

DATA SHEET

BYT79 series
Rectifier diodes
ultrafast

Product specification

September 1998



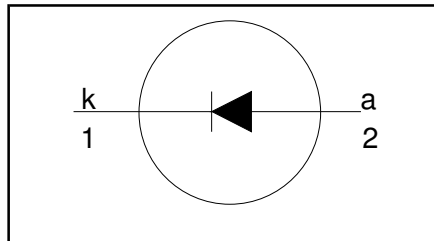
**Rectifier diodes
ultrafast**

BYT79 series

FEATURES

- Low forward volt drop
- Fast switching
- Soft recovery characteristic
- High thermal cycling performance
- Low thermal resistance

SYMBOL



QUICK REFERENCE DATA

$V_R = 300\text{ V} / 400\text{ V} / 500\text{ V}$
$V_F \leq 1.05\text{ V}$
$I_{F(AV)} = 14\text{ A}$
$t_{tr} \leq 60\text{ ns}$

GENERAL DESCRIPTION

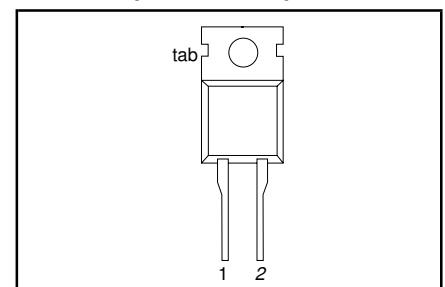
Ultra-fast, epitaxial rectifier diodes intended for use as output rectifiers in high frequency switched mode power supplies.

The BYT79 series is supplied in the conventional leaded SOD59 (TO220AC) package.

PINNING

PIN	DESCRIPTION
1	cathode
2	anode
tab	cathode

SOD59 (TO220AC)



LIMITING VALUES

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.			UNIT
V_{RRM} V_R	Peak repetitive reverse voltage	BYT79 $T_{mb} \leq 147^\circ\text{C}$	-	-300	-400	-500	V
	Continuous reverse voltage		-	300	400	500	V
$I_{F(AV)}$	Average forward current ¹	square wave; $\delta = 0.5$; $T_{mb} \leq 117^\circ\text{C}$	-	14			A
I_{FSM}	Non-repetitive peak forward current.	$t = 10\text{ ms}$	-	130			A
		$t = 8.3\text{ ms}$ sinusoidal; with reapplied $V_{RRM(max)}$	-	143			A
T_{stg}	Storage temperature		-40	150			$^\circ\text{C}$
T_j	Operating junction temperature		-	150			$^\circ\text{C}$

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-mb}$	Thermal resistance junction to mounting base		-	-	2.0	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient	in free air.	-	60	-	K/W

¹ Neglecting switching and reverse current losses

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ELECTRICAL CHARACTERISTICS

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage	$I_F = 15\text{ A}; T_j = 150\text{ }^\circ\text{C}$	-	0.90	1.05	V
		$I_F = 30\text{ A}$	-	1.17	1.38	V
I_R	Reverse current	$V_R = V_{RRM}$	-	5.0	50	μA
Q_s	Reverse recovery charge	$V_R = V_{RRM}; T_j = 100\text{ }^\circ\text{C}$	-	0.2	0.8	mA
		$I_F = 2\text{ A to } V_R \geq 30\text{ V};$	-	50	60	nC
		$di_F/dt = 20\text{ A}/\mu\text{s}$				
t_{rr}	Reverse recovery time	$I_F = 1\text{ A to } V_R \geq 30\text{ V};$	-	50	60	ns
		$di_F/dt = 100\text{ A}/\mu\text{s}$				
I_{rrm}	Peak reverse recovery current	$I_F = 10\text{ A to } V_R \geq 30\text{ V};$	-	4.0	5.2	A
		$di_F/dt = 50\text{ A}/\mu\text{s}; T_j = 100\text{ }^\circ\text{C}$				
V_{fr}	Forward recovery voltage	$I_F = 10\text{ A}; di_F/dt = 10\text{ A}/\mu\text{s}$	-	2.5	-	V

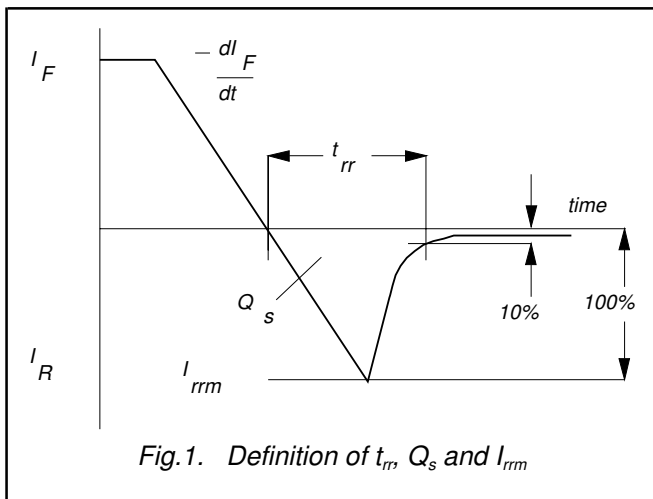


Fig.1. Definition of t_{rr} , Q_s and I_{rrm}

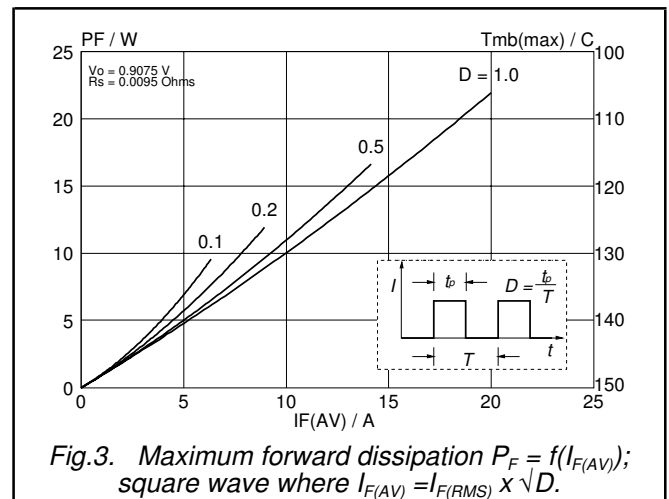


Fig.3. Maximum forward dissipation $P_F = f(I_{F(AV)})$; square wave where $I_{F(AV)} = I_{F(RMS)} \times \sqrt{D}$.

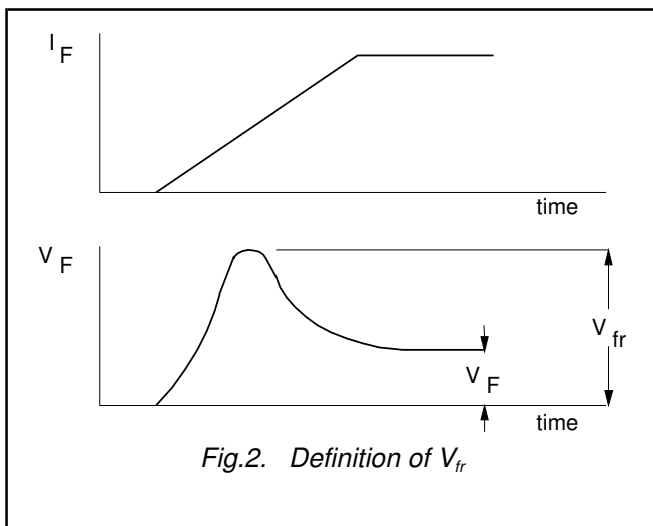


Fig.2. Definition of V_{fr}

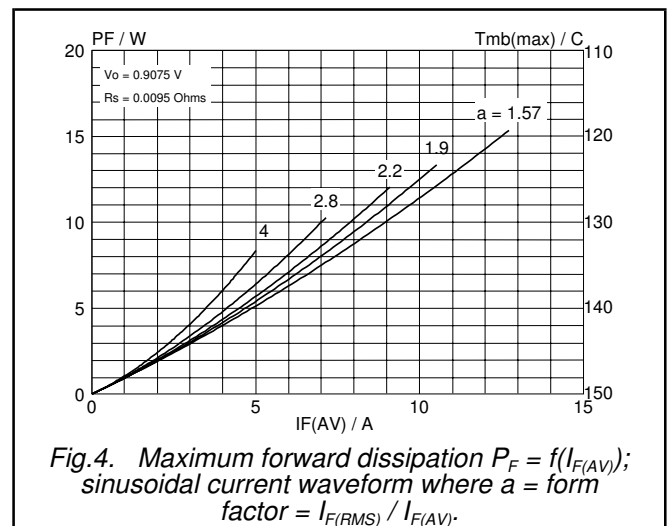
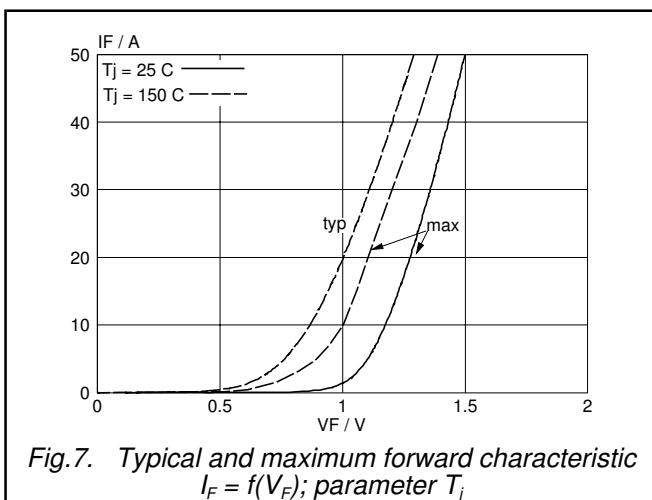
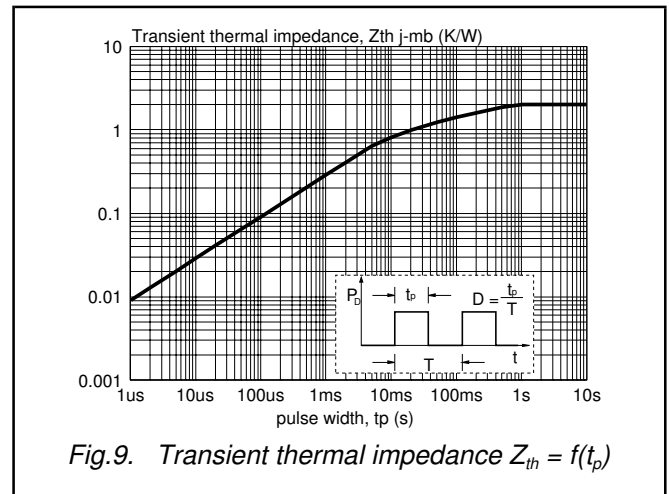
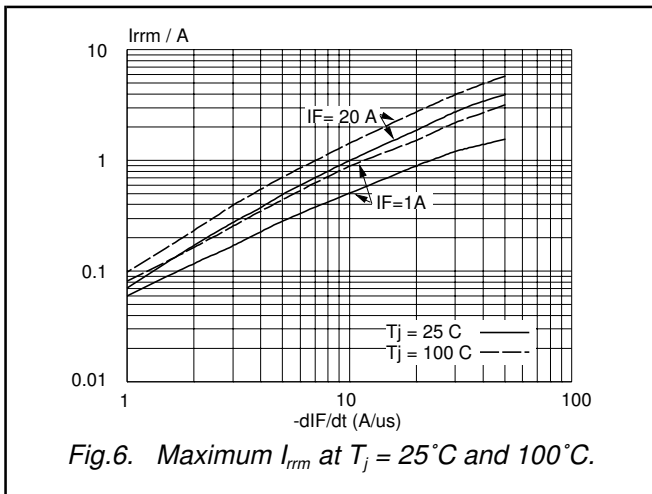
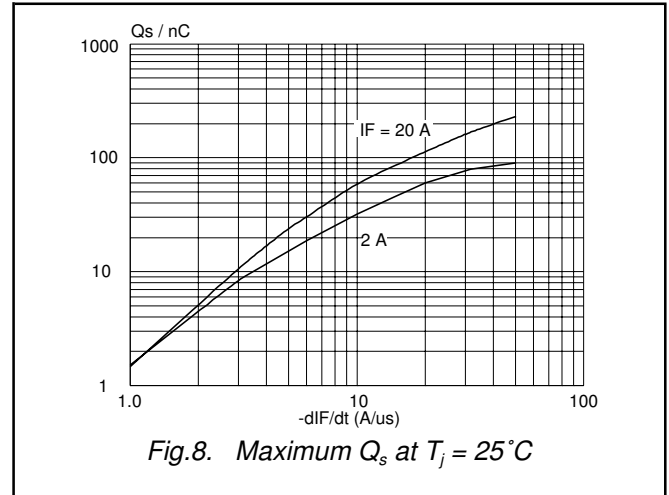
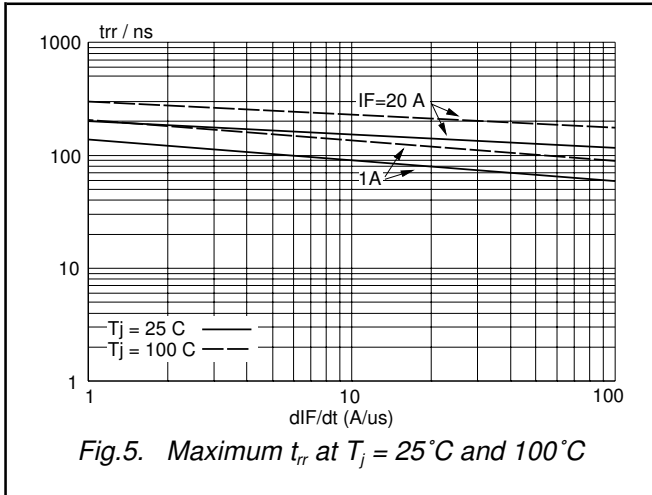


Fig.4. Maximum forward dissipation $P_F = f(I_{F(AV)})$; sinusoidal current waveform where $a = \text{form factor} = I_{F(RMS)} / I_{F(AV)}$.

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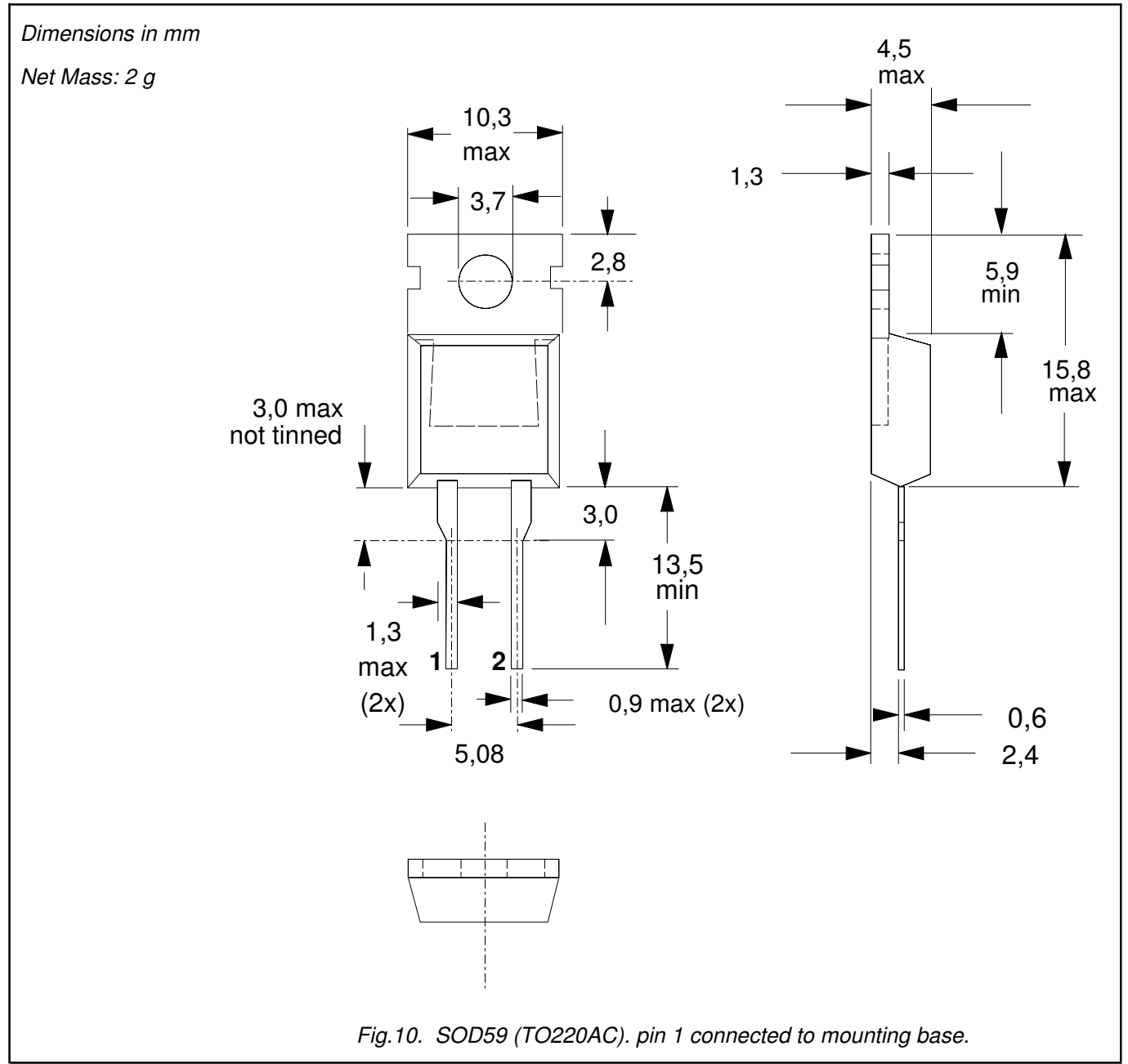
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MECHANICAL DATA



Notes

1. Refer to mounting instructions for TO220 envelopes.
2. Epoxy meets UL94 V0 at 1/8".

Legal information

DATA SHEET STATUS

DOCUMENT STATUS ⁽¹⁾	PRODUCT STATUS ⁽²⁾	DEFINITION
Objective data sheet	Development	This document contains data from the objective specification for product development.
Preliminary data sheet	Qualification	This document contains data from the preliminary specification.
Product data sheet	Production	This document contains the product specification.

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For additional information please visit: <http://www.nxp.com>

For sales offices addresses send e-mail to: salesaddresses@nxp.com

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