

BYW92 SERIES

ULTRA FAST RECOVERY RECTIFIER DIODES

Glass-passivated, high-efficiency epitaxial rectifier diodes in DO-5 metal envelopes, featuring low forward voltage drop, ultra fast reverse recovery times, very low stored charge and soft recovery characteristic. They are intended for use in switched-mode power supplies and high-frequency circuits in general, where low conduction and switching losses are essential. The series consists of normal polarity (cathode to stud) types.

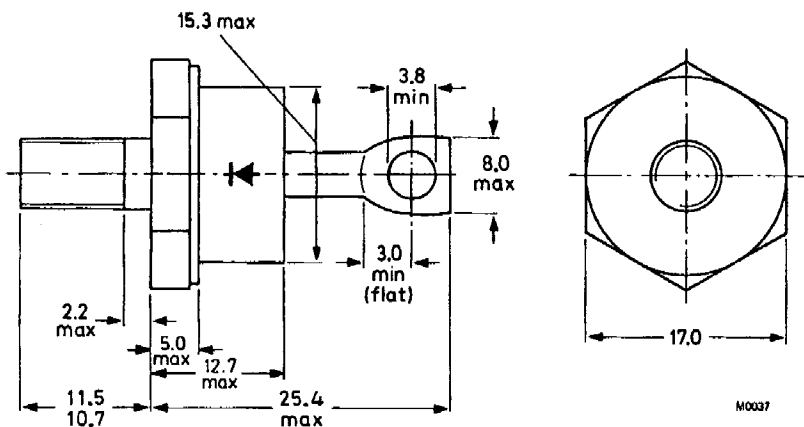
QUICK REFERENCE DATA

		BYW92-50				V
		max.	50	100	150	
Repetitive peak reverse voltage	V_{RRM}	max.	50	100	150	200
Average forward current	$I_F(AV)$	max.		40		A
Forward voltage	V_F	<		0.8		V
Reverse recovery time	t_{rr}	<		40		ns

MECHANICAL DATA

Dimensions in mm

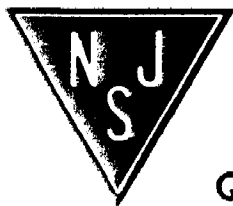
Fig.1 DO-5: with metric M6 stud (ϕ 6 mm); e.g. BYW92-50.
with $\frac{1}{4}$ in x 28 UNF stud (ϕ 6.35 mm); e.g. BYW92-50U.



Net mass: 22 g
Diameter of clearance hole: max. 6.5 mm
Accessories supplied on request:
see ACCESSORIES section.

Supplied with device: 1 nut, 1 lock washer
Torque on nut: min. 1.7 Nm (17 kg cm)
max. 3.5 Nm (35 kg cm)
Nut dimensions across the flats:
M6: 10 mm; $\frac{1}{4}$ in x 28 UNF: 11.1 mm

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RATINGS

Limiting values in accordance with the Absolute Maximum System

Voltages		BYW92-50	100	150	200	
Repetitive peak reverse voltage	V_{RRM}	max. 50	100	150	200	V
Crest working reverse voltage	V_{RWM}	max. 50	100	150	200	V
Continuous reverse voltage*	V_R	max. 50	100	150	200	V
Currents						
Average forward current; switching losses negligible up to 500 kHz						
square wave; $\delta = 0.5$; up to $T_{mb} = 110^\circ\text{C}$		$I_F(AV)$	max.	40		A
up to $T_{mb} = 125^\circ\text{C}$		$I_F(AV)$	max.	27		A
sinusoidal; up to $T_{mb} = 115^\circ\text{C}$		$I_F(AV)$	max.	35		A
up to $T_{mb} = 125^\circ\text{C}$		$I_F(AV)$	max.	26		A
R.M.S. forward current		$I_F(RMS)$	max.	55		A
Repetitive peak forward current						
$t_p = 20 \mu\text{s}$; $\delta = 0.02$		I_{FRM}	max.	800		A
Non-repetitive peak forward current						
half sine-wave; $T_j = 150^\circ\text{C}$ prior to surge; with reapplied V_{RWMmax} ;						
$t = 10 \text{ ms}$		I_{FSM}	max.	500		A
$t = 8.3 \text{ ms}$		I_{FSM}	max.	600		A
$I^2 t$ for fusing ($t = 10 \text{ ms}$)						
		$I^2 t$	max.	1250		A^2s
Temperatures						
Storage temperature		T_{stg}		-55 to +150		$^\circ\text{C}$
Junction temperature		T_j	max.	150		$^\circ\text{C}$
THERMAL RESISTANCE						
From junction to mounting base		$R_{th j-mb}$	=	1.0		K/W
From mounting base to heatsink						
a. with heatsink compound		$R_{th mb-h}$	=	0.3		K/W
b. without heatsink compound		$R_{th mb-h}$	=	0.5		K/W
Transient thermal impedance; $t = 1 \text{ ms}$		$Z_{th j-mb}$	=	0.2		K/W

MOUNTING INSTRUCTIONS

The top connector should be neither bent nor twisted; it should be soldered into the circuit so that there is no strain on it.

During soldering the heat conduction to the junction should be kept to a minimum.

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CHARACTERISTICS

Forward voltage

$I_F = 35 \text{ A}; T_j = 150^\circ\text{C}$

$I_F = 100 \text{ A}; T_j = 25^\circ\text{C}$

V_F	<	0.8	V^*
V_F	<	1.3	V^*

Reverse current

$V_R = V_{RRMmax}; T_j = 100^\circ\text{C}$

$T_j = 25^\circ\text{C}$

I_R	<	2.5	mA
I_R	<	100	μA

Reverse recovery when switched from

$I_F = 1 \text{ A}$ to $V_R \geq 30 \text{ V}$ with $-dI_F/dt = 100 \text{ A}/\mu\text{s}$;

$T_j = 25^\circ\text{C}$; recovery time

t_{rr}	<	40	ns
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$I_F = 2 \text{ A}$ to $V_R \geq 30 \text{ V}$ with $-dI_F/dt = 20 \text{ A}/\mu\text{s}$;

$T_j = 25^\circ\text{C}$; recovered charge

Q_s	<	20	nC
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$I_F = 10 \text{ A}$ to $V_R \geq 30 \text{ V}$ with $-dI_F/dt = 50 \text{ A}/\mu\text{s}$;

$T_j = 100^\circ\text{C}$; peak recovery current

I_{RRM}	<	4.5	A
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Forward recovery when switched to $I_F = 10 \text{ A}$

with $dI_F/dt = 10 \text{ A}/\mu\text{s}$; $T_j = 25^\circ\text{C}$

V_{fr}	typ.	1.0	V
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