

# Dual rectifier diodes ultrafast

# BYV74 series

## GENERAL DESCRIPTION

Glass passivated, high efficiency rectifier diodes in a plastic envelope featuring low forward voltage drop, ultra fast reverse recovery times and soft recovery characteristic. They are intended for use in switched mode power supplies and high frequency circuits in general, where both low conduction losses and low switching losses are essential.

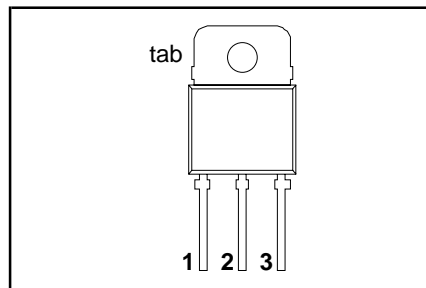
## QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	UNIT
$V_{RRM}$	Repetitive peak reverse voltage	<b>300</b> 300	<b>400</b> 400	<b>500</b> 500	V
$V_F$	Forward voltage	1.12	1.12	1.12	V
$I_{O(AV)}$	Average output current (both diodes conducting)	30	30	30	A
$t_{rr}$	Reverse recovery time	60	60	60	ns

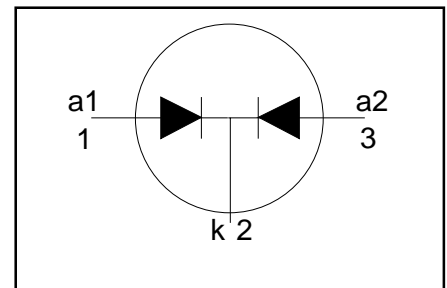
## PINNING - SOT93

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
				-300	-400	-500	
$V_{RRM}$	Repetitive peak reverse voltage	$T_{mb} \leq 136^\circ\text{C}$	-	300	400	500	V
$V_{RWM}$	Crest working reverse voltage		-	300	400	500	V
$V_R$	Continuous reverse voltage		-	300	400	500	V
$I_{O(AV)}$	Average output current (both diodes conducting) <sup>1</sup>	square wave; $\delta = 0.5$ ; $T_{mb} \leq 94^\circ\text{C}$	-	30			A
		sinusoidal; $a = 1.57$ ; $T_{mb} \leq 98^\circ\text{C}$	-	27			A
$I_{O(RMS)}$	RMS output current (both diodes conducting)		-	43			A
$I_{FRM}$	Repetitive peak forward current per diode	$t = 25\ \mu\text{s}$ ; $\delta = 0.5$ ; $T_{mb} \leq 94^\circ\text{C}$	-	30			A
$I_{FSM}$	Non-repetitive peak forward current per diode.	$t = 10\ \text{ms}$ $t = 8.3\ \text{ms}$ sinusoidal; with reapplied	-	150			A
		$V_{RRM(max)}$ $t = 10\ \text{ms}$	-	160			A
$I^2t$	$I^2t$ for fusing		-	112			A <sup>2</sup> s
$T_{stg}$	Storage temperature		-40	150			°C
$T_j$	Operating junction temperature		-	150			°C

<sup>1</sup> Neglecting switching and reverse current losses.

For output currents in excess of 20 A, connection should be made to the exposed metal mounting base.

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**THERMAL RESISTANCES**

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

**STATIC CHARACTERISTICS** $T_j = 25\text{ °C}$  unless otherwise stated

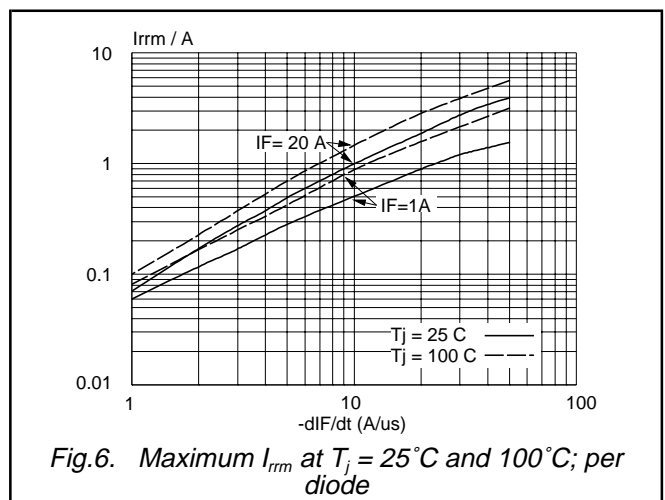
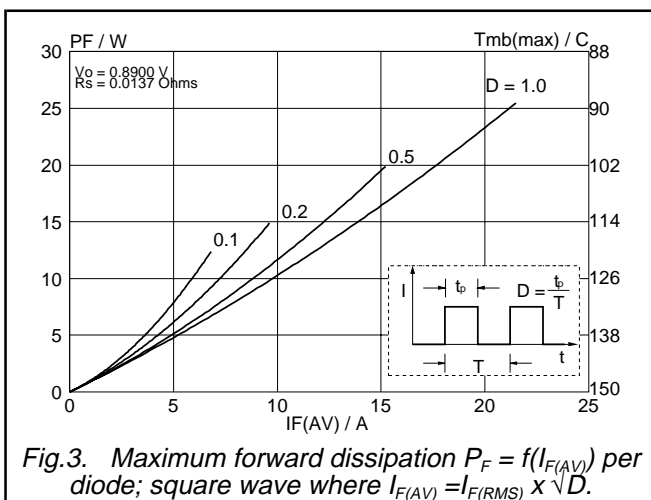
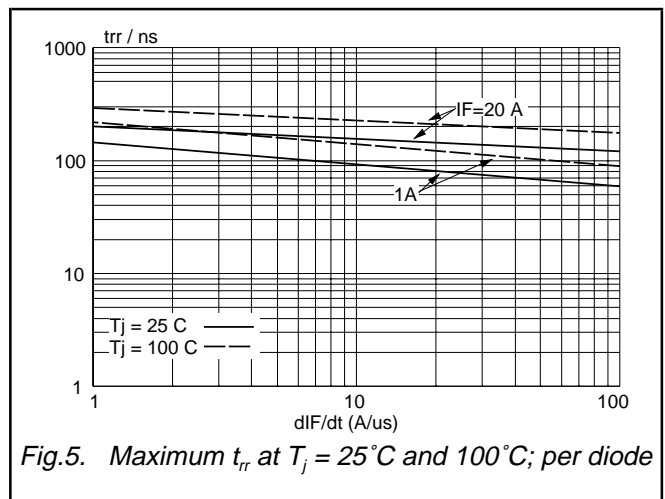
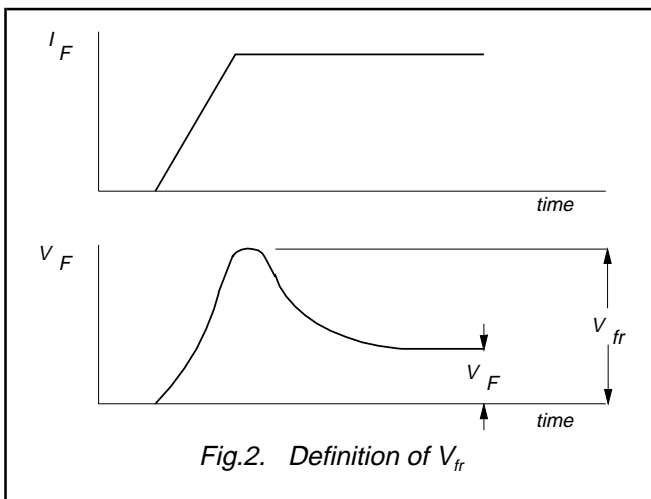
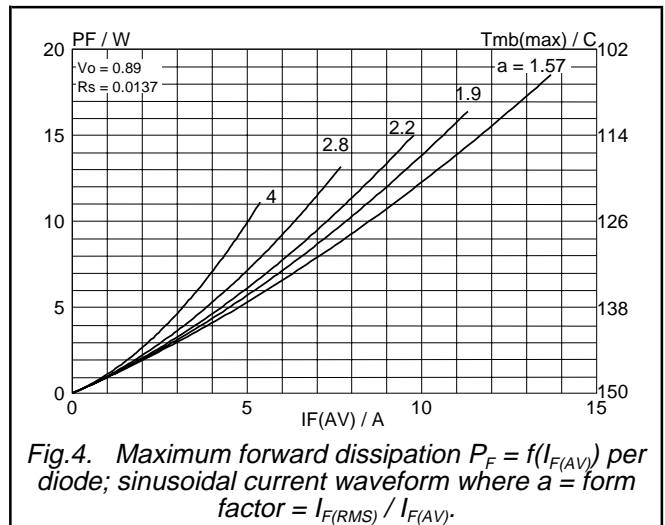
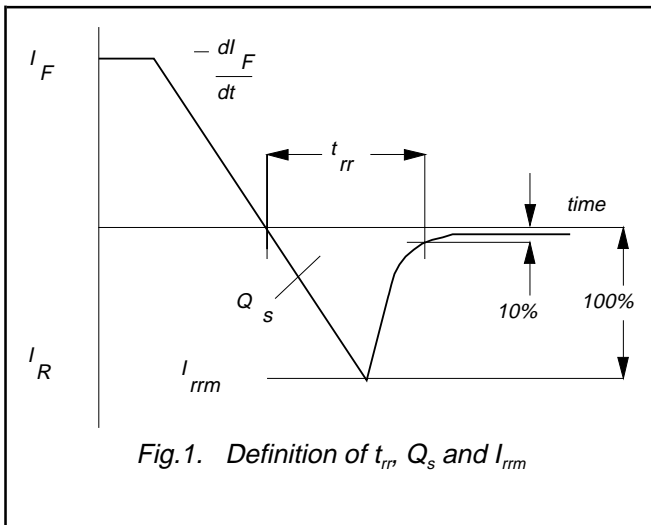
SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$V_F$	Forward voltage (per diode)	$I_F = 15\text{ A}; T_j = 150\text{ °C}$	-	0.95	1.12	V
		$I_F = 15\text{ A}$	-	1.08	1.25	V
		$I_F = 30\text{ A}$	-	1.15	1.36	V
$I_R$	Reverse current (per diode)	$V_R = V_{RRM}$	-	10	50	$\mu\text{A}$
		$V_R = V_{RRM}; T_j = 100\text{ °C}$	-	0.3	0.8	mA

**DYNAMIC CHARACTERISTICS** $T_j = 25\text{ °C}$  unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$Q_s$	Reverse recovery charge (per diode)	$I_F = 2\text{ A to } V_R \geq 30\text{ V};$ $di_F/dt = 20\text{ A}/\mu\text{s}$	-	40	60	nC
$t_{rr}$	Reverse recovery time (per diode)	$I_F = 1\text{ A to } V_R \geq 30\text{ V};$ $di_F/dt = 100\text{ A}/\mu\text{s}$	-	50	60	ns
$I_{rrm}$	Peak reverse recovery current (per diode)	$I_F = 10\text{ A to } V_R \geq 30\text{ V};$ $di_F/dt = 50\text{ A}/\mu\text{s}; T_j = 100\text{ °C}$	-	4.2	5.2	A
$V_{fr}$	Forward recovery voltage (per diode)	$I_F = 10\text{ A}; di_F/dt = 10\text{ A}/\mu\text{s}$	-	2.5	-	V

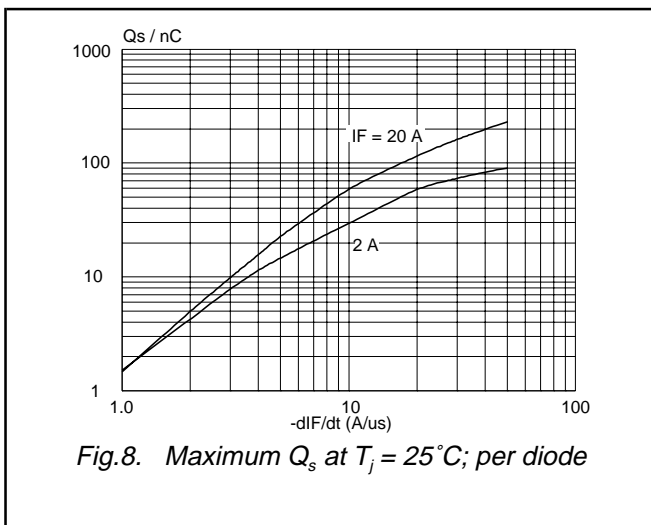
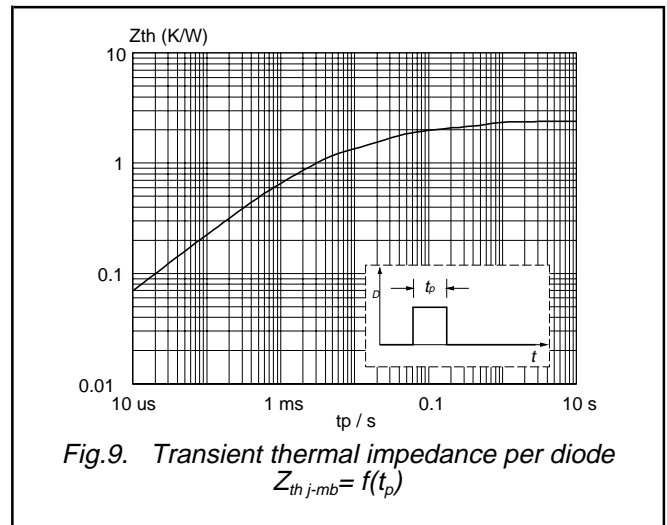
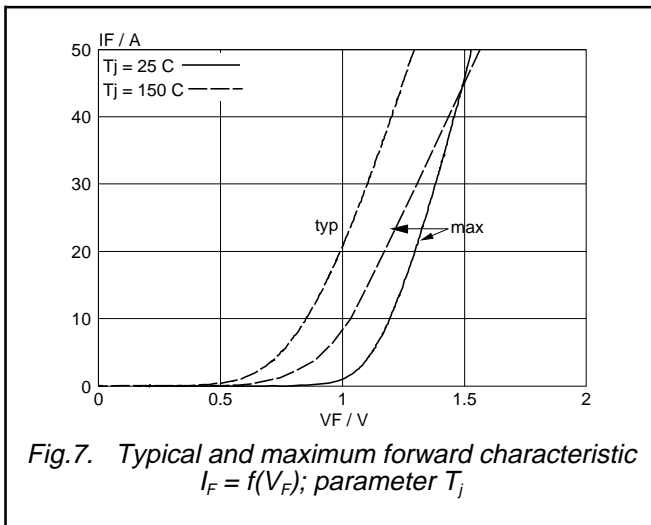
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**MECHANICAL DATA**

*Dimensions in mm*

*Net Mass: 5 g*

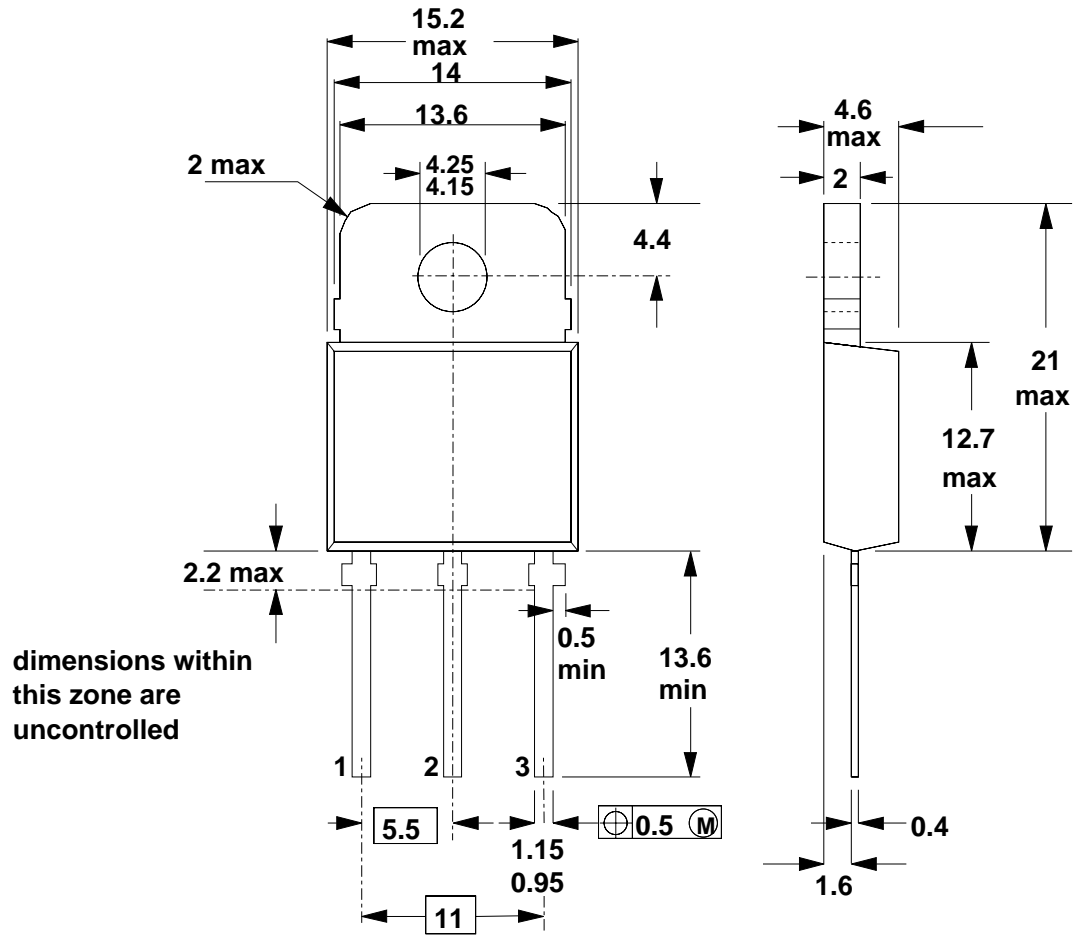


Fig.10. SOT93; pin 2 connected to mounting base.

**Notes**

1. Refer to mounting instructions for SOT93 envelope.
2. Epoxy meets UL94 V0 at 1/8".

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### DEFINITIONS

<b>Data sheet status</b>	
Objective specification	This data sheet contains target or goal specifications for product development.
Preliminary specification	This data sheet contains preliminary data; supplementary data may be published later.
Product specification	This data sheet contains final product specifications.
<b>Limiting values</b>	
Limiting values are given in accordance with the Absolute Maximum Rating System (IEC 134). Stress above one or more of the limiting values may cause permanent damage to the device. These are stress ratings only and operation of the device at these or at any other conditions above those given in the Characteristics sections of this specification is not implied. Exposure to limiting values for extended periods may affect device reliability.	
<b>Application information</b>	
Where application information is given, it is advisory and does not form part of the specification.	
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