

DATA SHEET

BYT79-500 Rectifier diodes ultrafast

Product specification

March 2019

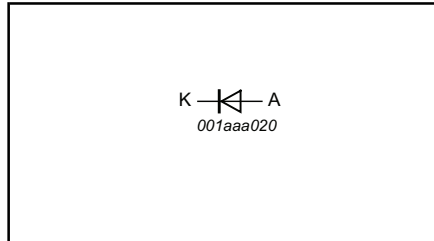
Rectifier diodes ultrafast

BYT79-500

FEATURES

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

SYMBOL



QUICK REFERENCE DATA

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

GENERAL DESCRIPTION

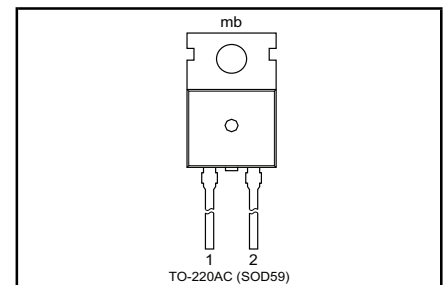
Ultra-fast, epitaxial rectifier diodes intended for use as output rectifiers in high frequency switched mode power supplies.

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}	Peak repetitive reverse voltage	$T_{mb} \leq 147^\circ \text{C}$	-	500	V
V_R	Continuous reverse voltage		-	500	V
$I_{F(AV)}$	Average forward current ¹	square wave; $\delta = 0.5$;	-	14	A
I_{FSM}	Non-repetitive peak forward current.	$T_{mb} \leq 117^\circ \text{C}$	-	-	A
		$t = 10 \text{ ms}$	-	130	A
		$t = 8.3 \text{ ms}$	-	143	A
		sinusoidal; with reapplied $V_{RRM(max)}$	-	-	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

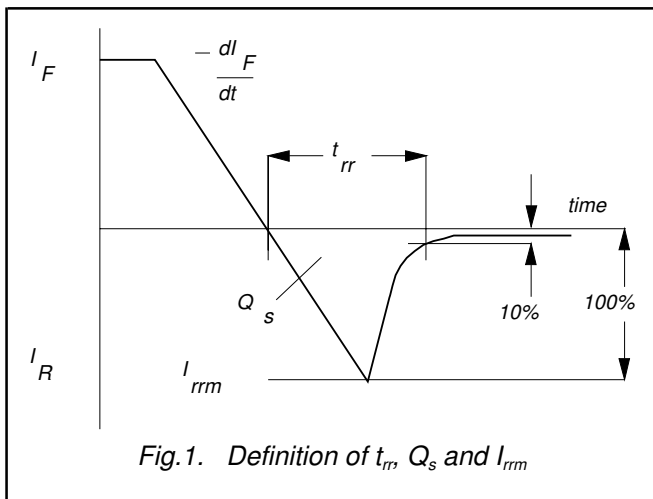


Fig.1. Definition of t_{rr} , Q_s and I_{rrm}

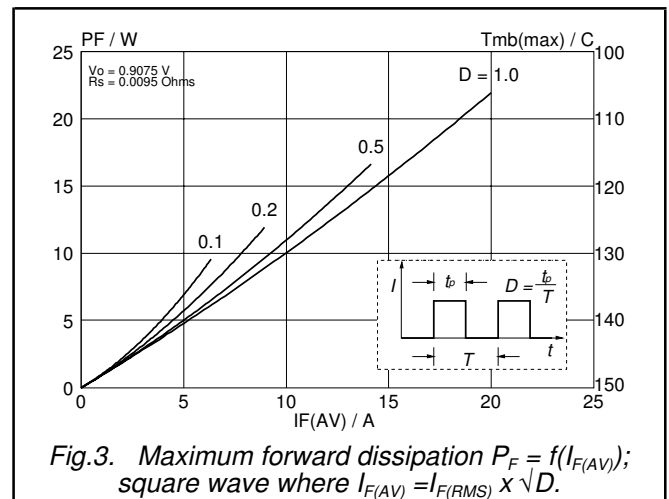


Fig.3. Maximum forward dissipation $P_F = f(I_{F(AV)})$; square wave where $I_{F(AV)} = I_{F(RMS)} \times \sqrt{D}$.

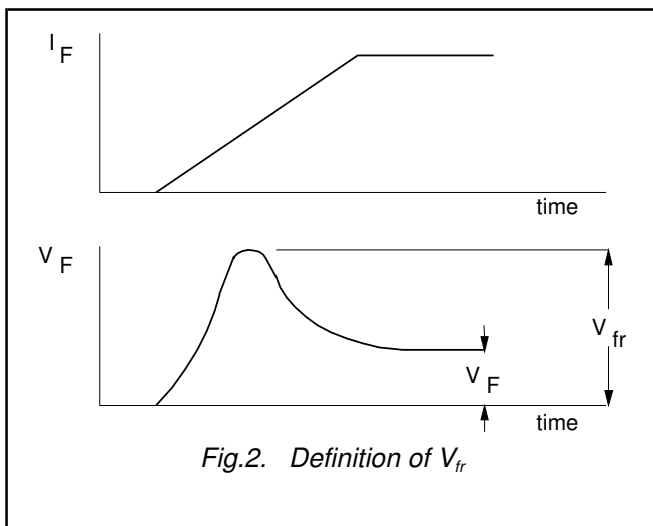


Fig.2. Definition of V_{fr}

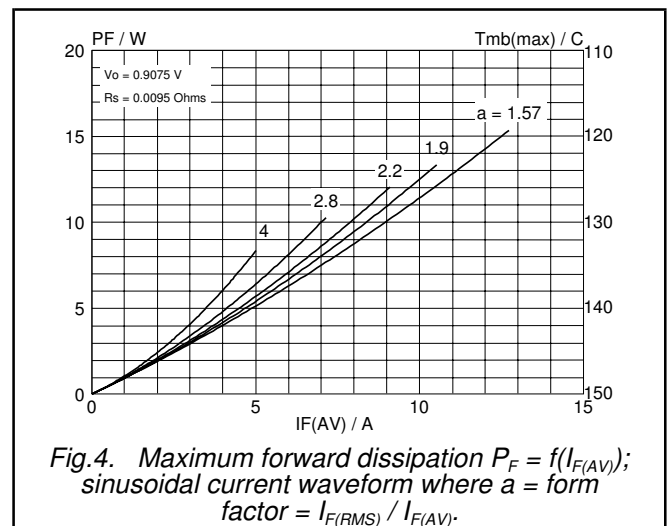


Fig.4. Maximum forward dissipation $P_F = f(I_{F(AV)})$; sinusoidal current waveform where $a = \text{form factor} = I_{F(RMS)} / I_{F(AV)}$.

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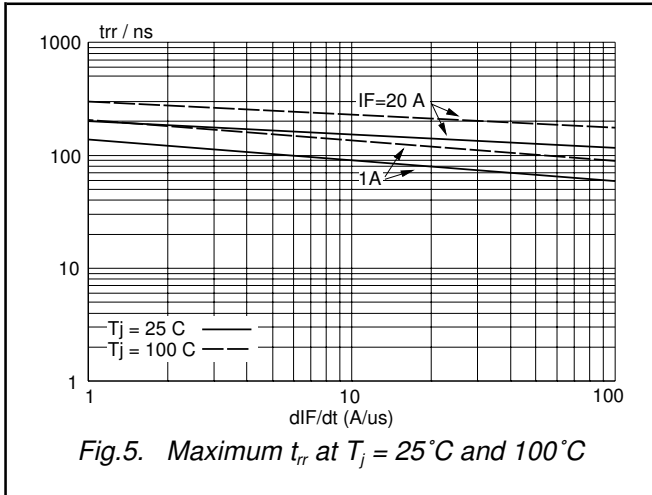


Fig.5. Maximum t_{rr} at $T_j = 25^\circ\text{C}$ and 100°C

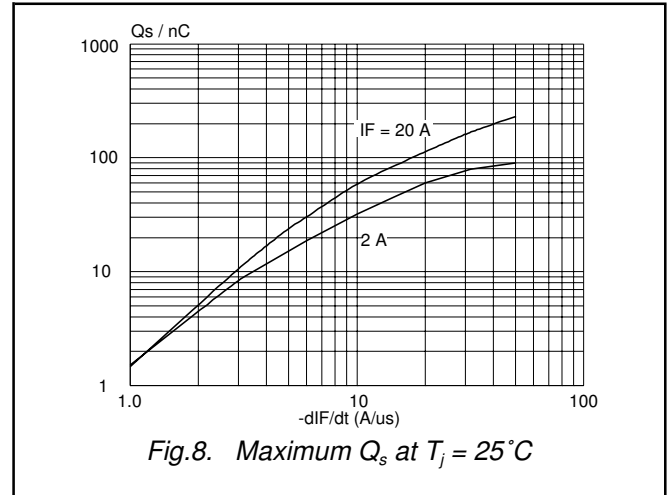


Fig.8. Maximum Q_s at $T_j = 25^\circ\text{C}$

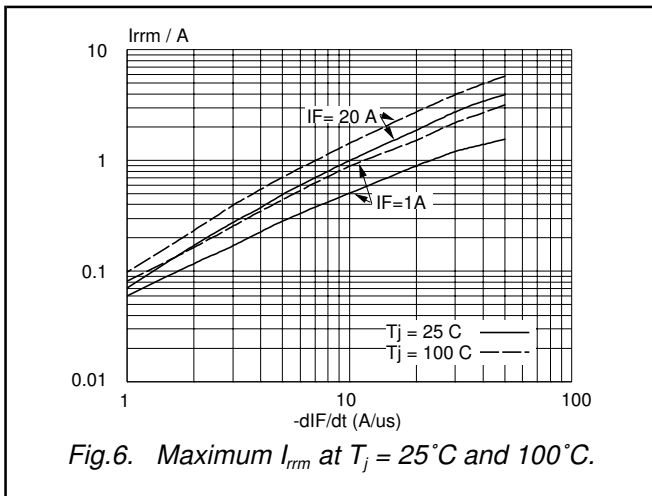


Fig.6. Maximum I_{rrm} at $T_j = 25^\circ\text{C}$ and 100°C .

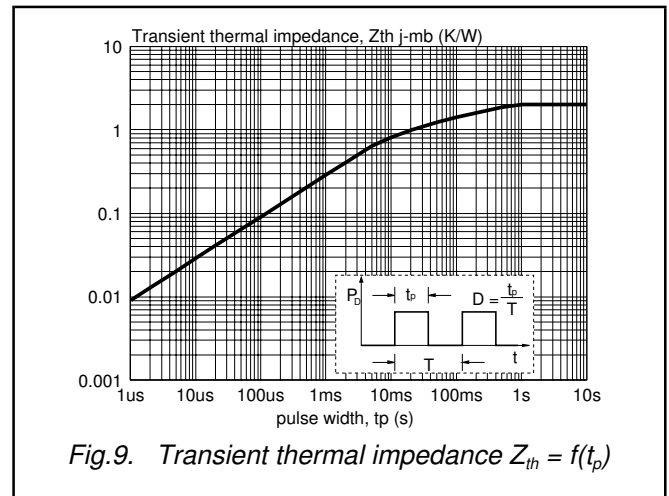


Fig.9. Transient thermal impedance $Z_{th} = f(t_p)$

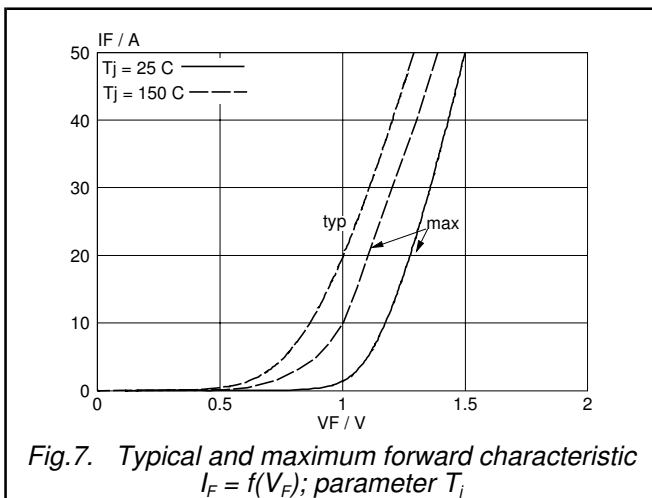


Fig.7. Typical and maximum forward characteristic $I_F = f(V_F)$; parameter T_j

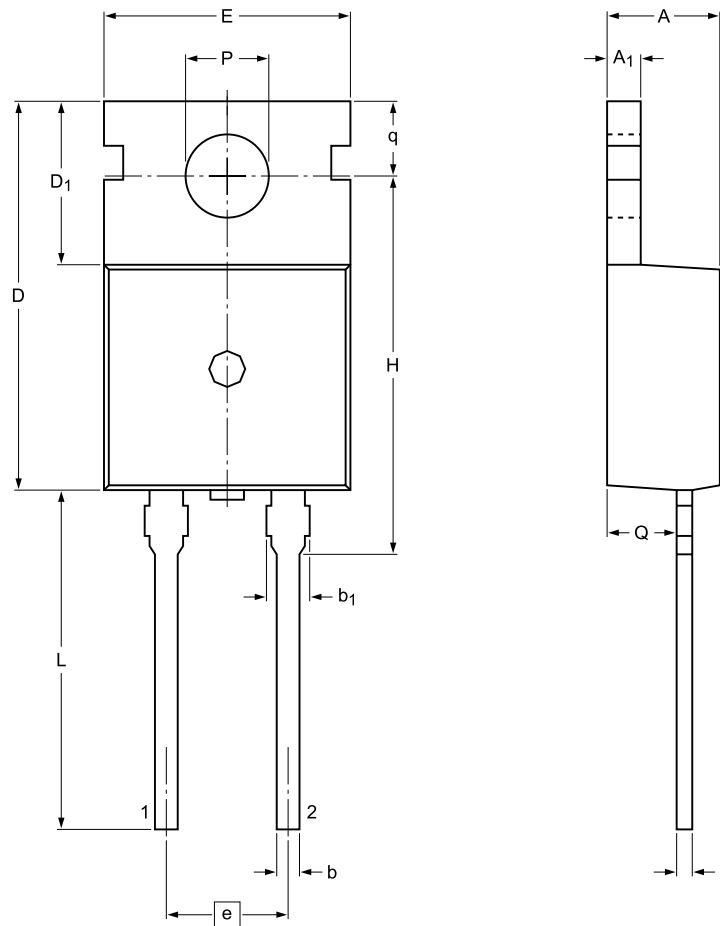
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MECHANICAL DATA

Plastic single-ended package; heatsink mounted; 1 mounting hole; 2-lead TO-220AC

SOD59



Dimensions

Unit	A	A ₁	b	b ₁ ⁽¹⁾	c	D	D ₁	E	e	H	L	P	Q	q
mm	max 4.7	1.40	0.95	1.7	0.65	15.8	6.8	10.30	5.08	16.25	15.0	3.80	2.6	2.9
	nom								(REF)					
	min 4.3	1.15	0.70	1.3	0.45	15.6	6.4	9.65		15.70	12.5	3.65	2.2	2.7

Note

1. Protruded dambar are included in the dimension.

sod059_po

Outline version	References			European projection	Issue date
	IEC	JEDEC	JEITA		
SOD59	2-lead TO-220AC				09-08-25 12-11-27

Legal information

Data sheet status

Document status [1][2]	Product status [3]	Definition
Objective [short] data sheet	Development	This document contains data from the objective specification for product development.
Preliminary [short] data sheet	Qualification	This document contains data from the preliminary specification.
Product [short] data sheet	Production	This document contains the product specification.

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- [2] The term 'short data sheet' is explained in section "Definitions".
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