

12. DISPLAY SA SVETLEĆIM DIODAMA (LED)

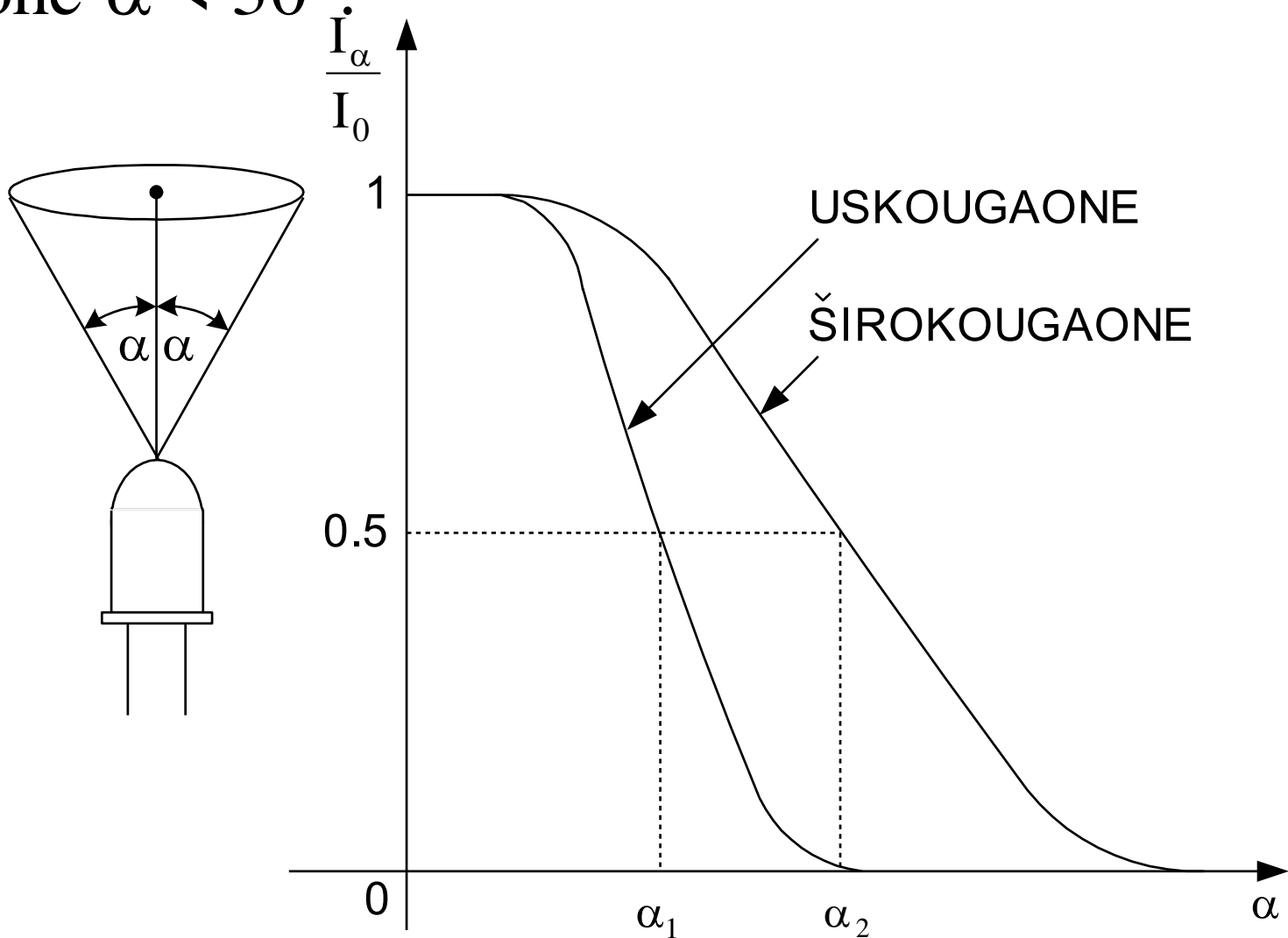
DIODA $V_d = 0.6V$ pri 20mA

LED $V_d = 1.6V..2.8V$ pri 20mA

IRLED $V_d = 1.5V$ pri 100mA

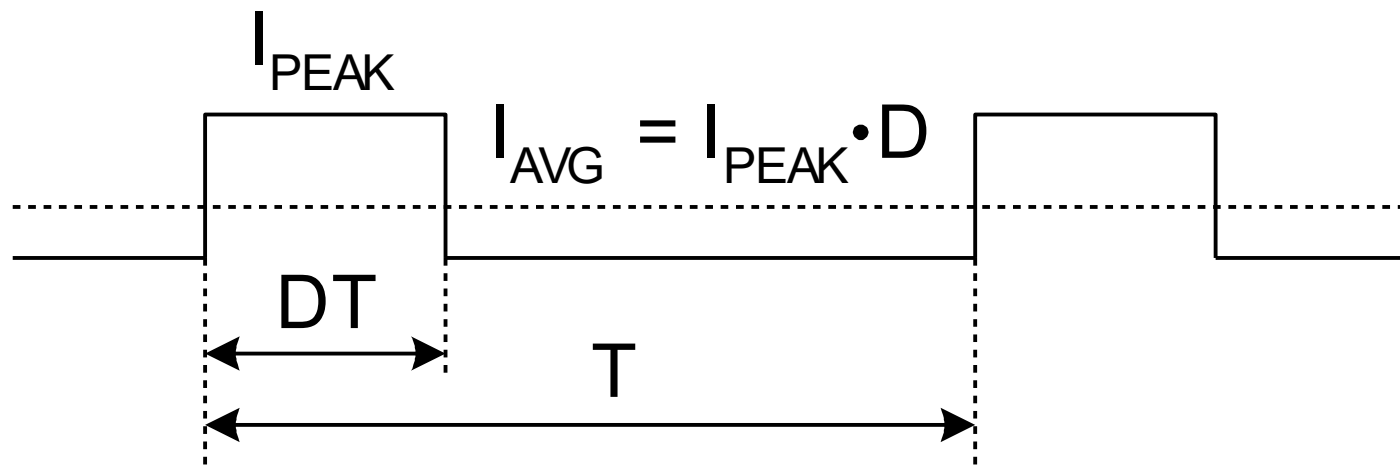
INTENZITET ZRAČENJA DIODE

- širokougaone $\alpha > 30^\circ$ i
- uskougane $\alpha < 30^\circ$



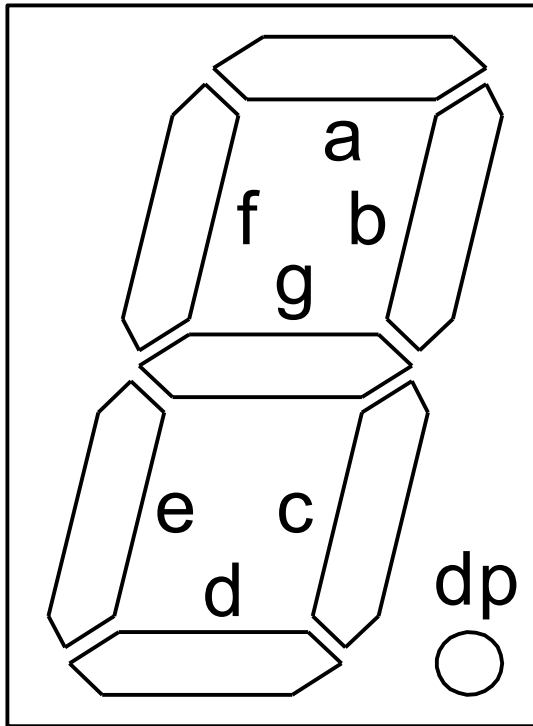
IMPULSNA STRUJA DIODE

Dobitak u osećaju osvetljaja u odnosu na kontinualan rad LED dioda je čak 5 puta pri maloj vrednosti D od 1% do 2%, i vršnim strujama od 50mA do 100mA (maksimalno 200mA). Pri tome trajanje DT vršne struje treba ograničiti na svega 10 mikrosekundi.

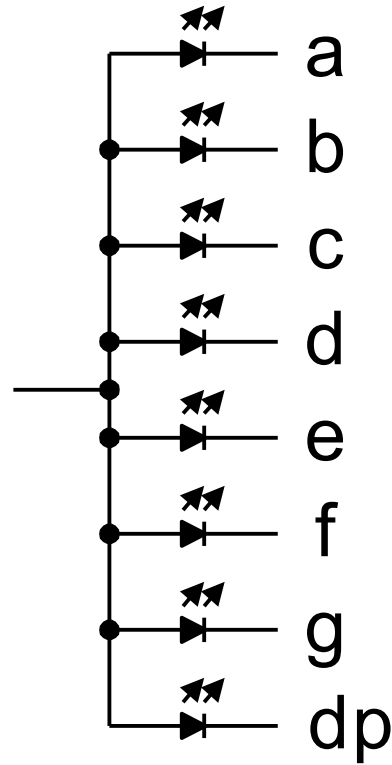


Kod IRLED diode pad napona je 3.5V za od 1.5A, a dostiže čak 10V pri 4.5A.

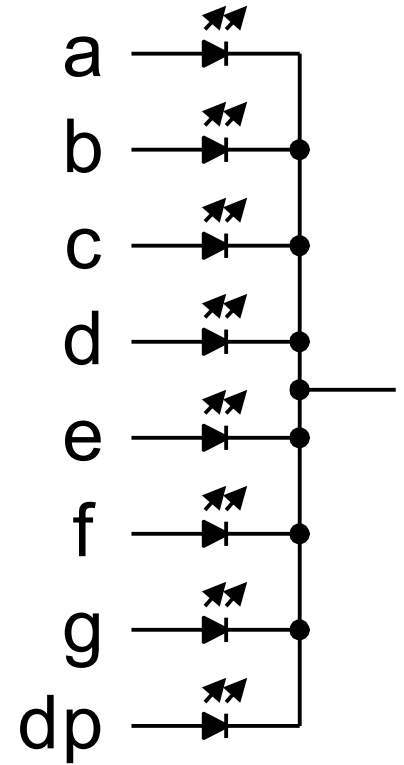
8 SEGMENTNI LED DISPLAY



a)



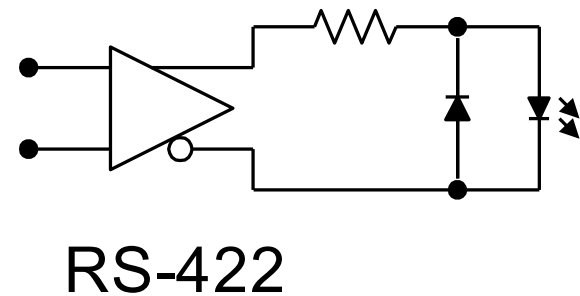
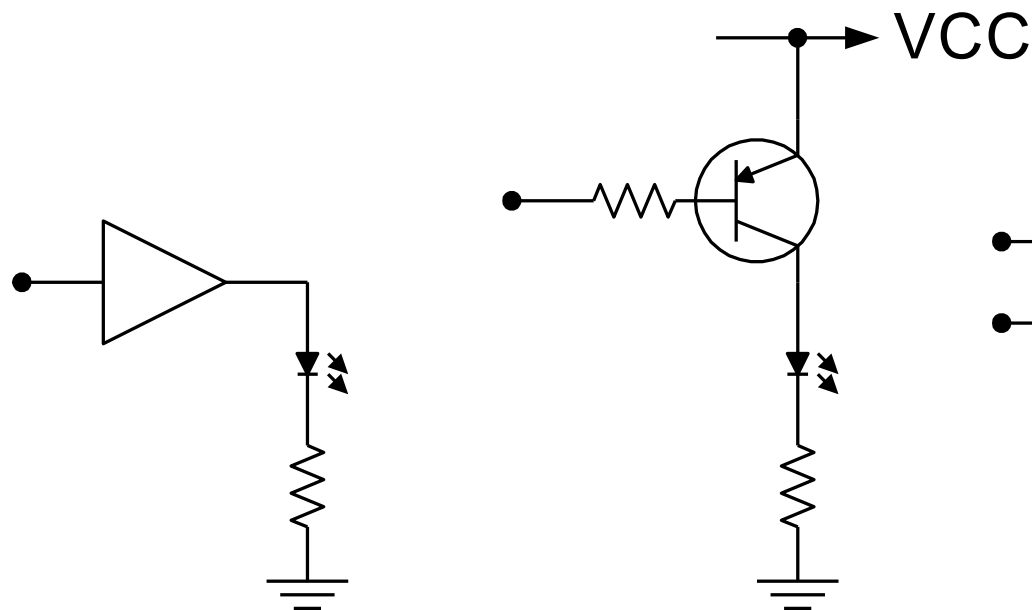
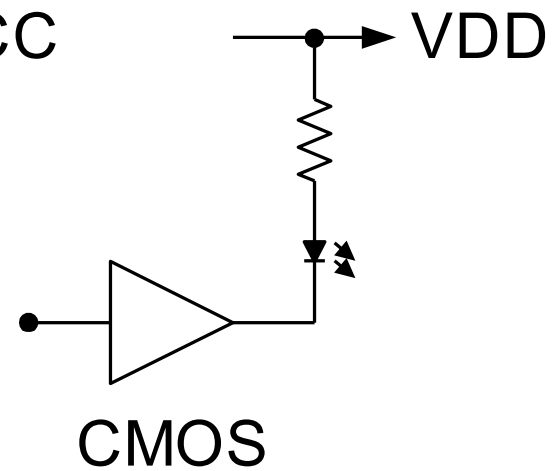
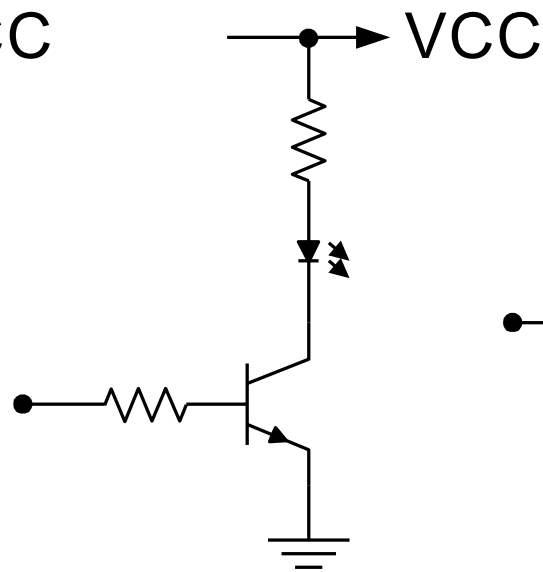
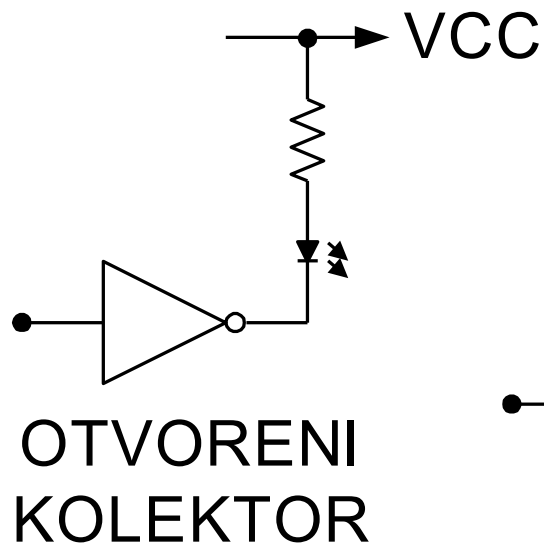
b)



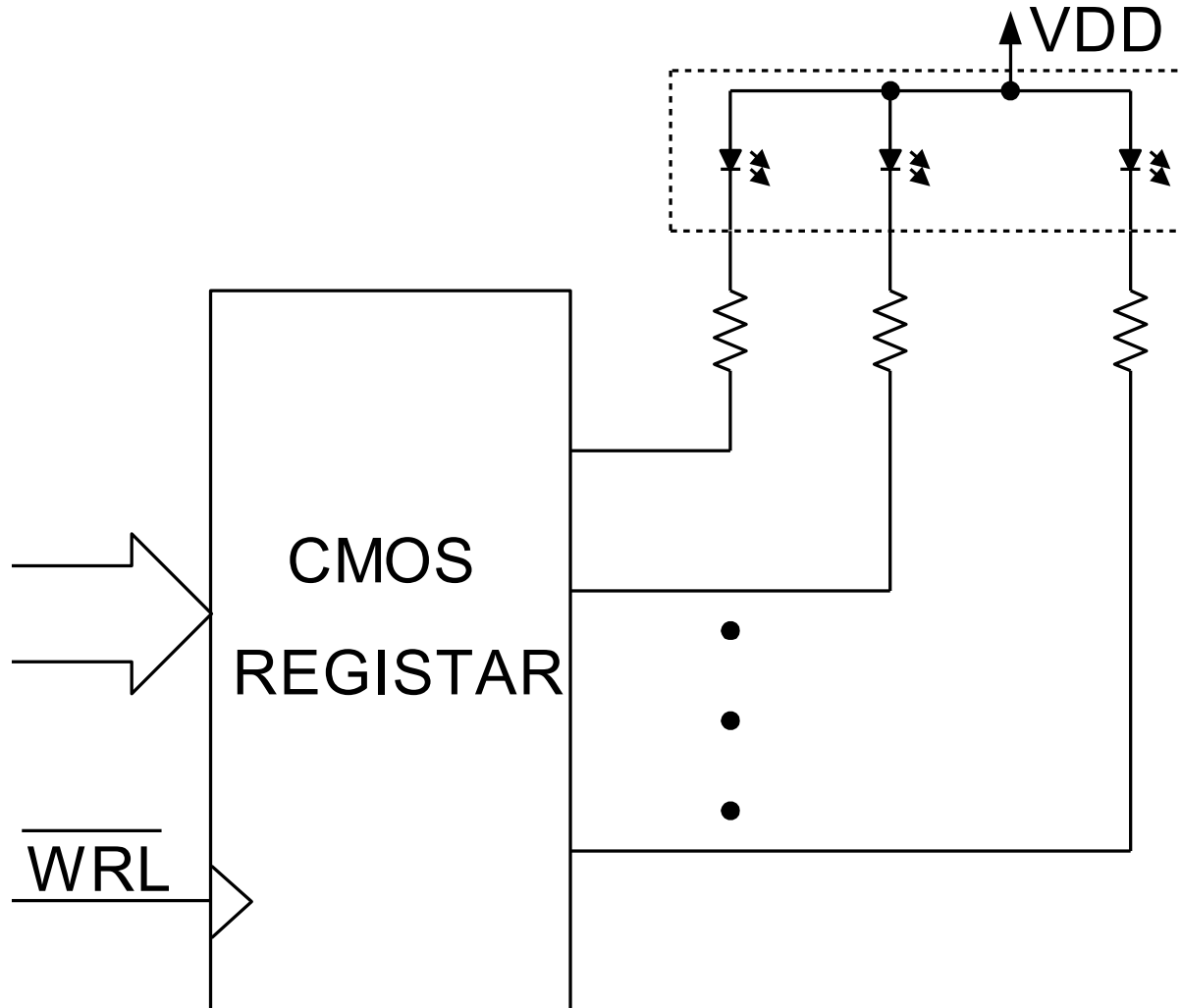
c)

- b) Sa zajedničkom anodom
- c) Sa zajedničkom katodom

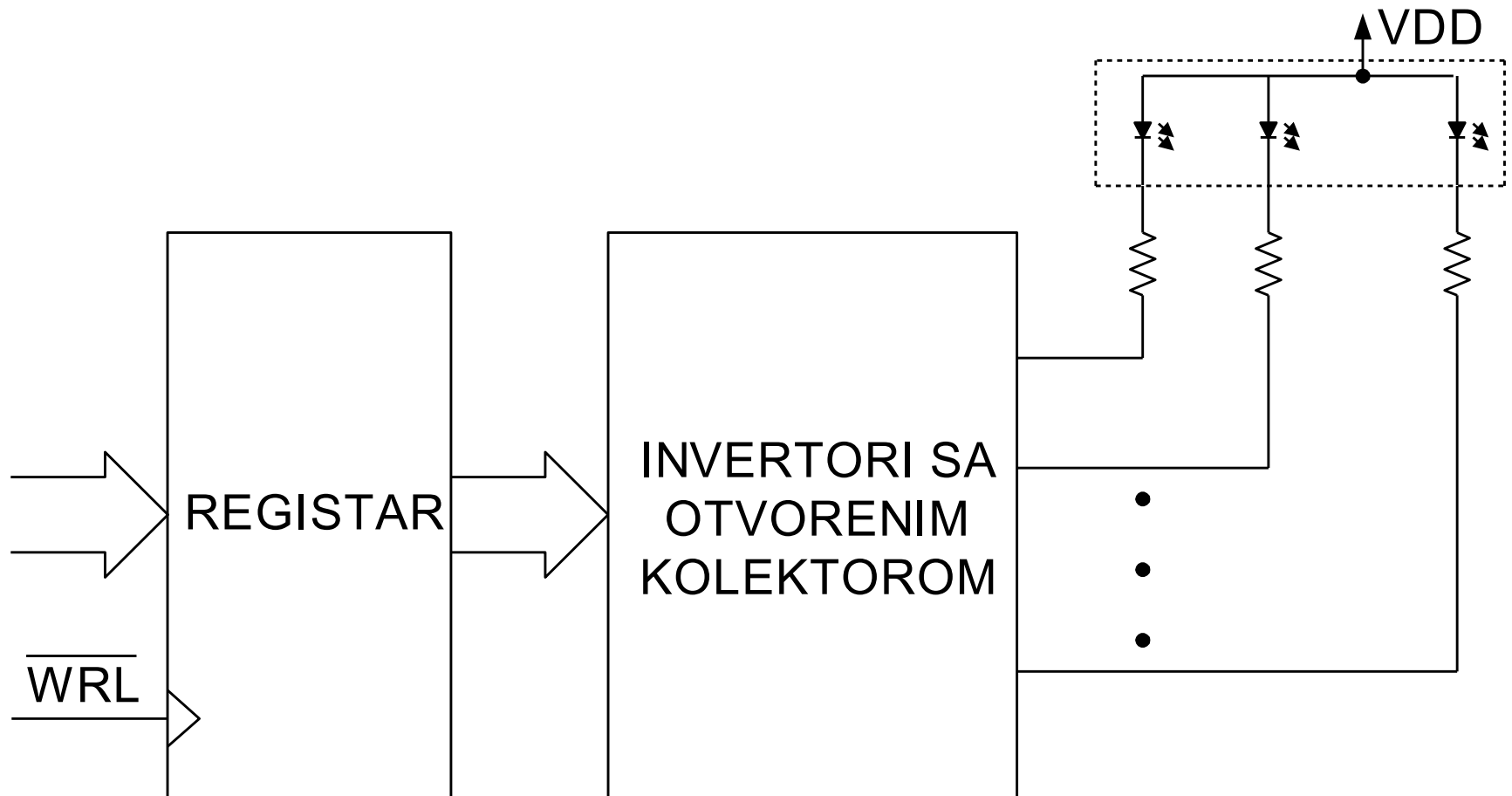
KONTROLA LED DIODA



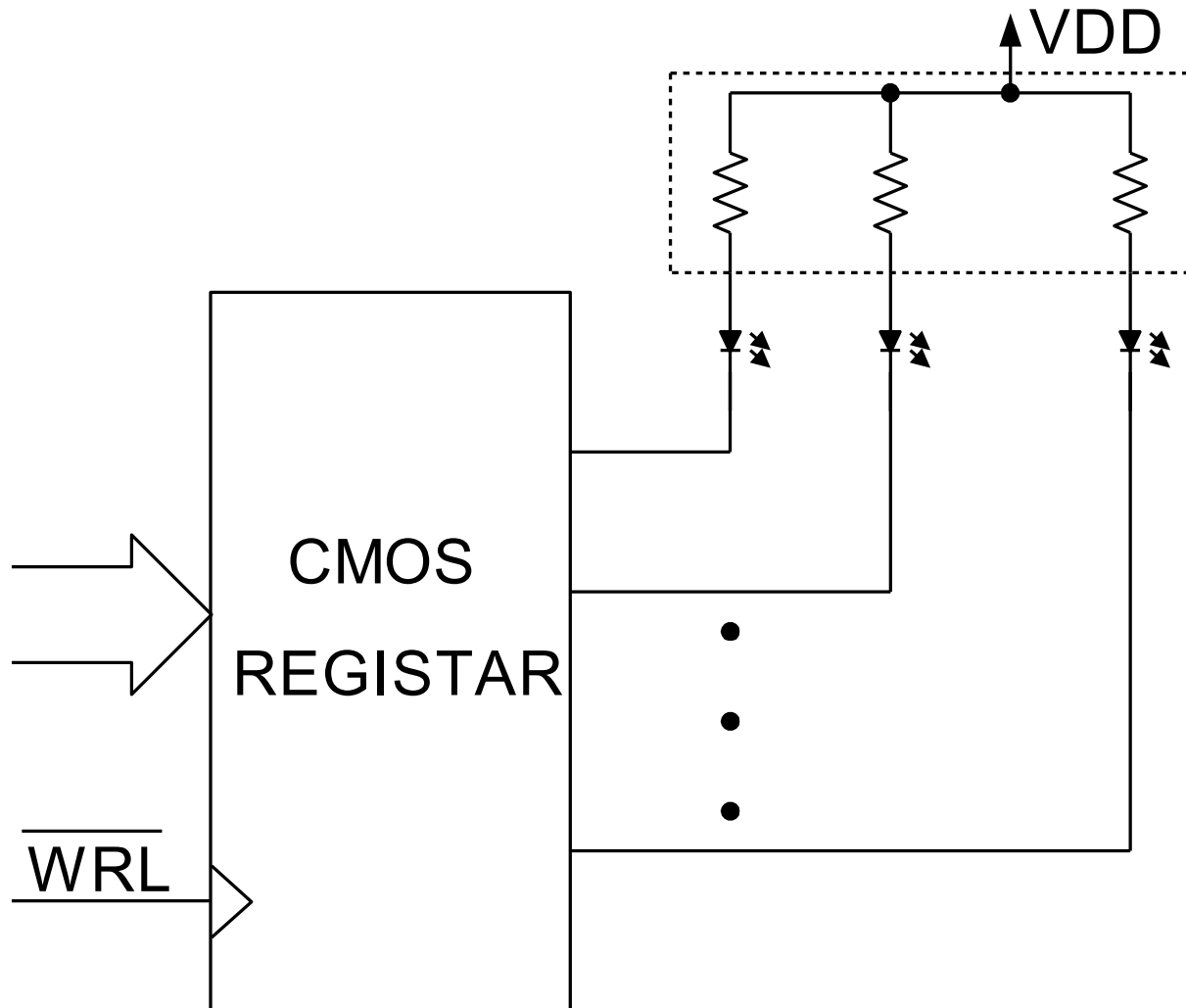
KONTROLA NEMULTIPLEKSIRANOG SEGMENTNOG LED DISPLEJA SA ZAJEDNIČKOM ANODOM



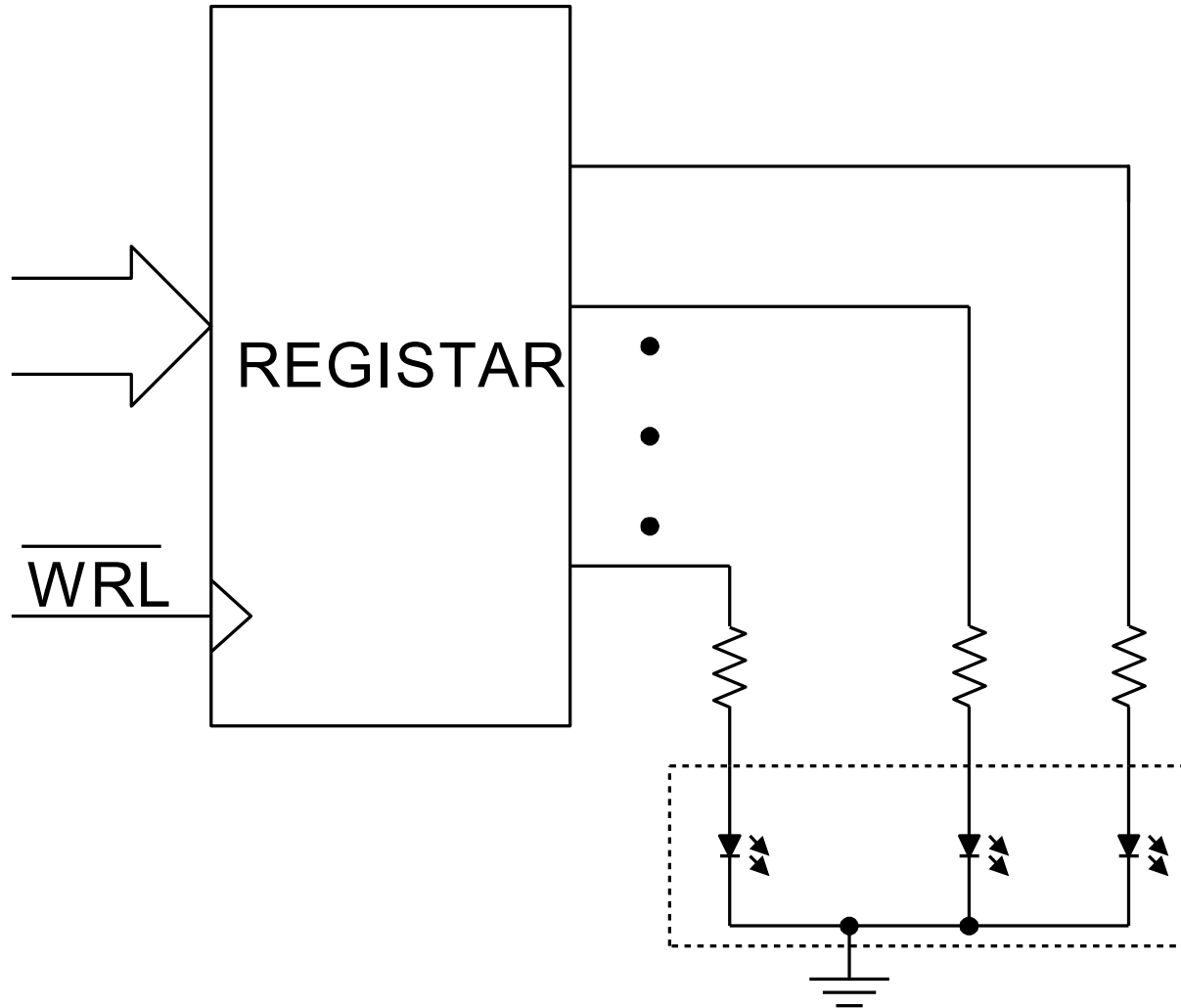
KONTROLA NEMULTIPLEKSIRANOG SEGMENTNOG LED DISPLEJA SA ZAJEDNIČKOM ANODOM



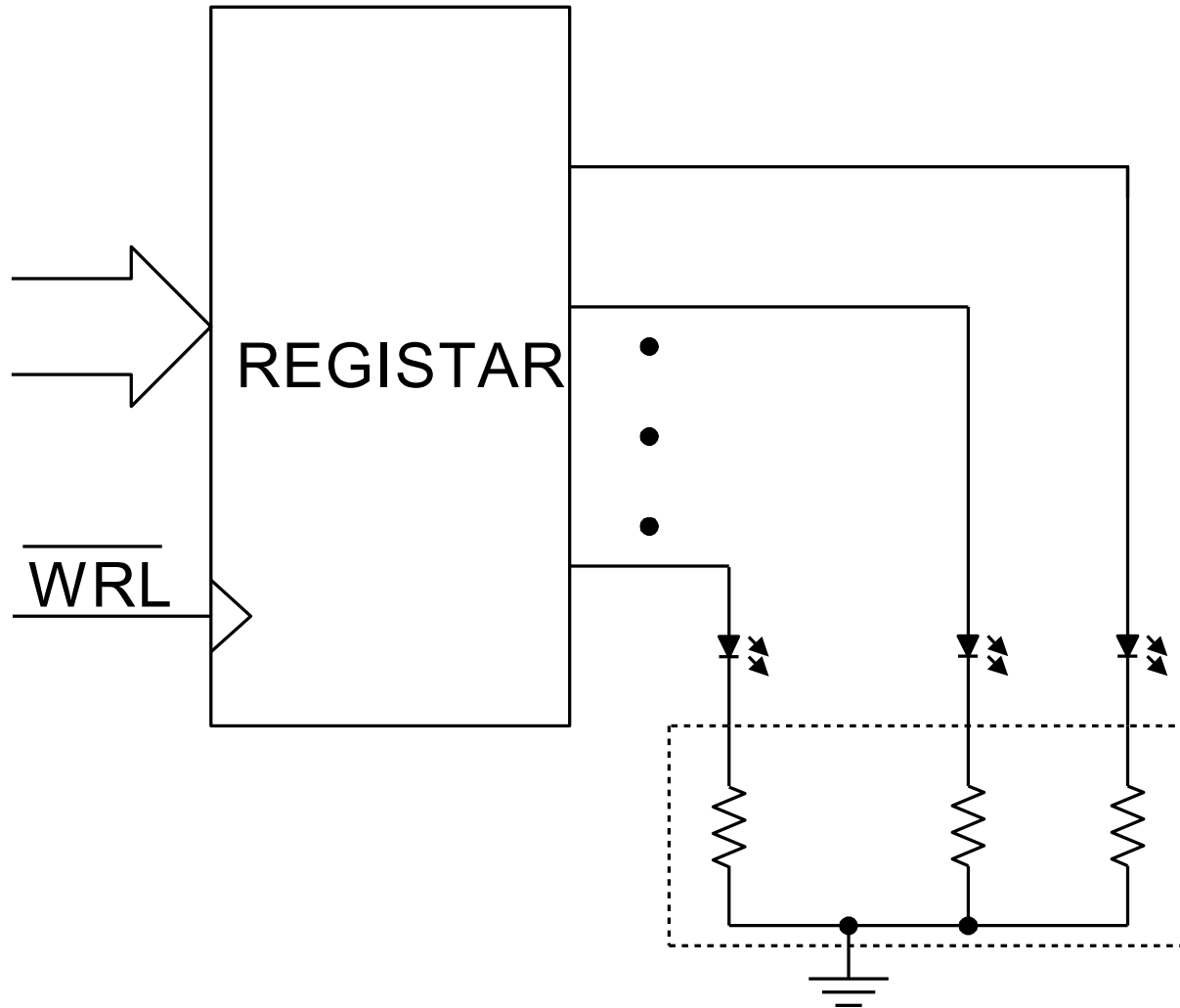
KONTROLA NEMULTIPLEKSI RANIH NEZAVISNIH LED DIODA



KONTROLA NEMULTIPLEKSIRANOG SEGMENTNOG LED DISPLEJA SA ZAJEDNIČKOM KATODOM

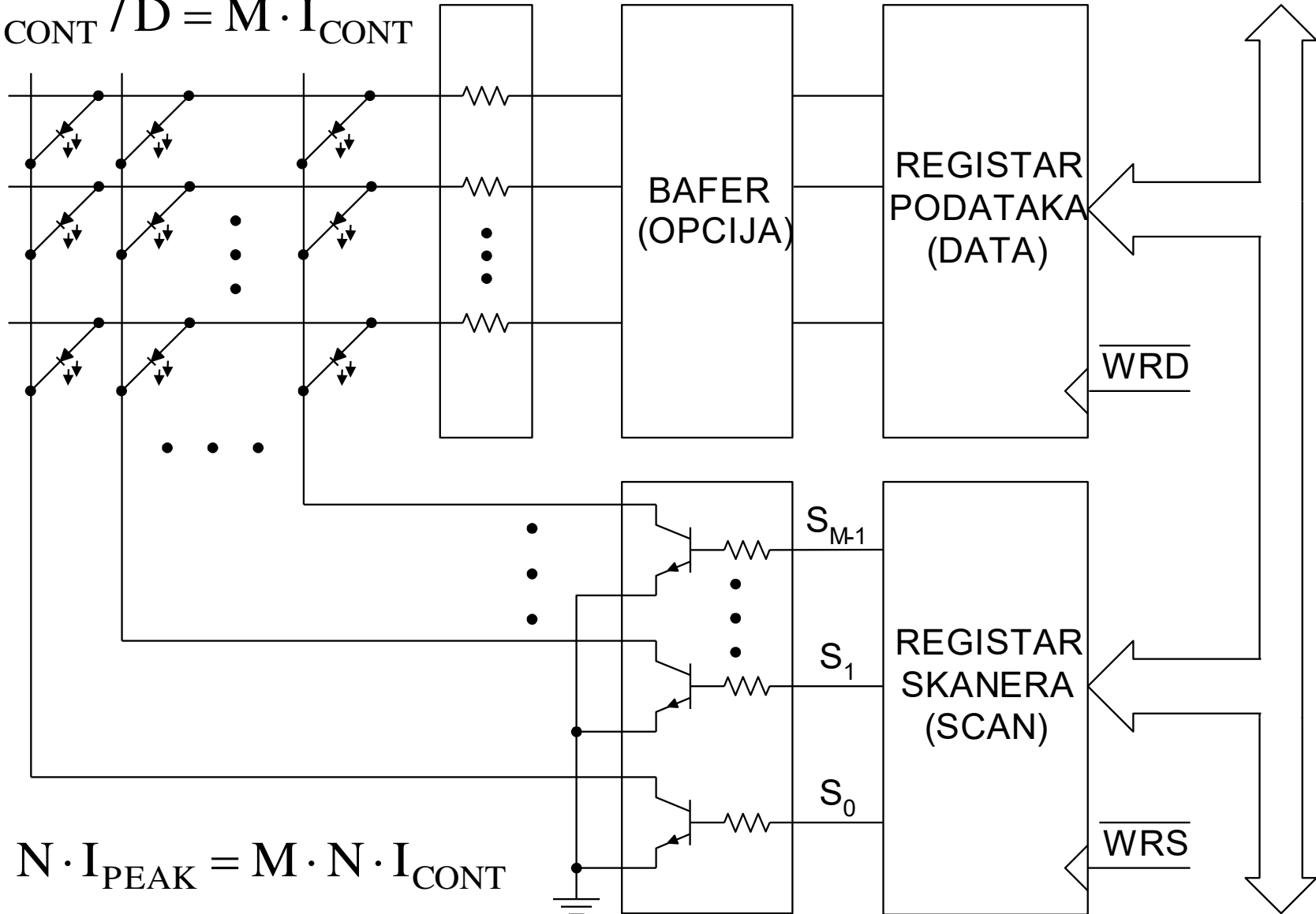


KONTROLA NEMULTIPLEKSI RANIH NEZAVISNIH LED DIODA

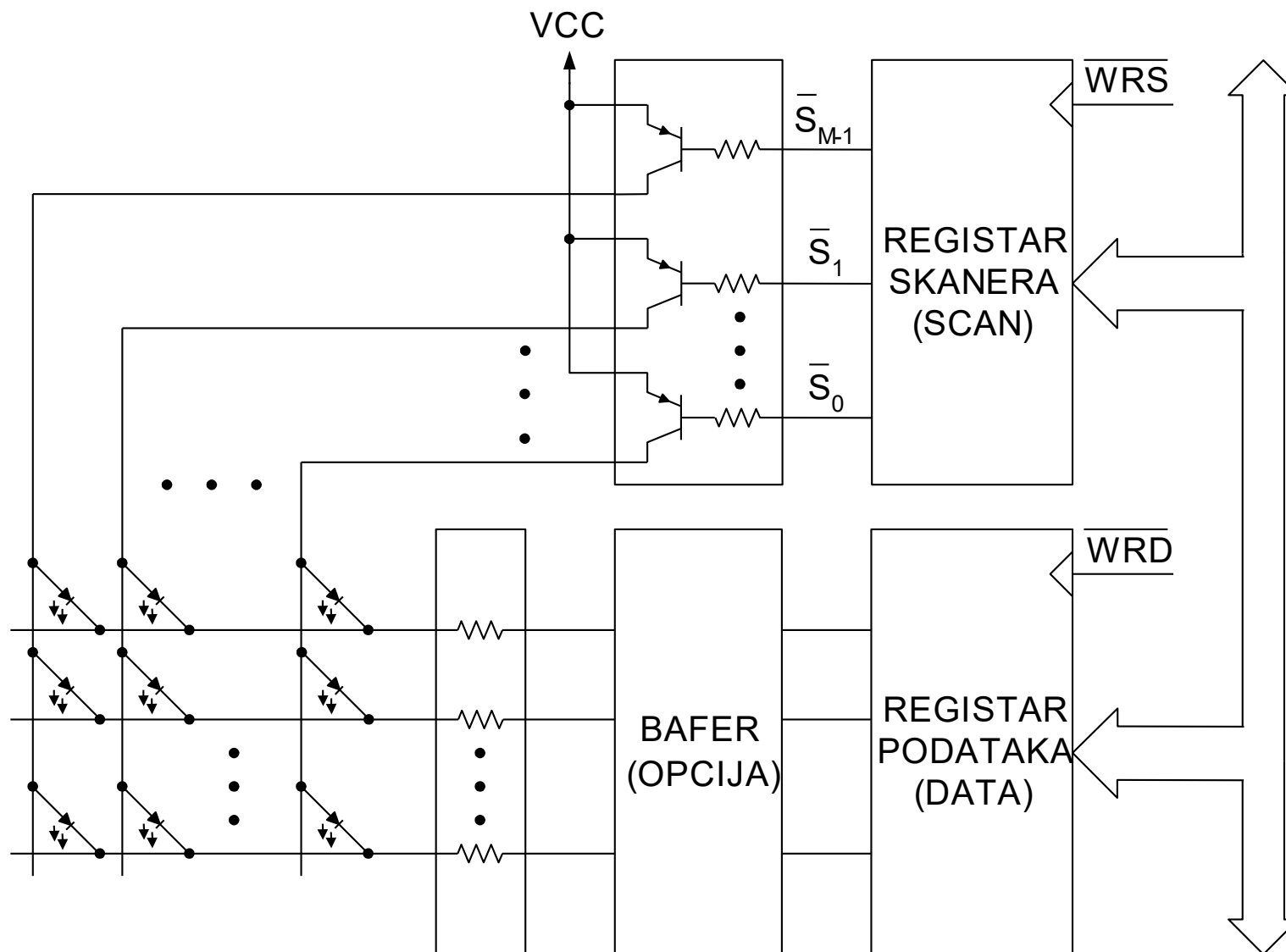


MULTIPLEKSIRANI SEGMENTNI LED SA ZAJEDNIČKOM KATODOM

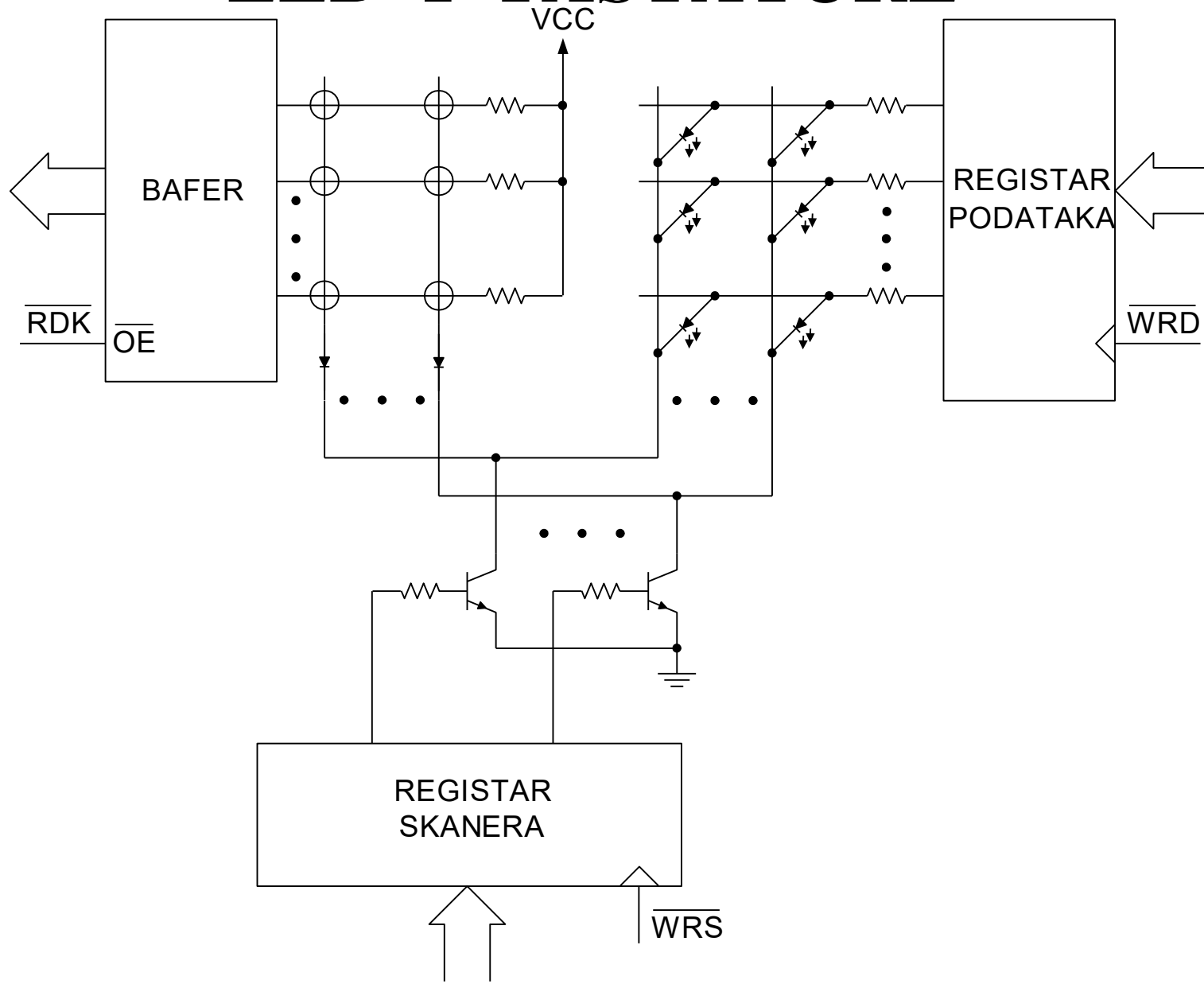
$$I_{\text{PEAK}} = I_{\text{CONT}} / D = M \cdot I_{\text{CONT}}$$



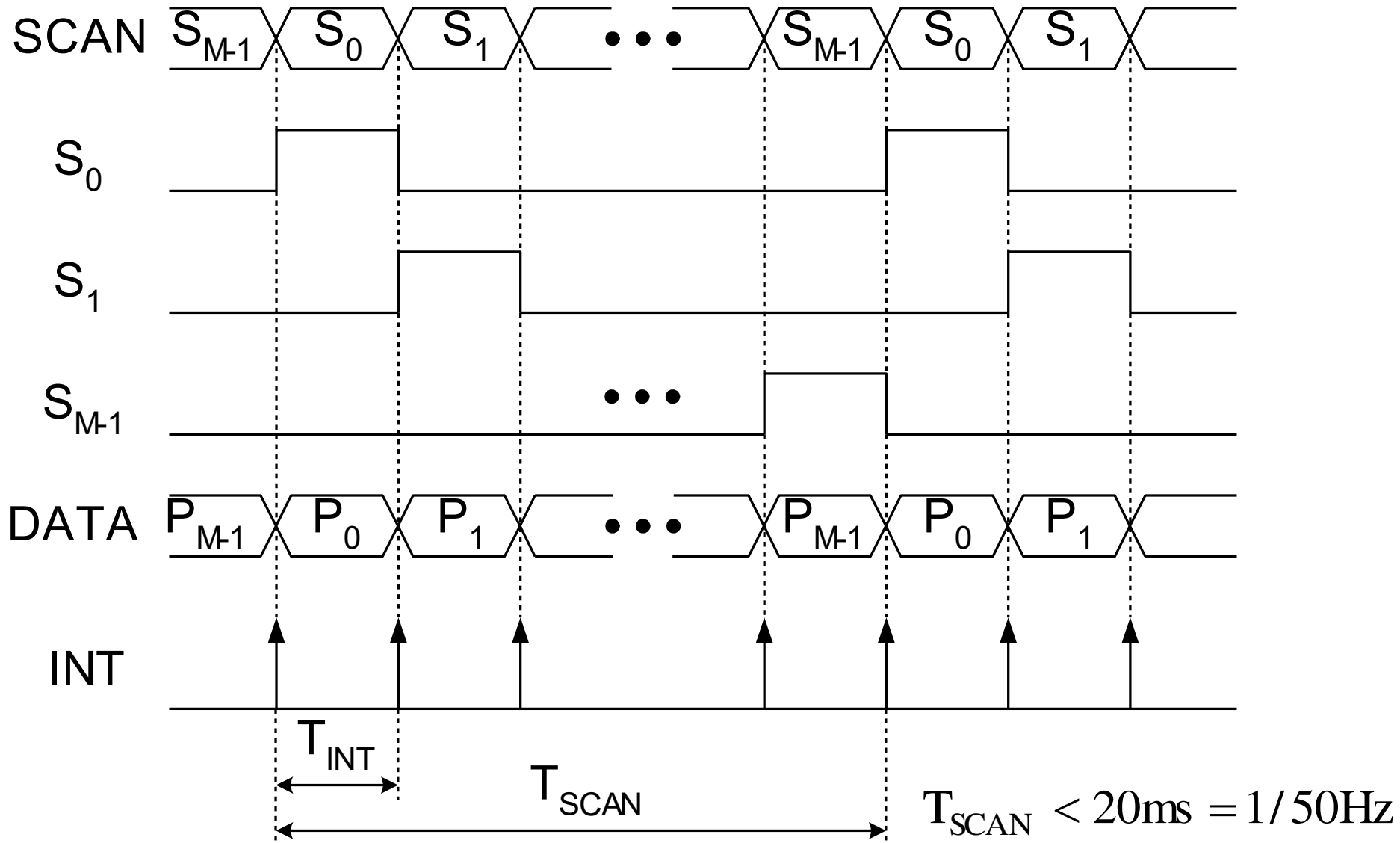
MULTIPLEKSIRANI SEGMENTNI LED SA ZAJEDNIČKOM ANODOM



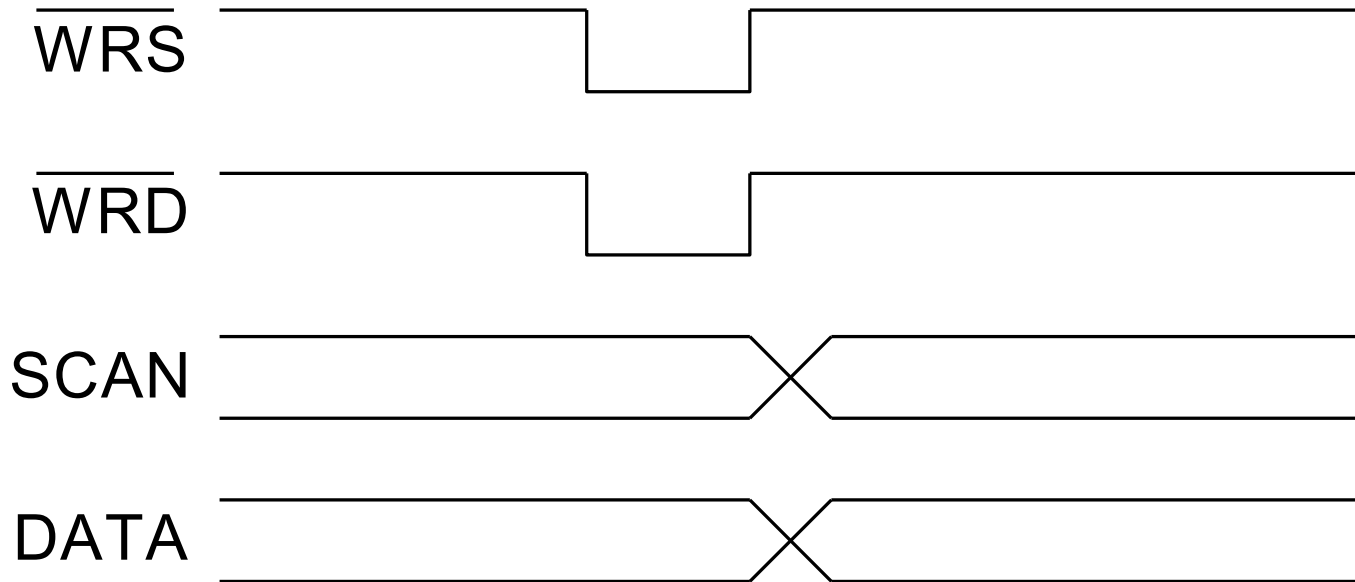
ZAJEDNIČKO SKANIRANJE LED I TASTATURE



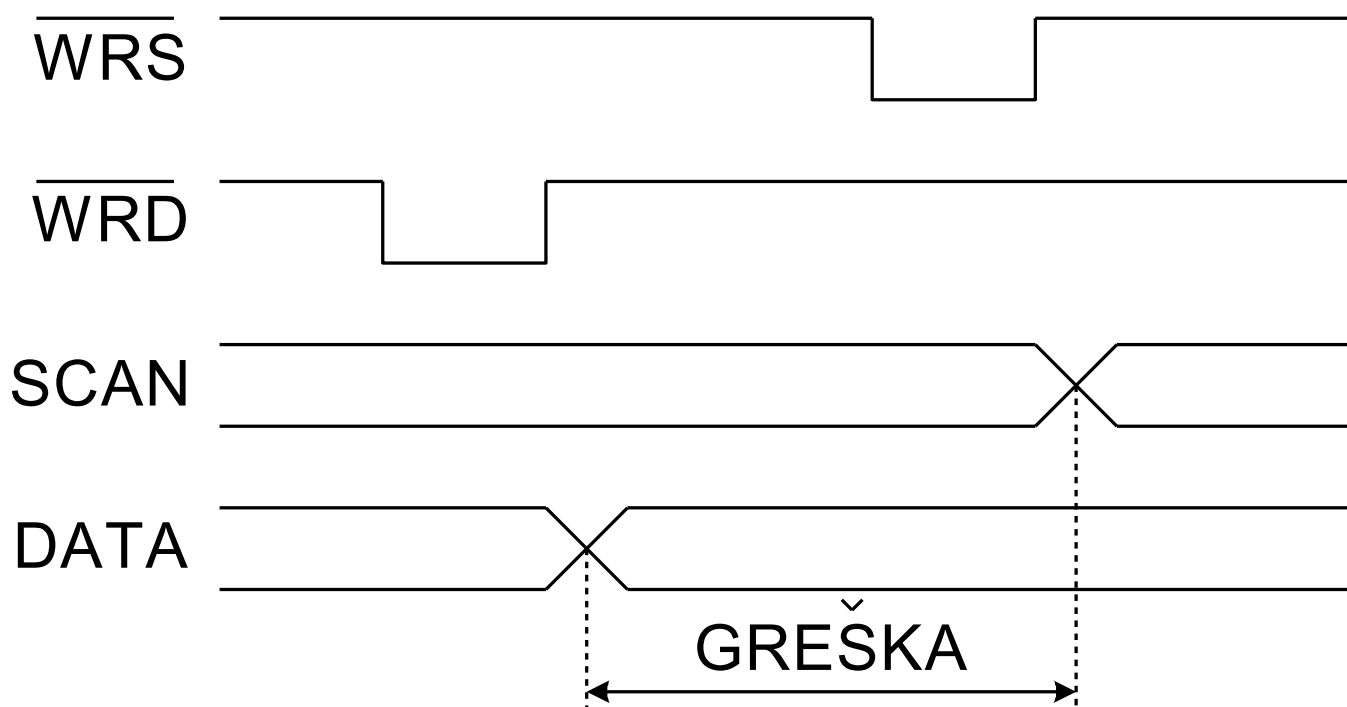
SKANIRANJE MULTIPLEKSIRANOG LED DISPLEJA



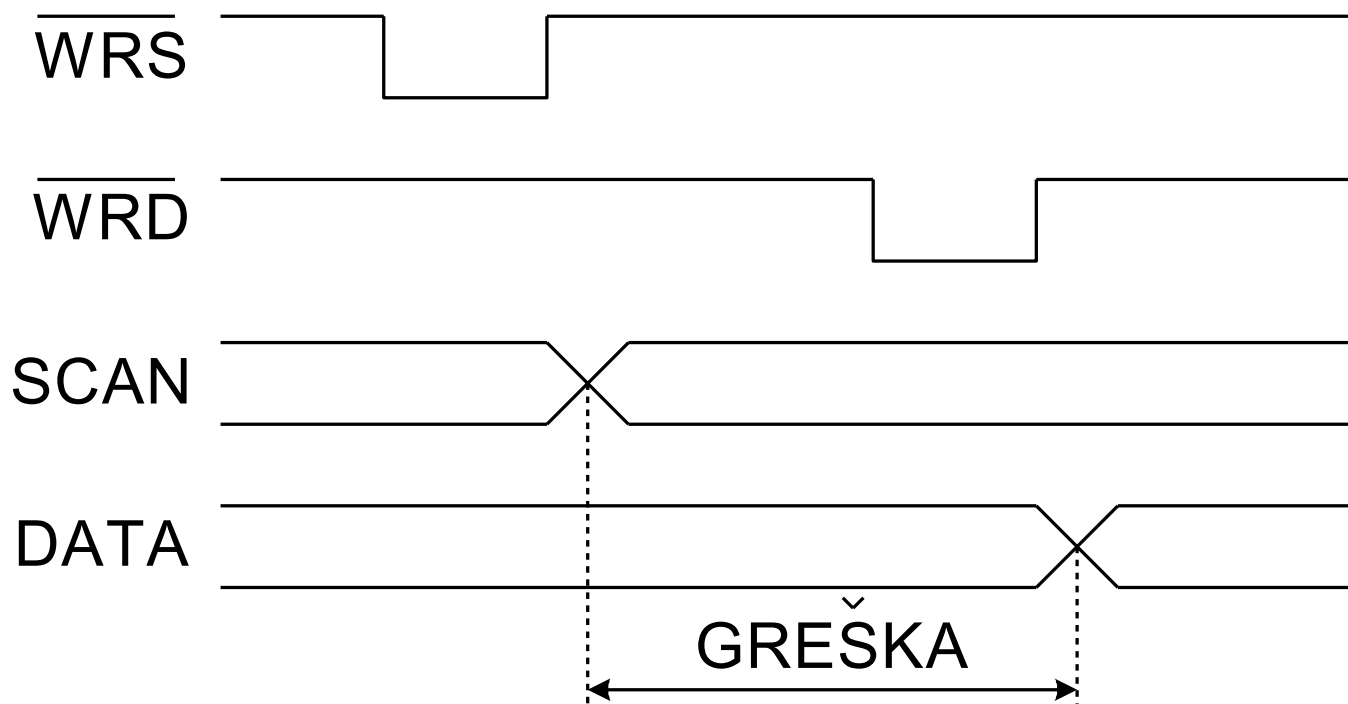
PRAVILAN UPIS U MULTIPLEKSIRANI LED DISPLEJ



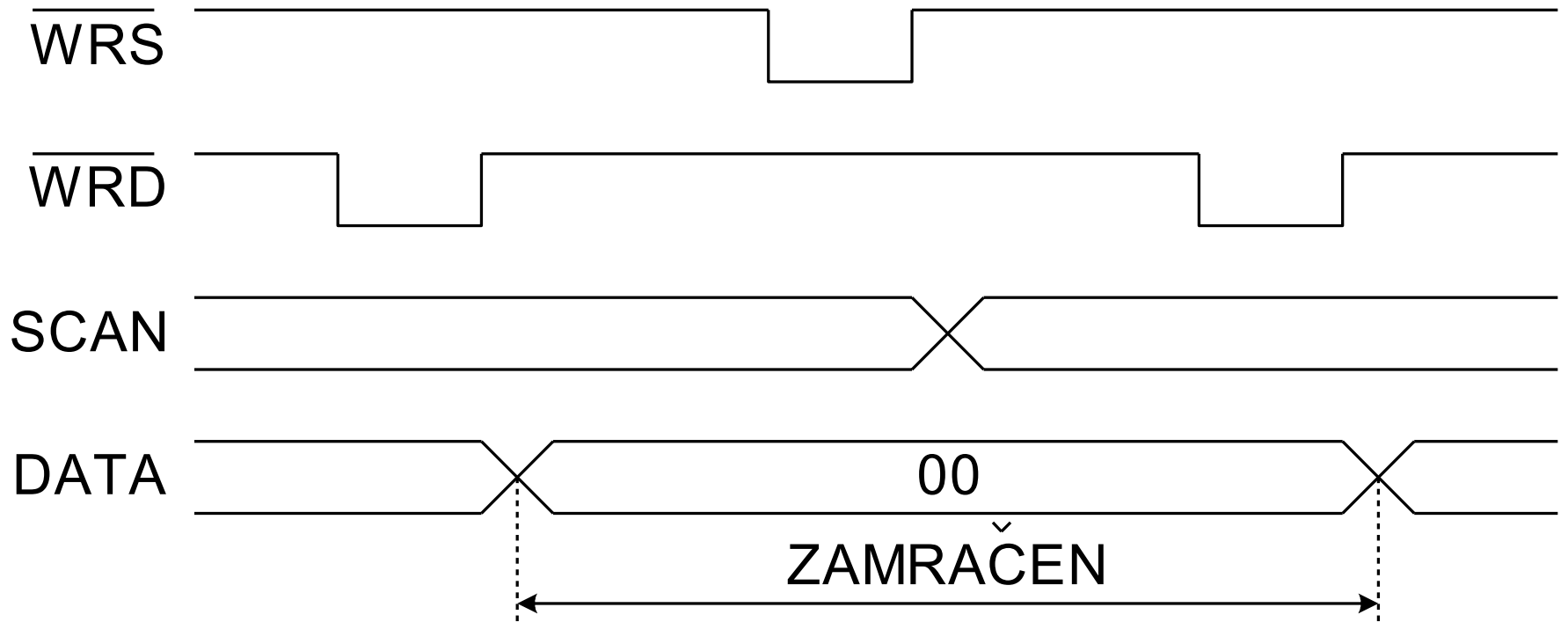
POGREŠAN UPIS U MULTIPLEKSIRANI LED DISPLAY



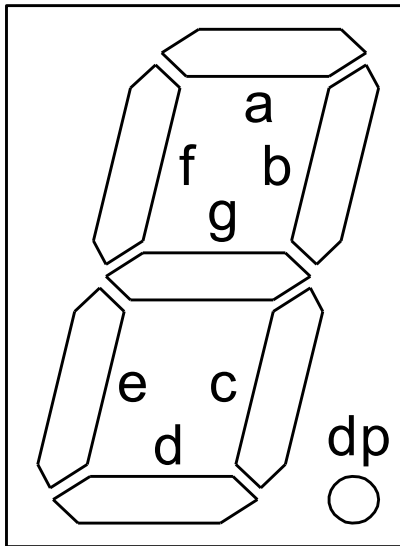
POGREŠAN UPIS U MULTIPLEKSIRANI LED DISPLAY



PRAVILAN UPIS U MULTIPLEKSIRANI LED DISPLEJ



DEFINICIONA TABELA ZA 10 CIFARA



a)

	g	f	e	d	c	b	a	
X	1	1	0	1	1	1	1	9
		•		•		•		
X	0	0	0	0	1	1	0	1
X	0	1	1	1	1	1	1	0

b)

ALGORITAM ZA SKANIRANJE

