

ULTRA FAST RECOVERY RECTIFIER DIODES

Glass-passivated, high-efficiency epitaxial rectifier diodes in DO-4 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

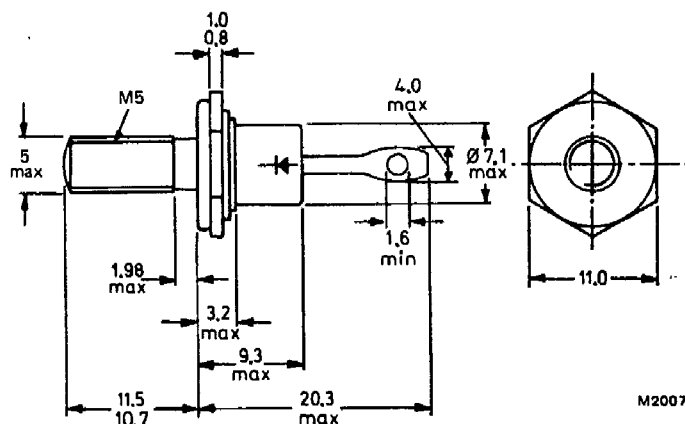
			BYV30-300			400	500		
			300	400	500				
Repetitive peak reverse voltage	V_{RRM}	max.	300	400	500				V
Average forward current	$I_F(AV)$	max.				14			A
Forward voltage	V_F	<				1.05			V
Reverse recovery time	t_{rr}	<				50			ns

MECHANICAL DATA

Dimensions in mm

Fig.1 DO-4 with metric (M5) stud as standard.

10-32 UNF is available upon request with suffix U (e.g. BYV30-400U).



Net mass: 6 g

Diameter of clearance hole: max. 5.2 mm

Accessories supplied on request: see data sheets

Mounting instructions and Accessories
for DO-4 envelopes.

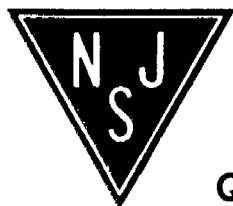
Supplied with device: 1 nut, 1 lock washer.

Nut dimensions across the flats: 9.5 mm

Torque on nut:

min. 0.9 Nm (9 kg cm)

max. 1.7 Nm (17 kg cm)



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RATINGS

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

Voltages		BYV30-300	400	500	V
→ Non-repetitive peak reverse voltage	V_{RSM}	max. 350	450	550	V
Repetitive peak reverse voltage	V_{RRM}	max. 300	400	500	V
Crest working reverse voltage	V_{RWM}	max. 200	300	400	V
Continuous reverse voltage*	V_R	max. 200	300	400	V
Currents					
Average forward current; switching losses negligible up to 100 kHz					
square wave; $\delta = 0.5$; up to $T_{mb} = 113^\circ\text{C}$	$I_F(AV)$	max.	14	A	
up to $T_{mb} = 125^\circ\text{C}$	$I_F(AV)$	max.	10	A	
sinusoidal; up to $T_{mb} = 118^\circ\text{C}$	$I_F(AV)$	max.	12.5	A	
up to $T_{mb} = 125^\circ\text{C}$	$I_F(AV)$	max.	10	A	
R.M.S. forward current	$I_F(RMS)$	max.	20	A	
Repetitive peak forward current					
$t_p = 20\ \mu\text{s}$; $\delta = 0.02$	I_{FRM}	max.	320	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.	150	A	
$t = 8.3\ \text{ms}$	I_{FSM}	max.	180	A	
I^2t for fusing ($t = 10\ \text{ms}$)	I^2t	max.	112	A^2s	
Temperatures					
Storage temperature	T_{stg}		-65 to +175	$^\circ\text{C}$	
Junction temperature	T_j	max.	150	$^\circ\text{C}$	
THERMAL RESISTANCE					
From junction to mounting base	$R_{th\ j-mb}$	=	2.0	K/W	
From mounting base to heatsink with heatsink compound	$R_{th\ mb-h}$	=	0.3	K/W	
From junction to ambient in free air	$R_{th\ j-a}$	=	50	K/W	

CHARACTERISTICS

Forward voltage					
$I_F = 15\ \text{A}$; $T_j = 150^\circ\text{C}$	V_F	<	1.05	V^*	
$I_F = 50\ \text{A}$; $T_j = 25^\circ\text{C}$	V_F	<	1.40	V^*	
Reverse current					
$V_R = V_{RWM\ max}$; $T_j = 100^\circ\text{C}$	I_R	<	0.8	mA	
$T_j = 25^\circ\text{C}$	I_R	<	50	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}	<	50	ns	
$I_F = 2\ \text{A}$ 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	<	50	nC	
$I_F = 10\ \text{A}$ 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}	<	5.2	A	
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.	2.5	V	