DATA SHEET

BYT79-500
Rectifier diodes ultrafast

Product specification

March 2019

WeEn
WeEn Semiconductors

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 V

$V_F \leq 1.05$ V

$I_{F(AV)}$ = 14 A

$t_{rr} \leq 60$ ns

GENERAL DESCRIPTION

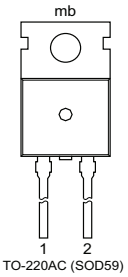
Ultra-fast, epitaxial rectifier diodes intended for use as output rectifiers in high frequency switched mode power supplies.

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		-	500	V
V_R	Continuous reverse voltage	$T_{mb} \leq 147$˚C	-	500	V
$I_{F(AV)}$	Average forward current[1]	square wave; $\delta = 0.5$; $T_{mb} \leq 117$ ˚C	-	14	A
I_{FSM}	Non-repetitive peak forward current.	t = 10 ms	-		A
		t = 8.3 ms	-	130	A
		sinusoidal; with reapplied $V_{RRM(max)}$		143	
T_{stg}	Storage temperature		-40	150	˚C
T_j	Operating junction temperature		-	150	˚C

THERMAL RESISTANCES

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

1 Neglecting switching and reverse current losses

ELECTRICAL CHARACTERISTICS

T_j = 25 ˚C unless otherwise stated

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

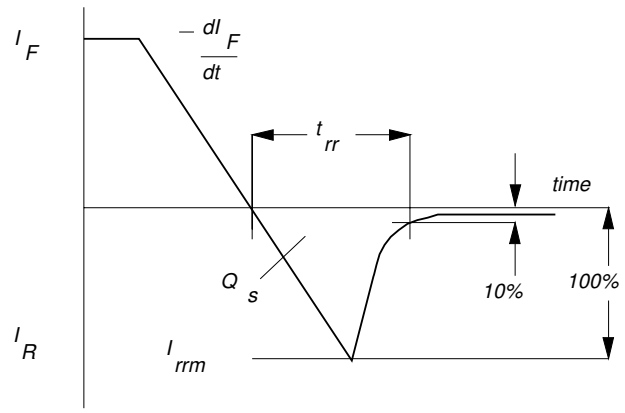


Fig.1. Definition of t_{rr}, Q_s and I_{rrm}

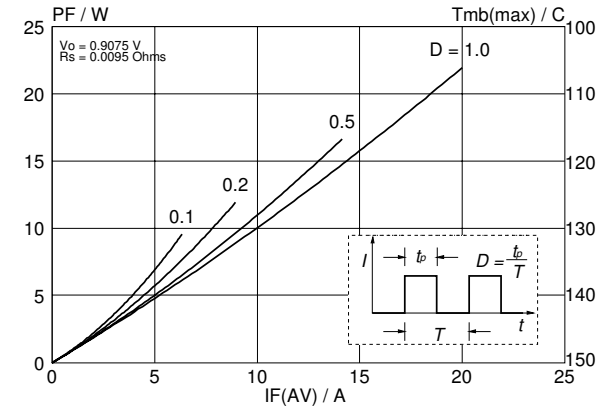


Fig.3. Maximum forward dissipation $P_F = f(I_{F(AV)})$; square wave where $I_{F(AV)} = I_{F(RMS)} \times \sqrt{D}$.

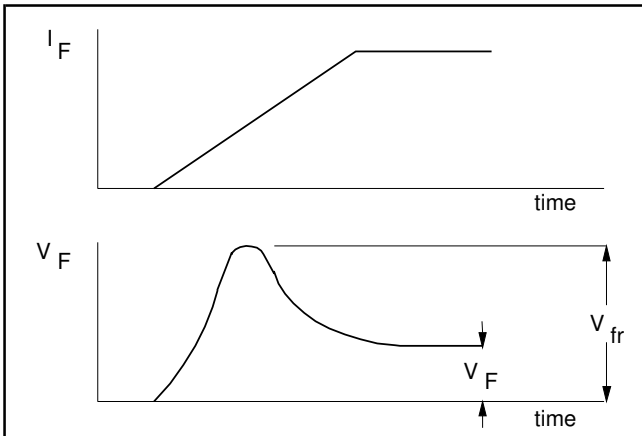


Fig.2. Definition of V_{fr}

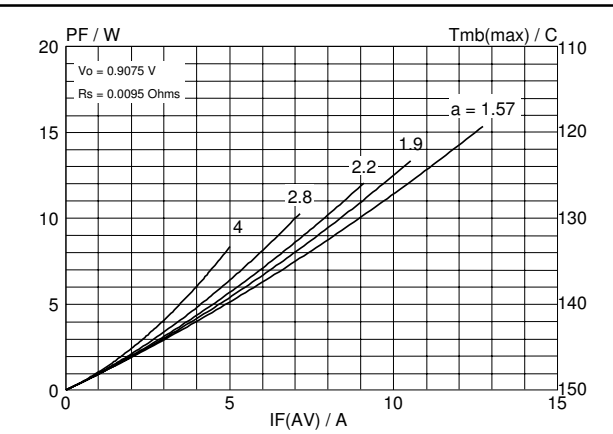


Fig.4. Maximum forward dissipation $P_F = f(I_{F(AV)})$; sinusoidal current waveform where a = form factor = $I_{F(RMS)} / I_{F(AV)}$.

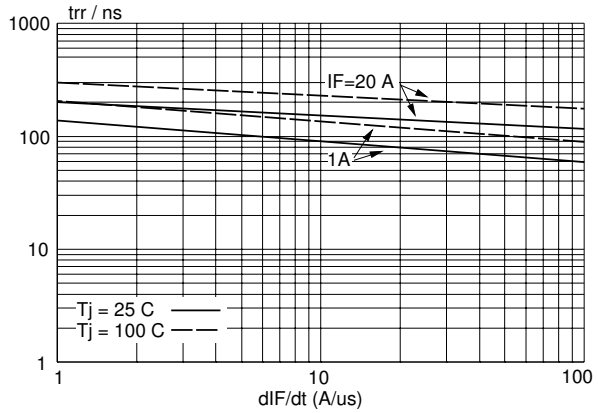


Fig.5. Maximum t_{rr} at T_j = 25˚C and 100˚C

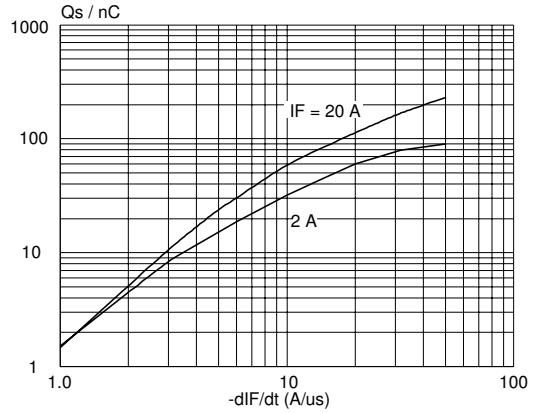


Fig.8. Maximum Q_s at T_j = 25˚C

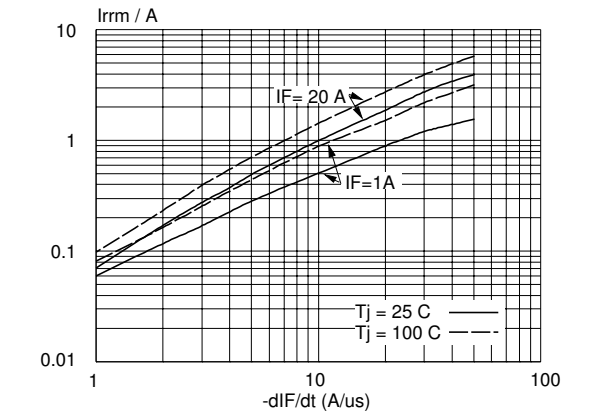


Fig.6. Maximum I_{rrm} at T_j = 25˚C and 100˚C.

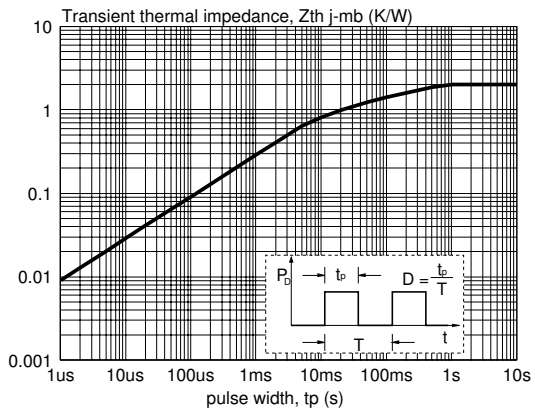


Fig.9. Transient thermal impedance $Z_{th} = f(t_p)$

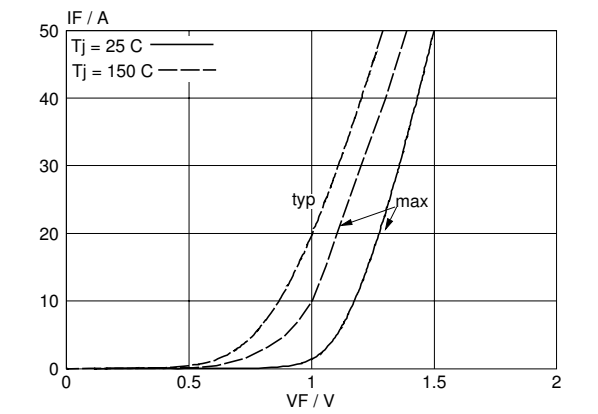
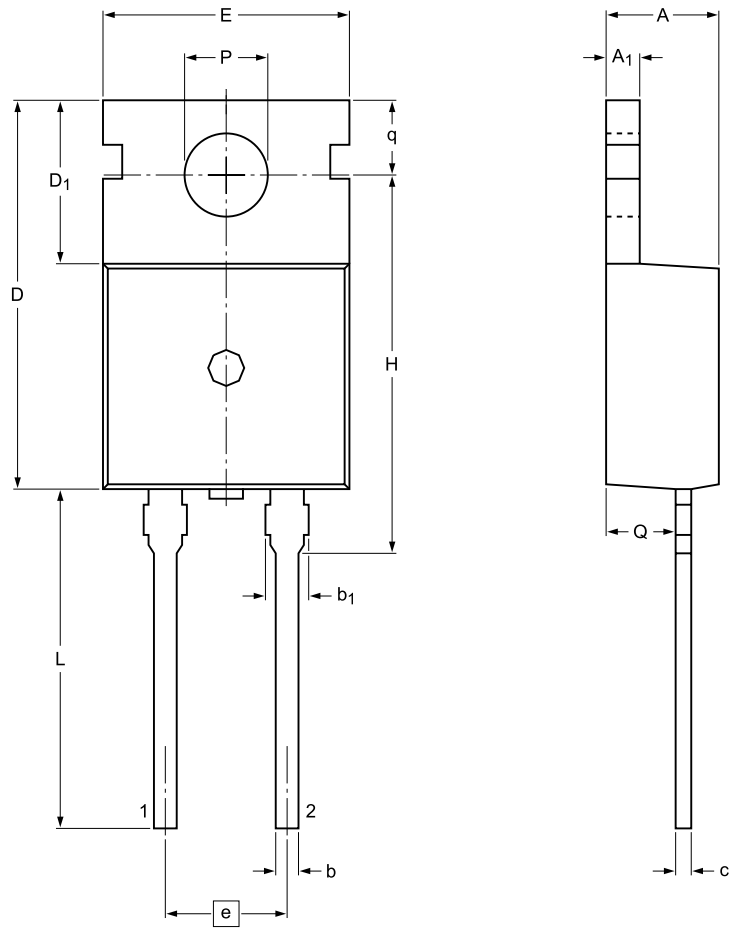


Fig.7. Typical and maximum forward characteristic $I_F = f(V_F)$; parameter T_j

MECHANICAL DATA

Plastic single-ended package; heatsink mounted; 1 mounting hole; 2-lead TO-220AC **SOD59**



0 5 10 mm
scale

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 (REF)	16.25	15.0	3.80	2.6	2.9
	nom														
	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.

[1] Please consult the most recently issued document before initiating or completing a design.
[2] The term 'short data sheet' is explained in section "Definitions".
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