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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.
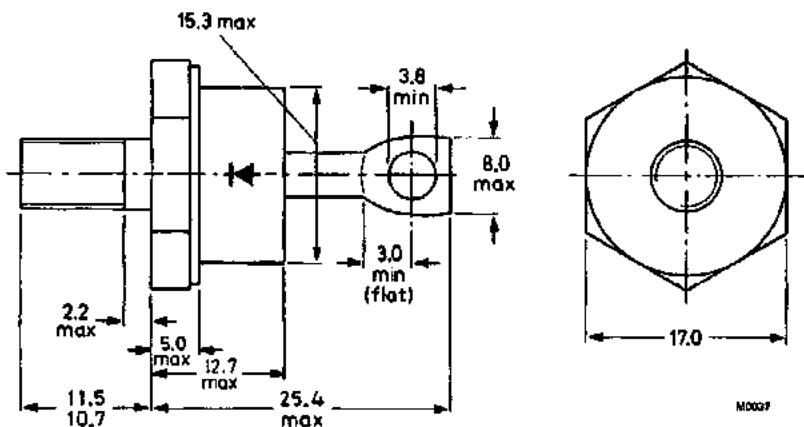
QUICK REFERENCE DATA

			BYW92-50	100	150	200	
Repetitive peak reverse voltage	V_{RRM}	max.	50	100	150	200	V
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 ¼ 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; ¼ in x 28 UNF: 11.1 mm

Quality Semi-Conductors

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 $T_{mb} = 110\ ^oC$	$I_{F(AV)}$	max.	40	A
up to $T_{mb} = 125\ ^oC$	$I_{F(AV)}$	max.	27	A
sinusoidal; up to $T_{mb} = 115\ ^oC$	$I_{F(AV)}$	max.	35	A
up to $T_{mb} = 125\ ^oC$	$I_{F(AV)}$	max.	26	A
R.M.S. forward current	$I_{F(RMS)}$	max.	55	A
Repetitive peak forward current $t_p = 20\ \mu s$; $\delta = 0.02$	I_{FRM}	max.	800	A
Non-repetitive peak forward current half sine-wave; $T_j = 150\ ^oC$ prior to surge; with reapplied V_{RWMmax}:				
$t = 10$ ms	I_{FSM}	max.	500	A
$t = 8.3$ ms	I_{FSM}	max.	600	A
I^2t for fusing ($t = 10$ ms)	I^2t	max.	1250	A^2s

Temperatures

Storage temperature	T_{stg}		−55 to +150	^oC
Junction temperature	T_j	max.	150	^oC

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; $t = 1$ 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.

BYW92 SERIES

CHARACTERISTICS

Forward voltage
$I_F = 35$ A; $T_j = 150$ °C V_F <   0.8   V*
$I_F = 100$ A; $T_j = 25$ °C V_F <   1.3   V*

Reverse current
$V_R = V_{RRMmax}$; $T_j = 100$ °C I_R <   2.5   mA
           $T_j = 25$ °C I_R <   100 μA

Reverse recovery when switched from
$I_F = 1$ A to $V_R \geqslant 30$ V with $-dI_F/dt = 100$ A/μs;
$T_j = 25$ °C; recovery time t_{rr} <   40   ns

$I_F = 2$ A to $V_R \geqslant 30$ V with $-dI_F/dt = 20$ A/μs;
$T_j = 25$ °C; recovered charge Q_s <   20   nC

$I_F = 10$ A to $V_R \geqslant 30$ V with $-dI_F/dt = 50$ A/μs;
$T_j = 100$ °C; peak recovery current I_{RRM} <   4.5   A

Forward recovery when switched to $I_F = 10$ A
with $dI_F/dt = 10$ A/μs; $T_j = 25$ °C V_{fr} typ.   1.0   V