**2-MUSTAQIL ISH**

Bipolyar tranzistorlarda kirish va chiqish harakteristikalarining h- parametrlari hisoblash bo‘yicha

**Topshiriq:**

1. Umumiy emitter ulanish sxemasi uchun h- parametrlar hisoblansin.

(410-20 guruh talabalari uchun)

1. Umumiy baza ulanish sxemasi uchun h- parametrlar hisoblansin.

(411-20 guruh talabalari uchun)

1. Har bir variant uchun berilgan tranzistor texnik parametrlari keltirilsin(internetdan izlab keltirilishi shart).
2. Sxema **Multisim** dasturiy muhitida yig‘ilib o‘lchash ishlari amalga oshirilsin va qiymatlar berilgan jadvallarga yozib olinsin.
3. Olingan natijalar asosida kirish va chiqish xarakteristik grafiklari chizilsin.

(Ikir=f(Ukir), Ichiq=f(Uchiq)).

1. h- parametrlar grafiklar yordamida hisoblansin.

**Umumiy emitter ulanish sxemasidagi BTning xarakteristikalarini o‘lchash uchun berilgan qiymatlar.**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Variant №** | **Bipolyar tranzistorlar** | **R1** | **R2** | **UKE=0** | **UKE>0** | ***IB1*** | ***IB2*** | ***IB3*** |
| **Birligi** |  | **kOm** | | **Volt** | | **mkA** | | |
| **1** | 2N1711 | 10 | 1 | 0 | 2 | 25 | 50 | 75 |
| **2** | 2N2102 | 20 | 1 | 0 | 4 | 30 | 60 | 100 |
| **3** | 2N2219 | 25 | 1 | 0 | 6 | 40 | 80 | 120 |
| **4** | 2N2221 | 50 | 1 | 0 | 8 | 50 | 75 | 125 |
| **5** | 2N2369 | 56 | 1 | 0 | 10 | 60 | 100 | 120 |
| **6** | 2N2712 | 10 | 1 | 0 | 2 | 75 | 100 | 150 |
| **7** | 2N2714 | 30 | 1 | 0 | 4 | 60 | 80 | 140 |
| **8** | 2N2923 | 20 | 1 | 0 | 6 | 50 | 100 | 150 |
| **9** | 2N2924 | 56 | 1 | 0 | 8 | 45 | 80 | 135 |
| **10** | 2N3019 | 32 | 1 | 0 | 10 | 35 | 85 | 145 |
| **11** | 2N3020 | 35 | 1 | 0 | 2 | 25 | 50 | 75 |
| **12** | 2N3055A | 55 | 1 | 0 | 4 | 30 | 60 | 100 |
| **13** | 2N3055G | 50 | 1 | 0 | 6 | 40 | 80 | 120 |
| **14** | 2N3390 | 15 | 1 | 0 | 8 | 50 | 75 | 125 |
| **15** | 2N3392 | 13 | 1 | 0 | 10 | 60 | 100 | 120 |
| **16** | 2N3393 | 23 | 1 | 0 | 2 | 75 | 100 | 150 |
| **17** | 2N3414 | 45 | 1 | 0 | 4 | 60 | 80 | 140 |
| **18** | 2N3416 | 17 | 1 | 0 | 6 | 50 | 100 | 150 |
| **19** | 2N3439 | 56 | 1 | 0 | 8 | 45 | 80 | 135 |
| **20** | 2N3441 | 20 | 1 | 0 | 10 | 35 | 85 | 145 |
| **21** | 2N3501 | 10 | 1 | 0 | 2 | 25 | 50 | 75 |
| **22** | 2N3700 | 15 | 1 | 0 | 4 | 30 | 60 | 100 |
| **23** | 2N3707 | 50 | 1 | 0 | 6 | 40 | 80 | 120 |
| **24** | 2N3858A | 19 | 1 | 0 | 8 | 50 | 75 | 125 |
| **25** | 2N3859A | 21 | 1 | 0 | 10 | 60 | 100 | 120 |
| **26** | 2N3860 | 23 | 1 | 0 | 2 | 75 | 100 | 150 |
| **27** | 2N3904 | 28 | 1 | 0 | 4 | 60 | 80 | 140 |
| **28** | 2N4265 | 33 | 1 | 0 | 6 | 50 | 100 | 150 |
| **29** | 2N4400 | 55 | 1 | 0 | 8 | 45 | 80 | 135 |
| **30** | 2N4424 | 27 | 1 | 0 | 10 | 35 | 85 | 145 |
| **31** | 2N4410 | 10 | 1 | 0 | 2 | 25 | 150 | 200 |

**Umumiy baza ulanish sxemasidagi BTning xarakteristikalarini o‘lchash uchun berilgan qiymatlar.**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Variant №** | **Bipolyar tranzistorlar** | **R1** | **R2** | **UKB=0** | **UKB>0** | ***IE1*** | ***IE2*** | ***IE3*** |
| **Birligi** |  | **kOm** | | **Volt** | | **mA** | | |
| **1** | 2N1711 | 1 | 1 | 0 | 2 | -4 | -8 | -12 |
| **2** | 2N2102 | 1 | 1 | 0 | 4 | -5 | -9 | -14 |
| **3** | 2N2219 | 1 | 1 | 0 | 2,5 | -6 | -9 | -15 |
| **4** | 2N2221 | 1 | 1 | 0 | 5 | -4 | -8 | -13 |
| **5** | 2N2369 | 1 | 1 | 0 | 3,5 | -5 | -7 | -11 |
| **6** | 2N2712 | 1 | 1 | 0 | 2 | -4 | -7 | -12 |
| **7** | 2N2714 | 1 | 1 | 0 | 4,5 | -4 | -8 | -12 |
| **8** | 2N2923 | 1 | 1 | 0 | 3 | -5 | -9 | -14 |
| **9** | 2N2924 | 1 | 1 | 0 | 2 | -6 | -9 | -15 |
| **10** | 2N3019 | 1 | 1 | 0 | 4 | -4 | -8 | -13 |
| **11** | 2N3020 | 1 | 1 | 0 | 2,5 | -5 | -7 | -11 |
| **12** | 2N3055A | 1 | 1 | 0 | 5 | -4 | -7 | -12 |
| **13** | 2N3055G | 1 | 1 | 0 | 3,5 | -4 | -8 | -12 |
| **14** | 2N3390 | 1 | 1 | 0 | 2 | -5 | -9 | -14 |
| **15** | 2N3392 | 1 | 1 | 0 | 4,5 | -6 | -9 | -15 |
| **16** | 2N3393 | 1 | 1 | 0 | 3 | -4 | -8 | -13 |
| **17** | 2N3414 | 1 | 1 | 0 | 2 | -5 | -7 | -11 |
| **18** | 2N3416 | 1 | 1 | 0 | 4 | -4 | -7 | -12 |
| **19** | 2N3439 | 1 | 1 | 0 | 2,5 | -4 | -8 | -12 |
| **20** | 2N3441 | 1 | 1 | 0 | 5 | -5 | -9 | -14 |
| **21** | 2N3501 | 1 | 1 | 0 | 3,5 | -6 | -9 | -15 |
| **22** | 2N3700 | 1 | 1 | 0 | 2 | -4 | -8 | -13 |
| **23** | 2N3707 | 1 | 1 | 0 | 4,5 | -5 | -7 | -11 |
| **24** | 2N3858A | 1 | 1 | 0 | 3 | -4 | -7 | -12 |
| **25** | 2N3859A | 1 | 1 | 0 | 2 | -4 | -8 | -12 |
| **26** | 2N3860 | 1 | 1 | 0 | 4 | -5 | -9 | -14 |
| **27** | 2N3904 | 1 | 1 | 0 | 2,5 | -6 | -9 | -15 |
| **28** | 2N4265 | 1 | 1 | 0 | 5 | -4 | -8 | -13 |
| **29** | 2N4400 | 1 | 1 | 0 | 3,5 | -5 | -7 | -11 |
| **30** | 2N4424 | 1 | 1 | 0 | 2 | -4 | -7 | -12 |
| **31** | 2N4410 | 1 | 1 | 0 | 4,5 | -4 | -8 | -12 |