

Silicon Diode

BYW29EB-200

200V/8A

DATASHEET

OEM – Philips

Source: Philips Databook 1999

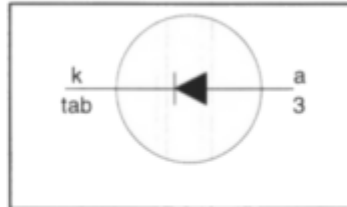
Rectifier diodes ultrafast, rugged

BYW29EB, BYW29ED series

FEATURES

- Low forward volt drop
- Fast switching
- Soft recovery characteristic
- Reverse surge capability
- High thermal cycling performance
- Low thermal resistance

SYMBOL



QUICK REFERENCE DATA

$$V_R = 150 \text{ V} / 200 \text{ V}$$

$$V_F \leq 0.895 \text{ V}$$

$$I_{F(AV)} = 8 \text{ A}$$

$$I_{RRM} = 0.2 \text{ A}$$

$$t_r \leq 25 \text{ ns}$$

GENERAL DESCRIPTION

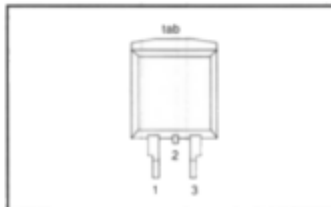
Ultra-fast, epitaxial rectifier diodes intended for use as output rectifiers in high frequency switched mode power supplies.

The BYW29EB series is supplied in the SOT404 surface mounting package.
The BYW29ED series is supplied in the SOT428 surface mounting package.

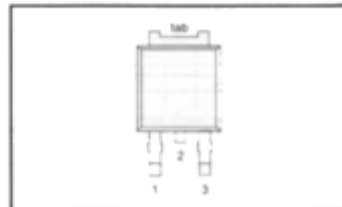
PINNING

PIN	DESCRIPTION
1	no connection
2	cathode ¹
3	anode
tab	cathode

SOT404



SOT428



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134)

SYMBOL	PARAMETER	CONDITIONS	BYW29EB/ BYW29ED		UNIT
			MIN.	MAX.	
V_{RRM}	Peak repetitive reverse voltage		-	-150 200	V
V_{RRM}	Working peak reverse voltage		-	150 200	V
V_R	Continuous reverse voltage		-	150 200	V
$I_{F(AV)}$	Average rectified forward current	square wave; $\delta = 0.5$; $T_{mb} \leq 128 \text{ }^\circ\text{C}$	-	8	A
I_{FRM}	Repetitive peak forward current	square wave; $\delta = 0.5$; $T_{mb} \leq 128 \text{ }^\circ\text{C}$	-	16	A
I_{FSM}	Non-repetitive peak forward current	$t = 10 \text{ ms}$	-	80	A
		$t = 8.3 \text{ ms}$	-	88	A
I_{RRM}	Peak repetitive reverse surge current	sinusoidal; with reapplied $V_{RRM(max)}$ $t_p = 2 \text{ } \mu\text{s}$; $\delta = 0.001$	-	0.2	A
I_{RSM}	Peak non-repetitive reverse surge current	$t_p = 100 \text{ } \mu\text{s}$	-	0.2	A
T_j	Operating junction temperature		-	150	$^\circ\text{C}$
T_{stg}	Storage temperature		-40	150	$^\circ\text{C}$

1. It is not possible to make connection to pin 2 of the SOT428 or SOT404 packages.

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ESD LIMITING VALUE

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_C	Electrostatic discharge capacitor voltage	Human body model; $C = 250 \text{ pF}$; $R = 1.5 \text{ k}\Omega$	-	8	kV

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{\theta j-mb}$	Thermal resistance junction to mounting base		-	-	2.7	K/W
$R_{\theta j-a}$	Thermal resistance junction to ambient	SOT404 and SOT428 packages, pcb mounted, minimum footprint, FR4 board	-	50	-	K/W

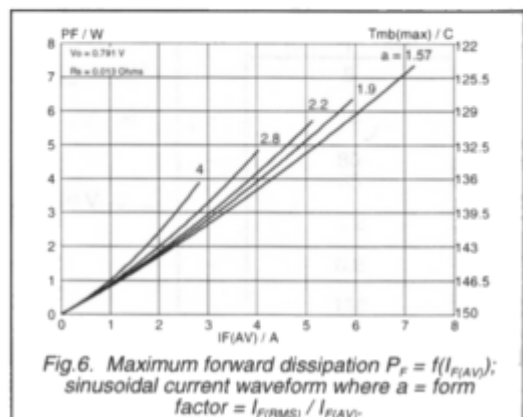
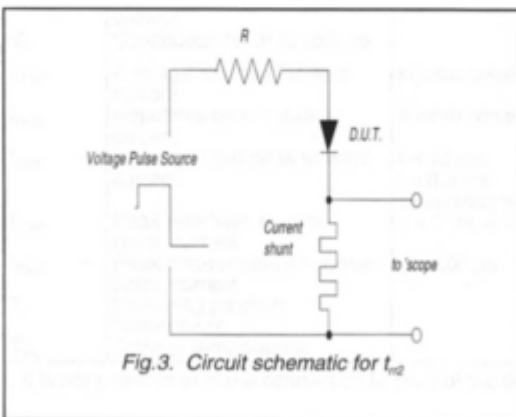
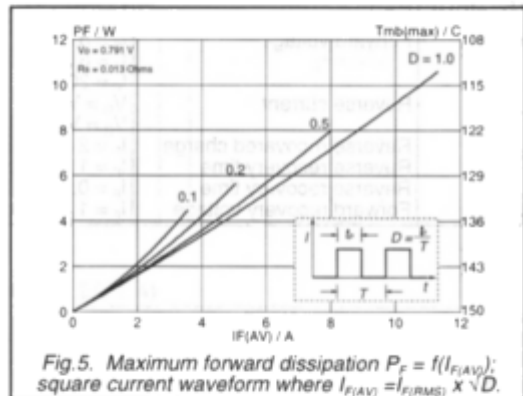
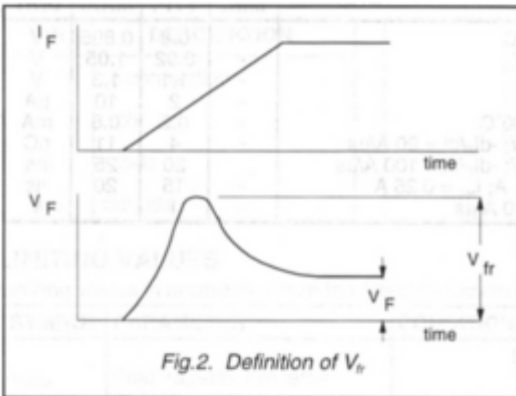
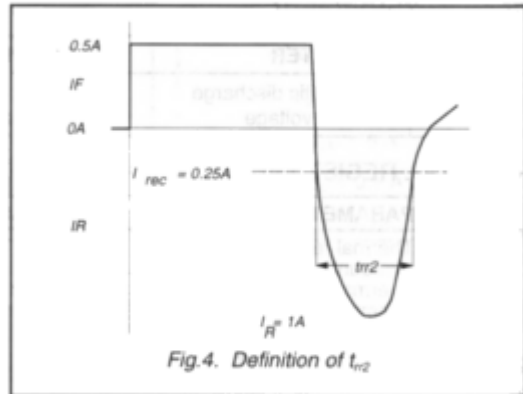
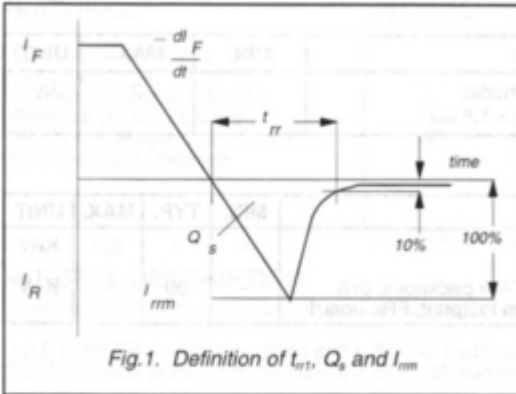
ELECTRICAL CHARACTERISTICS

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage	$I_F = 8 \text{ A}$; $T_j = 150 \text{ }^\circ\text{C}$	-	0.8	0.895	V
		$I_F = 8 \text{ A}$	-	0.92	1.05	V
		$I_F = 20 \text{ A}$	-	1.1	1.3	V
I_R	Reverse current	$V_R = V_{RWM}$	-	2	10	μA
		$V_R = V_{RWM}$; $T_j = 100 \text{ }^\circ\text{C}$	-	0.2	0.6	mA
Q_R	Reverse recovered charge	$I_F = 2 \text{ A}$; $V_R \geq 30 \text{ V}$; $-di_F/dt = 20 \text{ A}/\mu\text{s}$	-	4	11	nC
t_{r1}	Reverse recovery time	$I_F = 1 \text{ A}$; $V_R \geq 30 \text{ V}$; $-di_F/dt = 100 \text{ A}/\mu\text{s}$	-	20	25	ns
t_{r2}	Reverse recovery time	$I_F = 0.5 \text{ A}$ to $I_R = 1 \text{ A}$; $I_{rec} = 0.25 \text{ A}$	-	15	20	ns
V_{σ}	Forward recovery voltage	$I_F = 1 \text{ A}$; $di_F/dt = 10 \text{ A}/\mu\text{s}$	-	1	-	V

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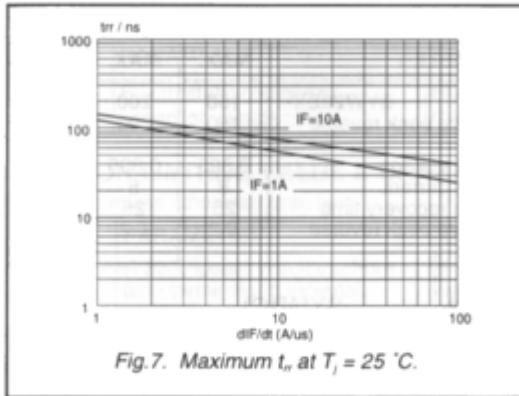


Fig.7. Maximum t_r at $T_j = 25\text{ }^\circ\text{C}$.

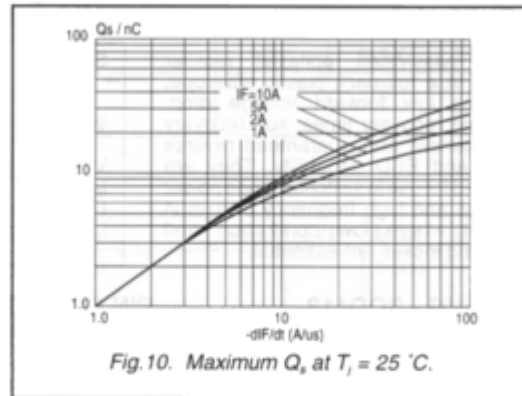


Fig.10. Maximum Q_s at $T_j = 25\text{ }^\circ\text{C}$.

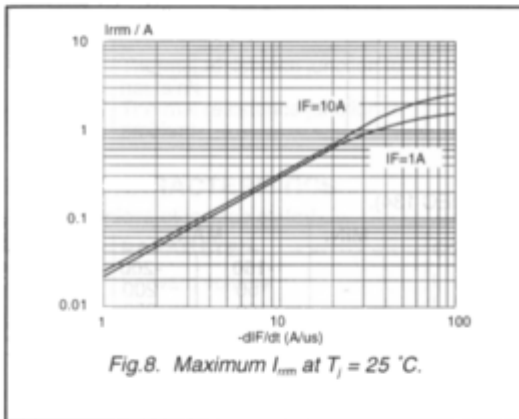


Fig.8. Maximum I_{rm} at $T_j = 25\text{ }^\circ\text{C}$.

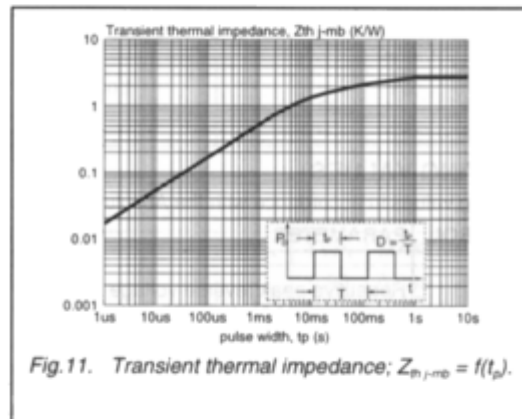


Fig.11. Transient thermal impedance; $Z_{th-jmb} = f(t_p)$.

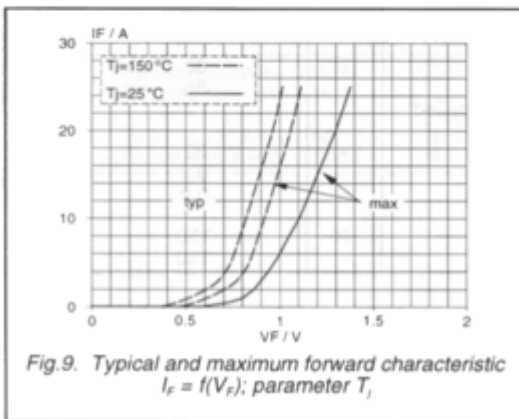


Fig.9. Typical and maximum forward characteristic $I_F = f(V_F)$; parameter T_j