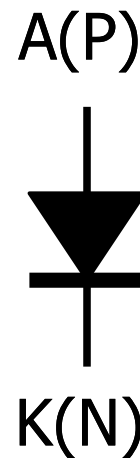


$d \equiv$ debelina plasti I
(čas vklopa diode)

Šibko dopiranje
 π ali $\nu \sim 10^{14} \text{cm}^{-3}$
 $Au \rightarrow \tau$ (izklop)



	Zaščitni omejevalnik	Krmiljeno VF stikalo	Nastavljivi VF upor
Debelina d plasti I	1 μm	5 μm	100 μm
Rekombinacijski čas τ manjšinskih nosilcev	10ns	100ns	1 μs

Izvedbe visokofrekvenčnih PIN diod

$\log(|Z|)$

$$R = \frac{dU}{dI} = \frac{n \cdot k_B T / q}{I} = \frac{n \cdot 26\text{mV}}{I}$$

$$I = I_S \cdot \left(e^{\frac{U}{n \cdot k_B T / q}} - 1 \right) = I_S \cdot \left(e^{\frac{U}{n \cdot 26\text{mV}}} - 1 \right)$$

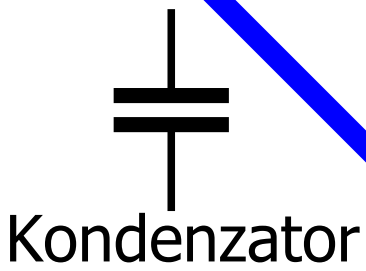
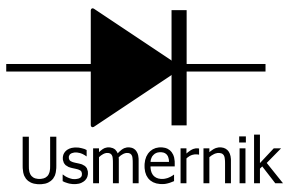
$k_B = 1.38 \cdot 10^{-23} \text{ J/K}$
 $T = 300\text{K}$
 $q = 1.6 \cdot 10^{-19} \text{ As}$

$n(\text{PN}) \approx 1$
 $n(\text{PIN}) \approx 2$

$$C = \frac{dQ}{dU} + C_s = \frac{d}{dU} (I \cdot \tau) + C_s = \frac{I \cdot \tau}{n \cdot 26\text{mV}} + C_s$$

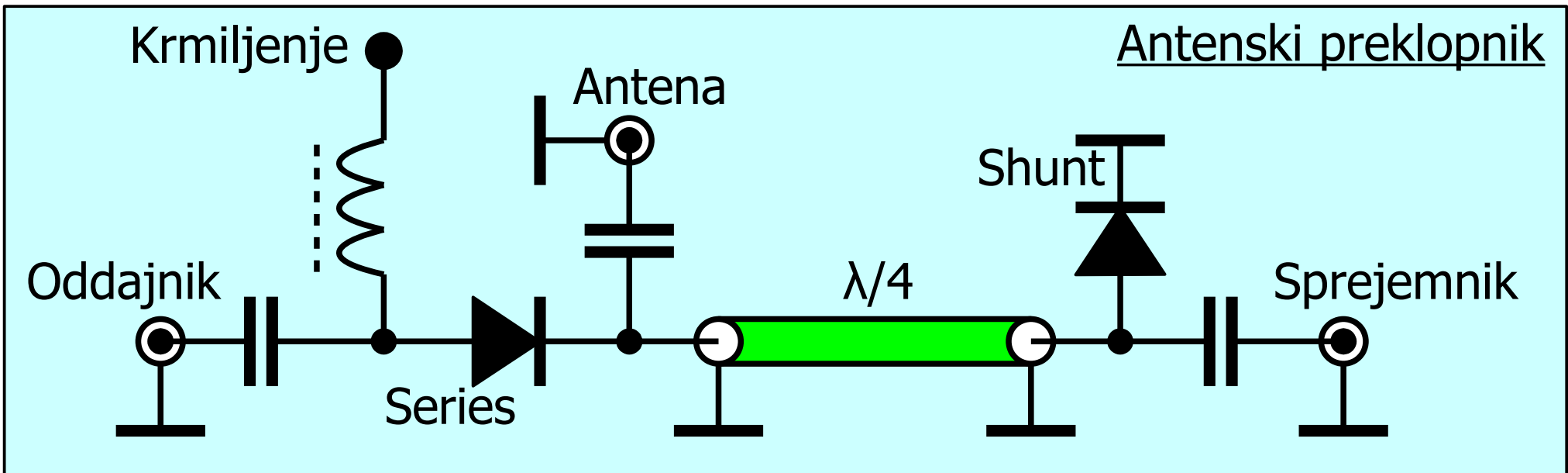
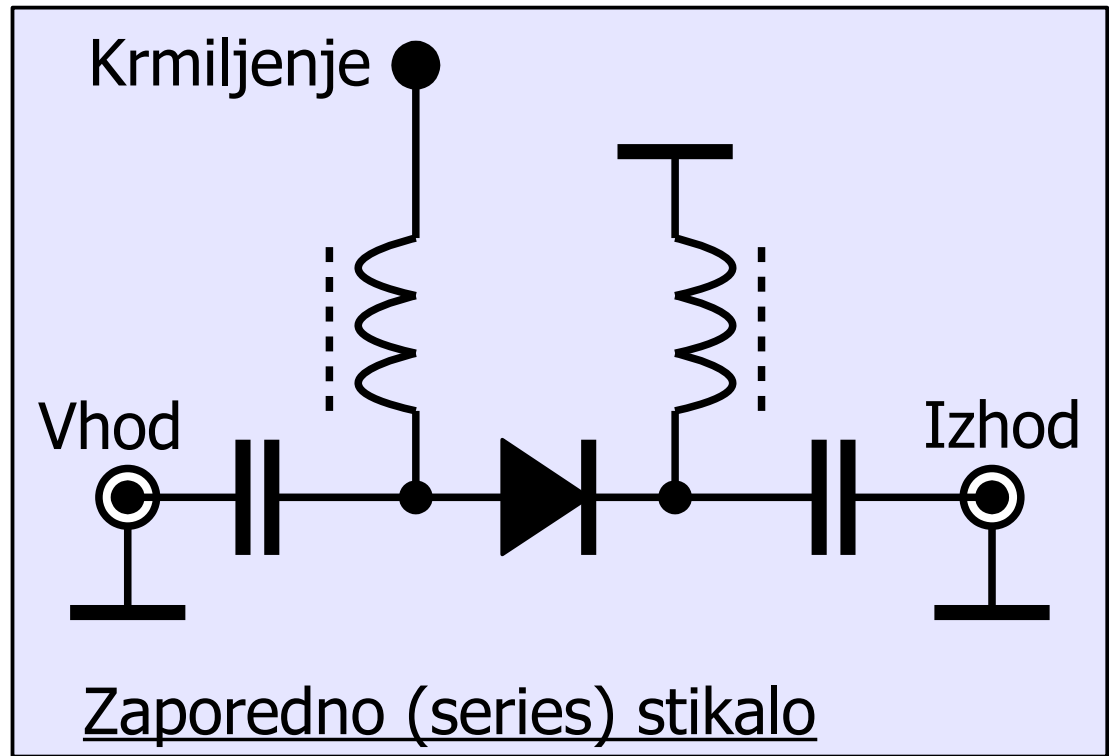
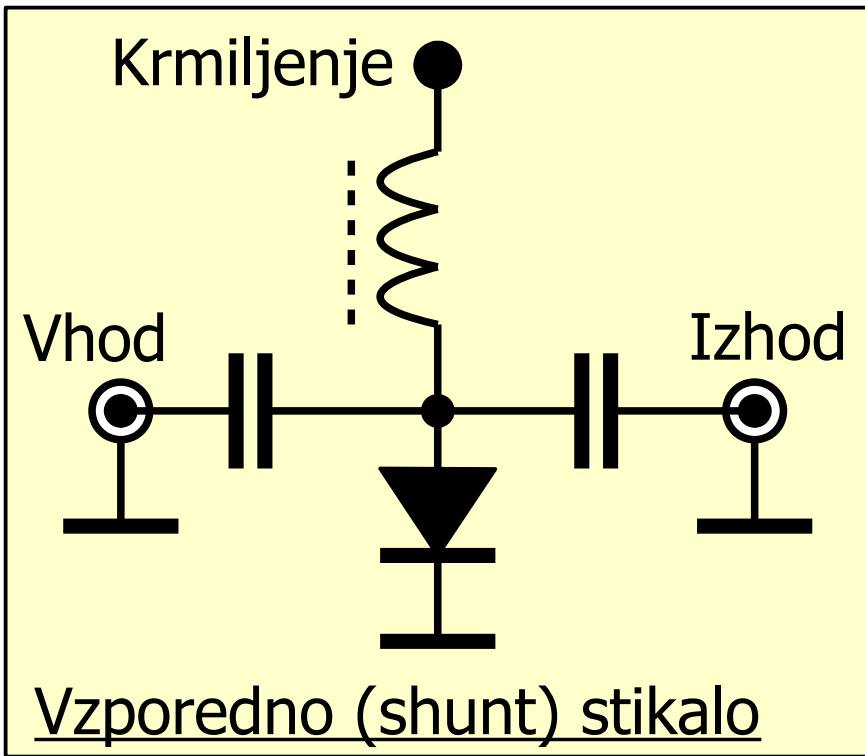
$$f = \frac{1}{2\pi \cdot \tau}$$

Upornost sloja I

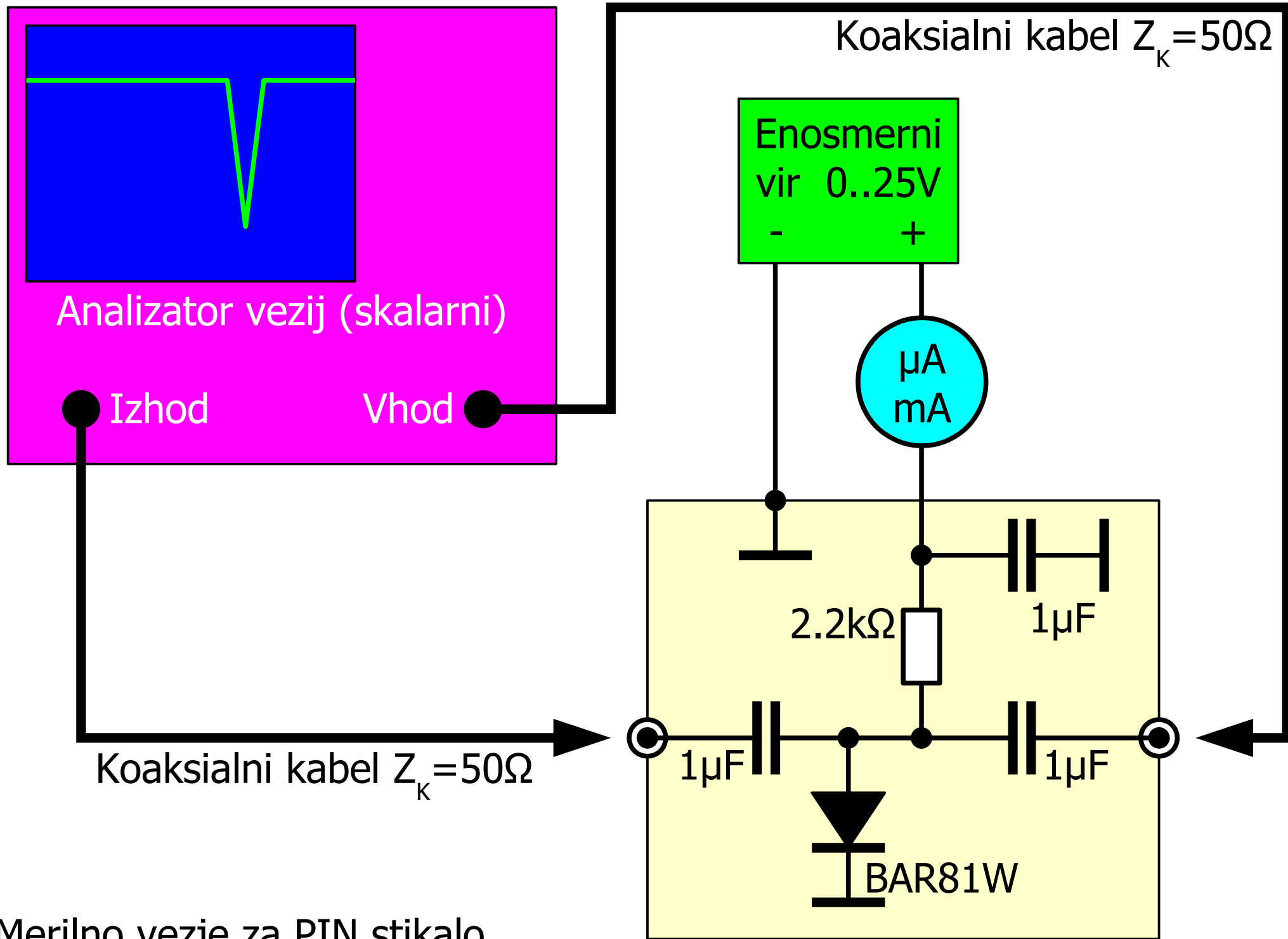


$\log(f)$

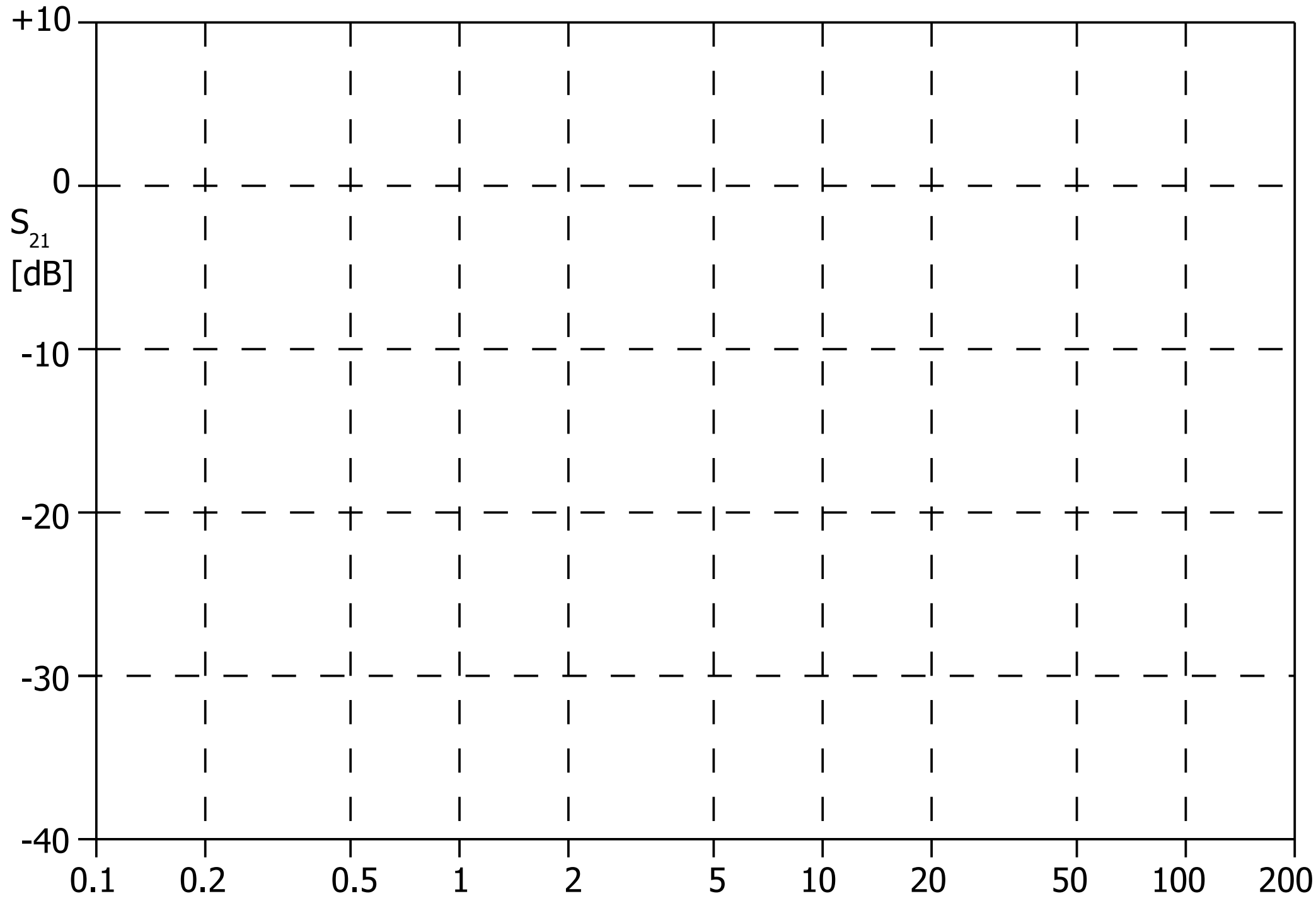
Impedanca PIN diode



Izvedbe visokofrekvenčnih stikal s PIN diodami



Merilno vezje za PIN stikalo



Vstavitveno slabljenje PIN stikala

Frekvenca [MHz]