

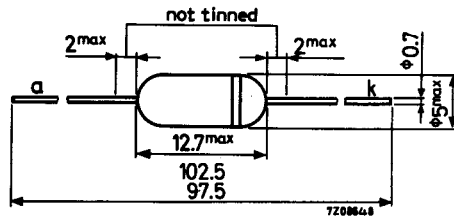
## GERMANIUM DIODE

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) <sup>1)</sup>

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
-------	------------------------	----------------------------

$I_F = 30$  mA

$V_F$	typ. 2.8 1.4 to 4.0	typ. 2.6 V 1.2 to 3.8 V
-------	------------------------	----------------------------

#### Reverse current

$V_R = 0.1$  V

$I_R$	typ. 0.35 < 1.0	typ. 4.5 $\mu$ A < 12 $\mu$ A
-------	--------------------	----------------------------------

$V_R = 1.5$  V

$I_R$	typ. 0.8 0.1 to 2.8	typ. 6 $\mu$ A 0.8 to 25 $\mu$ A
-------	------------------------	-------------------------------------

$V_R = 10$  V

$I_R$	typ. 4.5 0.4 to 18	typ. 16 $\mu$ A 2.5 to 60 $\mu$ A
-------	-----------------------	--------------------------------------

$V_R = 30$  V

$I_R$	typ. 35 1.5 to 150	typ. 60 $\mu$ A 60 to 300 $\mu$ A
-------	-----------------------	--------------------------------------

$V_R = 45$  V

$I_R$	typ. 90 4 to 350	typ. 170 $\mu$ A 15 to 500 $\mu$ A
-------	---------------------	---------------------------------------

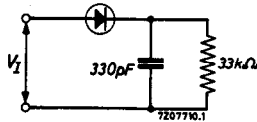
<sup>1)</sup> Limiting values according to the Absolute Maximum System as defined in IEC publication 134.

7Z3 1247

# OA79 2-OA79

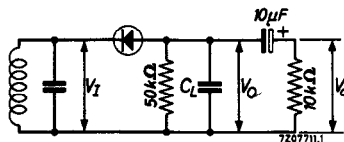
## APPLICATION INFORMATION

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



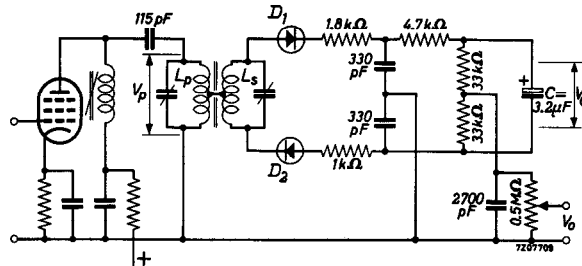
$$\begin{aligned} V_I(\text{RMS}) &= 3 \text{ V} & \eta & \text{typ. } 85 \% \\ f &= 10.7 \text{ MHz} & R_d & \text{typ. } 15 \text{ k}\Omega \\ & & & 13.5 \text{ to } 19 \text{ k}\Omega \end{aligned}$$

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  $V_C = 2 \text{ to } 20\text{-V}$

$$\begin{aligned} f &= f_0 & \alpha & \geq 30 \\ f &= f_0 \pm 25 \text{ kHz} & \alpha & \geq 15 \end{aligned}$$

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  $V_p = 350 \text{ mV}$

7Z3 1909