Silicon Diode

BY329-1000

1000V/8A

DATASHEET

OEM – Philips

Source: Philips Databook 1999

Datasheet Rev. 1.3 – 04/19 – data without warranty / liability

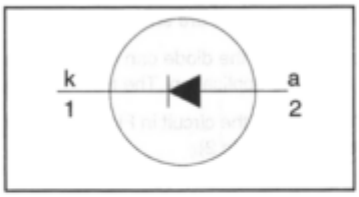
Rectifier diodes fast, soft-recovery

BY329 series

FEATURES

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

SYMBOL



QUICK REFERENCE DATA

V_R = 800 V/ 1000 V/ 1200 V

$I_{F(AV)}$ = 8 A

$I_{FSM} \leq$ 75 A

$t_{rr} \leq$ 135 ns

GENERAL DESCRIPTION

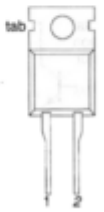
Glass-passivated double diffused rectifier diodes featuring low forward voltage drop, fast reverse recovery and soft recovery characteristic. The devices are intended for use in TV receivers, monitors and switched mode power supplies.

The BY329 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
		BY329		-800	-1000	-1200	
V_{RSM}	Peak non-repetitive reverse voltage		-	800	1000	1200	V
V_{RRM}	Peak repetitive reverse voltage		-	800	1000	1200	V
V_{RWM}	Crest working reverse voltage		-	600	800	1000	V
$I_{F(AV)}$	Average forward current[1]	square wave; δ = 0.5; $T_{mb} \leq$ 122 ˚C	-		8		A
		sinusoidal; a = 1.57; $T_{mb} \leq$ 125 ˚C	-		7		A
$I_{F(RMS)}$	RMS forward current		-		11		A
I_{FRM}	Repetitive peak forward current	t = 25 µs; δ = 0.5; $T_{mb} \leq$ 122 ˚C	-		16		A
I_{FSM}	Non-repetitive peak forward current.	t = 10 ms	-		75		A
		t = 8.3 ms	-		82		A
		sinusoidal; T_j = 150 ˚C prior to surge; with reapplied $V_{RWM(max)}$					
I^2t	I^2t for fusing	t = 10 ms	-		28		A^2s
T_{stg}	Storage temperature		-40		150		˚C
T_j	Operating junction temperature		-		150		˚C

1 Neglecting switching and reverse current losses.

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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

STATIC CHARACTERISTICS

T_j = 25 °C unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage	I_F = 20 A	-	1.5	1.85	V
I_R	Reverse current	$V_R = V_{RWM}$; T_j = 125 °C	-	0.1	1.0	mA

DYNAMIC CHARACTERISTICS

T_j = 25 °C unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
t_{rr}	Reverse recovery time	I_F = 1 A; $V_R \geq$ 30 V; $-dI_F/dt$ = 50 A/µs	-	100	135	ns
Q_s	Reverse recovery charge	I_F = 2 A; $V_R \geq$ 30 V; $-dI_F/dt$ = 20 A/µs	-	0.5	0.7	µC
dI_R/dt	Maximum slope of the reverse recovery current	I_F = 2 A; $-dI_F/dt$ = 20 A/µs	-	50	60	A/µs

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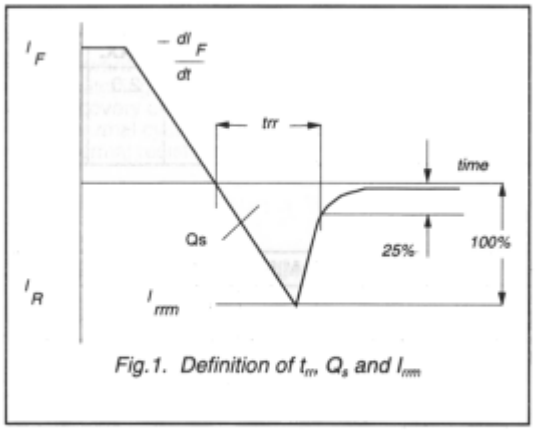

Fig.1. Definition of t_{rr}, Q_s and I_{rrm}

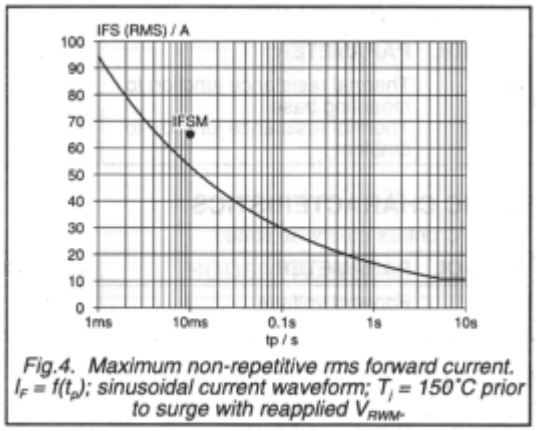

Fig.4. Maximum non-repetitive rms forward current. $I_F = f(t_p)$; sinusoidal current waveform; T_j = 150˚C prior to surge with reapplied V_{RWM}.

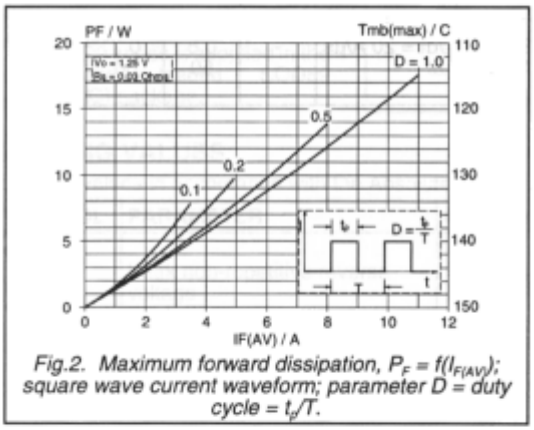

Fig.2. Maximum forward dissipation, $P_F = f(I_{F(AV)})$; square wave current waveform; parameter D = duty cycle = t_p/T.

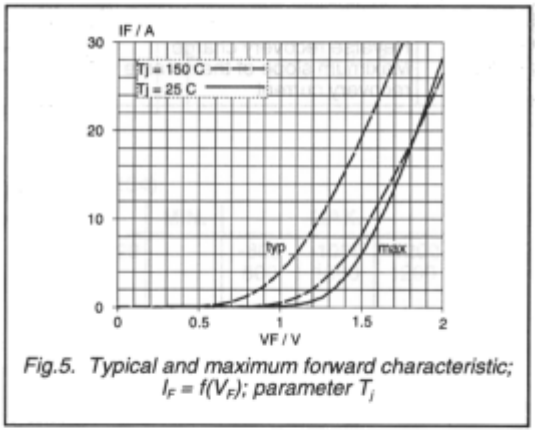

Fig.5. Typical and maximum forward characteristic; $I_F = f(V_F)$; parameter T_j

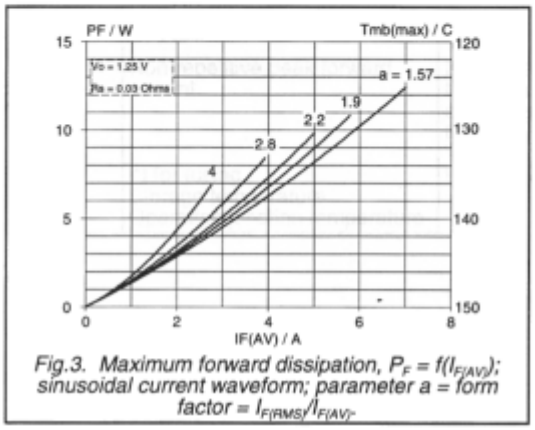

Fig.3. Maximum forward dissipation, $P_F = f(I_{F(AV)})$; sinusoidal current waveform; parameter a = form factor = $I_{F(RMS)}/I_{F(AV)}$.

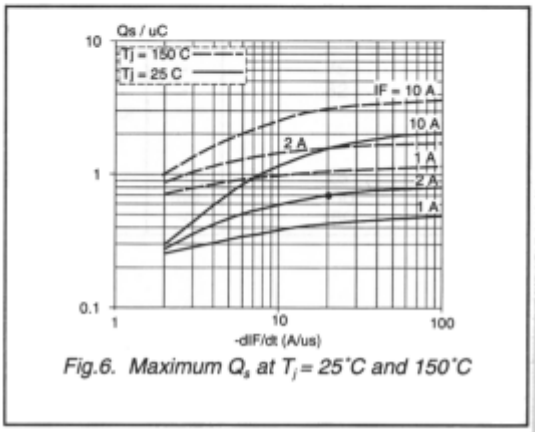

Fig.6. Maximum Q_s at T_j = 25˚C and 150˚C

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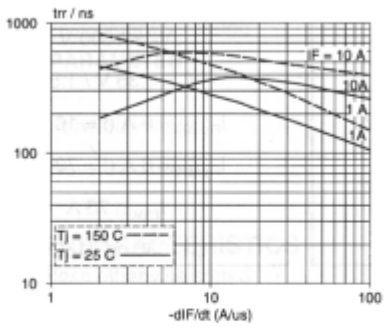

Fig.7. Maximum t_{rr} measured to 25% of I_{rm}; T_j = 25˚C and 150˚C

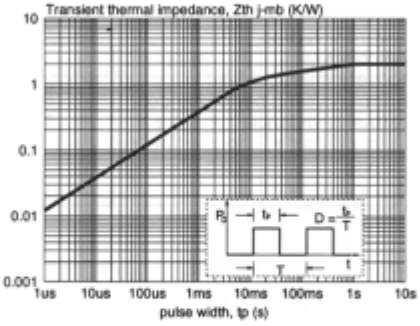

Fig.9. Transient thermal impedance $Z_{th} = f(t_p)$

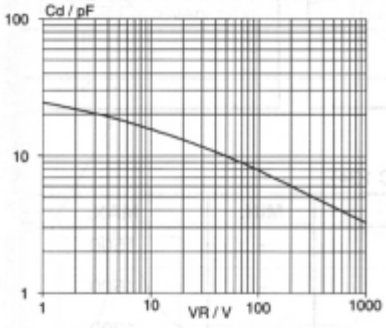

Fig.8. Typical junction capacitance C_d at f = 1 MHz, T_j = 25˚C