Silicon Diode

BY229F-200

200V/8A

DATASHEET

OEM – Philips

Source: Philips Databook 1999

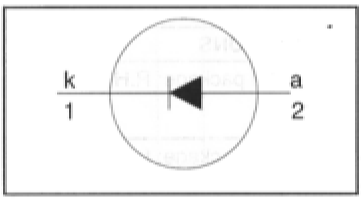
Rectifier diodes fast, soft-recovery

BY229F, BY229X series

FEATURES

- Low forward volt drop
- Fast switching
- Soft recovery characteristic
- High thermal cycling performance
- Isolated mounting tab

SYMBOL



QUICK REFERENCE DATA

V_R = 200 V/ 400 V/ 600 V/800 V

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

$I_{FSM} \leq 60$ A

$t_{rr} \leq 135$ ns

GENERAL DESCRIPTION

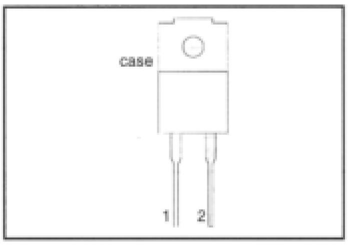
Glass-passivated double diffused rectifier diodes featuring low forward voltage drop, fast reverse recovery and soft recovery characteristic. The devices are intended for use in TV receivers, monitors and switched mode power supplies.

The BY229F series is supplied in the conventional leaded SOD100 package.
The BY229X series is supplied in the conventional leaded SOD113 package.

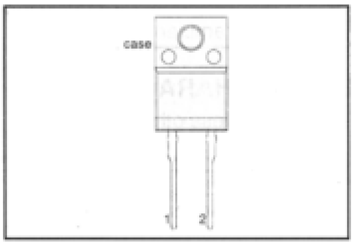
PINNING

PIN	DESCRIPTION
1	cathode
2	anode
tab	isolated

SOD100



SOD113



LIMITING VALUES

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.				UNIT
		BY229F- / BY229X-		200	400	600	800	
V_{RSM}	Peak non-repetitive reverse voltage		-	200	400	600	800	V
V_{RRM}	Peak repetitive reverse voltage		-	200	400	600	800	V
V_{RWM}	Crest working reverse voltage		-	150	300	500	600	V
V_R	Continuous reverse voltage		-	150	300	500	600	V
$I_{F(AV)}$	Average forward current[1]	square wave; $\delta = 0.5$; $T_{hs} \leq 83$ ˚C	-	8				A
		sinusoidal; a = 1.57; $T_{hs} \leq 90$ ˚C	-	7				A
$I_{F(RMS)}$	RMS forward current		-	11				A
I_{FRM}	Peak repetitive forward current	t = 25 µs; $\delta = 0.5$; $T_{hs} \leq 83$ ˚C	-	16				A
I_{FSM}	Peak non-repetitive forward current	t = 10 ms	-	60				A
		t = 8.3 ms	-	66				A
		sinusoidal; T_j = 150 ˚C prior to surge; with reapplied $V_{RWM(max)}$						
I^2t	I^2t for fusing	t = 10 ms	-	18				A^2s
T_{stg}	Storage temperature		-40	150				˚C
T_j	Operating junction temperature		-	150				˚C

1. Neglecting switching and reverse current losses.

ISOLATION LIMITING VALUE & CHARACTERISTIC

T_{hs} = 25 ˚C unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_{isol}	Peak isolation voltage from both terminals to external heatsink	SOD100 package; R.H. ≤ 65%; clean and dustfree	-	-	1500	V
V_{isol}	R.M.S. isolation voltage from both terminals to external heatsink	SOD113 package; f = 50-60 Hz; sinusoidal waveform; R.H. ≤ 65%; clean and dustfree	-	-	2500	V
C_{isol}	Capacitance from pin 1 to external heatsink	f = 1 MHz	-	10	-	pF

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-hs}$	Thermal resistance junction to heatsink	with heatsink compound	-	-	4.8	K/W
		without heatsink compound	-	-	7.2	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient	in free air.	-	55	-	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	0.4	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 ≥ 30 V; $-dI_F/dt$ = 50 A/µs	-	100	135	ns
Q_s	Reverse recovery charge	I_F = 2 A; V_R ≥ 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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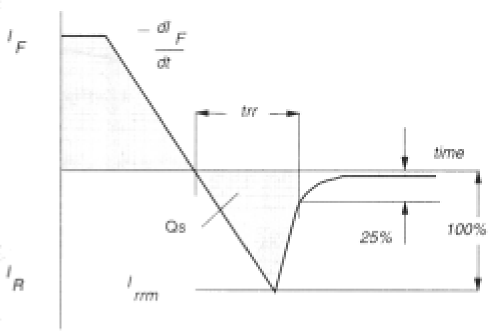

Fig.1. Definition of t_{rr}, Q_s and I_{rrm}

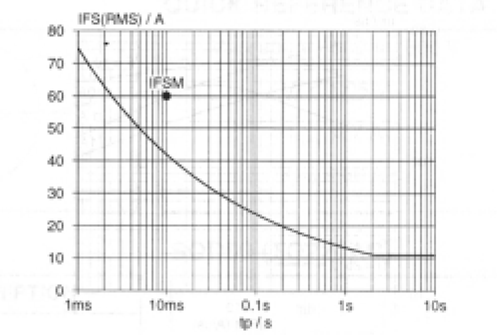

Fig.4. Maximum non-repetitive rms forward current. $I_F = f(t_p)$; sinusoidal current waveform; $T_j = 150^{\circ}C$ prior to surge with reapplied V_{RWM}.

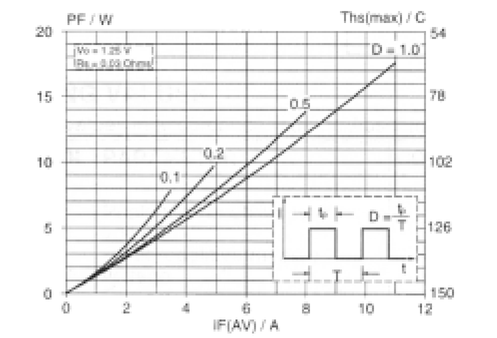

Fig.2. Maximum forward dissipation, $P_F = f(I_{F(AV)})$; square wave current waveform; parameter D = duty cycle = t_p/T.

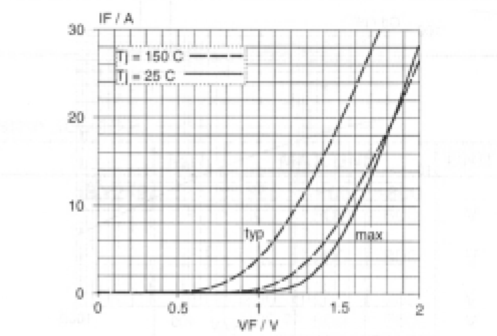

Fig.5. Typical and maximum forward characteristic; $I_F = f(V_F)$; parameter T_j

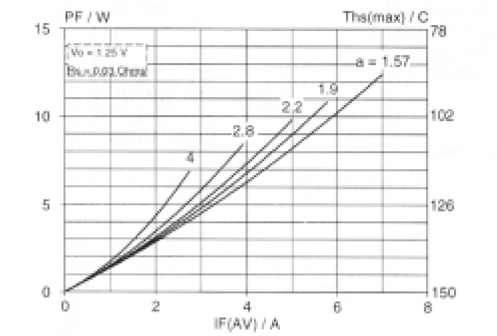

Fig.3. Maximum forward dissipation, $P_F = f(I_{F(AV)})$; sinusoidal current waveform; parameter a = form factor = $I_{F(RMS)}/I_{F(AV)}$.

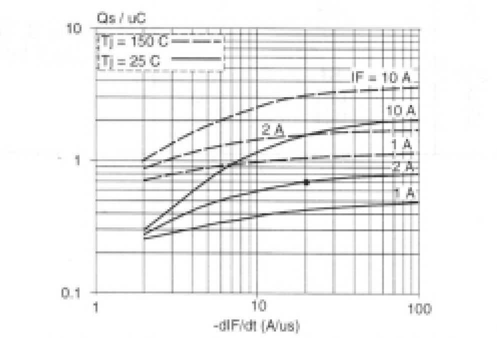

Fig.6. Maximum Q_s at $T_j = 25^{\circ}C$ and $150^{\circ}C$

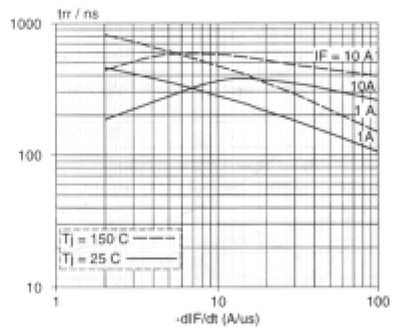

Fig.7. Maximum t_{rr} measured to 25% of I_{rrm}; T_j = 25˚C and 150˚C

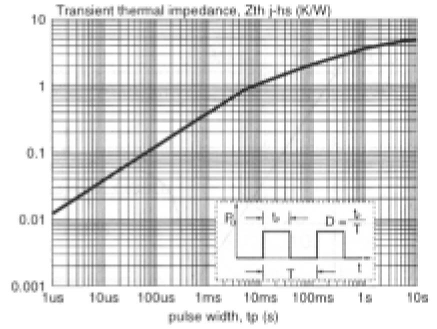

Fig.9. Transient thermal impedance Z_{th} = $f(t_p)$

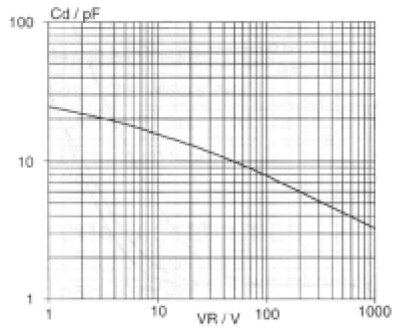

Fig.8. Typical junction capacitance C_d at f = 1 MHz; T_j = 25˚C