

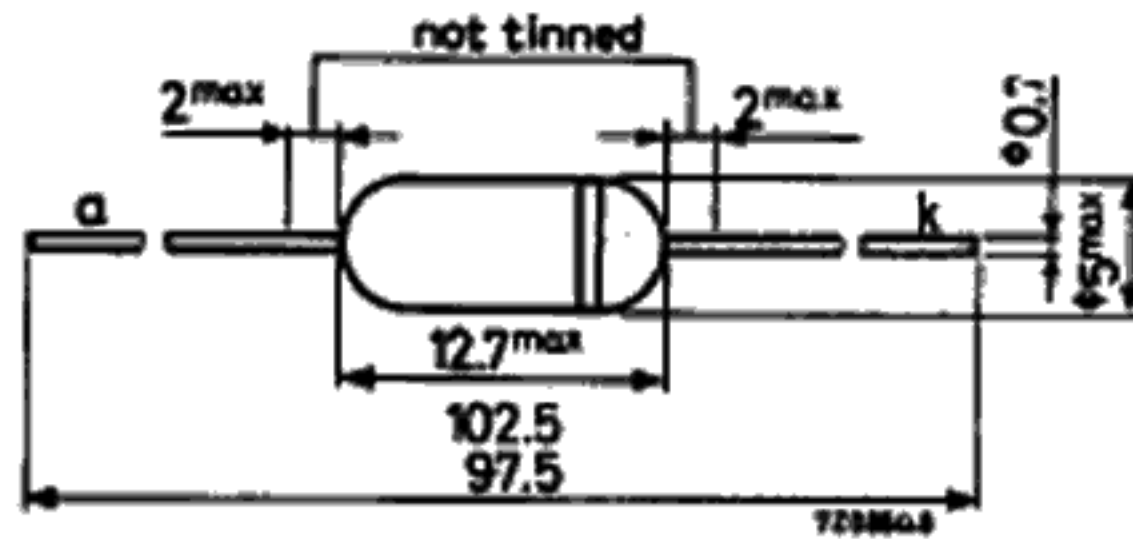
GERMANIUM DIODE

Germanium diode in all glass construction for use in a.m. detector circuits.
Type 2-OA79 consists of 2 diodes OA79 selected for operation in a ratio detector circuit.

MECHANICAL DATA

Dimensions in mm

The white band indicates the cathode side



RATINGS (Limiting values) ¹⁾

Continuous reverse voltage	V_R	max.	30	V
Repetitive peak reverse voltage	V_{RRM}	max.	45	V
Forward current (d.c.)	I_F	max.	35	mA
Repetitive peak forward current	I_{FRM}	max.	100	mA
Non repetitive peak forward current ($t \leq 1$ s)	I_{FSM}	max.	200	mA
Operating ambient temperature	T_{amb}		-50 to +60	°C

CHARACTERISTICS

Forward voltage

$I_F = 0.1$ mA

	$T_{amb} = 25^\circ\text{C}$	$T_{amb} = 60^\circ\text{C}$
V_F	typ. 0.23 0.15 to 0.30	typ. 0.16 0.1 to 0.25 V

$I_F = 10$ mA

V_F	typ. 1.5 0.8 to 2.2	typ. 1.4 0.7 to 2.1 V
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$I_F = 30$ mA

V_F	typ. 2.8 1.4 to 4.0	typ. 2.6 1.2 to 3.8 V
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Reverse current

$V_R = 0.1$ V

I_R	typ. 0.35 < 1.0	typ. 4.5 < 12 μA
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$V_R = 1.5$ V

I_R	typ. 0.8 0.1 to 2.8	typ. 6 0.8 to 25 μA
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$V_R = 10$ V

I_R	typ. 4.5 0.4 to 18	typ. 16 2.5 to 60 μA
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$V_R = 30$ V

I_R	typ. 35 1.5 to 150	typ. 60 60 to 300 μA
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$V_R = 45$ V

I_R	typ. 90 4 to 350	typ. 170 15 to 500 μA
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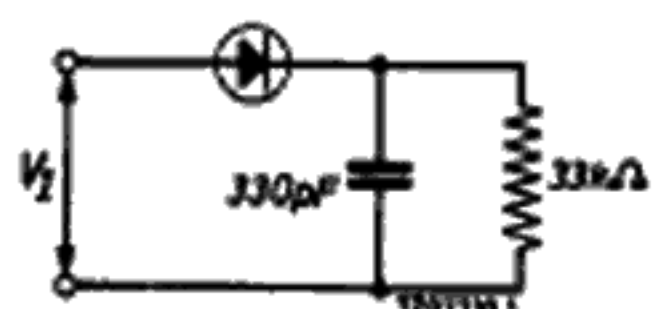
¹⁾ Limiting values according to the Absolute Maximum System as defined in IEC publication 134.

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OA79 2-OA79

APPLICATION INFORMATION

Measuring circuit at $T_{amb} = 25^{\circ}C$



$$V_{I(RMS)} = 3 \text{ V}$$

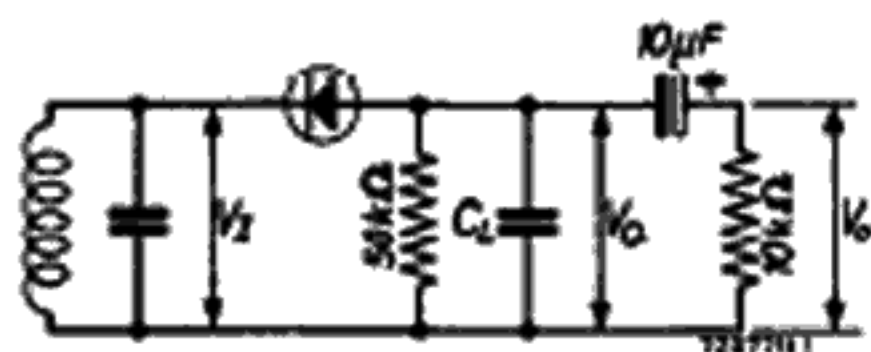
$$f = 10.7 \text{ MHz}$$

$$\eta \text{ typ. } 85 \%$$

$$R_d \text{ typ. } 15 \text{ k}\Omega$$

$$R_d \text{ } 13.5 \text{ to } 19 \text{ k}\Omega$$

Diode in an a.m. detector circuit at $T_{amb} = 25^{\circ}C$



$$V_{I(RMS)} = 0.1 \text{ V}$$

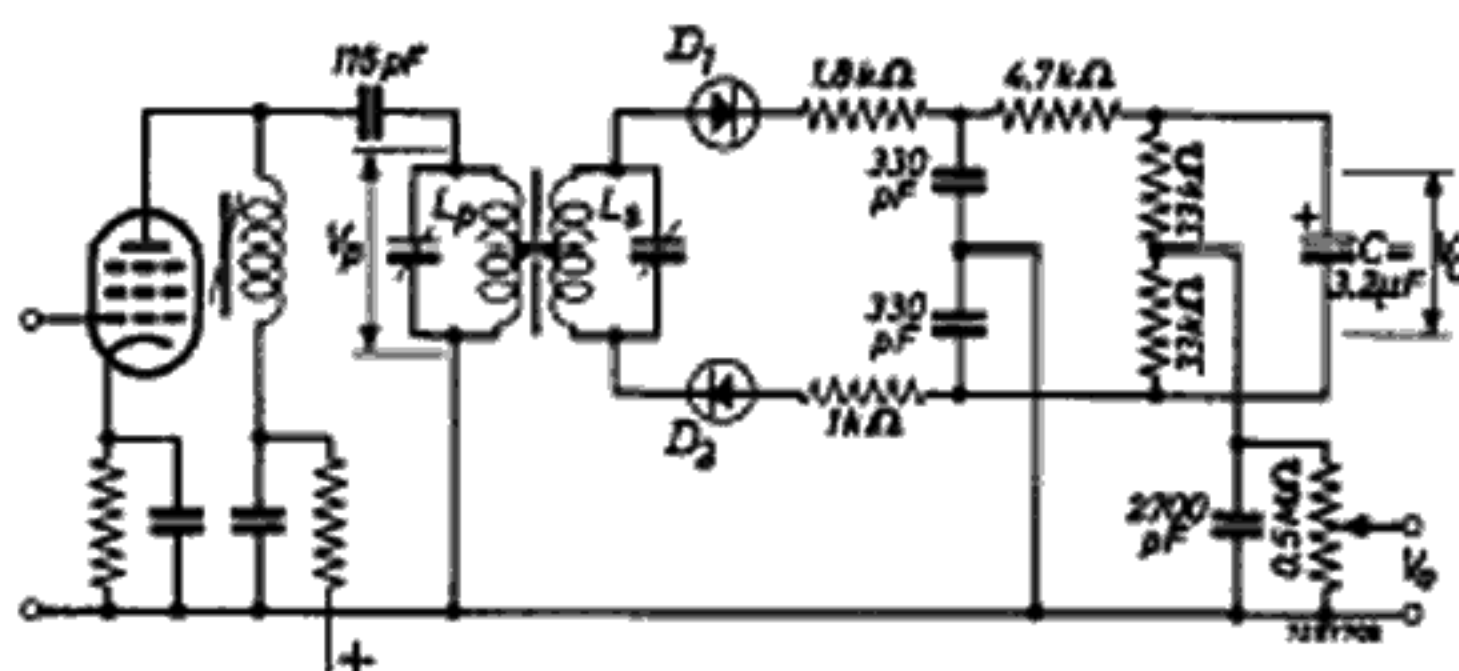
$$f = 0.5 \text{ MHz}$$

$$V_O \text{ typ. } 55 \text{ mV}$$

$$V_{O(rms)} \text{ typ. } 4.5 \text{ mV}^{1)}$$

$$R \text{ typ. } 40 \text{ k}\Omega^{2)}$$

Matched pair in a ratio detector circuit



$$L_p = 7.4 \text{ }\mu\text{H}$$

$$Q_0 = 80 \text{ unloaded}$$

$$R = 40 \text{ k}\Omega \text{ unloaded}$$

$$\text{Tap} = 0.5$$

$$L_s = 4.4 \text{ }\mu\text{H}$$

$$Q_0 = 150 \text{ unloaded}$$

$$R = 45 \text{ k}\Omega \text{ unloaded}$$

$$kQ = 0.8^{3)}$$

$$f_0 = 10.7 \text{ MHz}$$

$$\Delta f = 15 \text{ kHz}$$

$$m = 0.3$$

a.m. suppression factor at $V_C = 2 \text{ to } 20 \text{ V}$

$$f = f_0$$

$$\alpha \geq 30$$

$$f = f_0 \pm 25 \text{ kHz}$$

$$\alpha \geq 15$$

For optimum a.m. suppression D_1 must be that diode of the matched pair which has the better dynamic forward characteristic.

For new design the successor types AA119; 2-AA119 are recommended

1) Modulation factor $m = 0.3$

2) Modulation factor $m = 0$

3) Measured in the circuit with $V_p = 350 \text{ mV}$

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