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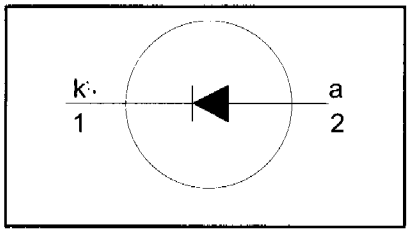
Rectifier diodes ultrafast

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 V/ 400 V/ 500 V

$V_F \leq 1.05$ V

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

$t_{rr} \leq 60$ ns

GENERAL DESCRIPTION

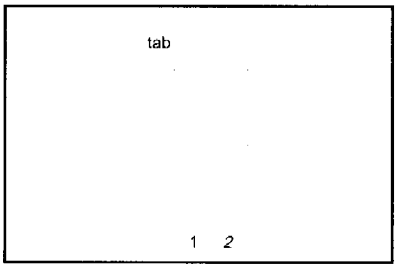
Ultra-fast, epitaxial rectifier diodes intended for use as output rectifiers in high frequency switched mode power supplies.

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
		BYT79		-300	-400	-500	
V_{RRM}	Peak repetitive reverse voltage		-	300	400	500	V
V_R	Continuous reverse voltage	$T_{mb} \leq 147$˚C	-	300	400	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	-	130			A
		t = 8.3 ms sinusoidal; with reapplied $V_{RRM(max)}$	-	143			A
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

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

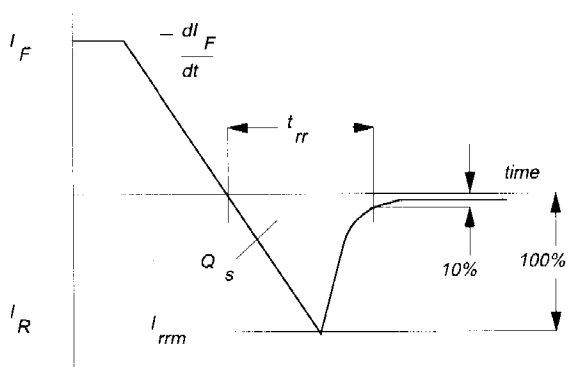


Fig.1. Definition of t_{rr}, Q_s and I_{rrm}

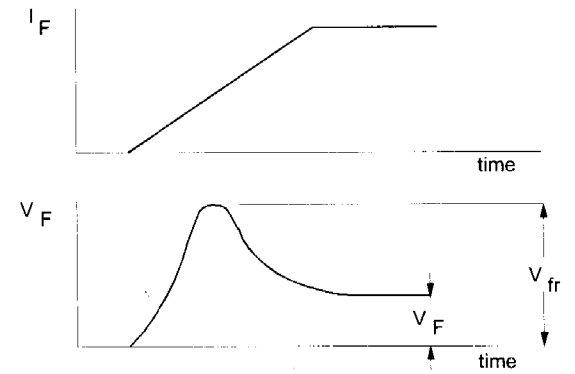


Fig.2. Definition of V_{fr}

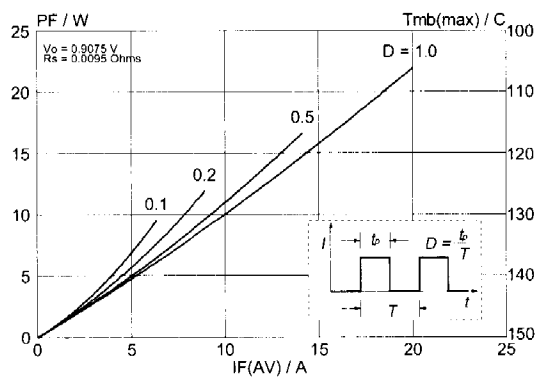


Fig.3. Maximum forward dissipation $P_F = f(I_{F(AV)})$; square wave where $I_{F(AV)} = I_{F(RMS)} \times \sqrt{D}$.

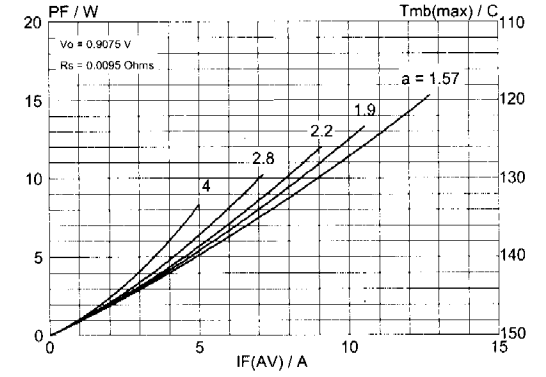
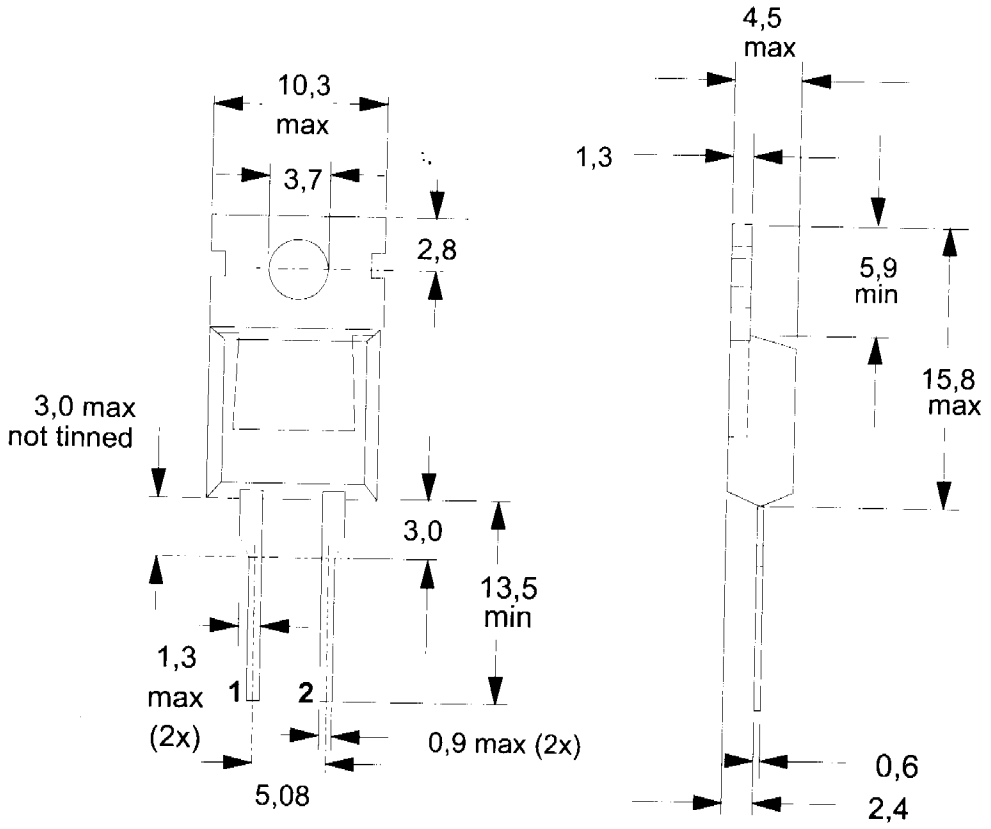


Fig.4. Maximum forward dissipation $P_F = f(I_{F(AV)})$; sinusoidal current waveform where a = form factor = $I_{F(RMS)} / I_{F(AV)}$.


10,3
max
3,7
2,8
3,0 max
not tinned
3,0
13,5
min
1,3
max
(2x)
1
2
0,9 max (2x)
5,08
4,5
max
1,3
5,9
min
15,8
max
0,6
2,4