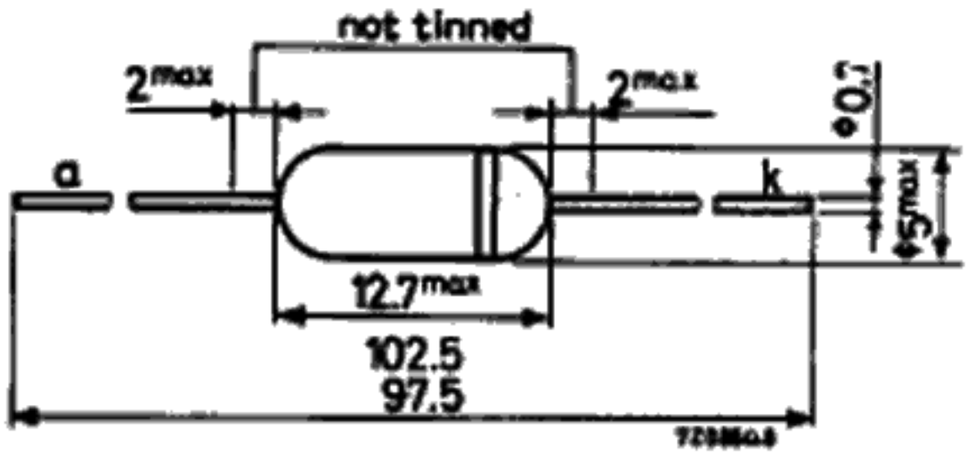
# GERMANIUM DIODE

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**

| | | $T_{amb}$ = 25 °C | $T_{amb}$ = 60 °C | |
|---|---|---|---|---|
| Forward voltage | | | | |
| $I_F$ = 0.1 mA | $V_F$ | typ. 0.23 | typ. 0.16 | V |
| | | 0.15 to 0.30 | 0.1 to 0.25 | V |
| $I_F$ = 10 mA | $V_F$ | typ. 1.5 | typ. 1.4 | V |
| | | 0.8 to 2.2 | 0.7 to 2.1 | V |
| $I_F$ = 30 mA | $V_F$ | typ. 2.8 | typ. 2.6 | V |
| | | 1.4 to 4.0 | 1.2 to 3.8 | V |
| Reverse current | | | | |
| $V_R$ = 0.1 V | $I_R$ | typ. 0.35 | typ. 4.5 | µA |
| | | < 1.0 | < 12 | µA |
| $V_R$ = 1.5 V | $I_R$ | typ. 0.8 | typ. 6 | µA |
| | | 0.1 to 2.8 | 0.8 to 25 | µA |
| $V_R$ = 10 V | $I_R$ | typ. 4.5 | typ. 16 | µA |
| | | 0.4 to 18 | 2.5 to 60 | µA |
| $V_R$ = 30 V | $I_R$ | typ. 35 | typ. 60 | µA |
| | | 1.5 to 150 | 60 to 300 | µA |
| $V_R$ = 45 V | $I_R$ | typ. 90 | typ. 170 | µA |
| | | 4 to 350 | 15 to 500 | µA |

[1]) Limiting values according to the Absolute Maximum System as defined in IEC publication 134.

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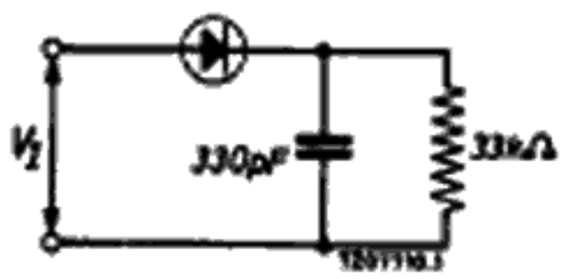
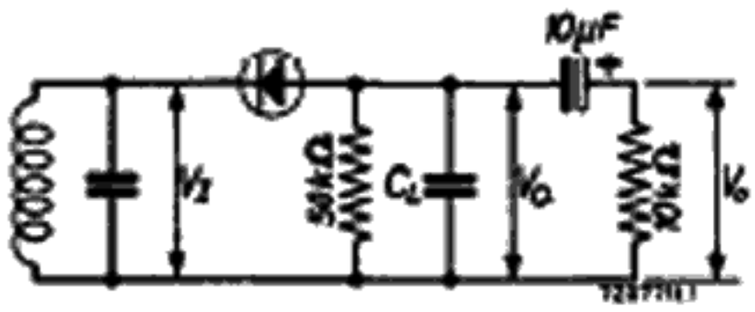
## APPLICATION INFORMATION

Measuring circuit at $T_{amb}$ = 25 °C



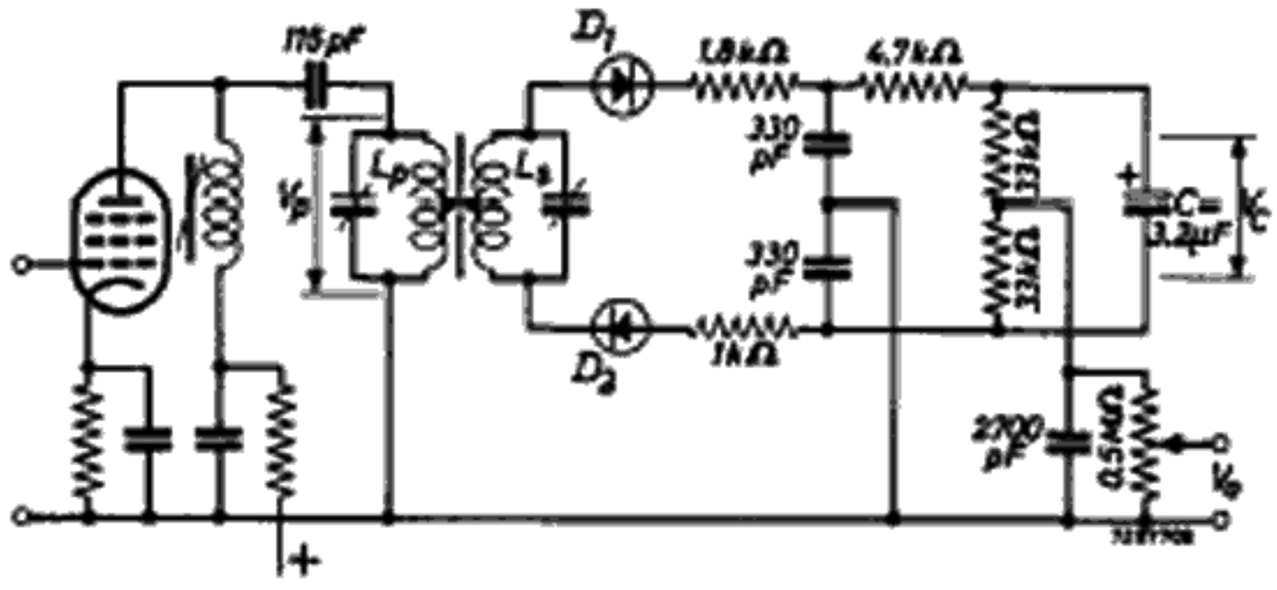

| | | | | | | |
|---|---|---|---|---|---|---|
| $V_{I(RMS)}$ | = 3 | V | $\eta$ | typ. | 85 | % |
| f | = 10.7 | MHz | $R_d$ | typ. | 15 | kΩ |
| | | | | 13.5 to | 19 | kΩ |

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




| | | | | | |
|---|---|---|---|---|---|
| $V_{I(RMS)}$ | = 0.1 V | $V_O$ | typ. | 55 | mV |
| f | = 0.5 MHz | $V_{o(rms)}$ | typ. | 4.5 | mV [1] |
| | | R | typ. | 40 | kΩ [2] |

Matched pair in a ratio detector circuit




| | | | |
|---|---|---|---|
| $L_p$ | = 7.4 | μH | |
| $Q_0$ | = 80 | unloaded | |
| R | = 40 | kΩ unloaded | |
| Tap | = 0.5 | | |
| $L_s$ | = 4.4 | μH | |
| $Q_0$ | = 150 | unloaded | |
| R | = 45 | kΩ unloaded | |
| kQ | = 0.8 | [3] | |
| $f_0$ | = 10.7 | MHz | |
| $\Delta f$ | = 15 | kHz | |
| m | = 0.3 | | |

a.m. suppression factor at $V_C$ = 2 to 20 V

| | | |
|---|---|---|
| $f = f_0$ | $\alpha$ | ≥ 30 |
| $f = f_0 \pm 25$ kHz | $\alpha$ | ≥ 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

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[1]) Modulation factor m = 0.3
[2]) Modulation factor m = 0
[3]) Measured in the circuit with $V_p$ = 350 mV

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