

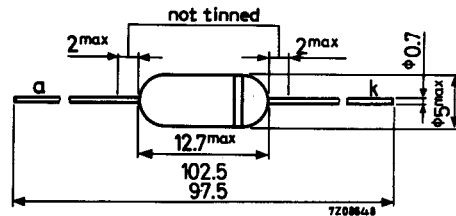
GERMANIUM DIODE

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

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

$I_F = 10$ mA

V_F	typ. 1.5 0.8 to 2.2	typ. 1.4 V 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 V 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 μ A < 12 μ A
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$V_R = 1.5$ V

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

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

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

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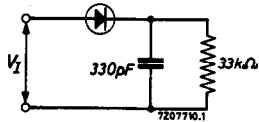
¹⁾ Limiting values according to the Absolute Maximum System as defined in IEC publication 134.

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OA79 2-OA79

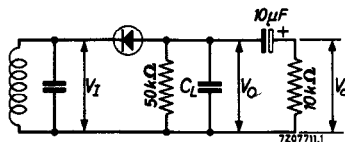
APPLICATION INFORMATION

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



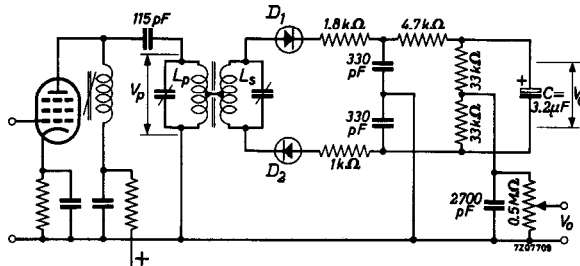
$$\begin{aligned} V_I(\text{RMS}) &= 3 \text{ V} & \eta & \text{typ. } 85\% \\ f &= 10.7 \text{ MHz} & R_d & \text{typ. } 15 \text{ k}\Omega \\ & & & 13.5 \text{ to } 19 \text{ k}\Omega \end{aligned}$$

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



$$\begin{aligned} V_I(\text{RMS}) &= 0.1 \text{ V} & V_O & \text{typ. } 55 \text{ mV} \\ f &= 0.5 \text{ MHz} & V_{O(\text{rms})} & \text{typ. } 4.5 \text{ mV}^1 \\ & & R & \text{typ. } 40 \text{ k}\Omega^2 \end{aligned}$$

Matched pair in a ratio detector circuit



$$\begin{aligned} L_p &= 7.4 \text{ } \mu\text{H} \\ Q_0 &= 80 \text{ unloaded} \\ R &= 40 \text{ k}\Omega \text{ unloaded} \\ \text{Tap} &= 0.5 \\ L_s &= 4.4 \text{ } \mu\text{H} \\ Q_0 &= 150 \text{ unloaded} \\ R &= 45 \text{ k}\Omega \text{ unloaded} \\ kQ &= 0.8^3 \\ f_0 &= 10.7 \text{ MHz} \\ \Delta f &= 15 \text{ kHz} \\ m &= 0.3 \end{aligned}$$

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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