

**Rectifier diodes  
ultrafast**

**BYV40 series**

**GENERAL DESCRIPTION**

Glass passivated high efficiency dual rectifier diodes in a plastic envelope suitable for surface mounting, 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.

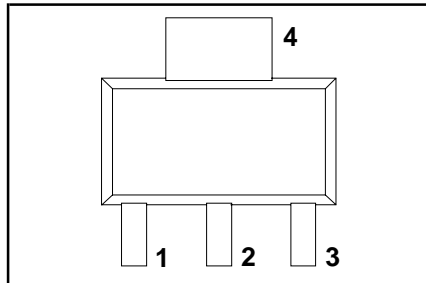
**QUICK REFERENCE DATA**

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	UNIT
$V_{RRM}$	Repetitive peak reverse voltage	<b>100</b> 100	<b>150</b> 150	<b>200</b> 200	V
$V_F$	Forward voltage	0.7	0.7	0.7	V
$I_{O(AV)}$	Output current (both diodes conducting)	1.5	1.5	1.5	A
$t_{rr}$	Reverse recovery time	25	25	25	ns

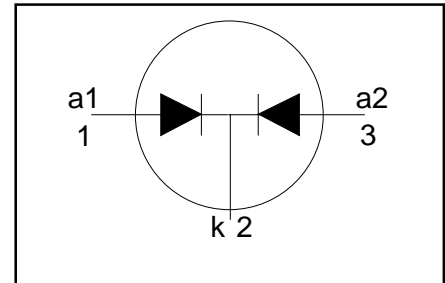
**PINNING - SOT223**

PIN	DESCRIPTION
1	anode 1 (a)
2	cathode (k)
3	anode 2 (a)
4	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 <sup>1</sup>		-	100	150	200	V
$I_{O(AV)}$	Output current (both diodes conducting) <sup>2</sup>	square wave; $\delta = 0.5$ ;	-	1.5			A
		$T_{sp} \leq 132^\circ\text{C}$ sinusoidal; $a = 1.57$ ;	-	1.35			A
$I_{O(RMS)}$	RMS forward current	$T_{sp} \leq 134^\circ\text{C}$	-	2.1			A
		$t = 25 \mu\text{s}$ ; $\delta = 0.5$ ;	-	1.5			A
$I_{FRM}$	Repetitive peak forward current per diode	$T_{sp} \leq 132^\circ\text{C}$	-	6			A
$I_{FSM}$	Non-repetitive peak forward current per diode	$t_p = 10 \text{ ms}$ $t_p = 8.3 \text{ ms}$ sinusoidal; $T_j = 150^\circ\text{C}$ prior to surge; with reapplied	-	6.6			A
$I^2t$	$I^2t$ for fusing	$V_{RWM(max)}$ $t = 10 \text{ ms}$	-	0.18			A <sup>2</sup> s
$T_{stg}$	Storage temperature		-65	150			$^\circ\text{C}$
$T_j$	Operating junction temperature		-	150			$^\circ\text{C}$

1  $T_{sp} \leq 120^\circ\text{C}$  for thermal stability.

2 Neglecting switching and reverse current losses

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**THERMAL RESISTANCES**

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-sp}$	Thermal resistance junction to solder point	one or both diodes conducting	-	-	15	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient	pcb mounted; minimum footprint	-	156	-	K/W
		pcb mounted; pad area as in fig:9	-	70	-	K/W

**STATIC CHARACTERISTICS**

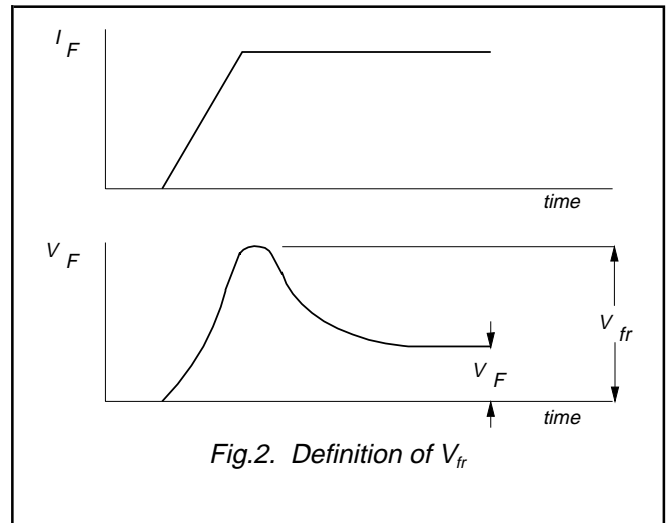
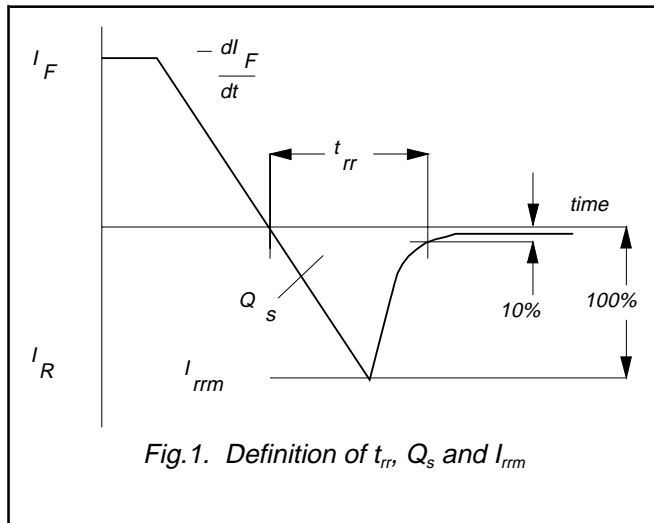
$T_j = 25\text{ }^\circ\text{C}$  unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$V_F$	Forward voltage (per diode)	$I_F = 0.5\text{ A}; T_j = 150\text{ }^\circ\text{C}$	-	0.50	0.7	V
		$I_F = 1.5\text{ A}$	-	0.82	1.0	V
$I_R$	Reverse current (per diode)	$V_R = V_{RWM}; T_j = 100\text{ }^\circ\text{C}$	-	100	300	$\mu\text{A}$
		$V_R = V_{RWM}$	-	5	10	$\mu\text{A}$

**DYNAMIC CHARACTERISTICS**

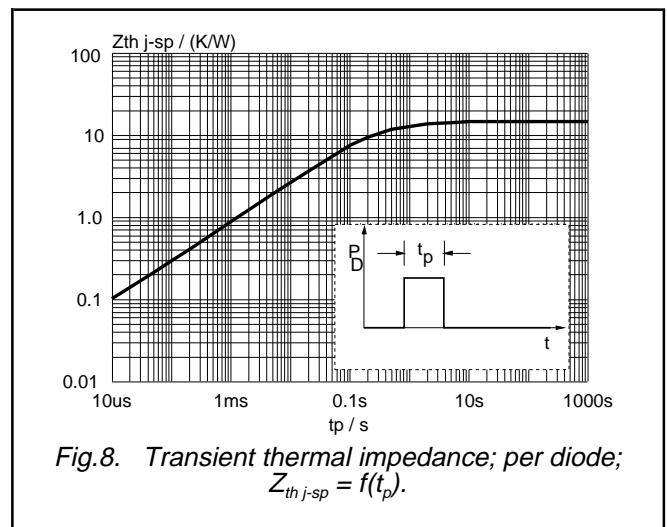
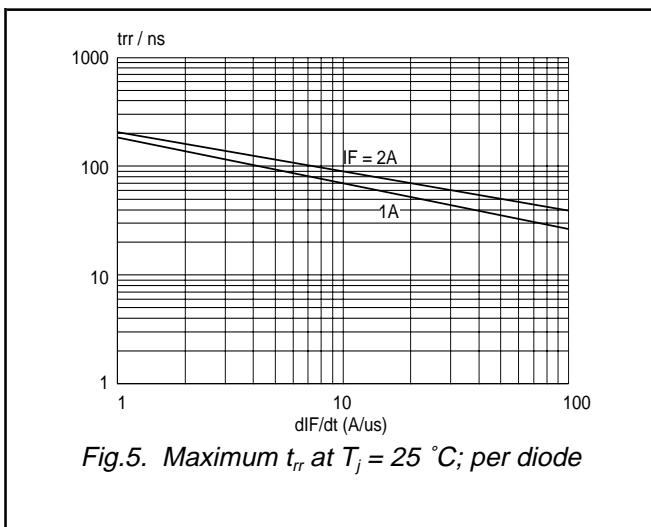
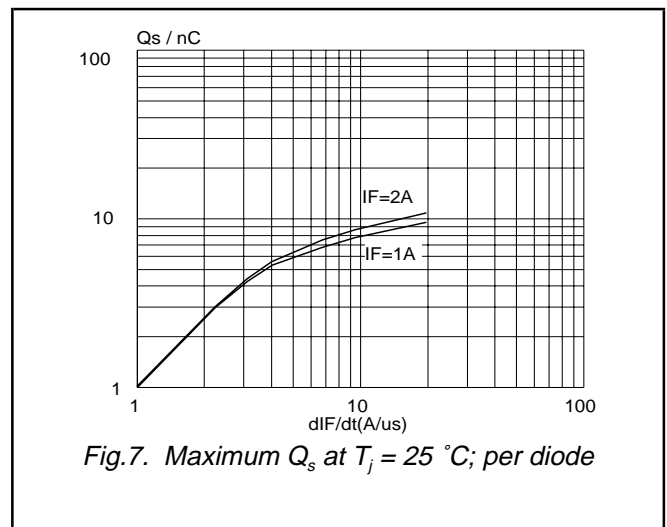
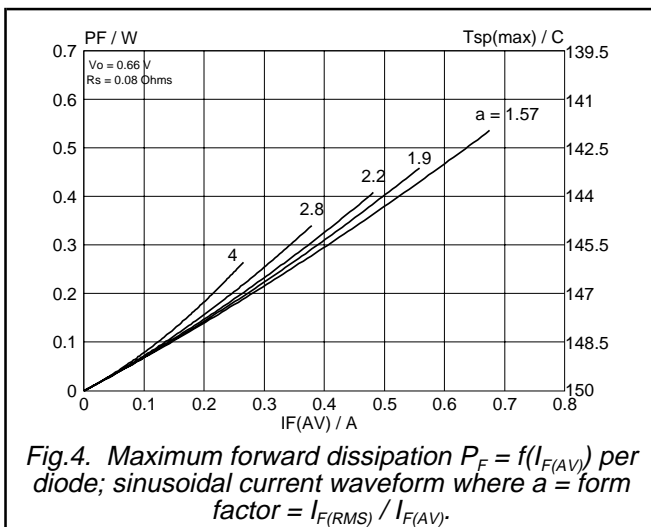
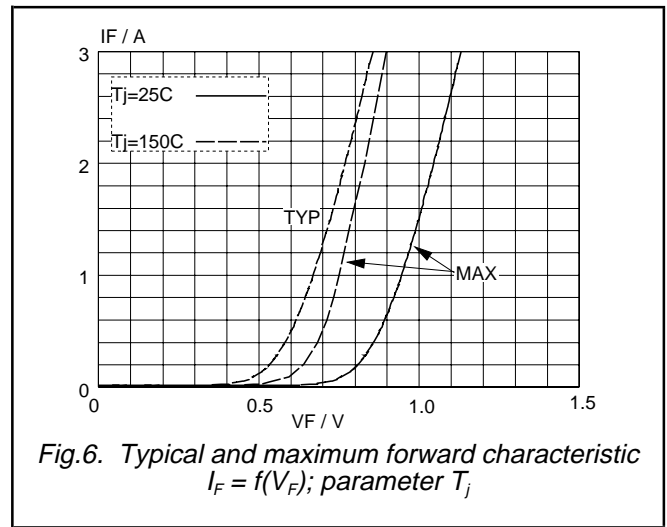
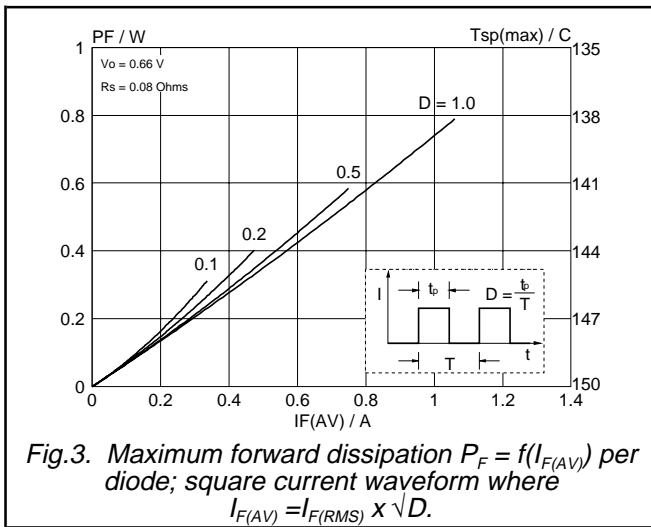
$T_j = 25\text{ }^\circ\text{C}$  unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$Q_s$	Reverse recovery charge (per diode)	$I_F = 2\text{ A}; V_R \geq 30\text{ V}; -di_F/dt = 20\text{ A}/\mu\text{s}$	-	-	11	nC
$t_{rr}$	Reverse recovery time (per diode)	$I_F = 1\text{ A}; V_R \geq 30\text{ V}; -di_F/dt = 100\text{ A}/\mu\text{s}$	-	-	25	ns
$V_{fr}$	Forward recovery voltage (per diode)	$I_F = 2\text{ A}; di_F/dt = 20\text{ A}/\mu\text{s}$	-	3	-	V

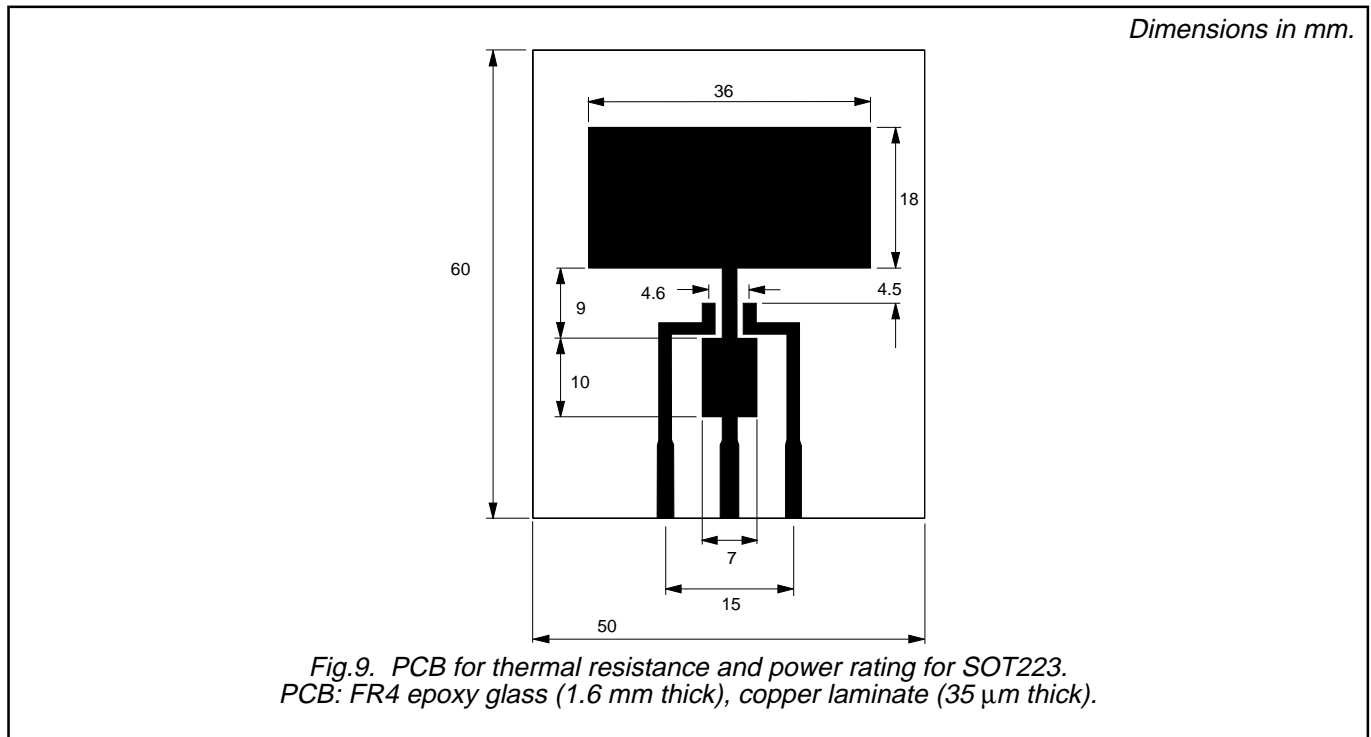


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**PRINTED CIRCUIT BOARD**



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**MECHANICAL DATA**

*Dimensions in mm*

*Net Mass: 0.11 g*

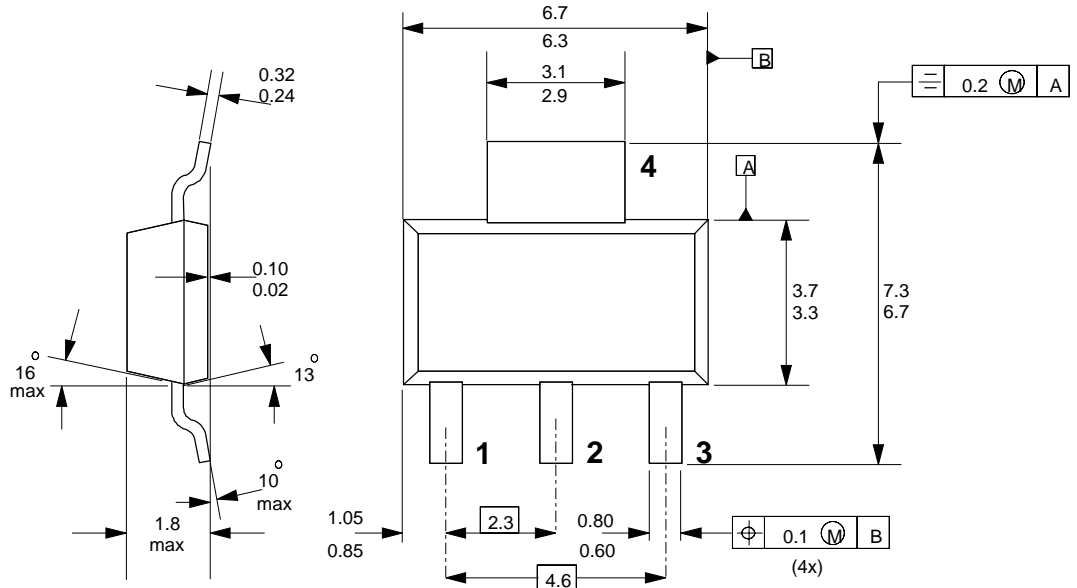


Fig.10. SOT223 surface mounting package.

**Notes**

1. For further information, refer to Philips publication SC18 " SMD Footprint Design and Soldering Guidelines".  
Order code: 9397 750 00505.
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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