

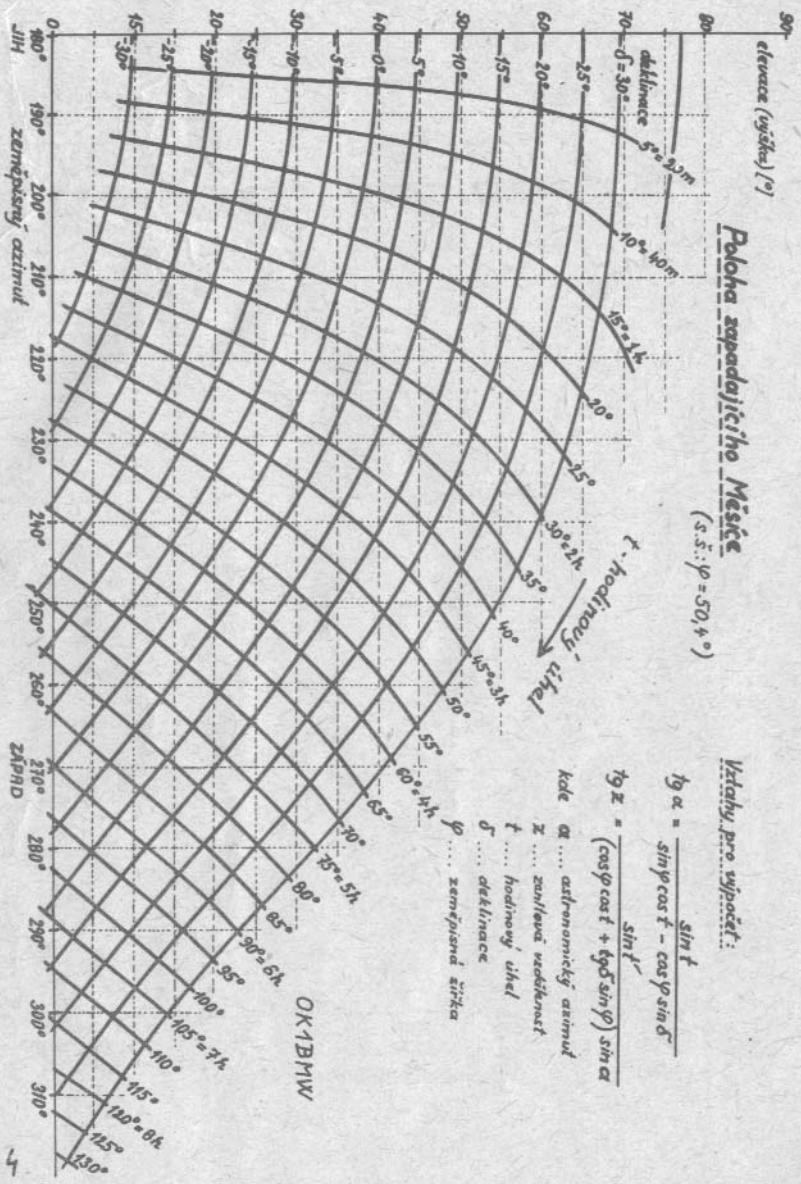
OKIKIR Praha 5

**SEMINÁŘ
UHF
TECHNIKY**



Lesní chata v Krkonoších

13. a 14. XI. 1971



elevace (výška) (α)

Poloha zapadajícího Měsíce

(s.š.: $\varphi = 50,4^\circ$)

Vzťahy pro výpočet:

$$\lg \alpha = \frac{\sin t}{\sin \varphi \cos \delta - \cos \varphi \sin \delta}$$

$$\lg Z = \frac{\sin t'}{(\cos \varphi \cos t + \sin \varphi \sin \varphi) \sin \alpha}$$

kde α ... astronomický azimut

Z ... zůbňovací vedlostnost

t ... hodinový úhel

δ ... deklinace

φ ... zeměpisná šířka

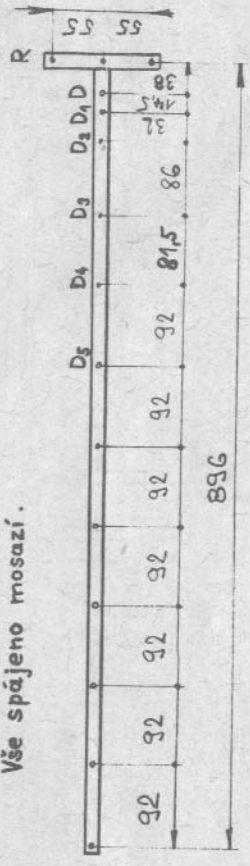
OK1BMW

OK1KIR: ANTÉNA PRO 1296 MHz.

Délky prvků:

- R = 175
- D = 126
- D₁ = 99,5
- D₂ = 95,5
- D₃ = 95
- D₅ = 94
- D₉ = 93

Nosná tyč: ocel. trubka $\phi 12/\phi 10$, všechny prvky $\phi 4$ mm.
 Vše spájeno mosazí.



Rozměry ant. soustavy
 4 x 15 el.

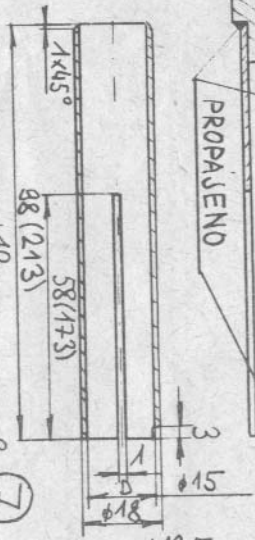
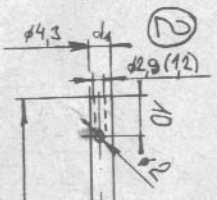
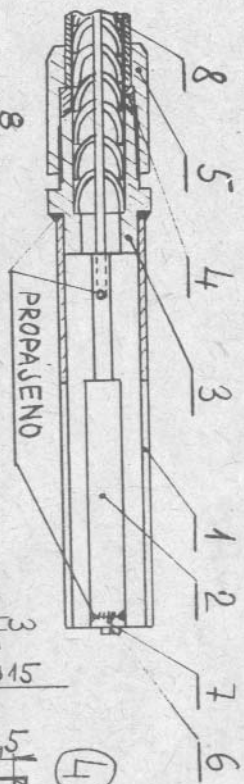
Rozměry dipolu:



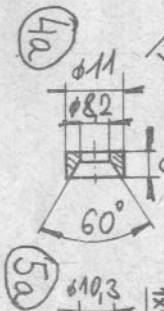
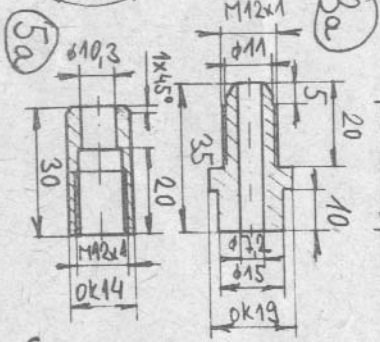
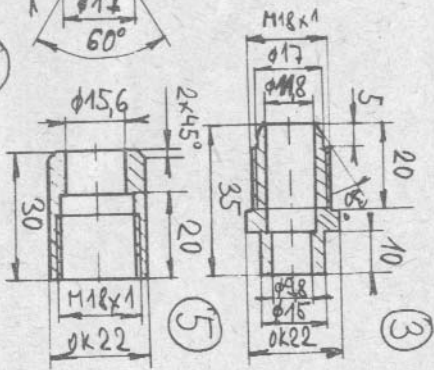
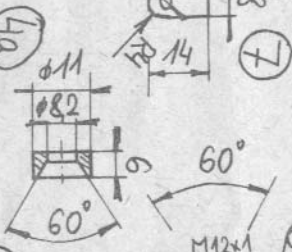
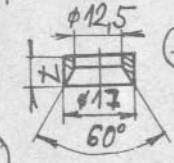
2 ks matice M3
 Ohýbat přes $\phi 16$ mm

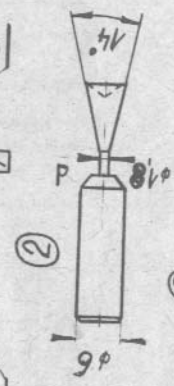
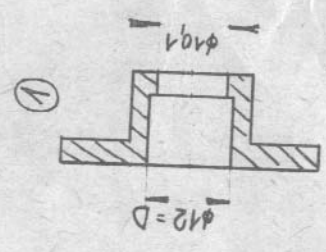
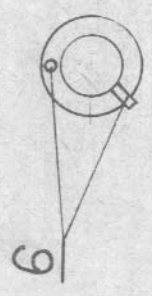
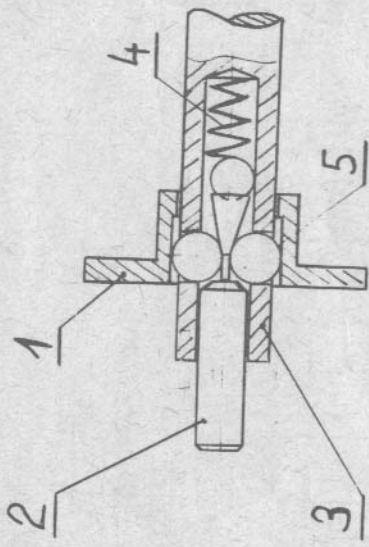
Rozměr	a	b
Funk. technik 2.4/70	385	385
OK1KIR	360	385
OK1KTL	400	455

OK1KIR: UHF SYMETRIZÁTORŮ



PRO 75Ω: $D = 3,5 d_1 = 1,87 d$





③ $3 \times \phi 5$ po 120°



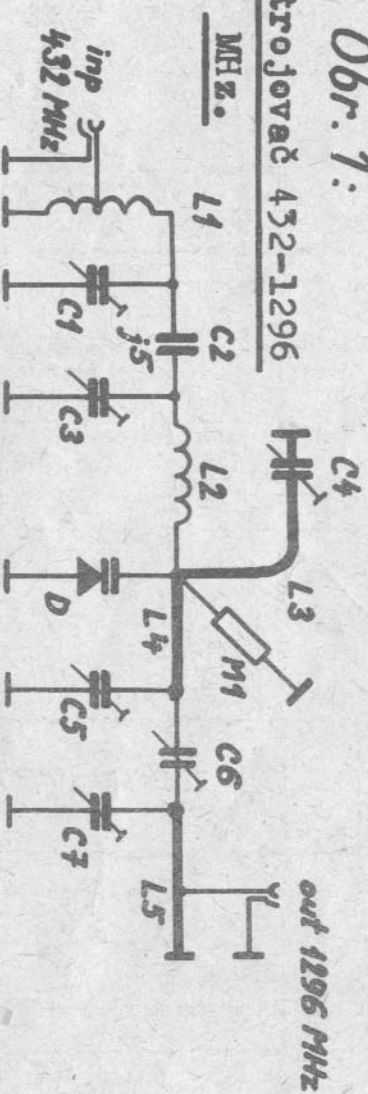
$$n = \frac{D}{d}$$

Kuličkový převod 1:n

7 OK1KIR:

Obr. 1:

Ztrojovnač 432-1296



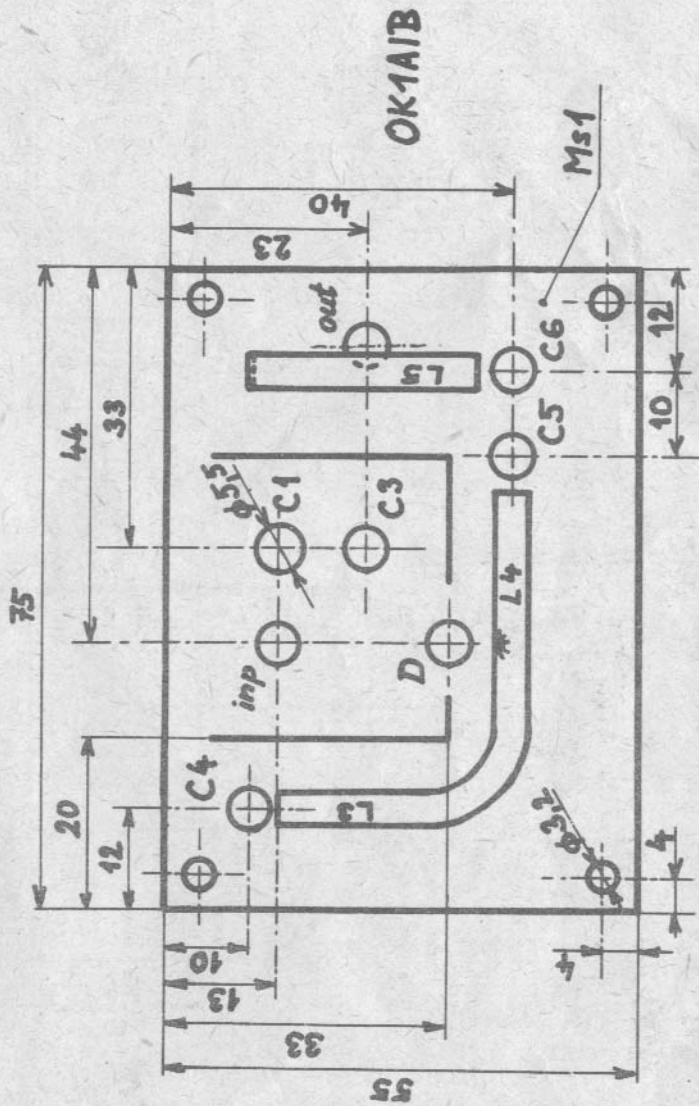
L_1 - 3 záv. díl, 2mm CuAg vinuto na $\phi 5,5$ mm
odbočka na 1 záv. od země,

$L_2 = L_1$ bez odbočky,

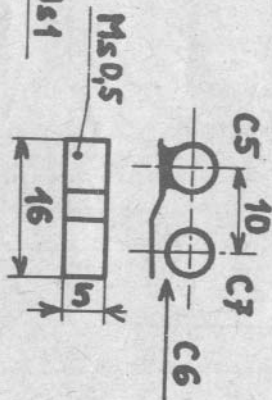
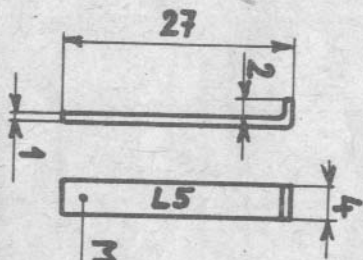
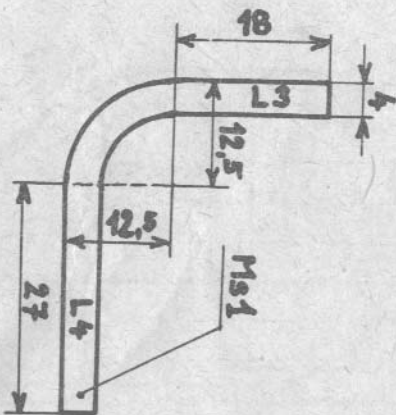
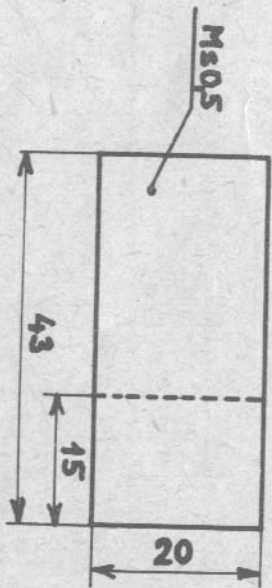
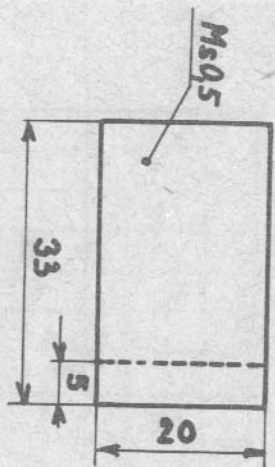
L_3, L_4, L_5 - viz obr. 2 a 3.

$C_1, C_2, C_3, C_4, C_5, C_6, C_7$ - trimr 0,8 až 6,8 pF (viz obr. 4)

OK1A1B

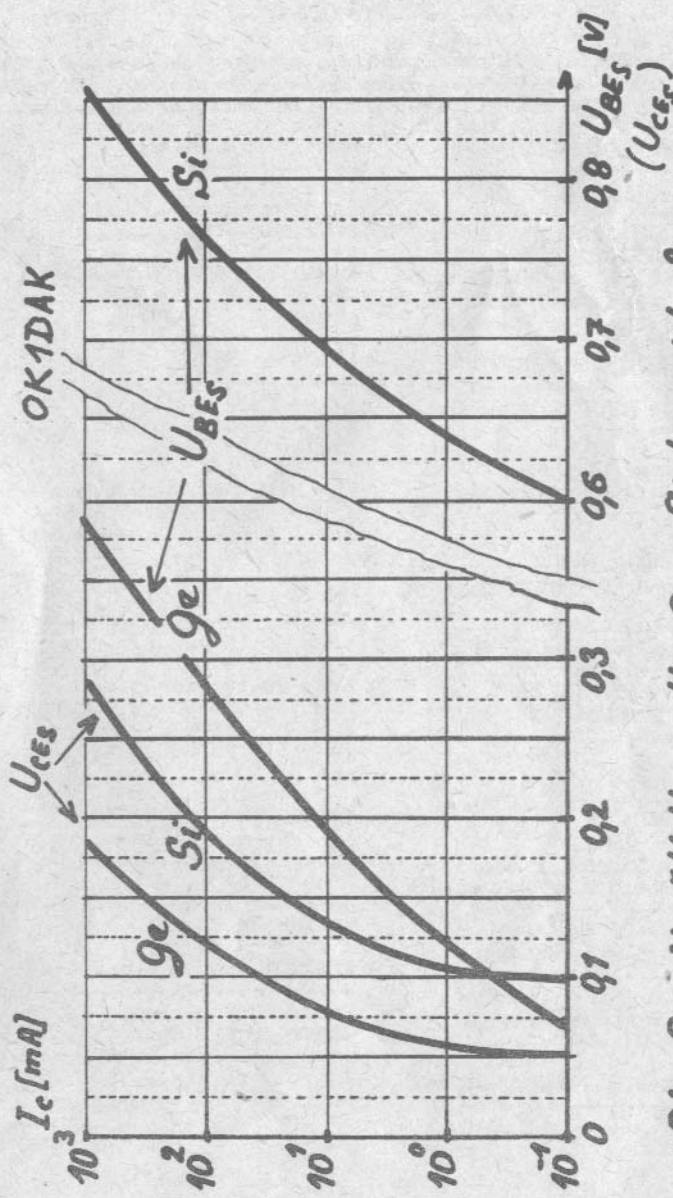


Obr. 2: FT 432 ÷ 1296 MHz - mechanické rozměry



Obv. 3: FT 432-1296 MHz - rozměry detailů

OK 1A1B



Obr. 8 : Napětí U_{BE} a U_{CE} Ge a Si transistorů v nasyceném stavu v závislosti na kol. proudu

Vf transistory

V následujícím přehledu jsou uvedeny charakteristické údaje a zapojení patič zahraničních transistorů nejčastěji používaných v konvertorech pro amatérská VKV pásma.

AF139,239 - Ge PNP

Ucem = 15 V
Uebm = 0,3 V
Icm = 10;15 mA
ft = 550;650 MHz
G = 11;14 dB/800 MHz
F < 7;5 dB/800 MHz
patice A

AF279,280 - Ge PNP

Ucem = 15 V
Uebm = 0,3 V
Icm = 10 mA
ft = 780;550 MHz
F = 5;3 dB/800;200 MHz
patice B

BF180 - Si NPN

Ucem = 20 V
Icm = 20 mA
Ptot = 150 mW
ft = 675 MHz
Vp = 9 dB/900 MHz
F = 7 dB/900 MHz
patice A

BF244A,B,C - N

Udss = 30 V
Igm = 10 mA
Ptot = 360 mW
Y12s = 4-6,5 mS C12s = 0,85 pF
C11s = 4 pF C22s = 1,2 pF
1/g11s = 25 K/100 MHz
1/g11s = 10 K/200 MHz
Idss = A 4 - 7 mA
B 6 - 15 mA
C 14 - 20 mA

patice C

BF245A,B,C - N, viz BF244

patice D

BFW92 - Si NPN

Ucem = 15 V
Icm = 50 mA
Ptot = 130 mW
ft = 1,6 GHz
Vp = 23;11 dB/200;800 MHz
Cc = 1,5 pF Cc = 0,7 pF
patice K

BFX89 - Si NPN

Ucem = 15 V
Icm = 50 mA
Ptot = 175 mW
ft = 1 GHz
Vp = 22;7 dB/200;800 MHz
F = 3,3;7 dB/200;800 MHz
Cc = 1,7 pF C12e = 0,6 pF
patice A

BFY90 - Si NPN

Ucem = 15 V
Icm = 25 mA
hFE = 20-125/Ie=25 mA
ft > 1,3 GHz/Uce=6 V, Ie=25 mA
F < 5 dB/500 MHz
Vp = 8 dB/800 MHz
patice A

MFE2000,2001 - N - JFET

Ugss = 25 V Idss = 4;8 mA
Ciss = 5 pF gfs = 4,5 mS
Gps/F/f = 10 dB/4 dB/400 MHz
patice E

MFE3004,3005 - N - MOSFET

Udsm = 20 V Idm = 10 mA
Ciss = 4,5 pF gfs = 4;3,5 mS
Gps = 16;10 dB/200;400 MHz
F = 4;5 dB/200;400 MHz
patice E

MFE3006,3007 - N - MOSFET

Udsm = 25 V Idm = 30 mA
Ciss = 7,6 pF gfs = 8; 10 mS
Gps = 20; 18 dB/100; 200 MHz
F = 4; 5 dB/100; 200 MHz
patice F

MFE3008 - N - MOSFET

pro rozsah VHF
Udsm = 25 V Igss = 100 pA
Idss = 2-20 mA
patice I

MPF102 - N - JFET

Ugss = 25 V Idss = 2-20 mA
gfs = 2-7,5 mS Ciss = 7 pF
F = 4 dB/300 MHz
patice G

MPF108,112 - N - JFET

pro rozsah VHF
Ugss = 25; 20 V
Idss = 1,5-24; 1-25 mA
Igss = 1,0; 100 nA
Yfs = 1,6; 1-7,5 mS
patice G ; J

TIS34 - N

Udsm = 30 V Igm = 10 mA
Ptot = 200 mW
Y21s = 3,5-6,5 mS
C11s = 6 pF C12s = 2 pF
g11s = 800 uS/200 MHz
g22s = 200 uS/200 MHz
patice C

2N3823 - N - JFET

gfs = 3,5-6,5 mS
Ciss = 6 pF
F = 2,5 dB/100 MHz
F = 4 dB/300 MHz
patice E

2N4416 - N

Udss = 30 V Idm = 30 mA
gfs = 4,5-7,5 mS

Cos = 2 pF Crss = 0,8 pF
Ciss = 4 pF Idss = 5-15 mA
Igm = 10 mA Igss = 0,1 nA
Gps > 10 dB/400 MHz
F < 4 dB/400 MHz
patice B

2N5245 /TIS88/ - N

Udgm = 30 V Id = 5-15 mA
Igss = 1 nA Ptot = 360 mW
Ciss = 4,5 pF Yfs = 4,5-7,5 mS
F = 2 dB/100 MHz
patice C

2N5485 /MPF106/ - N - JFET

Ugss = 25 V Idss = 4 mA
Ciss = 5 pF gfs = 3 mS
Gps = 10 dB/400 MHz
F = 4 dB/400 MHz
patice G

2N5486 /MPF107/ - N - JFET

Ugss = 25 V Idss = 8 mA
Ciss = 5 pF gfs = 3,5 mS
Gps = 10 dB/400 MHz
F = 4 dB/400 MHz
patice G

3N128 - N - MOSFET

Udsm = 20 V Igss = 0,05 nA
gfs = 5 mS Ptot = 400 mW
Gps/F/f = 16 dB/3,5 dB/200 MHz
patice H

3N139 - N - MOSFET

Udsm = 35 V Igss = 1 nA
gfs = 3,5 mS Ptot = 400 mW
Gps/F/f = 14 dB/4 dB/200 MHz
patice H

3N140 - N - MOSFET

Udsm = 20 V Igss = 1 nA
gfs = 10 mS Ptot = 400 mW
Crss = 0,03 pF Ciss = 5,5 pF
Gps/F/f = 18 dB/3,5 dB/200 MHz
patice I

3N141 - N - MOSFET

Udsm=20 V Igss=1 nA
gfs=10 mS Ptot=400 mW
Crss=0,03 pF Ciss=5,5 pF
Gmix=17 dB/200 MHz
patice I

3N142 - N - MOSFET

Udsm=20 V Igss=1 nA
gfs=4 mS Ptot=400 mW
Crss=0,12 pF
Gps/F/f=24 dB/4 dB/100 MHz
patice H

3N143 - N - MOSFET

Udsm=20 V Igss=1 nA
gfs=5 mS Ptot=100 mW
Crss=0,12 pF
Gmix=13,5 dB/100 MHz
patice H

3N152 - N - MOSFET

Udsm=20 V Igss=1 nA
gfs=5 mS Ptot=400 mW
Crss=0,12 pF
Gps/F/f=17 dB/2,5 dB/200MHz
patice H

3N154 - N - MOSFET

Udsm=20 V Igss=0,05 nA
gfs=5 mS Ptot=400 mW
Crss=0,12 pF
Gps/F/f=20 dB/3,5 dB/200MHz
patice H

3N159 - N - MOSFET

Udsm=20 V Igss=1 nA
gfs=10 mS Ptot=400 mW
Crss=0,03 pF Ciss=5,5 pF
Gps/F/f=18 dB/2,5 dB/200MHz
patice I

40600 - N - MOSFET

Udsm=20 V
gfs=10 mS Ptot=400 mW
Crss=0,03 pF Ciss=5,5 pF

Gps/F/f=20 dB/5 dB/200 MHz
patice I

40601 - N - MOSFET

Udsm=20 V Igss=1 nA
gfs=10 mS Ptot=400 mW
Crss=0,03 pF Ciss=5,5 pF
Gmix=14 dB/200 MHz
patice I

40602 - N - MOSFET

Udsm=20 V Igss=1 nA
gfs=10 mS Ptot=400 mW
Crss=0,03 pF Ciss=5,5 pF
Gps=35 dB/44 MHz
patice I

40603 - N - MOSFET

Udsm=20 V Igss=1 nA
gfs=10 mS Ptot=400 mW
Crss=0,03 pF Ciss=5,5 pF
Gps/F/f=26 dB/2,5 dB/100MHz
patice I

40604 - N - MOSFET

Udsm=20 V Igss=1 nA
gfs=10 mS Ptot=400 mW
Crss=0,03 pF Ciss=5,5 pF
Gmix=21 dB/10,7 MHz
patice I

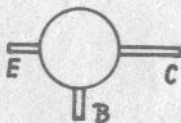
40673 - N - MOSFET

Udsm=20 V Ptot=330 mW
Idm=50 mA Idss=5-35 mA
gfs=12 mS Ciss=6 pF
Coss=2 pF Crss=0,01-0,03 pF
Gps/F/f=14-18 dB/3,5 dB/
200 MHz
riss=1 k/200 MHz
ross=2,8 k/200 MHz
patice I

A



B



C



D



E



F



G



H



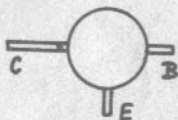
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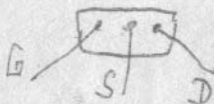
J



K



256 B



Podle firemních katalogů Texas Instruments, Motorola, RCA, Valvo, Telefunken a Siemens zpracoval OK1VCW.

Pro organisátora "Semináře UHF techniky" vydal
kolektiv klubové stanice OK1KRC.

Praha listopad 1971