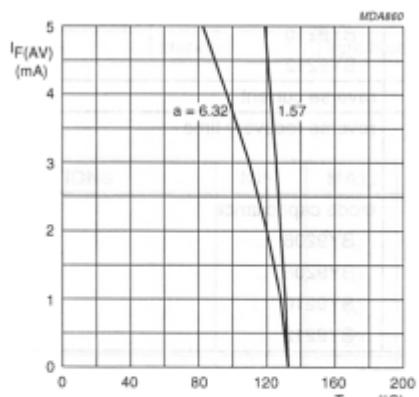
BY9210.

$a = I_{F(RMS)} / I_{F(AV)}$; $V_R = V_{RWmax}$; $R_{th(j-a)} \leq 120 \text{ K/W}$.

(1) $a = 6.32$: line output transformer application; see Fig 11.

(2) $a = 1.57$: half-sinewave.

Fig.4 Maximum permissible average forward current as a function of ambient temperature.



BY9212.

$a = I_{F(RMS)} / I_{F(AV)}$; $V_R = V_{RWmax}$; $R_{th(j-a)} \leq 120 \text{ K/W}$.

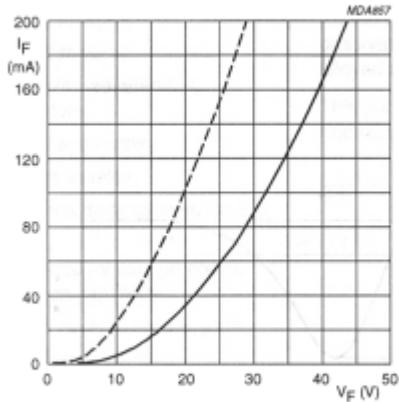
$a = 6.32$: line output transformer application; see Fig 11.

$a = 1.57$: half-sinewave.

Fig.5 Maximum permissible average forward current as a function of ambient temperature.

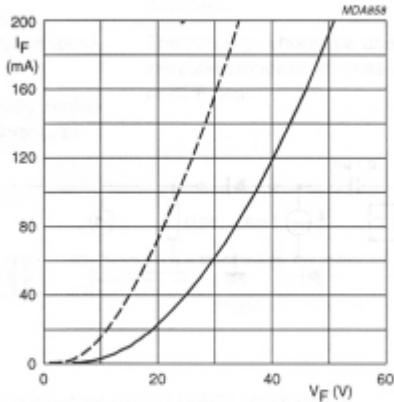
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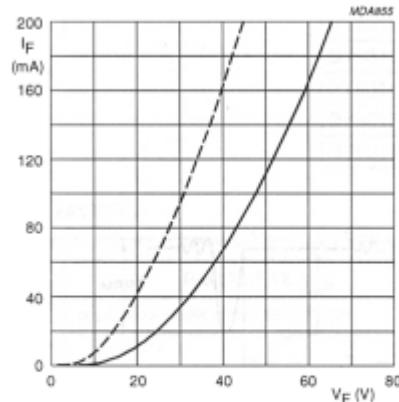
BY9206.
Dotted line: $T_j = T_{j\max}$.
Solid line: $T_j = 25^\circ C$.

Fig.6 Forward current as a function of forward voltage; typical values.



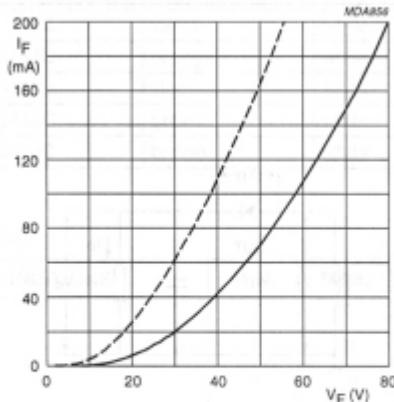
BY9208.
Dotted line: $T_j = T_{j\max}$.
Solid line: $T_j = 25^\circ C$.

Fig.7 Forward current as a function of forward voltage; typical values.



BY9210.
Dotted line: $T_j = T_{j\max}$.
Solid line: $T_j = 25^\circ C$.

Fig.8 Forward current as a function of forward voltage; typical values.

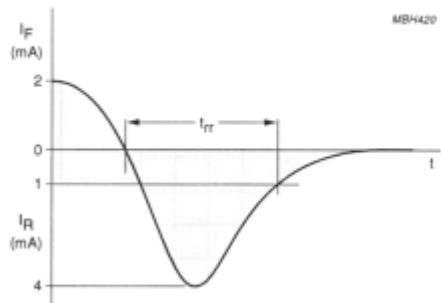
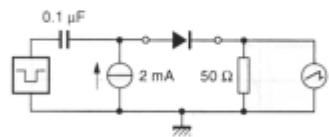


BY9212.
Dotted line: $T_j = T_{j\max}$.
Solid line: $T_j = 25^\circ C$.

Fig.9 Forward current as a function of forward voltage; typical values.

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Rise time oscilloscope: $t_r < 7 \text{ ns}$.
Generator pulse width: $1 \mu\text{s}$.

Fig.10 Test circuit and reverse recovery time waveform and definition.

APPLICATION INFORMATION

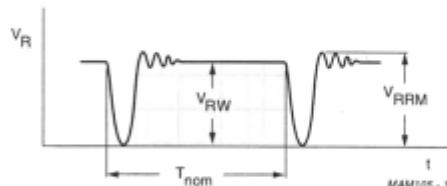
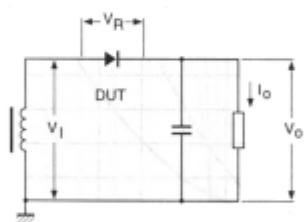


Fig.11 Typical operation circuit and voltage waveform.