# Q17-Mini 3.0 Power Transistors Selection Table

## Pair of transistors for the driver stage.

Minimum Vds = 150V, same Vgs(th) range (4V), close transductance (Gfs)

Q7 v1.4.6

| | | | Minimum default config | | | | | | | | Caculated (RCiss filter) | | | | Final resistor values (scope) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Config D1 | DEFAULT | | Status | Parts | Qg nC | Gfs Sie | Ciss pF | R7 | R8 | Freq MHz | R7 | R8 | Freq MHz | | R7 | R8 | Freq MHz | | | | OK | Comment |
| | Q5 | P | EOL | FQP3P20 | 6 | 1.23 | 190 | 100 | | 8,38 | 104,7 | | 8 | | 100 | | 8 | | | | Yes | Original config |
| | Q6 | N | EOL | FQP3N30 | 7 | 1.75 | 75 | | 100 | 21,22 | | 265,25 | 8 | | | 120 | 8 | | | | | |

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| Config D2 | TESTED OK | | Status | Parts | Qg nC | Gfs Sie | Ciss pF | R7 | R8 | Freq MHz | R7 | R8 | Freq MHz | | R7 | R8 | Freq MHz | | | | OK | Comment |
| | Q5 | P | | FQPF7P20 | 25 | 3.5 | 770 | 100 | | 2,06 | 93,95 | | 2,2 | | 100 | | 2,2 | | | | Yes | |
| | Q6 | N | EOL | 2SK3564 | 17 | 2.6 | 700 | | 100 | 2,27 | | 103,34 | 2,2 | | | 100 | 2,2 | | | | | |

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| Config D3 | TESTED | | Status | Parts | Qg nC | Gfs Sie | Ciss pF | R7 | R8 | Freq MHz | R7 | R8 | Freq MHz | | R7 | R8 | Freq MHz | | | | OK | Comment |
| | Q5 | P | | FQPF7P20 | 25 | 3.5 | 770 | 100 | | 2,06 | 93,95 | | 2,2 | | 100 | | 2,2 | | | | Yes | |
| | Q6 | N | | FQPF3N80C | 16.5 | 3 | 705 | | 100 | 2,25 | | 108,55 | 2,2 | | | 100 | 2,2 | | | | | Overshoot with config S2. |

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| Config D4 | TESTED | | Status | Parts | Qg nC | Gfs Sie | Ciss pF | R7 | R8 | Freq MHz | R7 | R8 | Freq MHz | | R7 | R8 | Freq MHz | | | | OK | Comment |
| | Q5 | P | | IRF9610 | 11 | 0.9 | 170 | 100 | | 9,36 | 98,54 | | 9,5 | | 100 | | 9 | | | | Yes | The square signals are a little less nice |
| | Q6 | N | | IRF610 | 8.2 | 0.8 | 140 | | 100 | 11,36 | | 119,66 | 9,5 | | | 100 | 9 | | | | | than with D2 configurations. |

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| | CANDIDATE | | Status | Parts | Qg nC | Gfs Sie | Ciss pF | R7 | R8 | Freq MHz | R7 | R8 | Freq MHz | | R7 | R8 | Freq MHz | | | | OK | Comment |
| | Q5 | P | | IRFI9620G | 15 | 1,3 | 340 | 100 | | 4,68 | 99,59 | | 4,7 | | | | | | | | | |
| | Q6 | N | | IRFI620G | 14 | 1.5 | 260 | | 100 | 6,12 | | 130,24 | 4,7 | | | | | | | | | |

## Pair of transistors for the output stage.

Minimum Vds = 150V, same Vgs(th) range (4V), close transductance (Gfs) and Qg.

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| Config S1 | DEFAULT | | Status | Parts | Qg nC | Gfs Sie | Ciss pF | R14 | R15 | Freq KHz | R14 | R15 | Freq KHz | | R14 | R15 | Freq KHz | | R10-R13 (R) | THD % | SNR -dBuA | OK | Comment | Subjective sound review |
| | Q15 | N | | FQA46N15 | 110 | 36 | 2500 | 330 | | 192,92 | 335,06 | | 190 | | 330 | | 190 | | 9.1 | 0,011 | 90,9 | Yes | Original config | Good sound. |
| | Q16 | P | n.a | FQA36P15 | 105 | 19.5 | 2550 | | 330 | 189,13 | | 328,49 | 190 | | | 330 | 190 | | | | | | | Well balanced sound. |

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| Config S2 | TESTED | | Status | Parts | Qg nC | Gfs Sie | Ciss pF | R14 | R15 | Freq KHz | R14 | R15 | Freq KHz | | R14 | R15 | Freq KHz | | R10-R13 (R) | THD % | SNR -dBuA | OK | Comment | Subjective sound review |
| | Q15 | N | | FQA46N15 | 110 | 36 | 2500 | 330 | | 192,92 | 335,06 | | 190 | | 330 | | 190 | | 9.1 | 0,017 | 88,2 | No | Q14=3.6V, Q16=-3.8V - Bad spectrum. | Good sound. |
| | Q16 | P | | IXTH48P20P | 103 | 32 | 5400 | | 330 | 89,31 | | 155,12 | 190 | | | 150 | 190 | | | | | | With R10/R13=8R2 consume 400mA. | Low frequency drier than S5. |

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| Config S3 | TO TEST | | Status | Parts | Qg nC | Gfs Sie | Ciss pF | R14 | R15 | Freq KHz | R14 | R15 | Freq KHz | | R14 | R15 | Freq KHz | | R10-R13 (R) | THD % | SNR -dBuA | OK | Comment | Subjective sound review |
| | Q15 | N | | IXTQ50N20P | 70 | 23 | 2720 | 330 | | 177,31 | 307,96 | | 190 | | | | | | 9.1 | | | | 48v max. | |
| | Q16 | P | | IXTQ52P10P | 60 | 20 | 2845 | | 330 | 169,52 | | 294,43 | 190 | | | | | | | | | | Good to try at 35-40V. | |

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| Config S4 | TESTED | | Status | Parts | Qg nC | Gfs Sie | Ciss pF | R14 | R15 | Freq KHz | R14 | R15 | Freq KHz | | R14 | R15 | Freq KHz | | R10-R13 (R) | THD % | SNR -dBuA | OK | Comment | Subjective sound review |
| | Q15 | N | | IXTQ36N30P | 70 | 22 | 2250 | 330 | | 214,35 | 372,29 | | 190 | | 374 | | 190 | | 8.2 | 0,022 | 87.2 dB | No | Q14=3.6V, Q16=-3.8V | Good sound. |
| | Q16 | P | | IXTQ36P15P | 55 | 19 | 3100 | | 330 | 155,57 | | 270,21 | 190 | | | 270 | 190 | | | | | | With R10/R13=9R1 ou 8R2 - Bad spectrum. | Low frequency less controlled than S5. |

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| Config S5 | TESTED OK | | Status | Parts | Qg nC | Gfs Sie | Ciss pF | R14 | R15 | Freq KHz | R14 | R15 | Freq KHz | | R14 | R15 | Freq KHz | | R10-R13 (R) | THD % | SNR -dBuA | OK | Comment | Subjective sound review |
| | Q15 | N | | FQA46N15 | 110 | 36 | 2500 | 330 | | 192,92 | 335,06 | | 190 | | 330 | | 190 | | 8.2 | 0,011 | 91,1 | Yes | Q15/Q16 well balanced (3.6V). | Good sound. |
| | Q16 | P | | IXTQ36P15P | 55 | 19 | 3100 | | 330 | 155,57 | | 270,21 | 190 | | | 330 | 285 | | | | | | With R10/R13=8R2. Good spectrum. | Well balanced sound. |

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| | CANDIDATE | | Status | Parts | Qg nC | Gfs Sie | Ciss pF | R14 | R15 | Freq KHz | R14 | R15 | Freq KHz | | R14 | R15 | Freq KHz | | R10-R13 (R) | THD % | SNR -dBuA | OK | Comment |
| | Q15 | N | | IXTQ50N20P | 70 | 23 | 2720 | 330 | | 177,31 | 307,96 | | 190 | | | | | | 9.1 | | | | |
| | Q16 | P | | IXTQ36P15P | 55 | 19 | 3100 | | 330 | 155,57 | | 270,21 | 190 | | | | | | | | | | |

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| | CANDIDATE | | Status | Parts | Qg nC | Gfs Sie | Ciss pF | R14 | R15 | Freq KHz | R14 | R15 | Freq KHz | | R14 | R15 | Freq KHz | | R10-R13 (R) | THD % | SNR -dBuA | OK | Comment |
| | Q15 | N | | IXFH50N85X | 152 | 32 | 4480 | 330 | | 107,65 | 186,97 | | 190 | | | | | | 9.1 | | | | |
| | Q16 | P | | IXTH48P20P | 103 | 32 | 5400 | | 330 | 89,31 | | 155,12 | 190 | | | | | | | | | | |

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| | CANDIDATE | | Status | Parts | Qg nC | Gfs Sie | Ciss pF | R14 | R15 | Freq KHz | R14 | R15 | Freq KHz | | R14 | R15 | Freq KHz | | R10-R13 (R) | THD % | SNR -dBuA | OK | Comment |
| | Q15 | N | | IRFP240 | 70 | 6.9 | 1300 | 330 | | 370,99 | 644,35 | | 190 | | | | | | 9.1 | | | | |
| | Q16 | P | | IRFP9240 | 44 | 9.4 | 1200 | | 330 | 401,90 | | 698,04 | 190 | | | | | | | | | | |

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| | SIM NOT WORKING | | Status | Parts | Qg nC | Gfs Sie | Ciss pF | R14 | R15 | Freq KHz | R14 | R15 | Freq KHz | | R14 | R15 | Freq KHz | | R10-R13 (R) | THD % | SNR -dBuA | OK | Comment |
| | Q15 | N | | ECX10N20 | | 1 | 500 | 330 | | 964,57 | 1675,31 | | 190 | | | | | | 9.1 | | | | |
| | Q16 | P | | ECX10P20 | | 1.5 | 500 | | 330 | 964,57 | | 1675,31 | 190 | | | | | | | | | | |

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| | SIM NOT WORKING | | Status | Parts | Qg nC | Gfs Sie | Ciss pF | R14 | R15 | Freq KHz | R14 | R15 | Freq KHz | | R14 | R15 | Freq KHz | | R10-R13 (R) | THD % | SNR -dBuA | OK | Comment |
| | Q15 | N | | ECW20N20 | | 8 | 900 | 330 | | 535,87 | 930,73 | | 190 | | | | | | 9.1 | | | | |
| | Q16 | P | | ECW20P20 | | 3 | 1850 | | 330 | 267,93 | | 452,78 | 190 | | | | | | | | | | |

## Pair of transistors for op-amp power supply

Minimum Vds = 60V, same Vgs(th) range (4V)

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| Config A1 | DEFAULT | | Status | Parts | Qg nC | Gfs Sie | Ciss pF | R40 | R41 | Freq MHz | R40 | R41 | Freq MHz | | R40 | R41 | Freq MHz | | | | | OK | Comment |
| | Q1 | N | | IRF610 | 8.2 | 0.8 | 140 | 100 | | 11,36 | 126,31 | | 9 | | 100 | | 9 | | | | | Yes | Original config |
| | Q4 | P | | IRF9610 | 11 | 0.9 | 170 | | 100 | 9,36 | | 104,02 | 9 | | | 100 | 9 | | | | | Yes | |

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| Config A2 | TESTED (SMD) | | Status | Parts | Qg nC | Gfs Sie | Ciss pF | R40 | R41 | Freq MHz | R40 | R41 | Freq MHz | | R40 | R41 | Freq MHz | | | | | OK | Comment |
| | Q1' | N | | Si2308BDS | 6.8 | 5 | 190 | 100 | | 8,37 | 104,70 | | 8 | | 100 | | 8 | | | | | Yes | Need 16V zener 1N5246B to get 13.5V. |
| | Q4' | P | | Si2309CDS | 4.1 | 2.8 | 210 | | 100 | 7,57 | | 94,73 | 8 | | | 100 | 8 | | | | | | Source-Gate = 2.15V |

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| Config A3 | TO TEST (SMD) | | Status | Parts | Qg nC | Gfs Sie | Ciss pF | R40 | R41 | Freq MHz | R40 | R41 | Freq MHz | | R40 | R41 | Freq MHz | | | | | OK | Comment |
| | Q1' | N | | DMN6075SQ | 12.3 | n.a | 606 | 100 | | 2,62 | 100,34 | | 2,6 | | 100 | | 2,6 | | | | | | |
| | Q4' | P | | DMPH6250S | 4 | n.a | 512 | | 100 | 3,10 | | 119,55 | 2,6 | | | 120 | 2,6 | | | | | | |

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| Config A4 | TO TEST (SMD) | | Status | Parts | Qg nC | Gfs Sie | Ciss pF | R40 | R41 | Freq MHz | R40 | R41 | Freq MHz | | R40 | R41 | Freq MHz | | | | | OK | Comment |
| | Q1' | N | | SI2328DS | 5 | 4 | 150 | 100 | | 10,61 | 350 | | 3 | | | | | | | | | | |
| | Q4' | P | | SI2325DS | 12 | 2.2 | 510 | | 100 | 3,12 | | 100 | 3 | | | | | | | | | | |