Silicon Schottky Diode

BYV116B-20

20V/10A

DATASHEET

OEM – Philips

Source: Philips Databook 1999

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

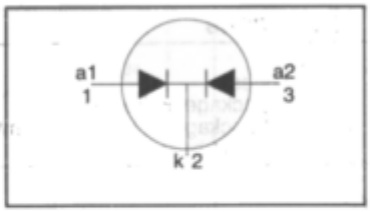
Rectifier diodes Schottky barrier

BYV116, BYV116B series

FEATURES

- Low forward volt drop
- Fast switching
- Reverse surge capability
- High thermal cycling performance
- Low thermal resistance

SYMBOL



QUICK REFERENCE DATA

$V_R = 20$ V/ 25 V

$I_{O(AV)} = 10$ A

$V_F \leq 0.54$ V

GENERAL DESCRIPTION

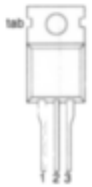
Dual schottky rectifier diodes intended for use as output rectifiers in low voltage, high frequency switched mode power supplies.

The BYV116 series is supplied in the SOT78 (TO220AB) conventional leaded package.
The BYV116B series is supplied in the SOT404 surface mounting package.

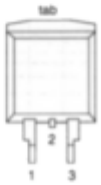
PINNING

PIN	DESCRIPTION
1	anode 1 (a)
2	cathode (k) [1]
3	anode 2 (a)
tab	cathode (k)

SOT78 (TO220AB)



SOT404



LIMITING VALUES

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.		UNIT
		BYV118-		**20**	**25**	
		BYV116B-		**20**	**25**	
V_{RRM}	Peak repetitive reverse voltage		-	20	25	V
V_{RWM}	Working peak reverse voltage		-	20	25	V
V_R	Continuous reverse voltage	$T_{mb} \leq 124$ ˚C	-	20	25	V
$I_{O(AV)}$	Average rectified forward current (both diodes conducting)	square wave; $\delta = 0.5$; $T_{mb} \leq 123$ ˚C	-	10		A
I_{FRM}	Repetitive peak forward current per diode	square wave; $\delta = 0.5$; $T_{mb} \leq 123$ ˚C	-	10		A
I_{FSM}	Non-repetitive peak forward current per diode	t = 10 ms	-	50		A
		t = 8.3 ms	-	55		A
		sinusoidal; $T_j = 125$ ˚C prior to surge; with reapplied $V_{RRM(max)}$				
I_{RRM}	Peak repetitive reverse surge current per diode	pulse width and repetition rate limited by $T_{j\,max}$	-	1		A
T_j	Operating junction temperature		-	150		˚C
T_{stg}	Storage temperature		- 65	175		˚C

1. It is not possible to make connection to pin 2 of the SOT404 package.

Rectifier diodes
Schottky barrier

BYV116, BYV116B series

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-mb}$	Thermal resistance junction to mounting base	per diode	-	-	4	K/W
		both diodes	-	-	3.5	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient	SOT78 package, in free air	-	60	-	K/W
		SOT404 package, pcb mounted, minimum footprint, FR4 board	-	50	-	K/W

ELECTRICAL CHARACTERISTICS

All characteristics are per diode at T_j = 25 ˚C unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage	I_F = 5 A; T_j = 125˚C	-	0.47	0.54	V
		I_F = 10 A; T_j = 125˚C	-	0.66	0.77	V
		I_F = 5 A	-	0.58	0.64	V
I_R	Reverse current	$V_R = V_{RWM}$	-	0.05	3	mA
		$V_R = V_{RWM}$; T_j = 100˚C	-	5	10	mA
C_d	Junction capacitance	V_R = 5 V; f = 1 MHz, T_j = 25˚C to 125˚C	-	160	-	pF

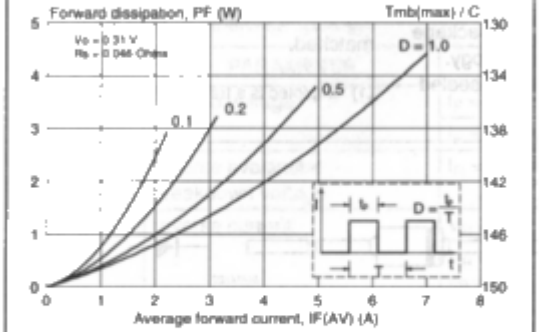


Fig.1. Maximum forward dissipation $P_F = f(I_{F(AV)})$ per diode; square current waveform where $I_{F(AV)} = I_{F(RMS)} \times \sqrt{D}$.

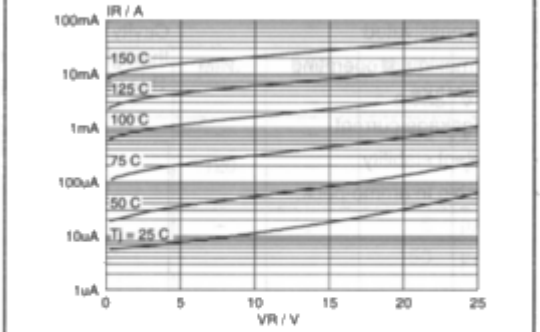


Fig.4. Typical reverse leakage current per diode; $I_R = f(V_R)$; parameter T_j

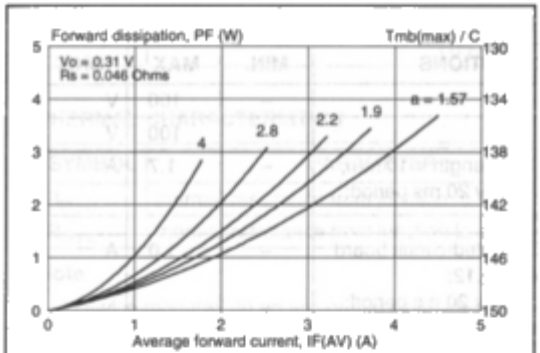


Fig.2. Maximum forward dissipation $P_F = f(I_{F(AV)})$ per diode; sinusoidal current waveform where a = form factor = $I_{F(RMS)} / I_{F(AV)}$.

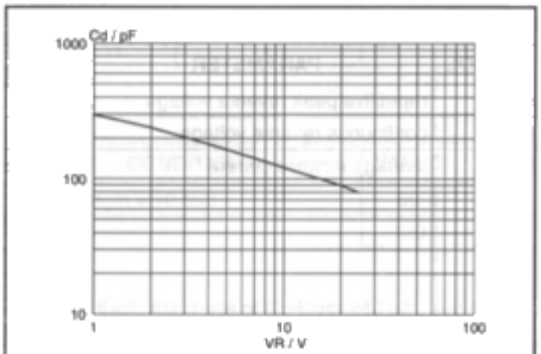


Fig.5. Typical junction capacitance per diode; $C_d = f(V_R)$; f = 1 MHz; T_j = 25˚C to 125 ˚C.

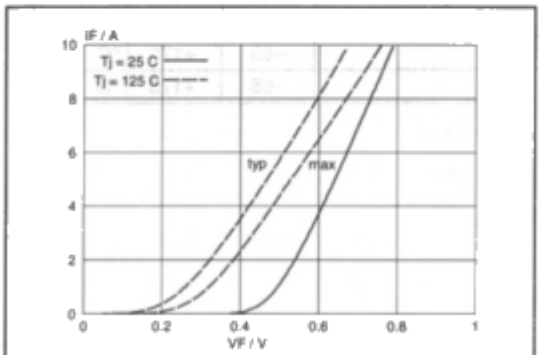


Fig.3. Typical and maximum forward characteristic $I_F = f(V_F)$; parameter T_j

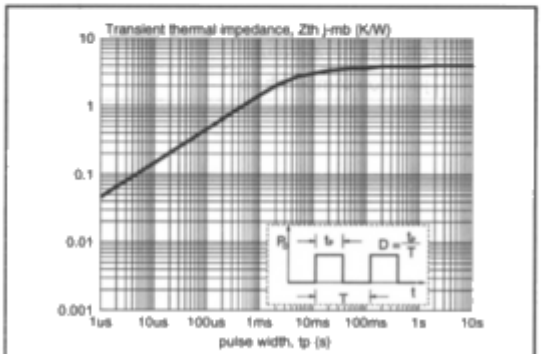


Fig.6. Transient thermal impedance; per diode; $Z_{th\ j\text{-}mb} = f(t_p)$.