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Picoampere diode

BAV45

FEATURES

- Extremely low leakage current: max. 5 pA
- Low diode capacitance
- Light insensitive.

APPLICATION

- Clamping
- Holding
- Peak follower
- Time delay circuits
- Logarithmic amplifiers
- Protection of insulated gate field-effect transistors.

DESCRIPTION

Silicon diode in a metal TO-18 can. It has an extremely low leakage current over a wide temperature range combined with a low capacitance and is not sensitive to light.

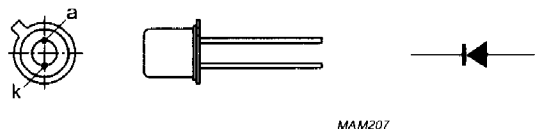

Fig.1 Simplified outline (SOT18/15; TO-18 except for the two leads) and symbol.

CAUTION

Handle the device with care whilst soldering into the circuit. The extremely low leakage current can only be guaranteed when the bottom is free from solder flux or other contaminations.

LIMITING VALUES

In accordance with the Absolute Maximum Rating System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_{RRM}	repetitive peak reverse voltage		–	35	V
V_R	continuous reverse voltage		–	20	V
I_F	continuous forward current	see Fig.2	–	50	mA
I_{FRM}	repetitive peak forward current		–	100	mA
P_{tot}	total power dissipation	T_{amb} = 25 °C; note 1	–	200	mW
T_{stg}	storage temperature		–65	+125	°C
T_j	junction temperature		–	125	°C

Note

1. Device mounted on a FR4 printed-circuit board.

ELECTRICAL CHARACTERISTICS

T_j = 25 °C unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MAX.	UNIT
V_F	forward voltage	I_F = 10 mA; see Figs 3 and 4	1	V
I_R	reverse current	see Fig.5		
		V_R = 5 V	5	pA
		V_R = 5 V; T_j = 80 °C	250	pA
		V_R = 20 V	10	pA
C_d	diode capacitance	f = 1 MHz; V_R = 0; see Fig.6	1.3	pF
t_{rr}	reverse recovery time	when switched from I_F = 10 mA to I_R = 10 mA; R_L = 100 Ω; measured at I_R = 1 mA; see Fig.7	600	ns

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	VALUE	UNIT
$R_{th\ j\text{-}a}$	thermal resistance from junction to ambient; note 1	500	K/W

Note

1. Device mounted on a FR4 printed-circuit board.

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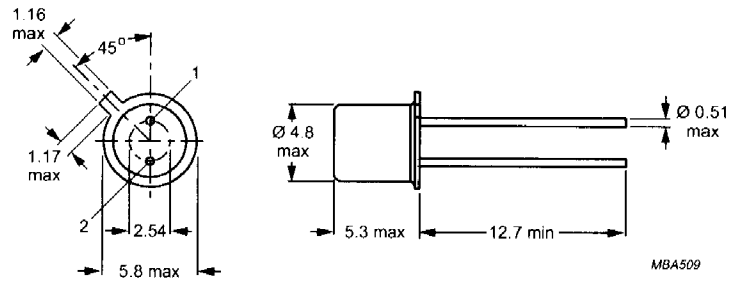
PACKAGE OUTLINE



Dimensions in mm.

Fig.8 SOT18/15; TO-18 (except for the two leads).