

Q17-Mini 3.0 Power Transistors Selection Table

Pair of transistors for the driver stage.

Q7 v1.4.2

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

		Minimum default config								Calculated (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		
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		
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	Overshoot with config S2.
		Q6	N		FQPF3N80C	16.5	3	705		100	2,25		108,55	2,2		100	2,2		
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		IRF9610	11	0.9	170	100		9,36		98,54	9,5					
		Q6	N		IRF610	8.2	0.8	140		100	11,36		119,66	9,5					
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.

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		FOA46N15	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	FOA36P15	105	19.5	2550		330	189,13		328,49	190		330	190						Well balanced sound.
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		FOA46N15	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.
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									
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	9.1	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.
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		FOA46N15	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.
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									
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									
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									
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									
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)

Config	A1	DEFAULT		Status	Parts	Qg nC	Gfs Sie	Ciss pF	R40	R41	Freq MHz	R40	R41	Freq MHz	R40	R41	Freq MHz	Freq MHz	OK	Comment
		Q1	N		IRF610		0.8	140	100		11,36		126,31	9		120	9	9		Original config
		Q4	P		IRF9610		0.9	170		100	9,36		104,02	9		100	9	9		