Rectifier diodes ultrafast

BYV72 series

GENERAL DESCRIPTION

Glass passivated, high efficiency, dual, rectifier diodes in a plastic envelope, featuring low forward voltage drop, ultra-fast recovery times 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.

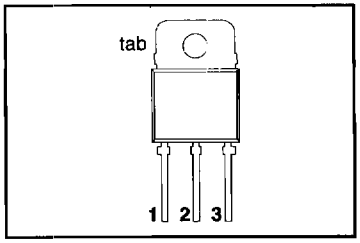
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	UNIT
	BYV72-	**100**	**150**	**200**	
V_{RRM}	Repetitive peak reverse voltage	100	150	200	V
V_F	Forward voltage	0.90	0.90	0.90	V
$I_{O(AV)}$	Output current (both diodes conducting)	30	30	30	A
t_{rr}	Reverse recovery time	28	28	28	ns

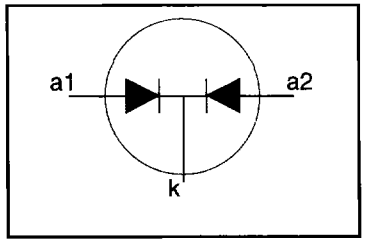
PINNING - SOT93

PIN	DESCRIPTION
1	Anode 1 (a)
2	Cathode (k)
3	Anode 2 (a)
tab	Cathode (k)

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.			UNIT
				-100	**-150**	**-200**	
V_{RRM}	Repetitive peak reverse voltage		-	100	150	200	V
V_{RWM}	Crest working reverse voltage		-	100	150	200	V
V_R	Continuous reverse voltage[1]		-	100	150	200	V
$I_{O(AV)}$	Output current (both diodes conducting)[2]	square wave; $\delta = 0.5$; $T_{mb} \leq 108$ °C	-		30		A
		sinusoidal; a = 1.57; $T_{mb} \leq 111$ °C	-		27		A
$I_{O(RMS)}$	RMS forward current		-		43		A
I_{FRM}	Repetitive peak forward current per diode	t = 25 µs; $\delta = 0.5$; $T_{mb} \leq 108$ °C	-		30		A
I_{FSM}	Non-repetitive peak forward current per diode	t = 10 ms	-		150		A
		t = 8.3 ms sinusoidal; with reapplied $V_{RWM(max)}$	-		160		A
I^2t	I^2t for fusing	t = 10 ms	-		112		A^2s
T_{stg}	Storage temperature		-40		150		°C
T_j	Operating junction temperature		-		150		°C

1 $T_{mb} \leq 144$°C for thermal stability.

2 Neglecting switching and reverse current losses.
For output currents in excess of 20 A, connection should be made to the exposed metal mounting base.

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j\text{-}mb}$	Thermal resistance junction to mounting base	per diode	-	-	2.4	K/W
		both diodes conducting	-	-	1.4	K/W
$R_{th\ j\text{-}a}$	Thermal resistance junction to ambient	in free air	-	45	-	K/W

STATIC CHARACTERISTICS

T_j = 25 °C unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage (per diode)	I_F = 15 A; T_j = 150°C	-	0.83	0.90	V
		I_F = 15 A	-	0.95	1.05	V
		I_F = 30 A	-	1.00	1.20	V
I_R	Reverse current (per diode)	$V_R = V_{RWM}$; T_j = 100 °C	-	0.5	1	mA
		$V_R = V_{RWM}$	-	10	100	µA

DYNAMIC CHARACTERISTICS

T_j = 25 °C unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Q_s	Reverse recovery charge (per diode)	I_F = 2 A; $V_R \geq$ 30 V; $-dI_F/dt$ = 20 A/µs	-	6	15	nC
t_{rr}	Reverse recovery time (per diode)	I_F = 1 A; $V_R \geq$ 30 V; $-dI_F/dt$ = 100 A/µs	-	20	28	ns
I_{rrm}	Peak reverse recovery current (per diode)	I_F = 10 A; $V_R \geq$ 30 V; $-dI_F/dt$ = 50 A/µs; T_j = 100 °C	-	2	2.4	A
V_{fr}	Forward recovery voltage (per diode)	I_F = 1 A; dI_F/dt = 10 A/µs	-	1	-	V

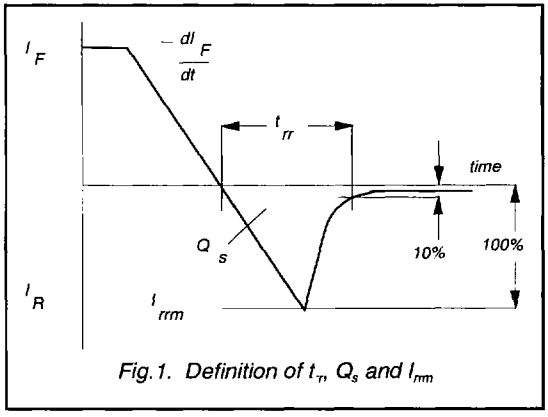


Fig.1. Definition of t_{rr}, Q_s and I_{rrm}

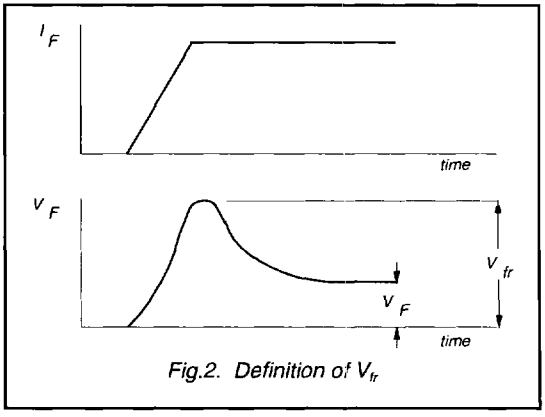


Fig.2. Definition of V_{fr}

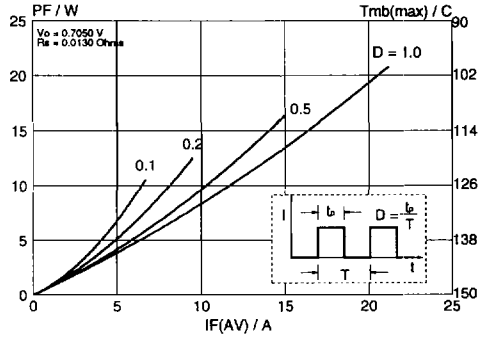


Fig.3. Maximum forward dissipation $P_F = f(I_{F(AV)})$ per diode; square current waveform where $I_{F(AV)} = I_{F(RMS)} \times \sqrt{D}$.

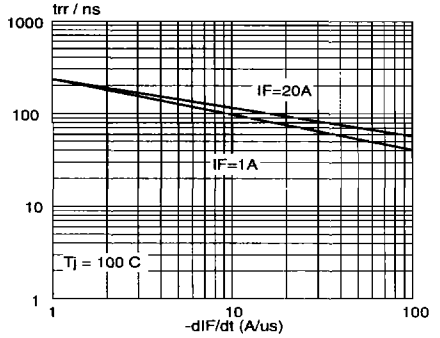


Fig.6. Maximum t_{rr} at T_j = 100 °C; per diode

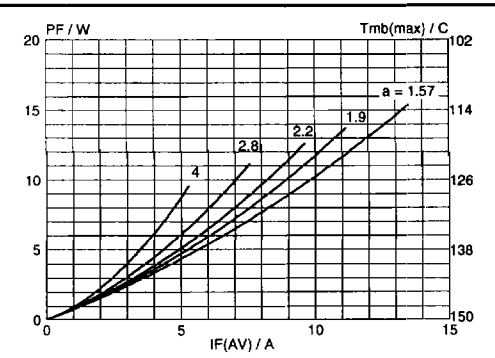


Fig.4. Maximum forward dissipation $P_F = f(I_{F(AV)})$ per diode; sinusoidal current waveform where a = form factor = $I_{F(RMS)} / I_{F(AV)}$.

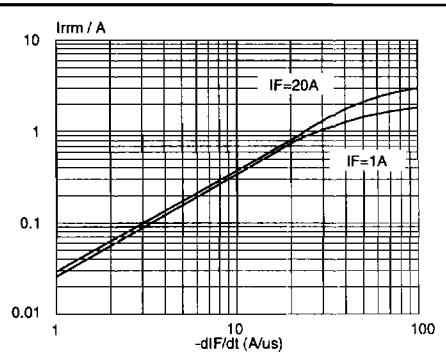


Fig.7. Maximum I_{rrm} at T_j = 25 °C; per diode

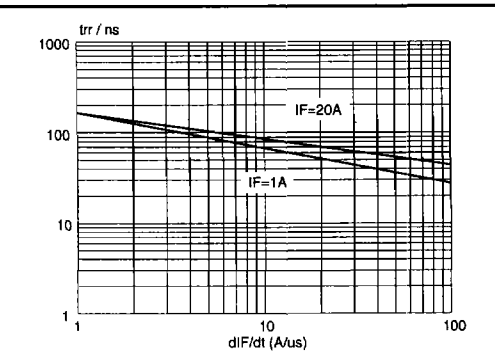


Fig.5. Maximum t_{rr} at T_j = 25 °C; per diode

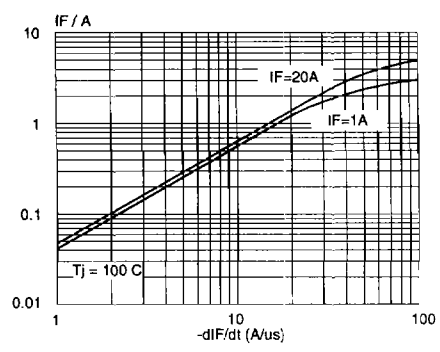


Fig.8. Maximum I_{rrm} at T_j = 100 °C; per diode

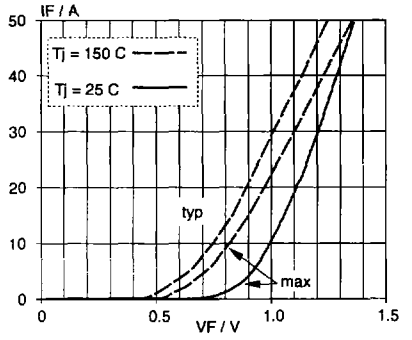


Fig.9. Typical and maximum forward characteristic $I_F = f(V_F)$; parameter T_j

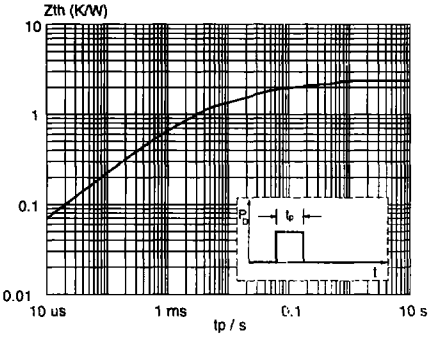


Fig.11. Transient thermal impedance; per diode; $Z_{th\ j\text{-}mb} = f(t_p)$.

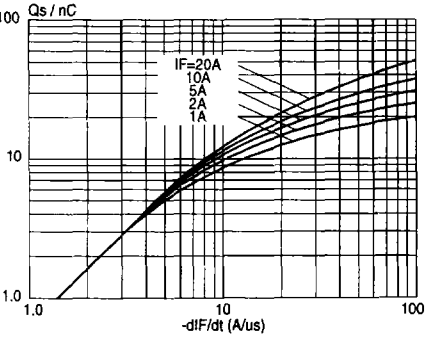


Fig.10. Maximum Q_s at T_j = 25 °C; per diode