

### ПРИМЕРЫ АНАЛОГОВЫХ СИГНАТУР

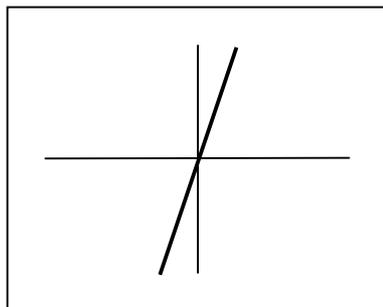
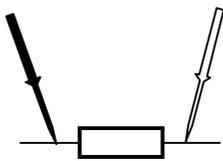
В данном приложении представлении сигнатуры электрорадиоэлементов (ЭРЭ), изготовленных на разных предприятиях-изготовителях.

Мы не можем гарантировать полного совпадения данных сигнатур с теми, которые будут получены Вами, что объясняется рядом причин, например, различием в используемых технологиях изготовления ЭРЭ.

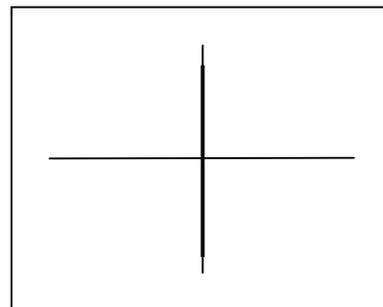
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| Резистор                 | 1  |
| Конденсатор/резистор     | 4  |
| Диод                     | 7  |
| Диод/резистор            | 9  |
| Стабилитрон              | 10 |
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| p-n-p транзистор         | 14 |
| Полевой транзистор       | 15 |
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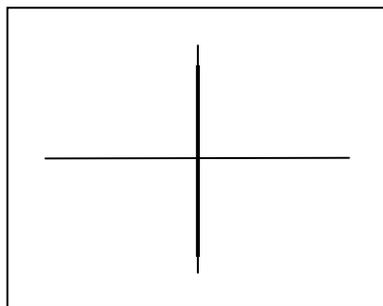
Резистор 10 Ом  
Частота 100 Гц



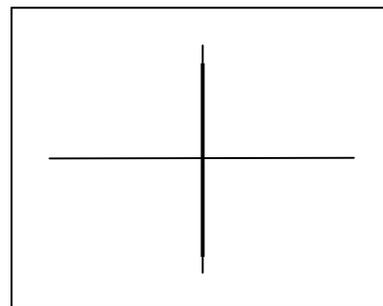
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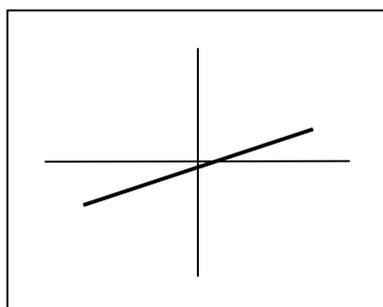
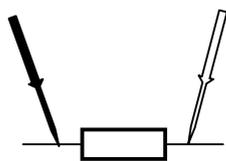


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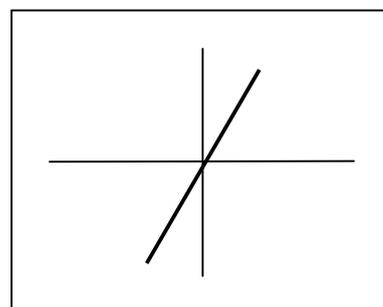


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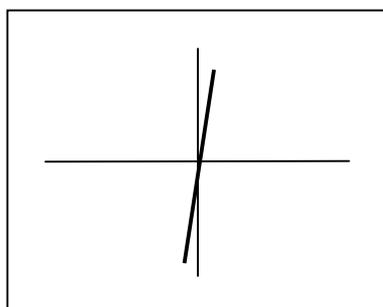
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Частота 100 Гц



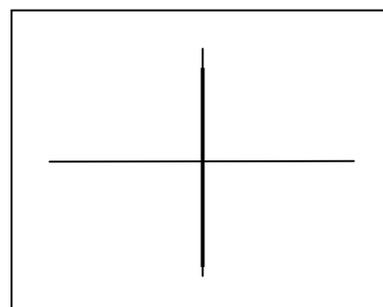
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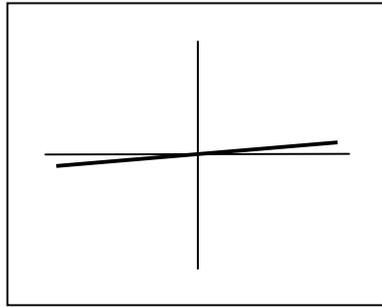
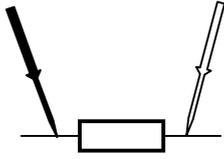


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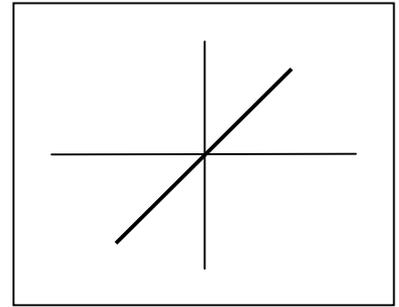


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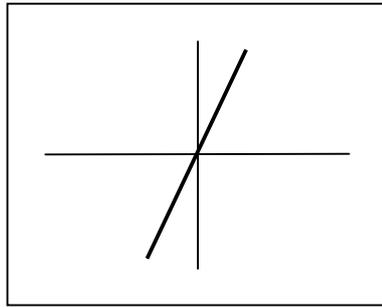
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Частота 100 Гц



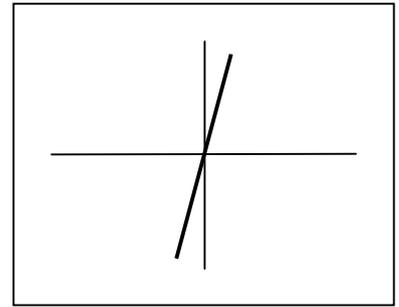
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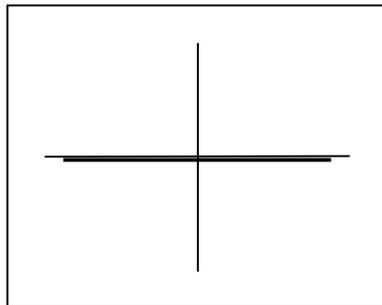
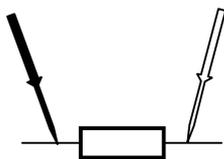


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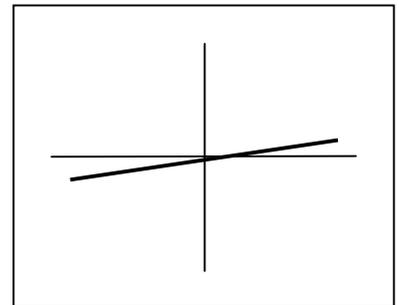


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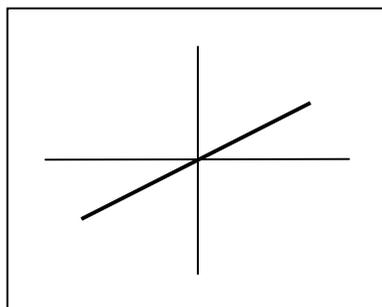
Резистор 43 кОм  
Частота 100 Гц



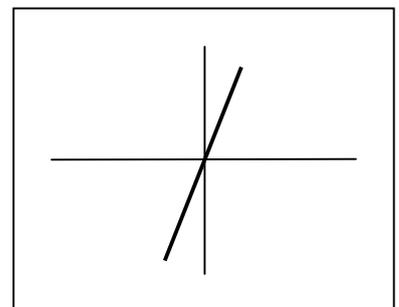
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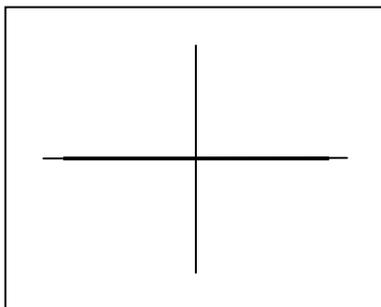
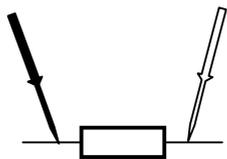


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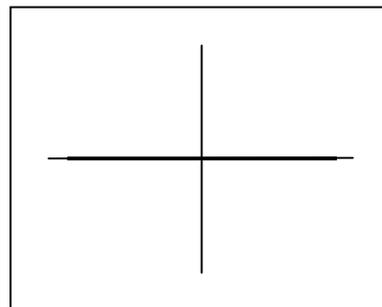


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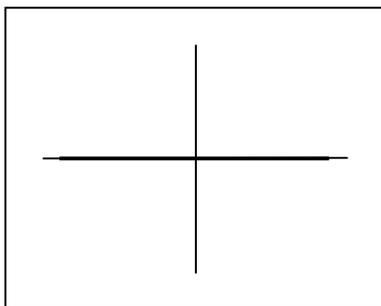
Резистор 430 кОм  
Частота 100 Гц



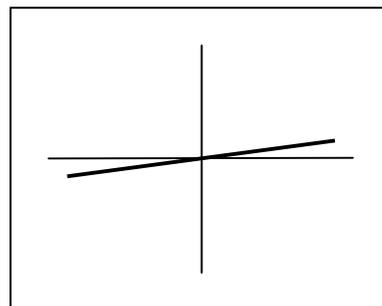
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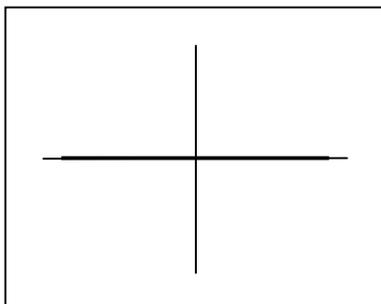
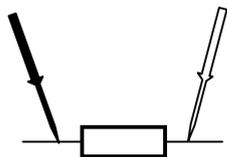


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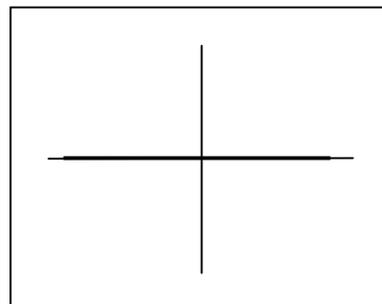


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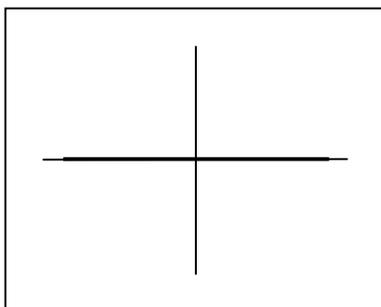
Резистор 2 мОм  
Частота 100 Гц



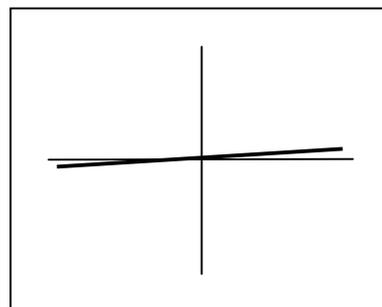
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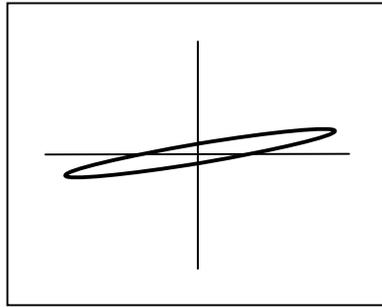
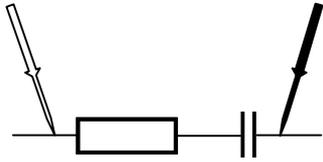


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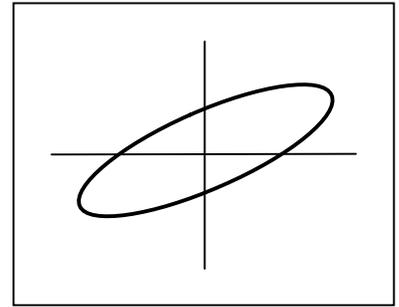


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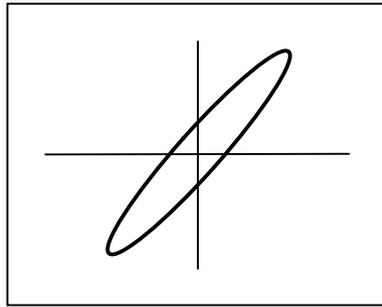
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 Последовательное  
 соединение  
 Частота 1кГц



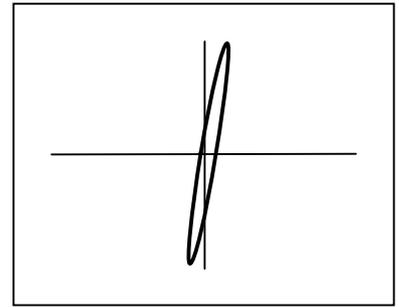
LOG



LOW

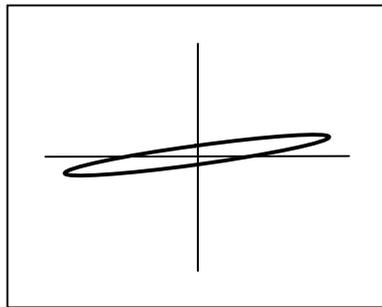
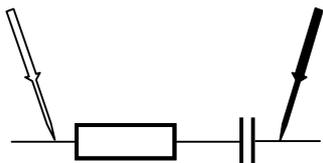


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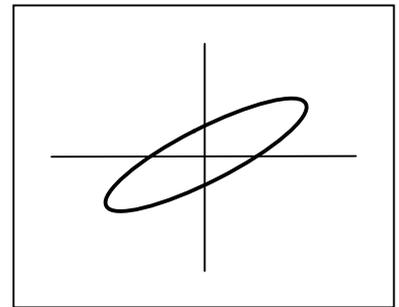


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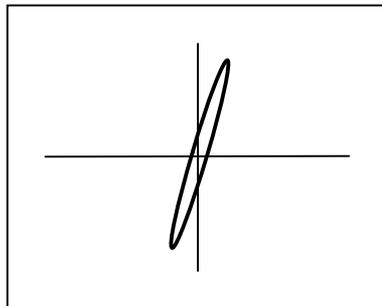
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 Резистор 910 Ом  
 Последовательное  
 соединение  
 Частота 2кГц



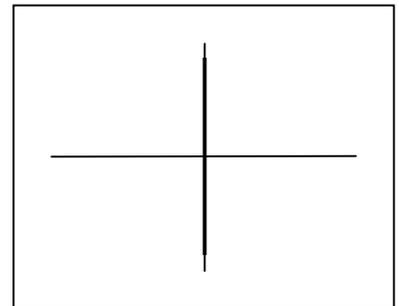
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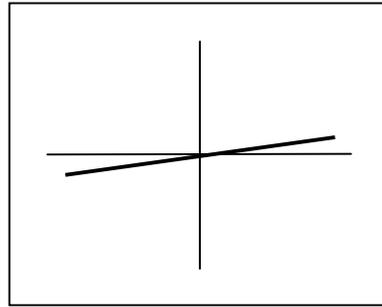
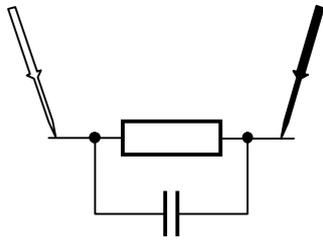


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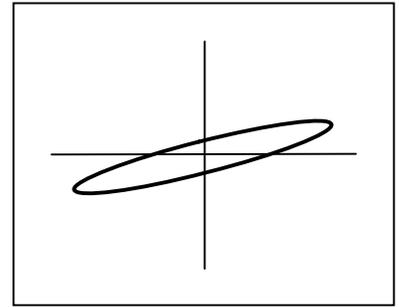


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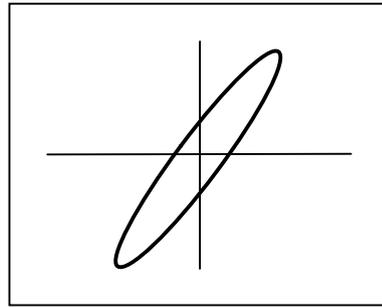
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 Резистор 3,3 кОм  
 Параллельное  
 соединение  
 Частота 50 Гц



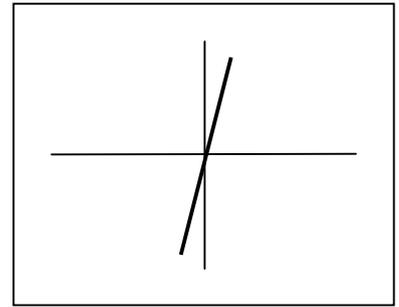
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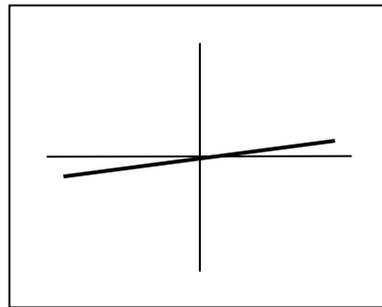
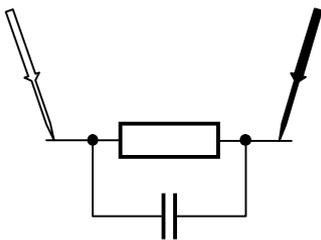


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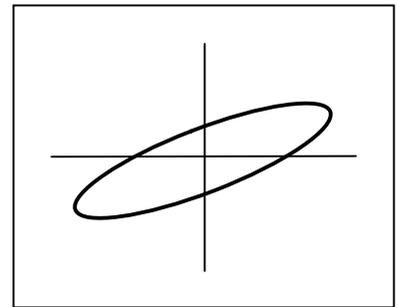


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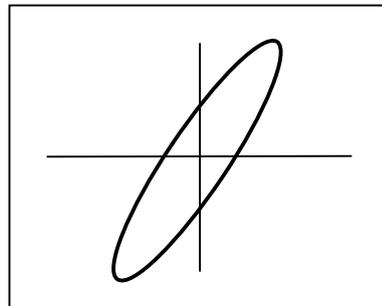
Конденсатор 0,1 мкФ  
 Резистор 3,3 кОм  
 Параллельное  
 соединение  
 Частота 100 Гц



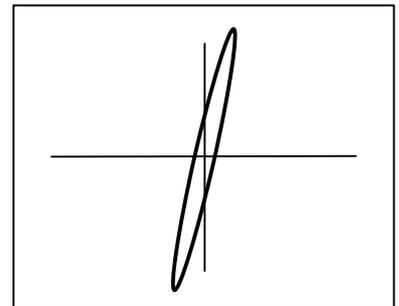
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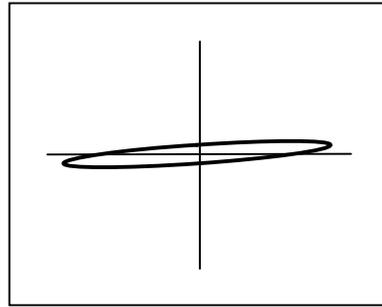
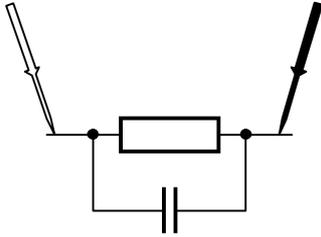


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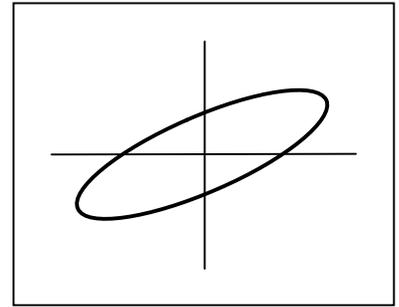


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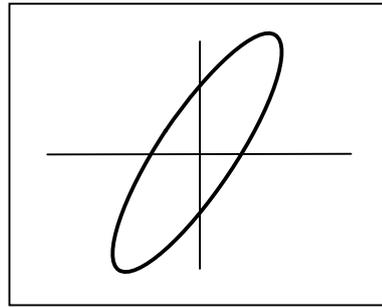
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 Параллельное  
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 Частота 500 Гц



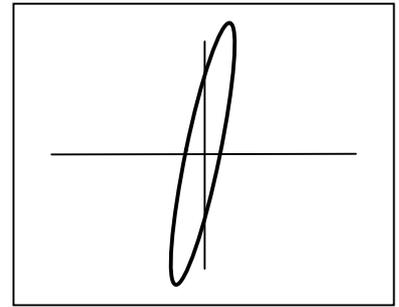
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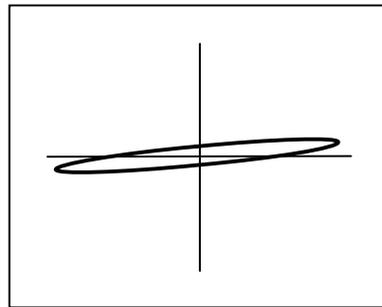
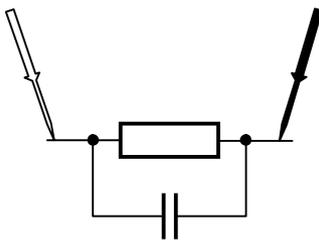


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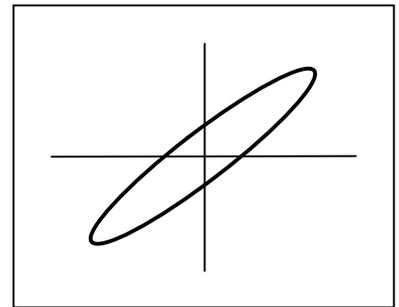


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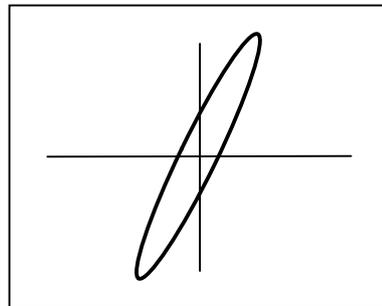
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 Параллельное  
 соединение  
 Частота 1 кГц



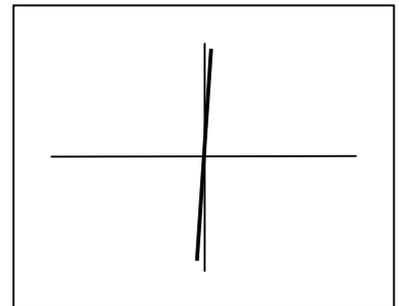
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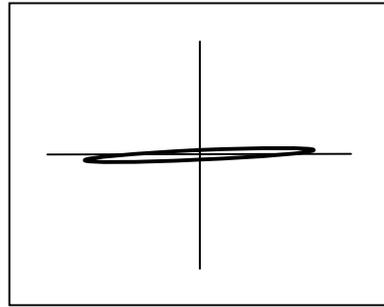
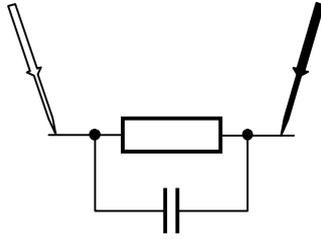


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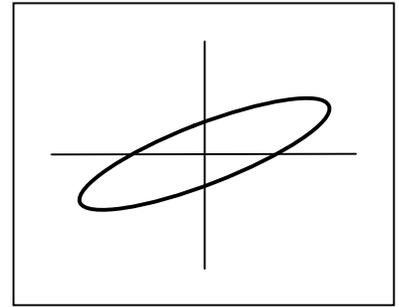


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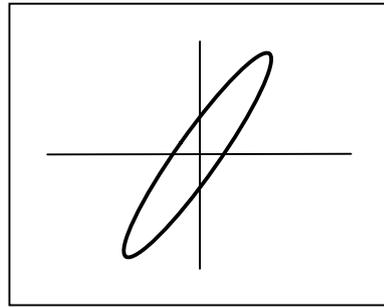
Конденсатор 0,1 мкФ  
 Резистор 3,3 кОм  
 Параллельное  
 соединение  
 Частота 2 кГц



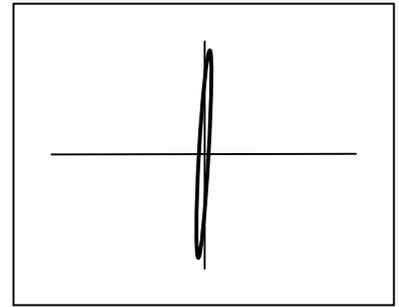
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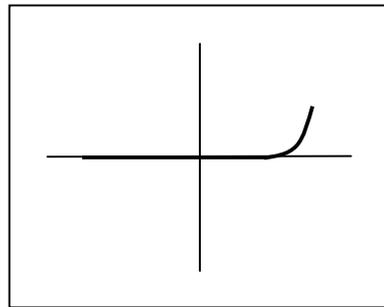
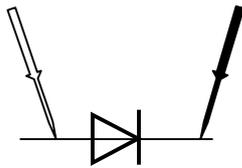


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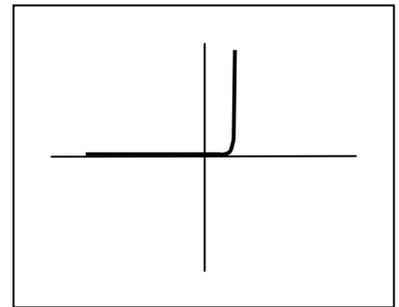


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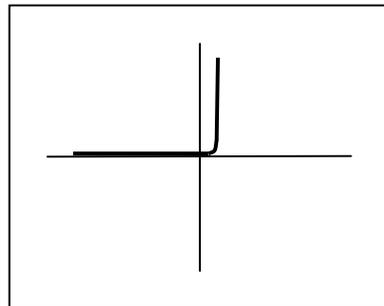
Диод 1N4148  
 Частота 50 Гц



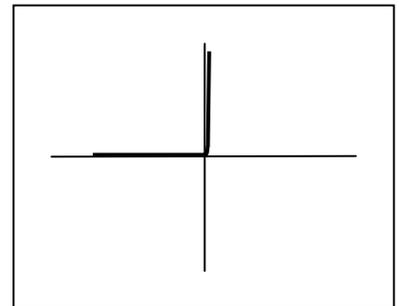
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LOG

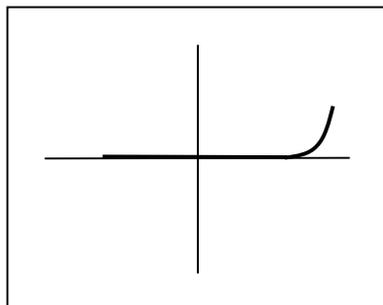
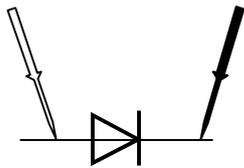


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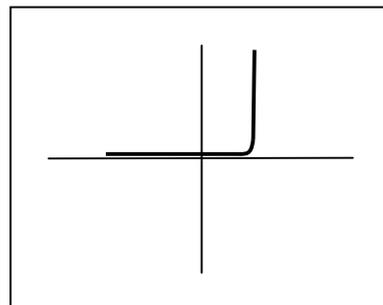


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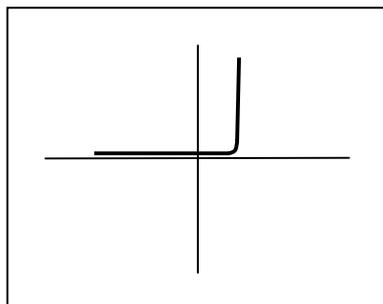
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Частота 50Гц



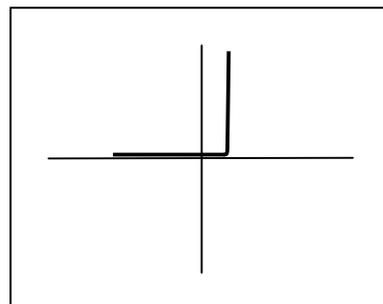
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LOG

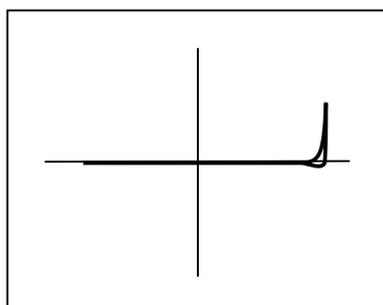
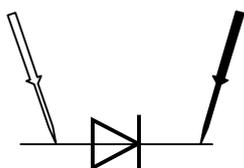


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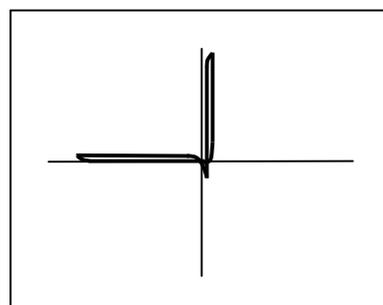


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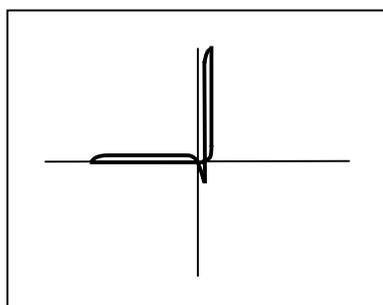
Диод 1N4007  
Частота 2 кГц



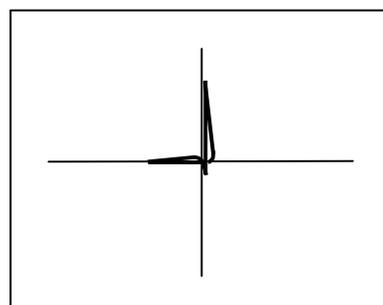
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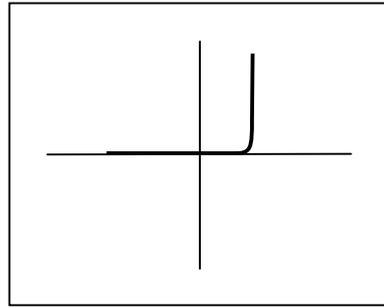
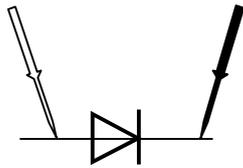


LOW

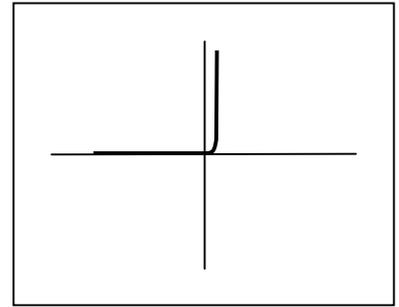


MED

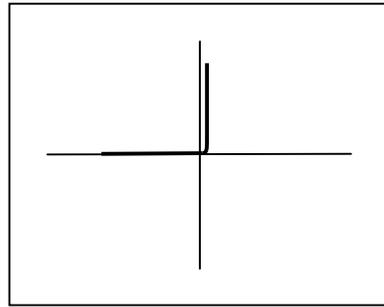
Диод Шотки  
1N5817  
Частота 50 Гц



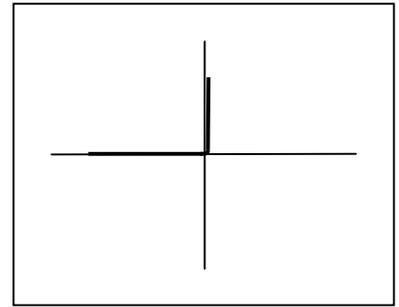
MIN



LOG

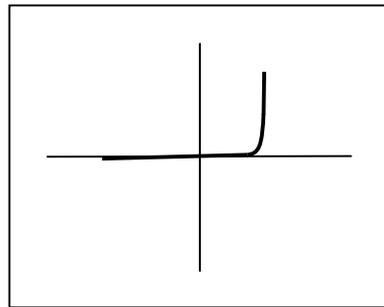
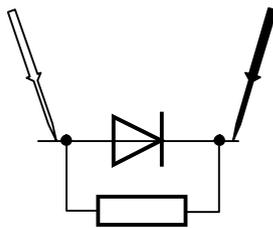


LOW

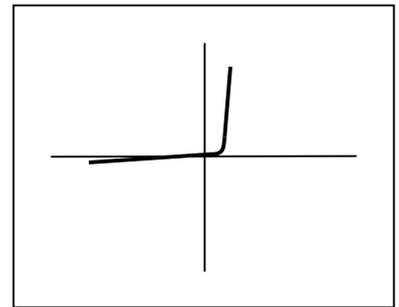


MED

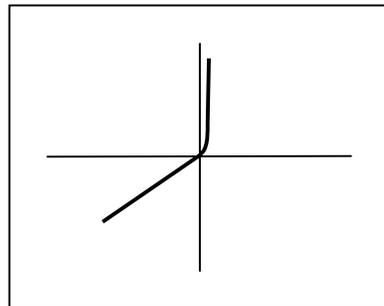
Диод 1N4148  
Резистор 1 кОм  
Параллельное  
соединение  
Частота 50 Гц



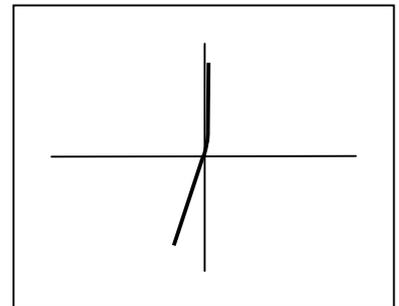
MIN



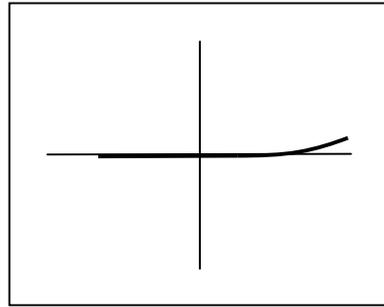
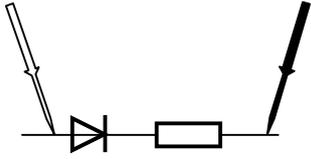
LOG



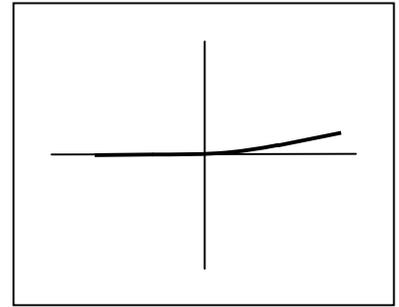
LOW



MED

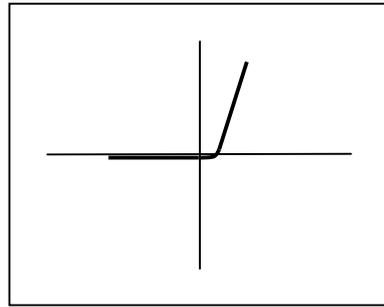


MIN

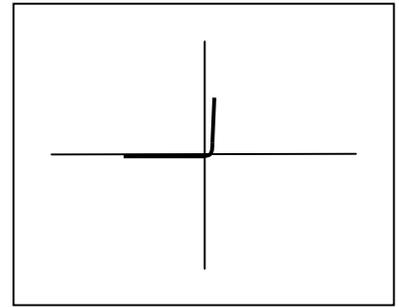


LOG

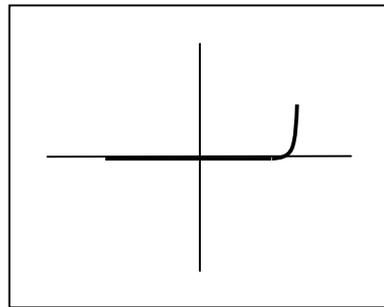
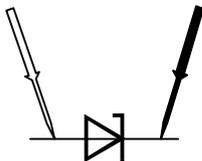
Диод 1N4148  
 Резистор 1 кОм  
 Последовательное  
 соединение  
 Частота 50 Гц



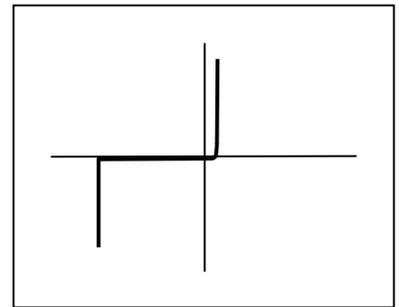
LOW



MED

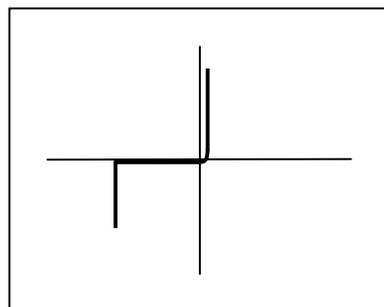


MIN

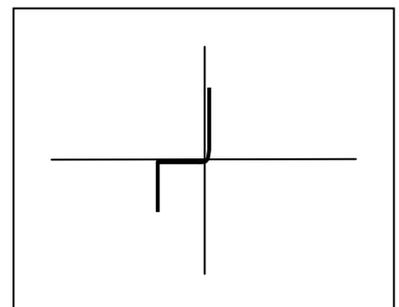


LOG

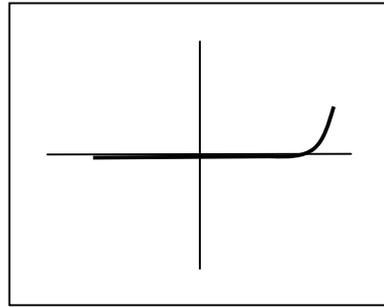
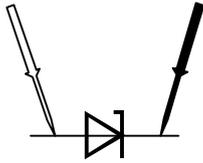
Стабилитрон 1N4734A  
 5,6 В  
 Частота 50 Гц



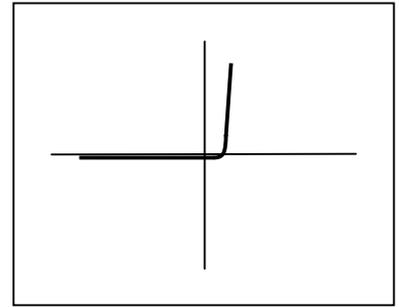
LOW



MED

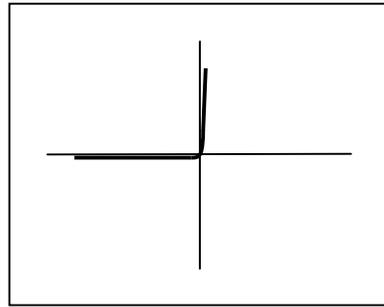


MIN

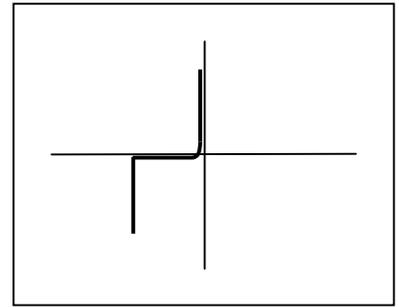


LOG

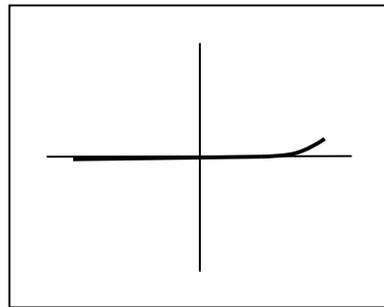
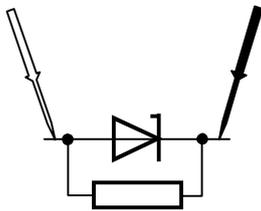
Стабилитрон 1N4741  
12 В  
Частота 50 Гц



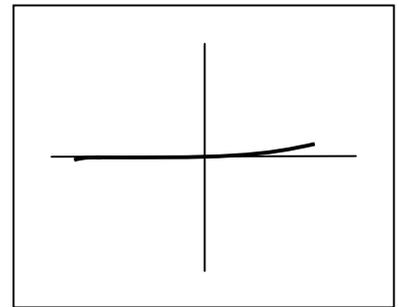
LOW



MED

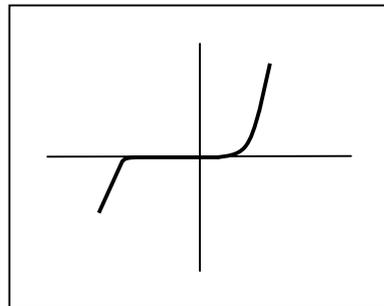


MIN

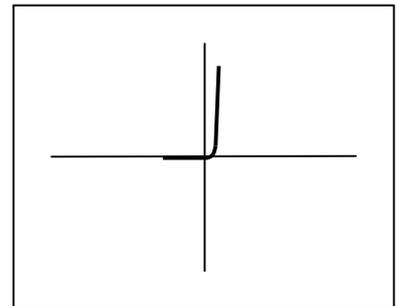


LOG

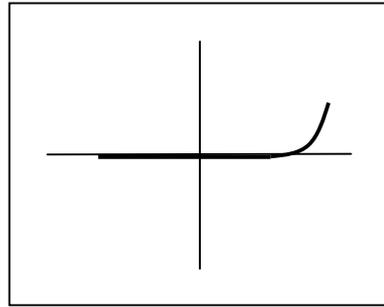
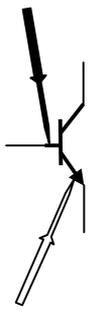
Стабилитрон BZ55  
5,6 В  
резистор 1 кОм  
параллельное  
соединение  
Частота 50 Гц



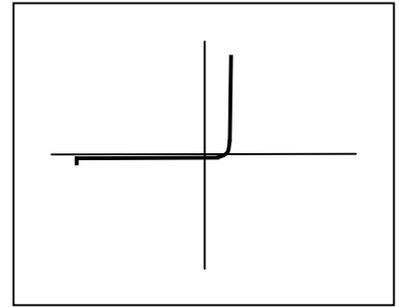
LOW



MED

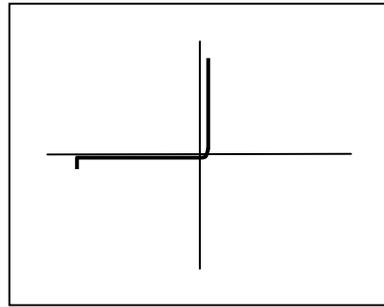


**MIN**

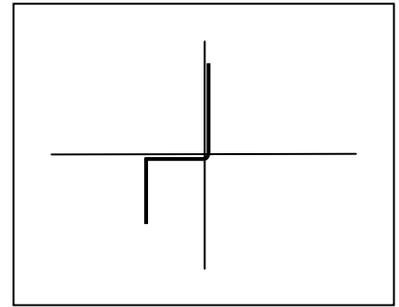


**LOG**

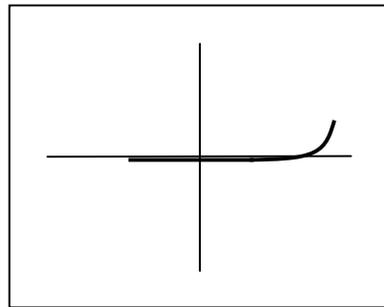
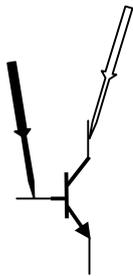
Транзистор С8050  
переход  
база-эмиттер  
Частота 50 Гц



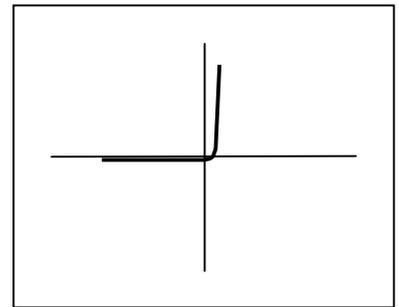
**LOW**



**MED**

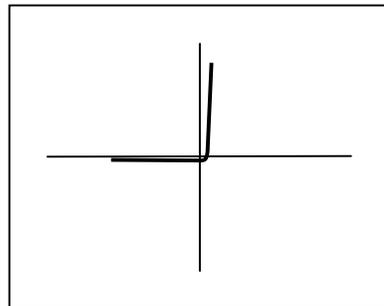


**MIN**

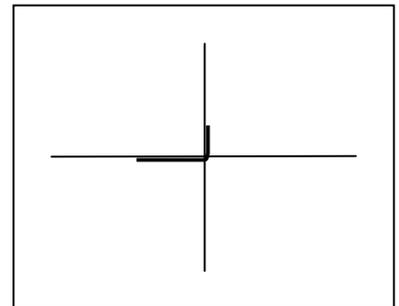


**LOG**

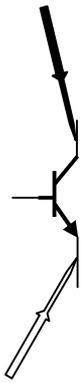
Транзистор С8050  
переход  
база-коллектор  
Частота 50 Гц



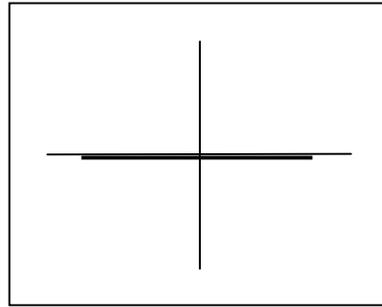
**LOW**



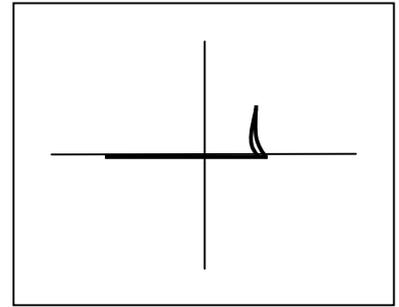
**MED**



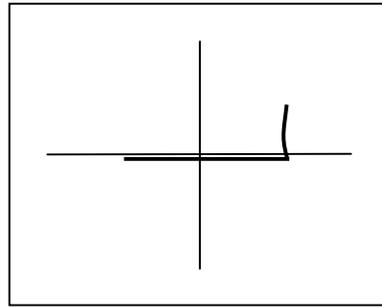
Транзистор С8050  
переход  
база-эмиттер  
Частота 50 Гц



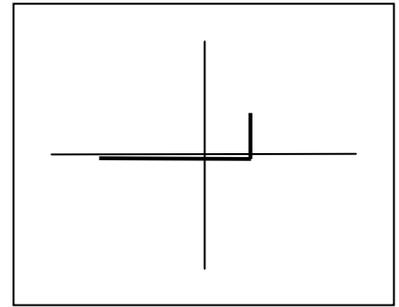
MIN



LOG

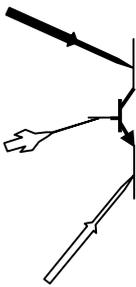


LOW

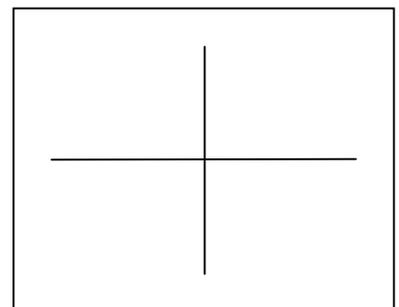
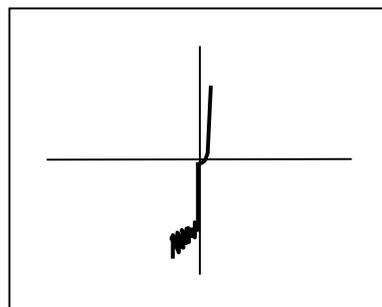
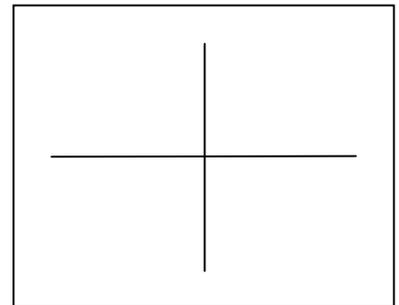
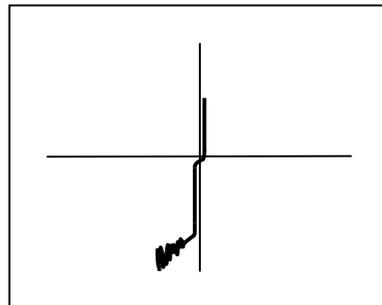


MED

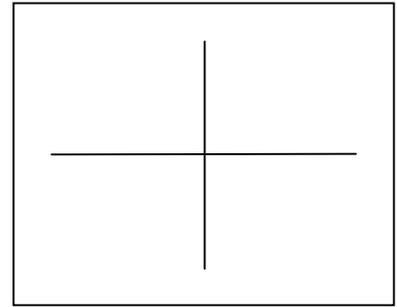
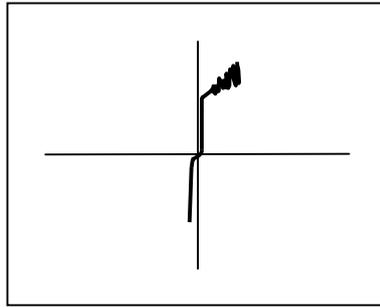
Транзистор С8050  
DC+ подается на базу  
Уровень 0  
Частота 50 Гц  
Режим LOG



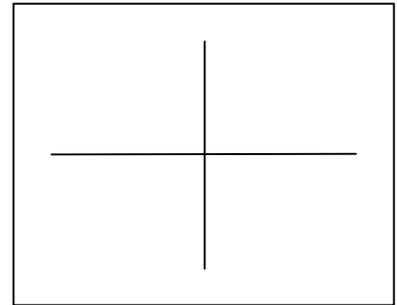
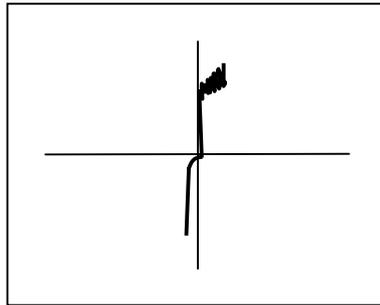
Транзистор С8050  
P1+ подается на базу  
Уровень 0,7 В  
Частота 50 Гц  
Режим LOW



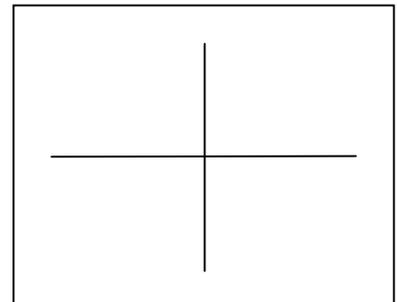
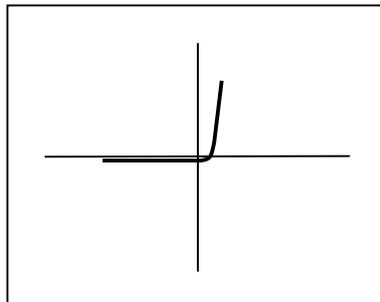
Транзистор C8550  
DC+ подается на базу  
Level 0 В  
Частота 50 Hz  
Режим LOG



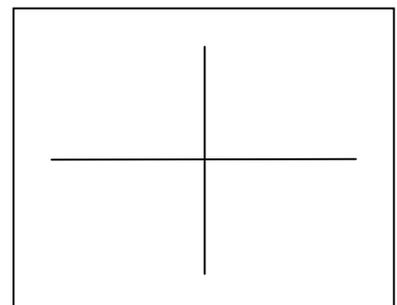
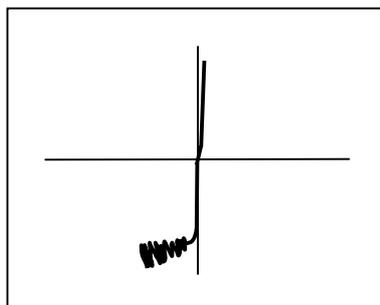
Транзистор C8550  
P1+ подается на базу  
Level 0,7 В  
Частота 50 Гц  
Режим LOW



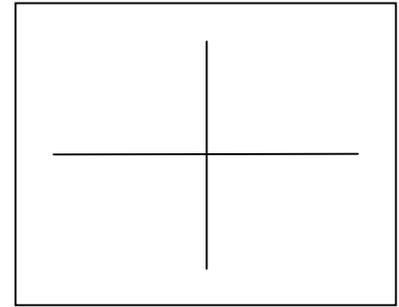
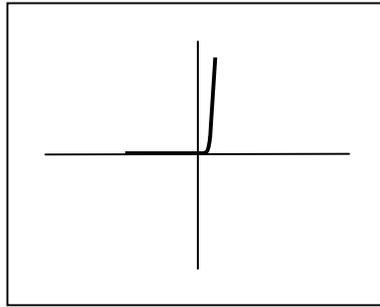
Транзистор BUT 11  
DC+ подается на базу  
Level 0 В  
Частота 50 Гц  
Режим LOG



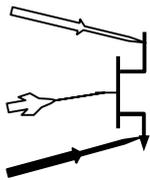
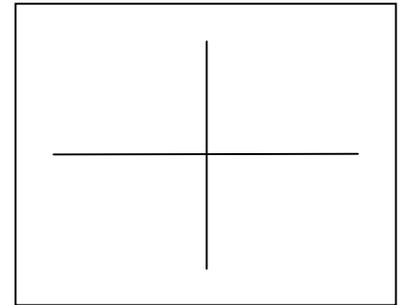
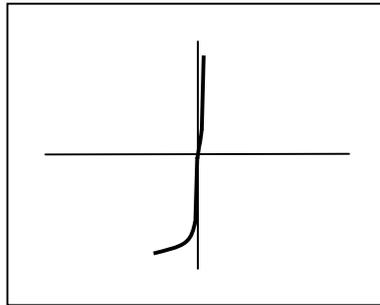
Транзистор BUT 11  
P1+ подается на базу  
Level 0,8 В  
Частота 50 Гц  
Режим LOW



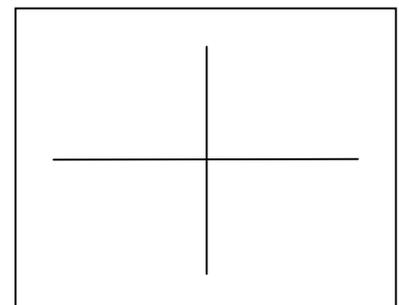
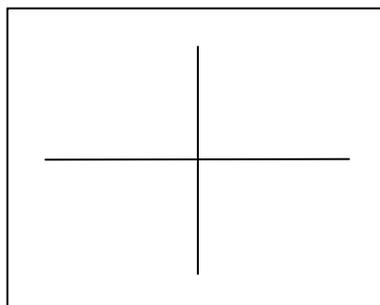
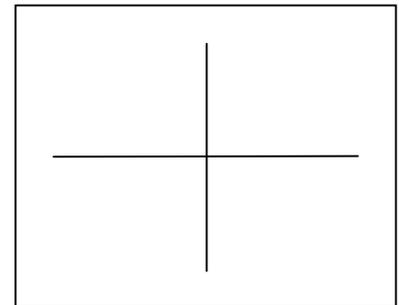
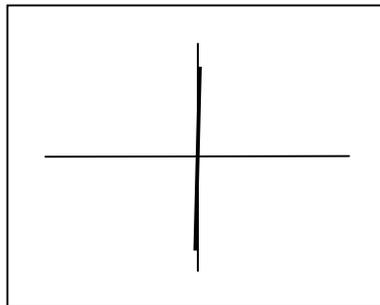
Полевой транзистор  
IRFZ 48  
DC+ подается на  
затвор  
Level 0 В  
Частота 50 Гц  
Режим LOG



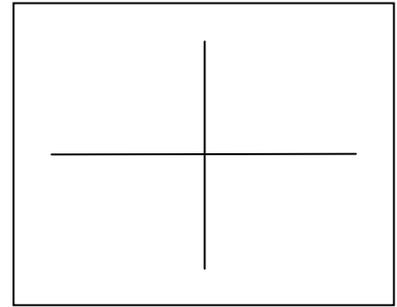
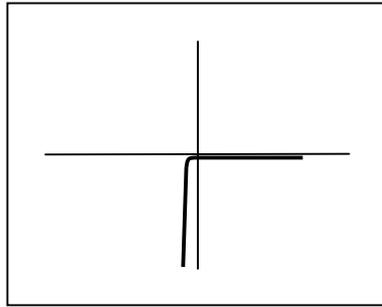
Полевой транзистор  
IRFZ 48  
DC+ подается на  
затвор  
Level 1,7 В  
Частота 50 Гц  
Режим LOG



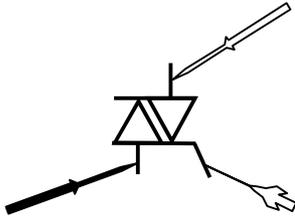
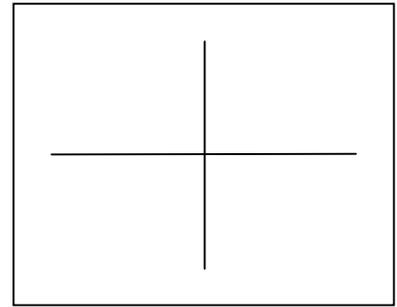
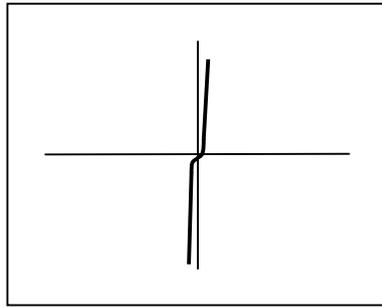
Полевой транзистор  
IRFZ 48  
DC+ подается на  
затвор  
Level 2,4 В  
Частота 50 Гц  
Режим LOG



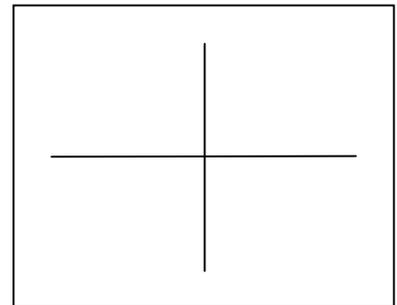
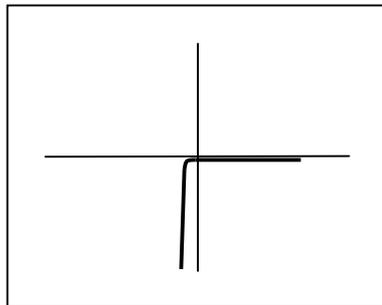
Тиристор BT136  
 DC+ подается на  
 управляющий  
 электрод  
 Level 0,7В  
 Режим LOG



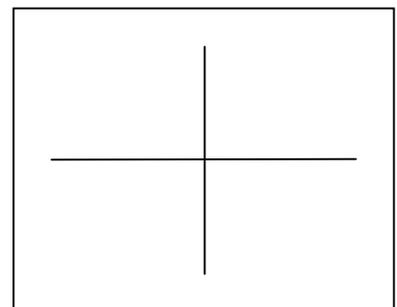
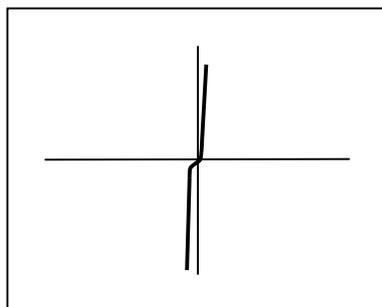
Тиристор BT136  
 DC+ подается на  
 управляющий  
 электрод  
 Level 1,2В  
 Режим LOG



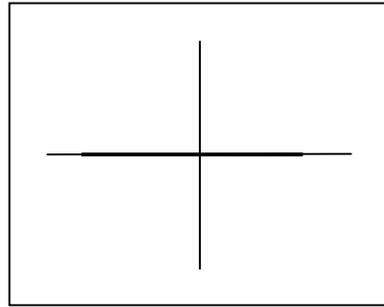
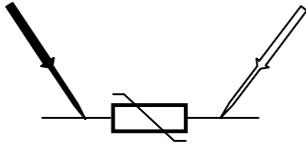
Тиристор BT136  
 DC- подается на  
 управляющий  
 электрод  
 Level -1В  
 Режим LOG



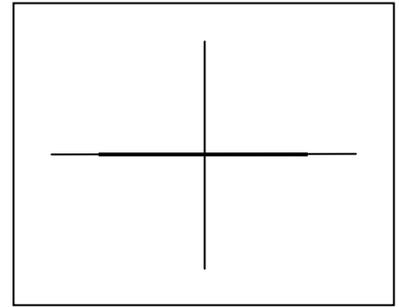
Тиристор BT136  
 DC- подается на  
 управляющий  
 электрод  
 Level -1,5В  
 Режим LOG



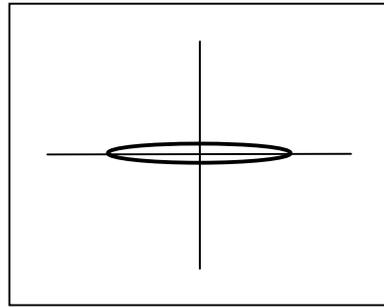
Варистор  
Частота 2кГц



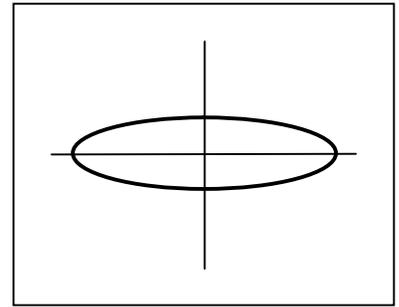
MIN



LOG

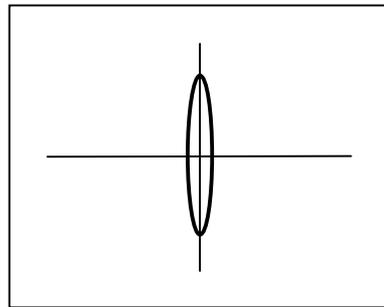
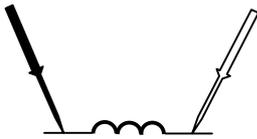


LOW

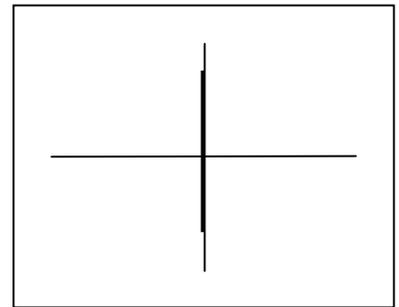


MED

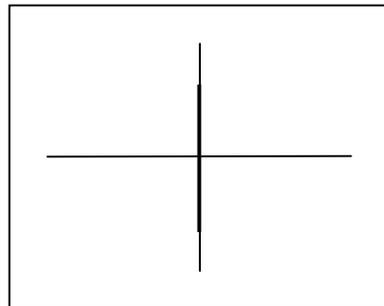
Индуктивность  
470мГн  
Частота 2кГц



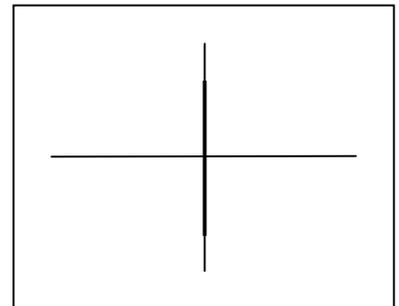
LOG



LOW

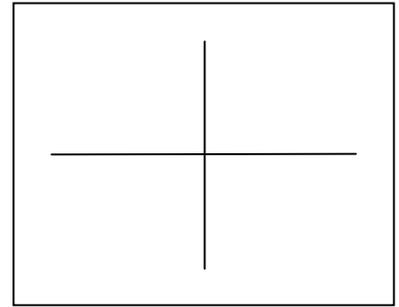
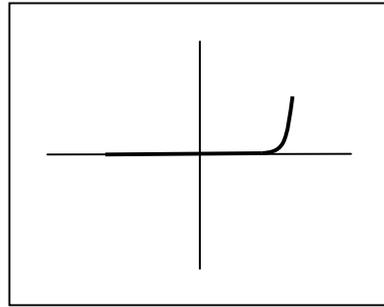
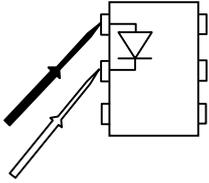


MED

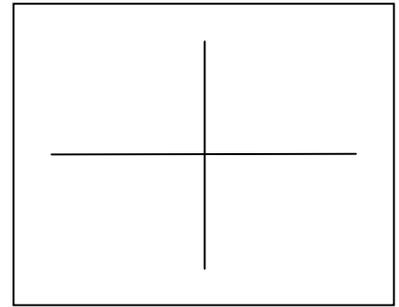
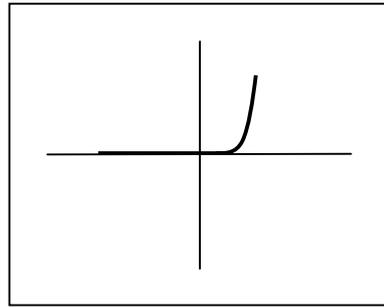
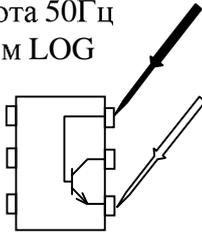


HIGH

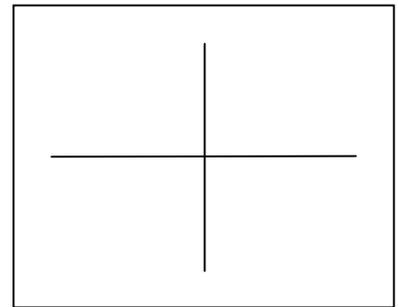
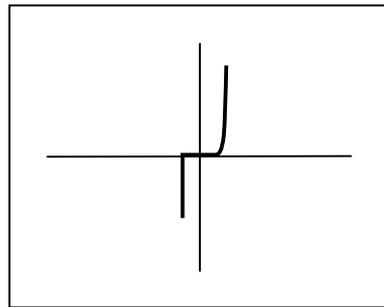
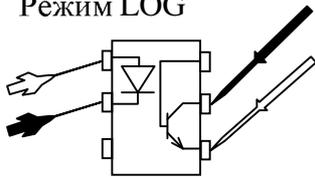
Оптопара LTV4N35  
Частота 50Гц  
Режим LOG



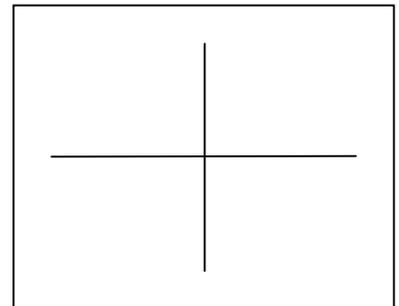
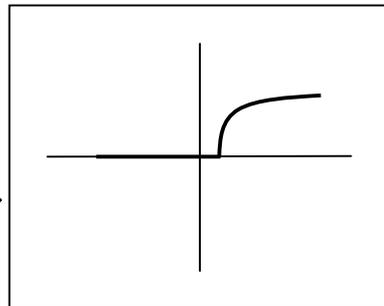
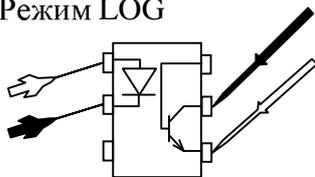
Оптопара LTV4N35  
Частота 50Гц  
Режим LOG



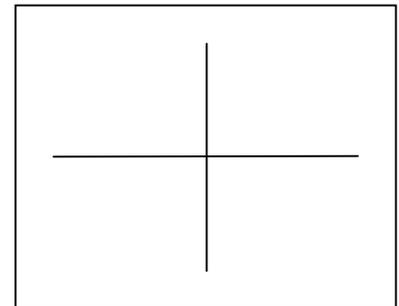
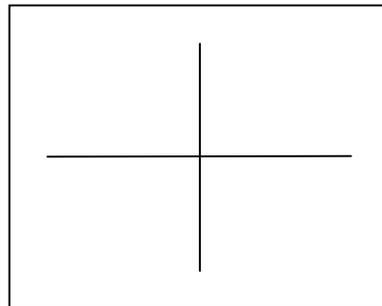
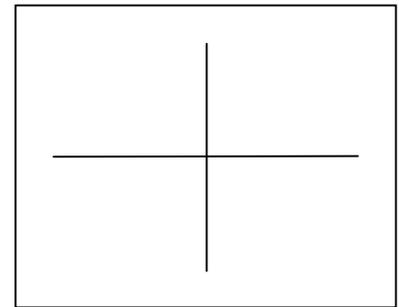
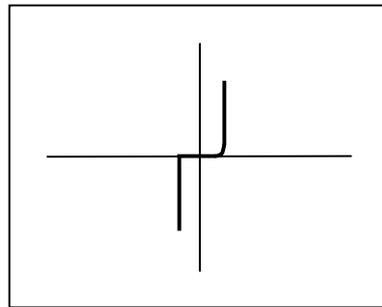
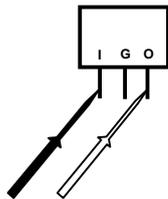
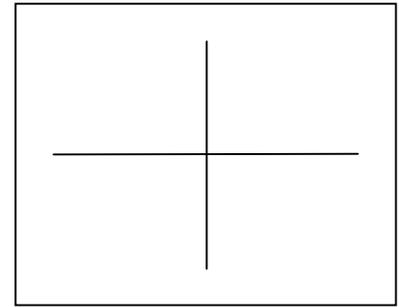
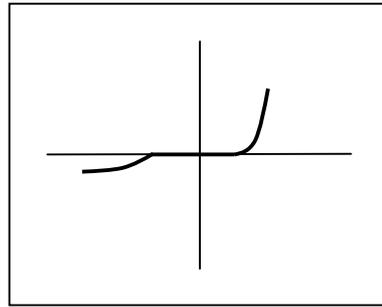
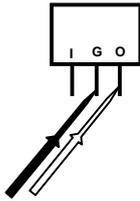
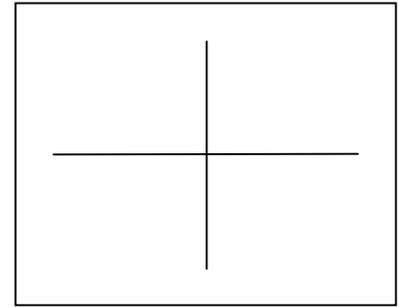
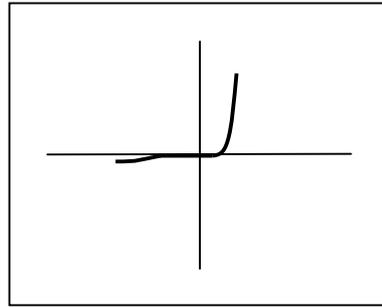
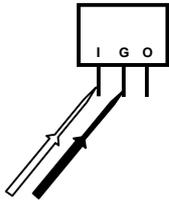
Оптопара LTV4N35  
Частота 50Гц  
Level 1,7В  
Режим LOG



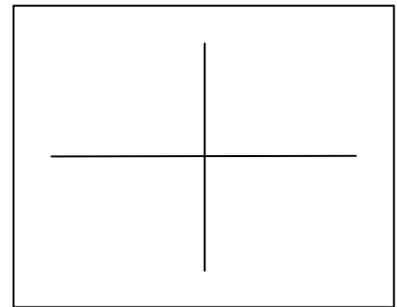
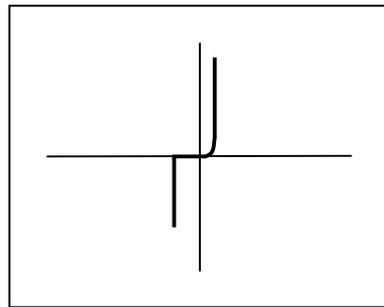
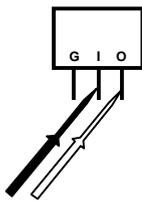
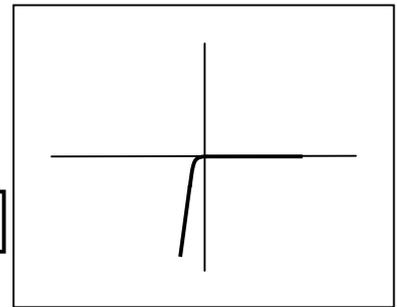
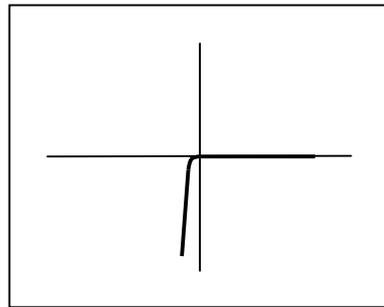
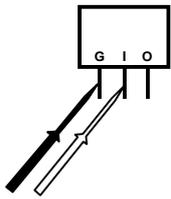
Оптопара LTV4N35  
Частота 50Гц  
Level 2,3 В  
Режим LOG



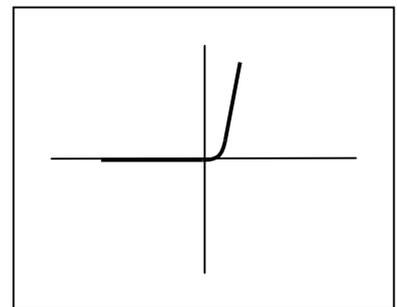
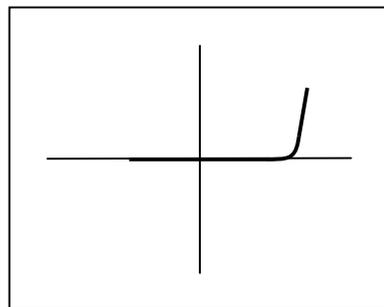
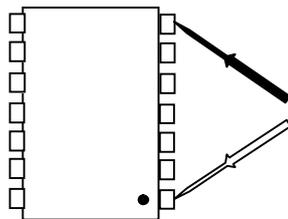
Линейный стабилизатор LM7805  
 Частота 50Гц  
 Режим LOG



Линейный стабилизатор LM7905  
Режим LOG

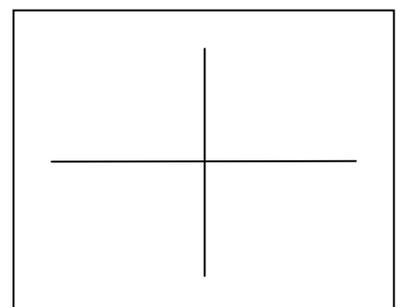
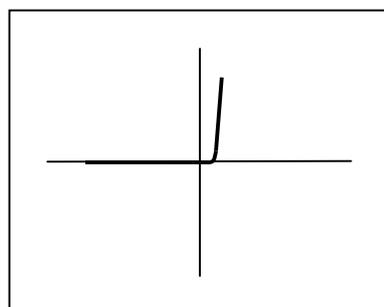


Микросхема 74LS04  
ТТЛ-структура  
вход



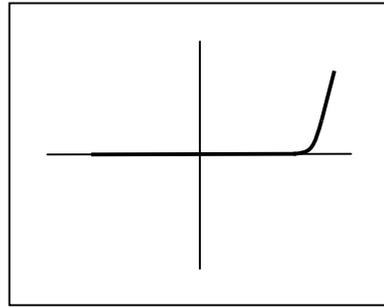
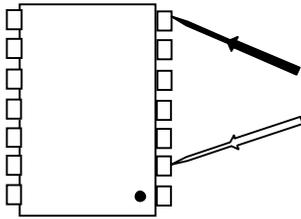
MIN

LOG

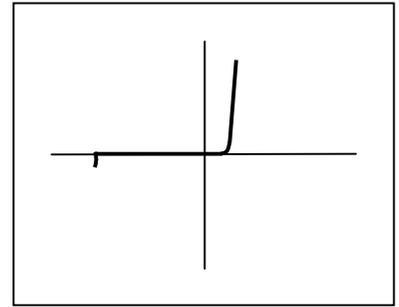


LOW

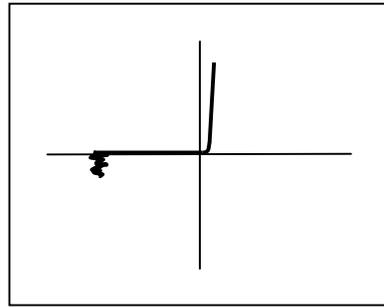
Микросхема 74LS04  
ТТЛ-структура  
ВЫХОД



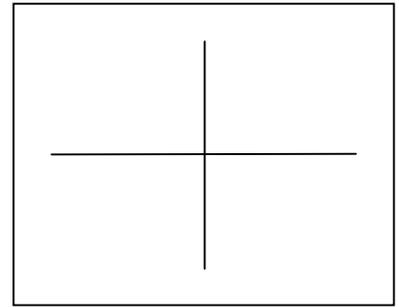
MIN



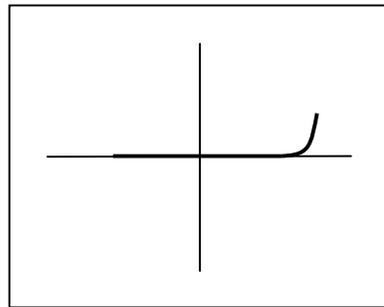
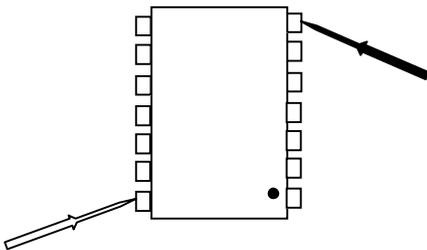
LOG



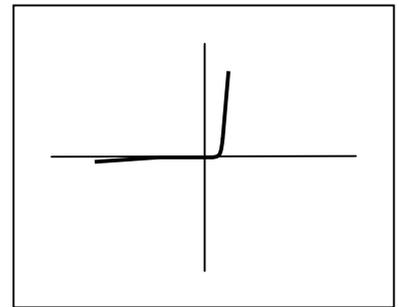
LOW



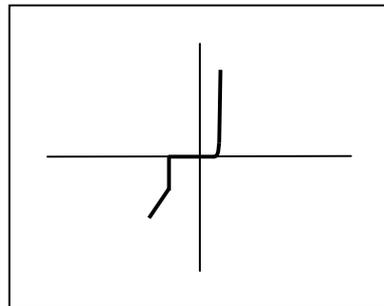
Микросхема 74LS04  
ТТЛ-структура  
питание



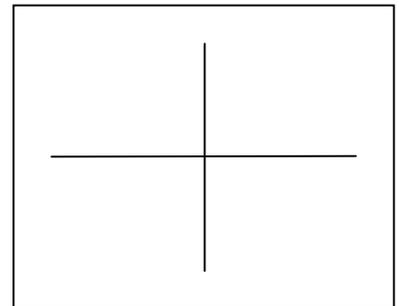
MIN



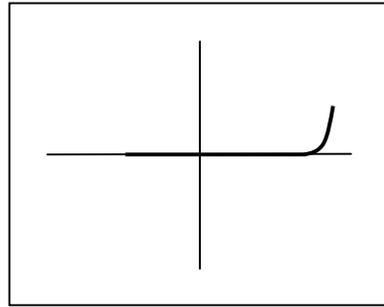
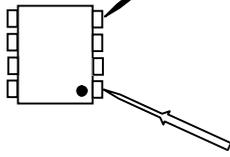
LOG



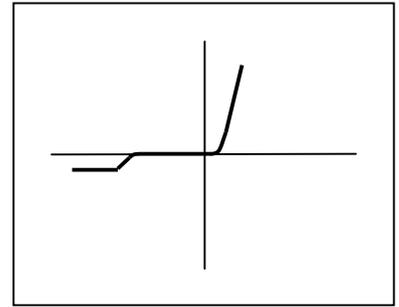
LOW



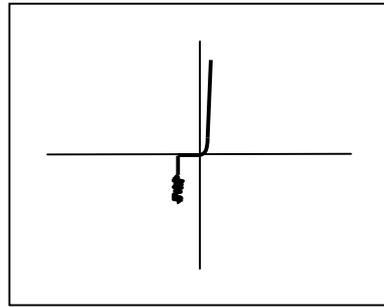
LM358  
Операционный усилитель  
ВХОД



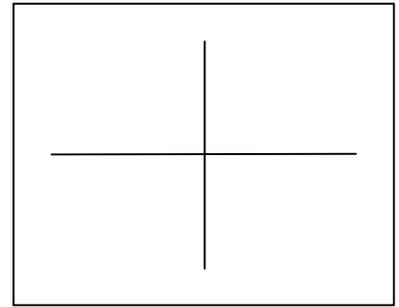
MIN



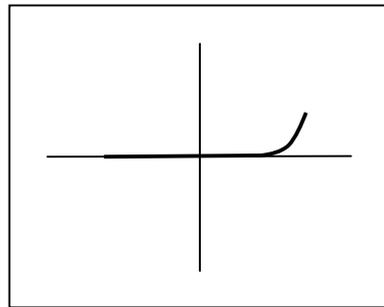
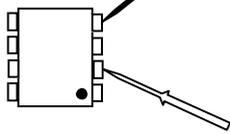
LOG



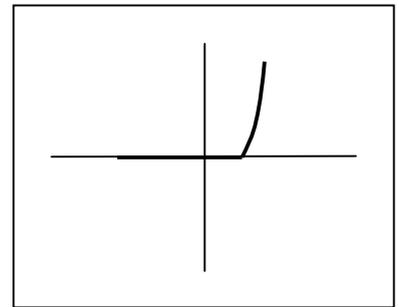
LOW



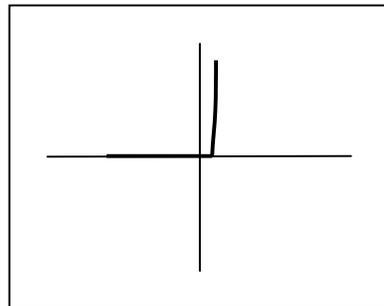
LM358  
Операционный усилитель  
ВЫХОД



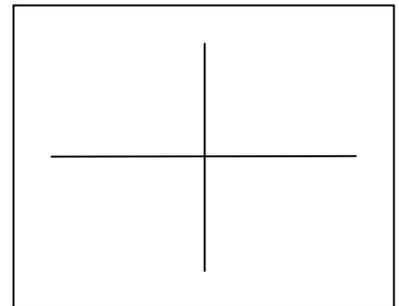
MIN



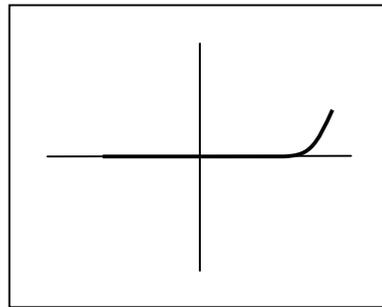
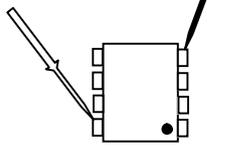
LOG



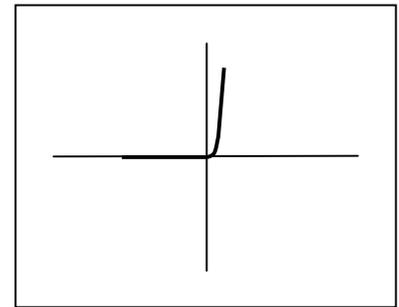
LOW



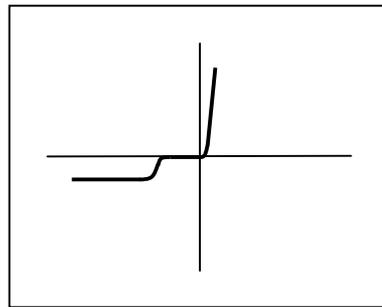
LM358  
Операционный усилитель  
питание



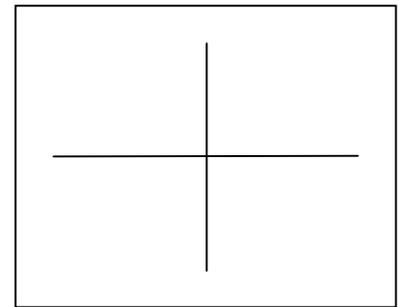
MIN



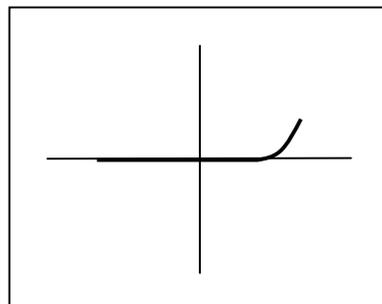
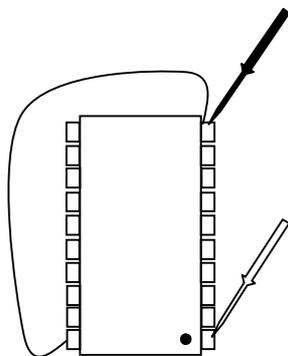
LOG



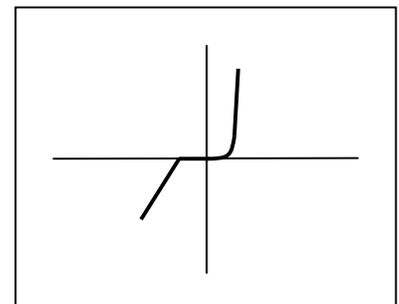
LOW



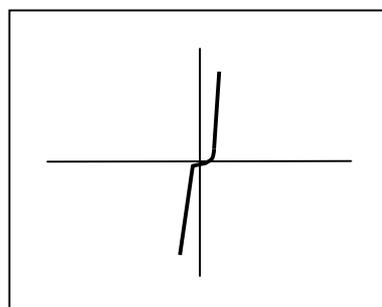
74HC374N  
КМОП-структура  
ВХОД



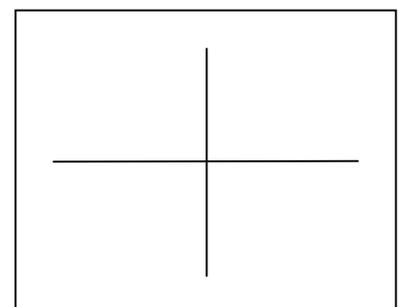
MIN



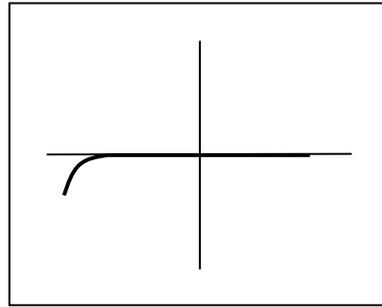
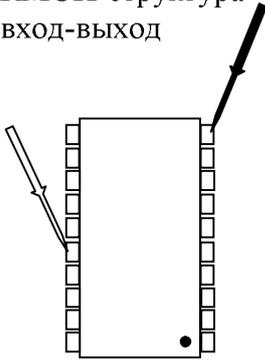
LOG



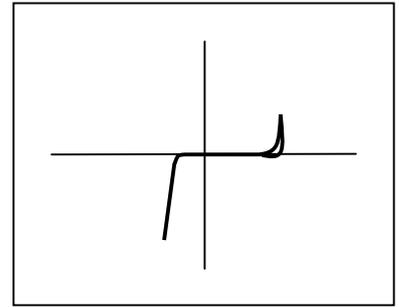
LOW



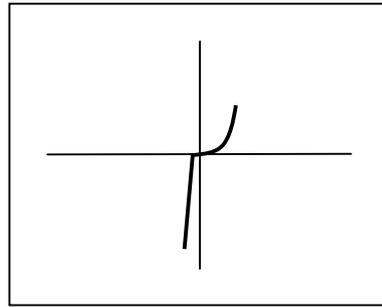
74HC374N  
КМОП-структура  
ВХОД-ВЫХОД



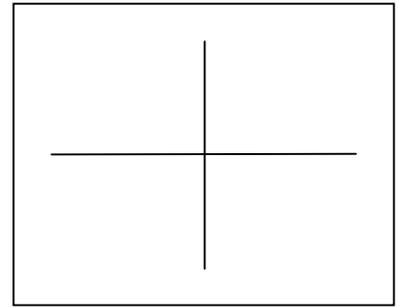
MIN



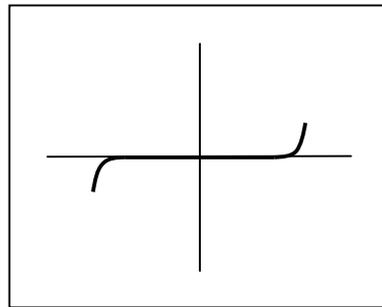
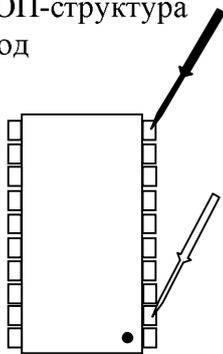
LOG



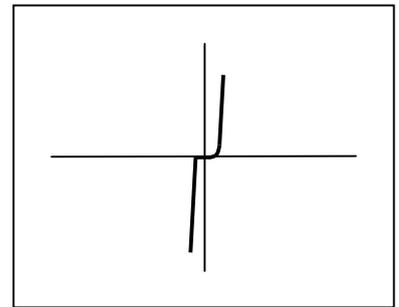
LOW



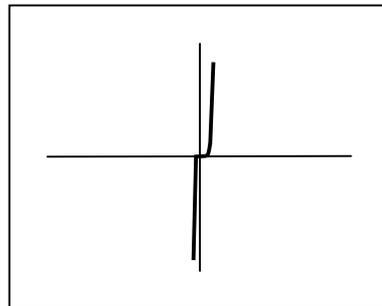
74HC374N  
КМОП-структура  
ВЫХОД



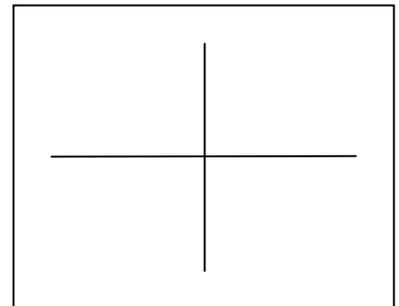
MIN



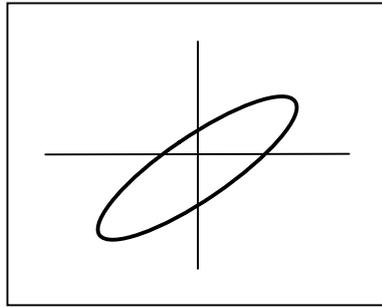
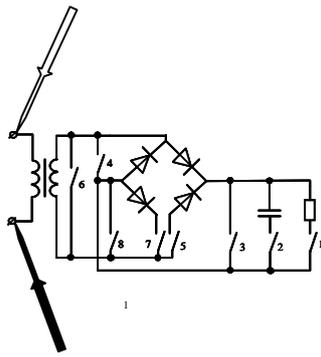
LOG



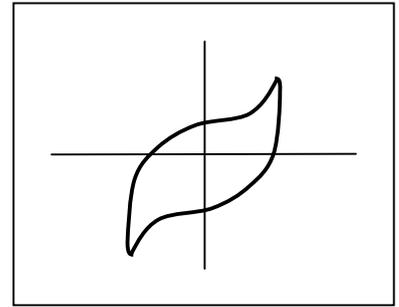
LOW



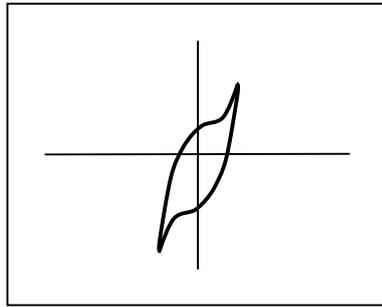
Сх блока питания



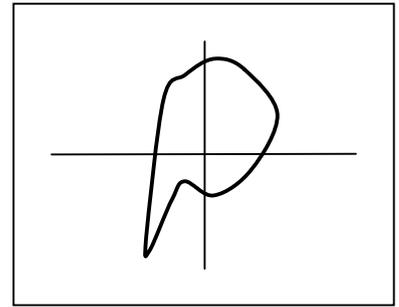
2, 5, 7 – замкн



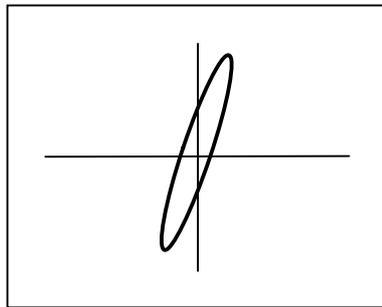
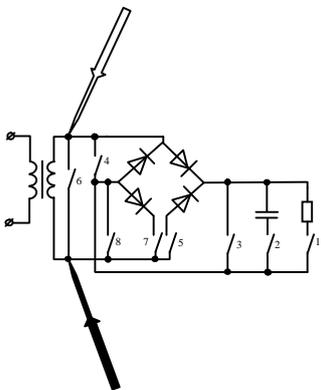
1, 2, 5, 7 – замкн



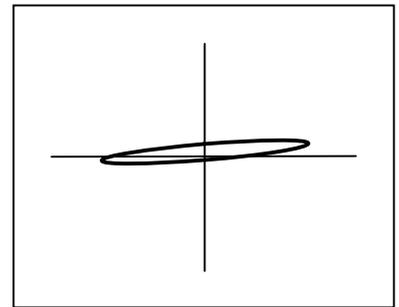
1, 2, 5, 7, 8 – замкн



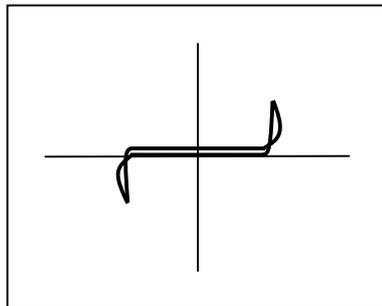
2, 5, 7, 8 – замкн



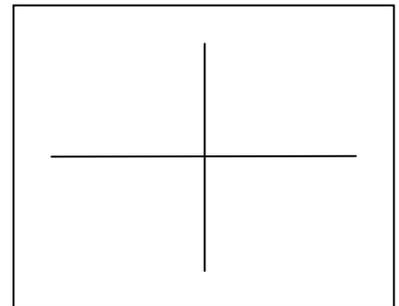
1, 2, 5, 6, 7 – замкн

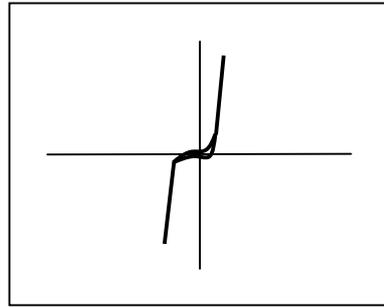
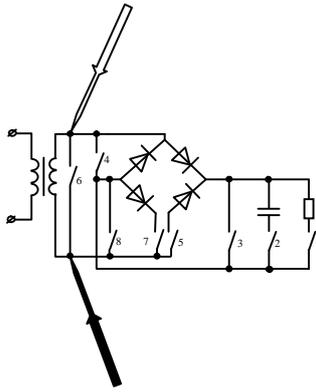


5, 7 – замкн

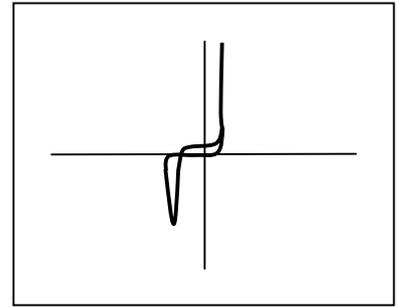


1, 2, 5, 7 – замкн

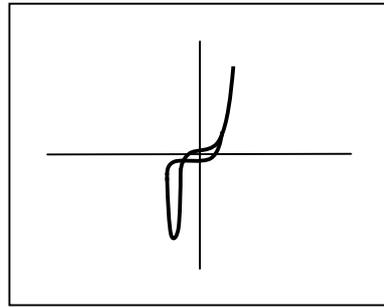




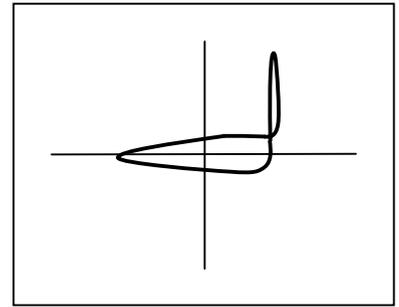
1,2,3,5,7 – замкн



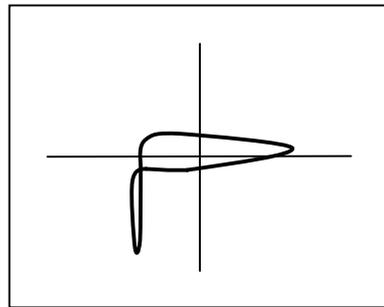
1,2, 4,5,7 – замкн



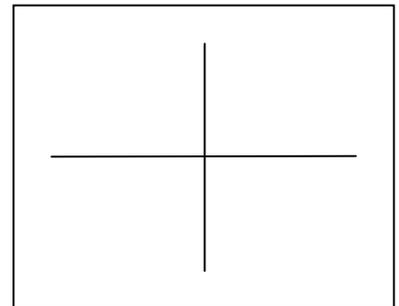
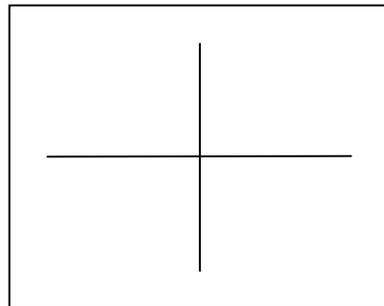
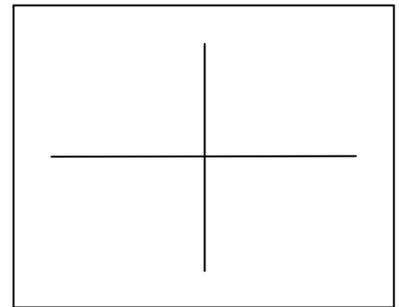
1,2,5,7,8 – замкн



1,2,7 – замкн



1,2,5 – замкн



**АЛГОРИТМ СРАВНЕНИЯ МЕТОДОМ ASA.**

При сравнении сигнатур производится выборка из  $n$  точек. Число  $n$  для прибора SFL2500 фиксировано и равно 100. Отклонение  $D$  определяется по формуле:

$$D = 1/n \sum_1^n |Va_n - Vb_n| \cdot k\% ,$$

где  $Va_1, Va_2, \dots Va_n$  – представляют амплитуду канала А, то есть эталонное значение при сравнении точек 1,2... $n$ .

$Vb_1, Vb_2, \dots Vb_n$  – представляют амплитуду канала В, то есть считываемое значение при сравнении точек 1,2... $n$ .

Коэффициент  $k$  – масштабирующий фактор.

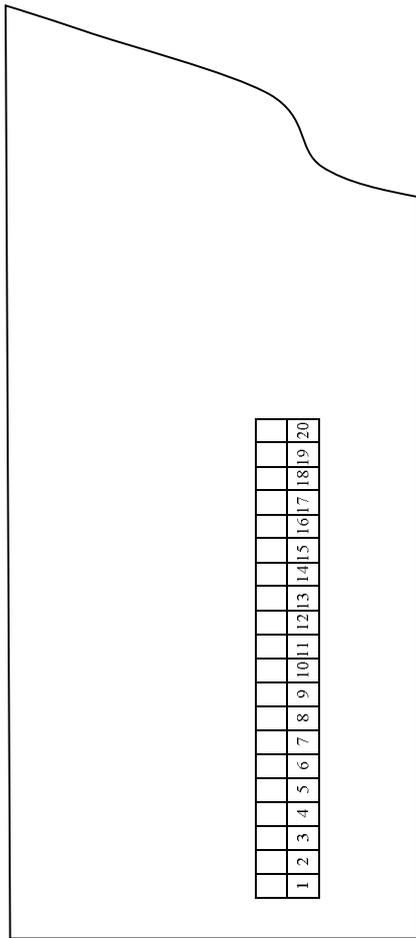


Рис. 1 Схема расположения каналов мультиплексора MUX128 при выборе режима DIP

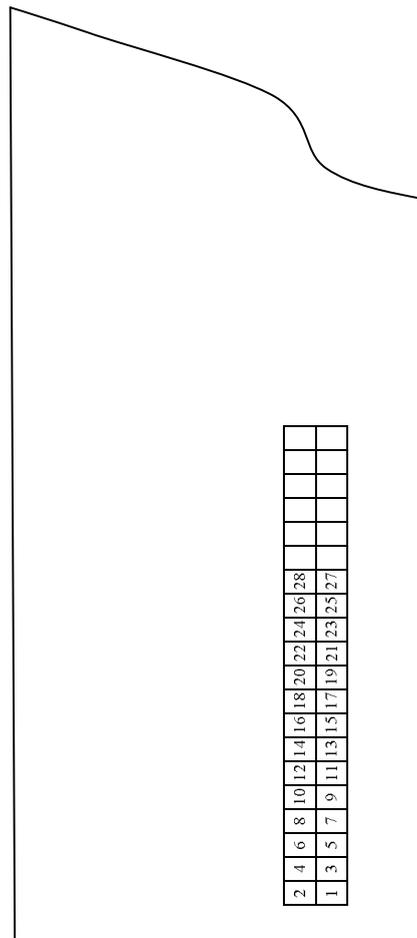


Рис. 2 Схема расположения каналов мультиплексора MUX128 при выборе режима SIP