Rectifier diodes schottky barrier

PBYR245CT series

GENERAL DESCRIPTION

Dual, low leakage, platinum barrier, schottky rectifier diodes in a plastic envelope suitable for surface mounting, featuring low forward voltage drop and absence of stored charge. These devices can withstand reverse voltage transients and have 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.

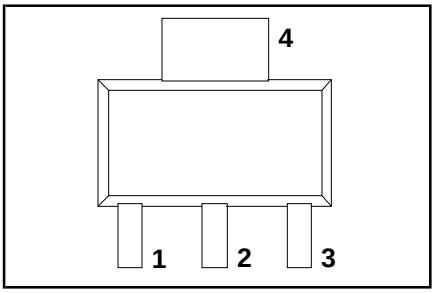
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	UNIT
	PBYR2-	**35CT**	**40CT**	**45CT**	
V_{RRM}	Repetitive peak reverse voltage	35	40	45	V
V_F	Forward voltage	0.45	0.45	0.45	V
$I_{O(AV)}$	Output current (both diodes conducting)	2	2	2	A

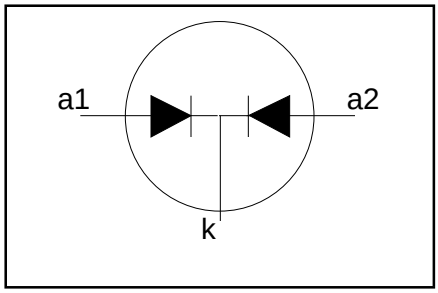
PINNING - SOT223

PIN	DESCRIPTION
1	anode 1 (a)
2	cathode (k)
3	anode 2 (a)
4	cathode (k)

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	$T_b \leq 99$ ˚C	-	35	40	45	V
$I_{O(AV)}$	Output current (both diodes conducting)	square wave; $\delta = 0.5$; $T_b \leq 118$ ˚C	-	2			A
$I_{O(RMS)}$	RMS forward current		-	2.8			A
I_{FRM}	Repetitive forward peak current per diode	t = 25µs; $\delta = 0.5$; $T_b \leq 118$ ˚C	-	2			A
I_{FSM}	Non-repetitive peak forward current per diode.	t = 10 ms	-	6			A
		t = 8.3 ms sinusoidal $T_j = 125$ ˚C prior to surge; with reapplied $V_{RWM(max)}$	-	6.6			A
I^2t	I^2t for fusing	t = 10 ms	-	0.18			A^2s
I_{RRM}	Repetitive peak reverse current per diode.	$t_p = 2$ µs; $\delta = 0.001$	-	1			A
I_{RSM}	Non-repetitive peak reverse current per diode.	$t_p = 100$ µs	-	1			A
T_{stg}	Storage temperature		-40	150			˚C
T_j	Operating junction temperature		-	150			˚C

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j\text{-}b}$	Thermal resistance junction to board	one or both diodes; PCB mounted, see fig:8; temperature measured 1-3 mm from tab.	-	-	30	K/W
$R_{th\ j\text{-}a}$	Thermal resistance junction to ambient	PCB mounted, see fig:8	-	70	-	K/W

STATIC CHARACTERISTICS

T_j = 25 ˚C unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage (per diode)	I_F = 1 A; T_j = 150˚C	-	0.40	0.45	V
		I_F = 2 A	-	0.61	0.70	V
I_R	Reverse current (per diode)	$V_R = V_{RWM}$	-	50	100	µA
		$V_R = V_{RWM}$; T_j = 125 ˚C	-	3.5	10	mA
C_d	Junction capacitance (per diode)	f = 1MHz; V_R = 5V; T_j = 25 ˚C to 125 ˚C	-	100	-	pF

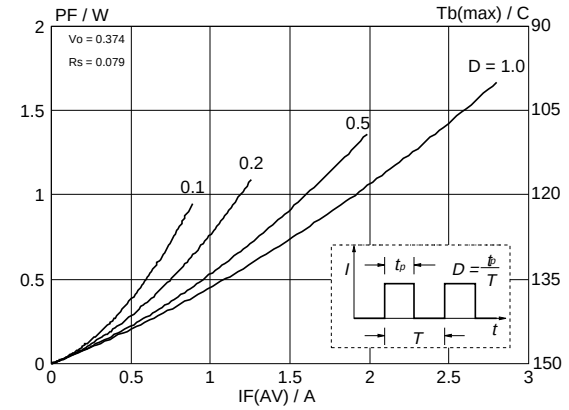


Fig.1. Maximum forward dissipation $P_F = f(I_{F(AV)})$ per diode; square current waveform where $I_{F(AV)} = I_{F(RMS)} \times \sqrt{D}$.

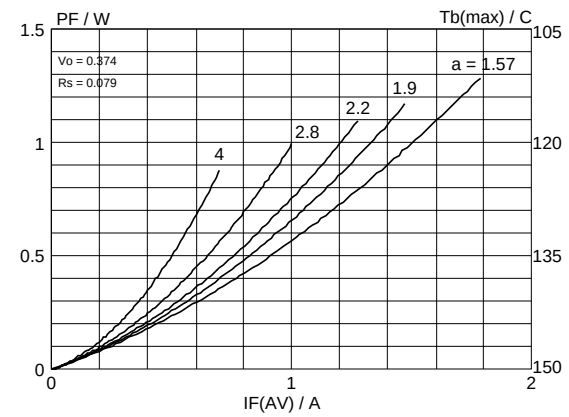


Fig.2. Maximum forward dissipation $P_F = f(I_{F(AV)})$ per diode; sinusoidal current waveform where a = form factor = $I_{F(RMS)} / I_{F(AV)}$.

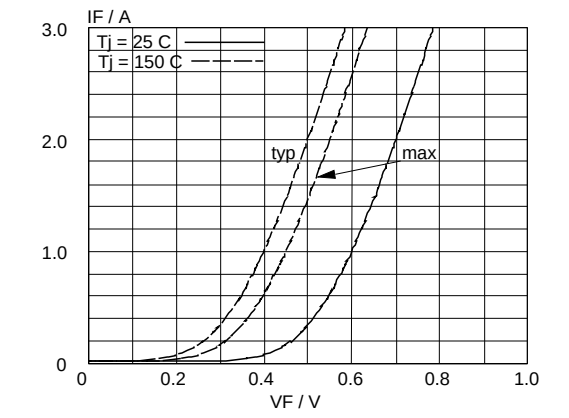


Fig.3. Typical and maximum forward characteristic $I_F = f(V_F)$; parameter T_j

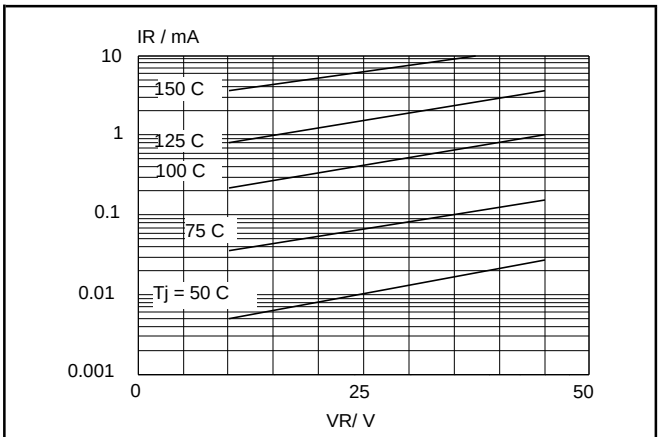


Fig.4. Typical reverse leakage current per diode; $I_R = f(V_R)$; parameter T_j

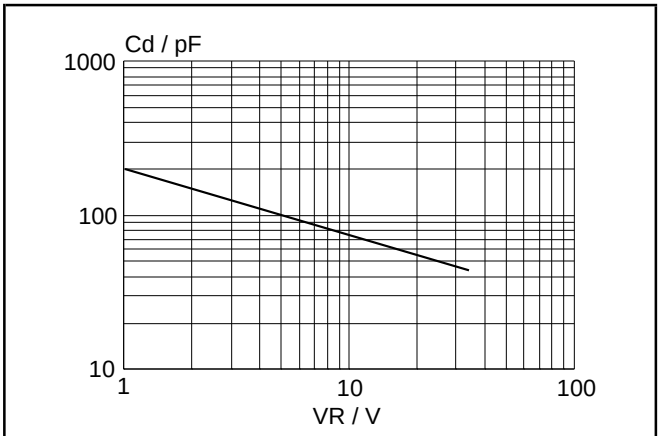


Fig.5. Typical junction capacitance per diode; $C_d = f(V_R)$; f = 1 MHz; T_j = 25˚C to 125 ˚C.

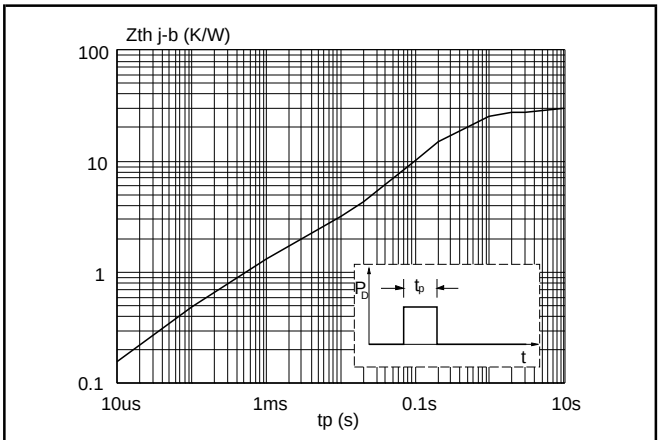


Fig.6. Transient thermal impedance; per diode; $Z_{th\ j\text{-}b} = f(t_p)$.

MOUNTING INSTRUCTIONS

Dimensions in mm.

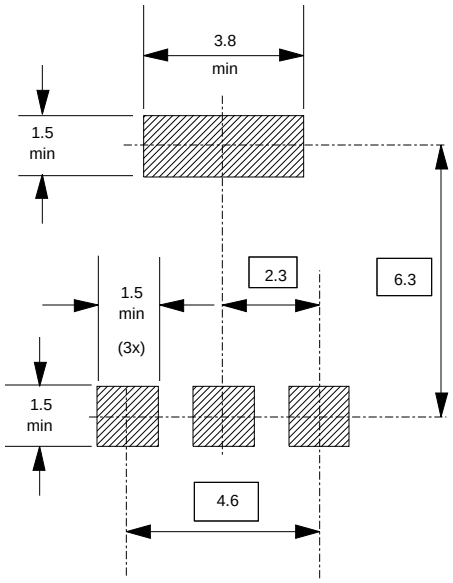


Fig.7. soldering pattern for surface mounting SOT223.

PRINTED CIRCUIT BOARD

Dimensions in mm.

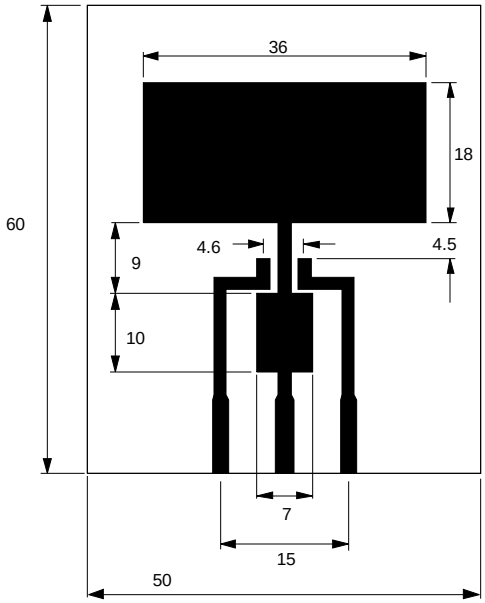


Fig.8. PCB for thermal resistance and power rating for SOT223.
PCB: FR4 epoxy glass (1.6 mm thick), copper laminate (35 μm thick).

MECHANICAL DATA

Dimensions in mm

Net Mass: 0.11 g

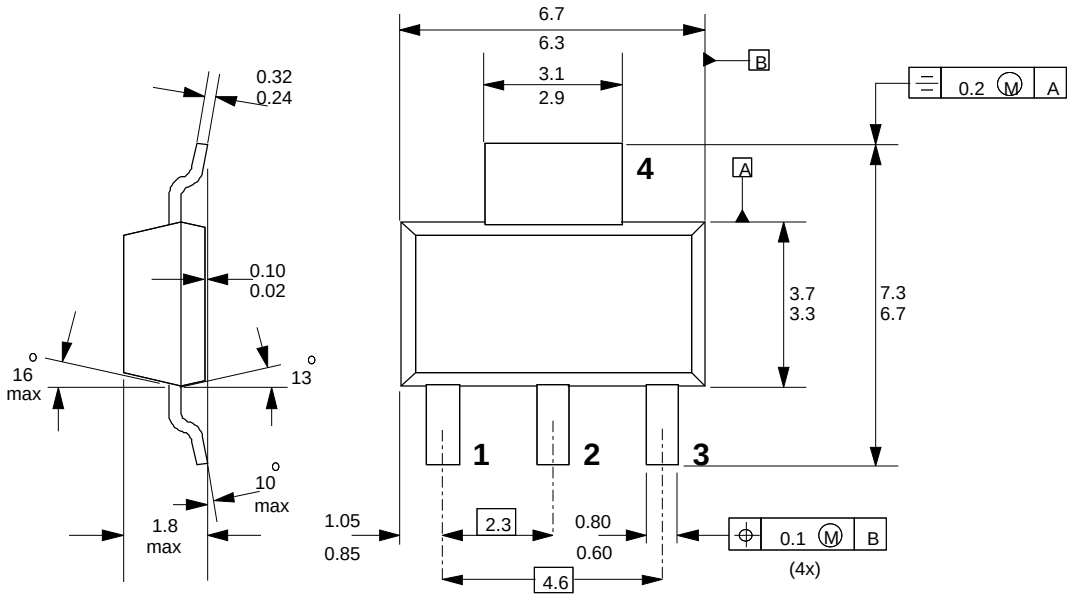


Fig.9. SOT223 surface mounting package.

Notes
1. For further information, refer to surface mounting instructions for SOT223 envelope.
2. Epoxy 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

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