Rectifier diodes schottky barrier

PBYR745B series

GENERAL DESCRIPTION

Low leakage, platinum barrier, schottky rectifier diodes in a plastic envelope suitable for surface mounting, featuring low forward voltage drop, absence of stored charge. and guaranteed reverse surge capability. The devices are intended for use in switched mode power supplies and high frequency circuits in general where low conduction and zero switching losses are important.

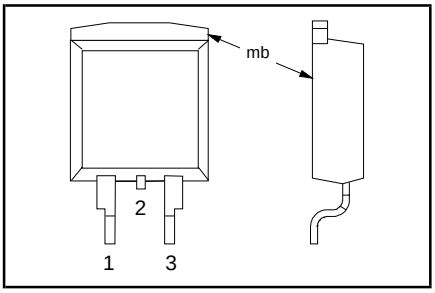
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	UNIT
	PBYR7-	**35B**	**40B**	**45B**	
V_{RRM}	Repetitive peak reverse voltage	35	40	45	V
V_F	Forward voltage	0.57	0.57	0.57	V
$I_{F(AV)}$	Average forward current	7.5	7.5	7.5	A

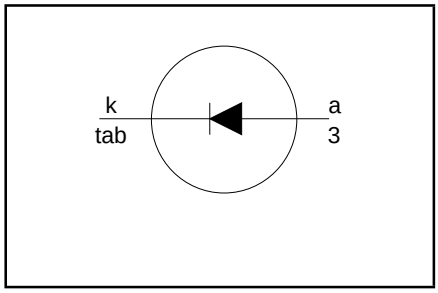
PINNING - SOT404

PIN	DESCRIPTION
1	no connection
2	cathode
3	anode
mb	cathode

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.			UNIT
				-35	**-40**	**-45**	
V_{RRM}	Repetitive peak reverse voltage		-	35	40	45	V
V_{RWM}	Crest working reverse voltage		-	35	40	45	V
V_R	Continuous reverse voltage	$T_{mb} \leq 139$ ˚C	-	35	40	45	V
$I_{F(AV)}$	Average forward current	square wave; $\delta = 0.5$; $T_{mb} \leq 136$ ˚C	-	7.5			A
$I_{F(RMS)}$	RMS forward current		-	11			A
I_{FRM}	Repetitive peak forward current	t = 25 µs; $\delta = 0.5$; $T_{mb} \leq 136$ ˚C	-	15			A
I_{FSM}	Non-repetitive peak forward current	t = 10 ms	-	135			A
		t = 8.3 ms sinusoidal; T_j = 125 ˚C prior to surge; with reapplied $V_{RRM(max)}$	-	150			A
I^2t	I^2t for fusing	t = 10 ms	-	91			A^2s
I_{RRM}	Repetitive peak reverse current	t_p = 2 µs; $\delta = 0.001$	-	1			A
I_{RSM}	Non-repetitive peak reverse current	t_p = 100 µs	-	1			A
T_{stg}	Storage temperature		-65	175			˚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		-	-	3.0	K/W
$R_{th\ j\text{-}a}$	Thermal resistance junction to ambient	minimum footprint, FR4 board	-	50	-	K/W

STATIC CHARACTERISTICS

T_j = 25 ˚C unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage	I_F = 7.5 A; T_j = 125˚C	-	0.50	0.57	V
		I_F = 15 A; T_j = 125˚C	-	0.62	0.72	V
		I_F = 15 A	-	0.74	0.84	V
I_R	Reverse current	$V_R = V_{RRM}$	-	50	100	µA
		$V_R = V_{RRM}$; T_j = 125 ˚C	-	12	22	mA
C_d	Junction capacitance	f = 1MHz; V_R = 5V; T_j = 25 ˚C to 125 ˚C	-	350	-	pF

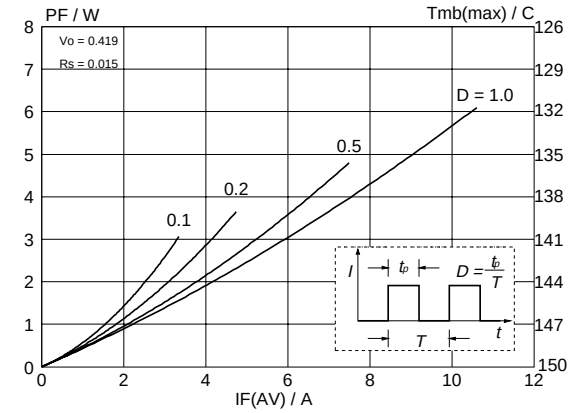


Fig.1. Maximum forward dissipation $P_F = f(I_{F(AV)})$; square current waveform where $I_{F(AV)} = I_{F(RMS)} \times \sqrt{D}$.

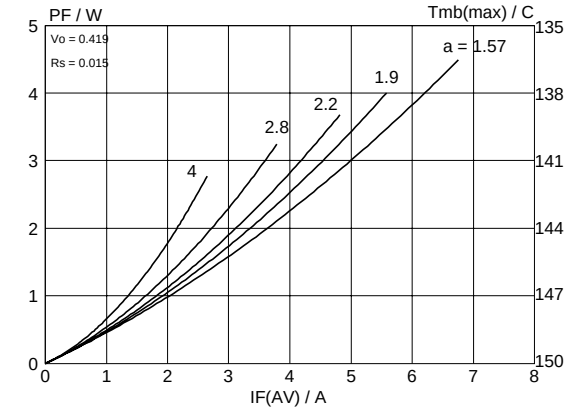


Fig.2. Maximum forward dissipation $P_F = f(I_{F(AV)})$; sinusoidal current waveform where a = form factor = $I_{F(RMS)} / I_{F(AV)}$.

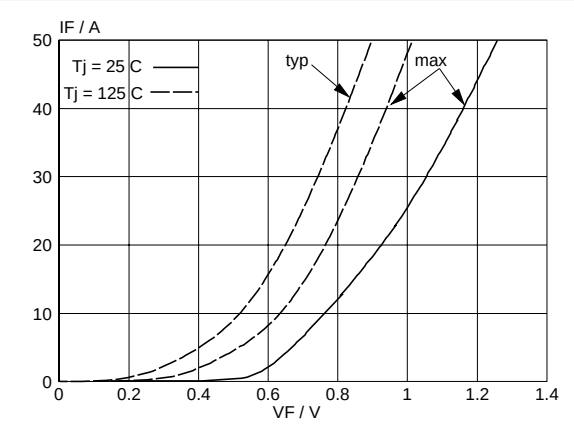


Fig.3. Typical and maximum forward characteristic $I_F = f(V_F)$; parameter T_j

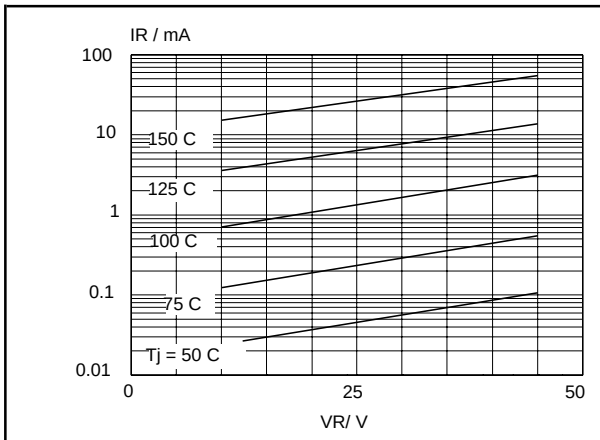


Fig.4. Typical reverse leakage current; $I_R = f(V_R)$; parameter T_j

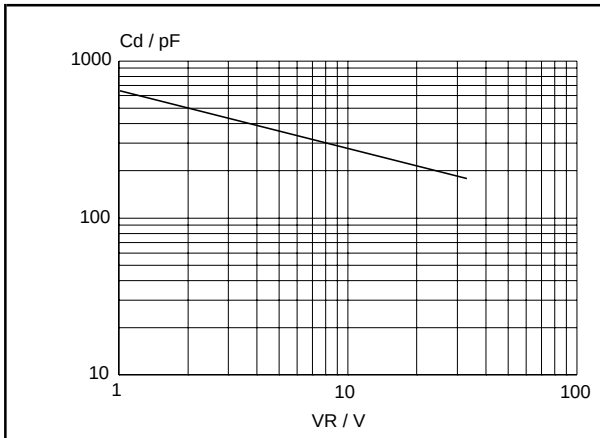


Fig.5. Typical junction capacitance; $C_d = f(V_R)$; f = 1 MHz; T_j = 25˚C to 125 ˚C.

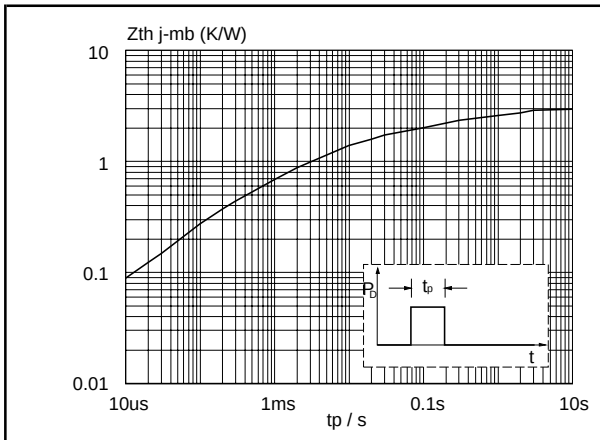


Fig.6. Transient thermal impedance; $Z_{th\ j\text{-}mb} = f(t_p)$.

MECHANICAL DATA

Dimensions in mm

Net Mass: 1.4 g

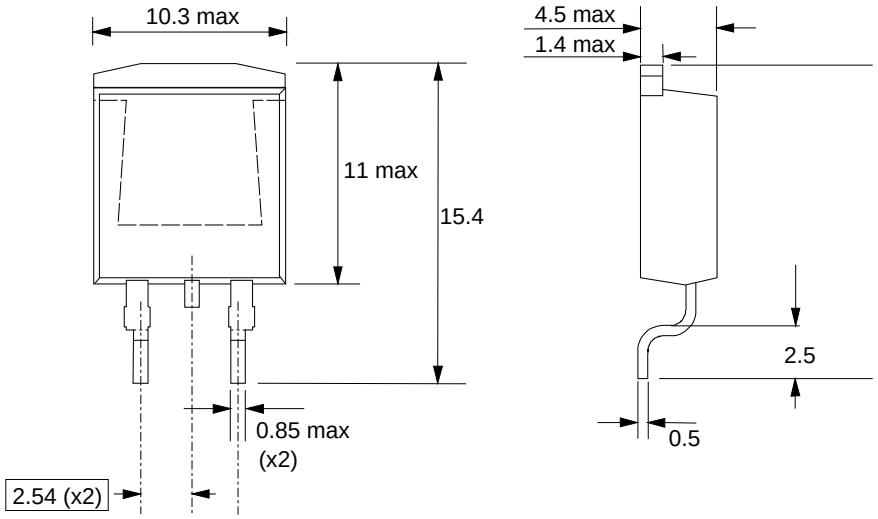


Fig.7. SOT404 : centre pin connected to mounting base.

Notes
1. Epoxy meets UL94 V0 at 1/8".

MOUNTING INSTRUCTIONS

Dimensions in mm

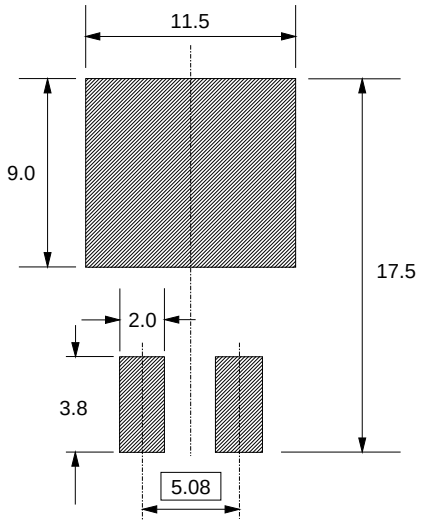


Fig.8. SOT404 : minimum pad sizes for surface mounting.

Notes
1. Plastic meets UL94 V0 at 1/8".

DEFINITIONS

Data sheet status	
Objective specification	This data sheet contains target or goal specifications for product development.
Preliminary specification	This data sheet contains preliminary data; supplementary data may be published later.
Product specification	This data sheet contains final product specifications.
Limiting values	
Limiting values are given in accordance with the Absolute Maximum Rating System (IEC 134). Stress above one or more of the limiting values may cause permanent damage to the device. These are stress ratings only and operation of the device at these or at any other conditions above those given in the Characteristics sections of this specification is not implied. Exposure to limiting values for extended periods may affect device reliability.	
Application information	
Where application information is given, it is advisory and does not form part of the specification.	

LIFE SUPPORT APPLICATIONS

These products are not designed for use in life support appliances, devices or systems where malfunction of these products can be reasonably expected to result in personal injury. Philips customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify Philips for any damages resulting from such improper use or sale.