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RFM07U7X application note

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Toshiba Corporation
Semiconductor & Storage Products Company
Discrete Semiconductor Div.
Small Signal Device Marketing & Engineering Dept.

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RF MOSFET New Products

For 5W/7.2V application

RFM07U7X 7.2V supply, 8W output, Wide Band matching

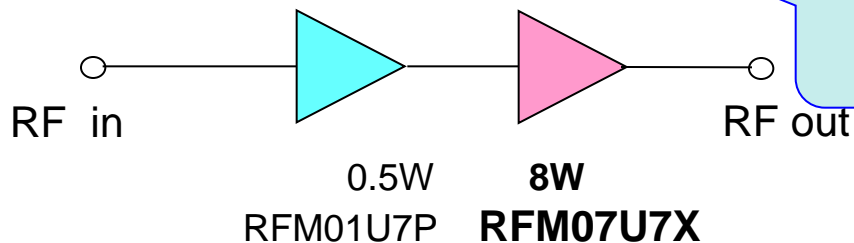
Features

Wide Band Matching: $f=450\text{-}530\text{MHz}$

High-Output Power: $P_o=8.2\text{W}(\text{typ.}) @f=520\text{MHz}$

Good-Efficiency: $\eta_D=68\%(\text{typ.}) @f=520\text{MHz}$

Package: PW-X



Good Efficiency!
compared with
RD07MUS2B($\eta_D=63\%$)

Package



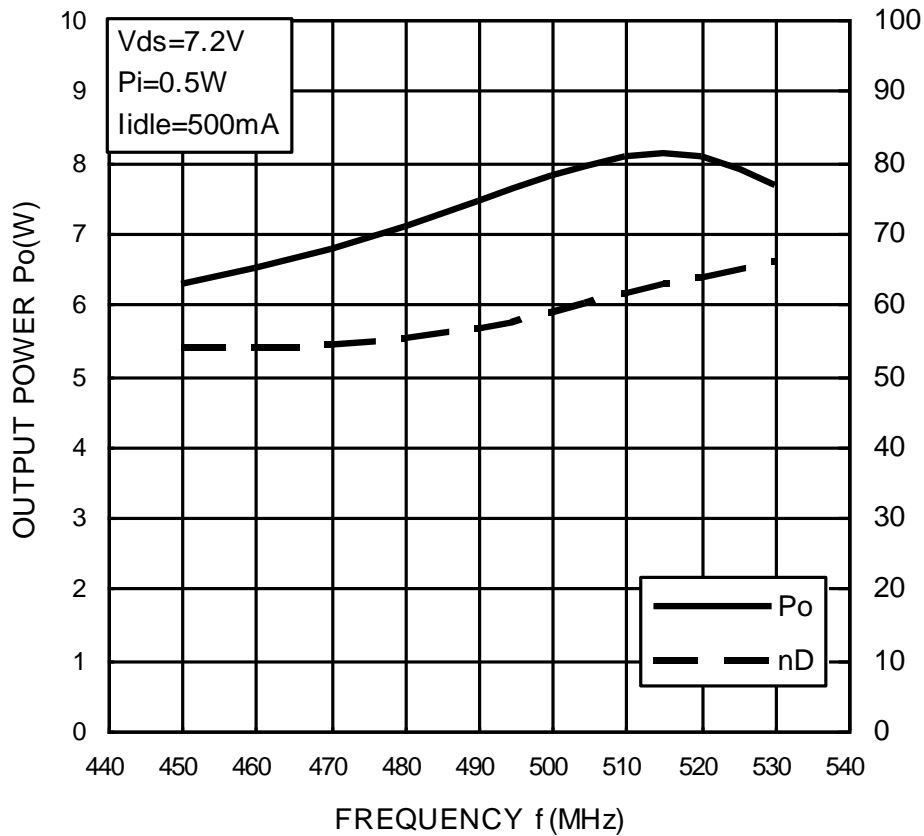
Electrical characteristics

Characteristics (Symbol)	Specification @Test condition
Output Power (P_o)	8W (typ.) @ $V_{DS}=7.2\text{V}$, $f=520\text{MHz}$
Drain Efficiency (η_D)	68% (typ.) @ $V_{DS}=7.2\text{V}$, $f=520\text{MHz}$
Power Gain (G_p)	12.5dB (typ.) @ $V_{DS}=7.2\text{V}$, $f=520\text{MHz}$

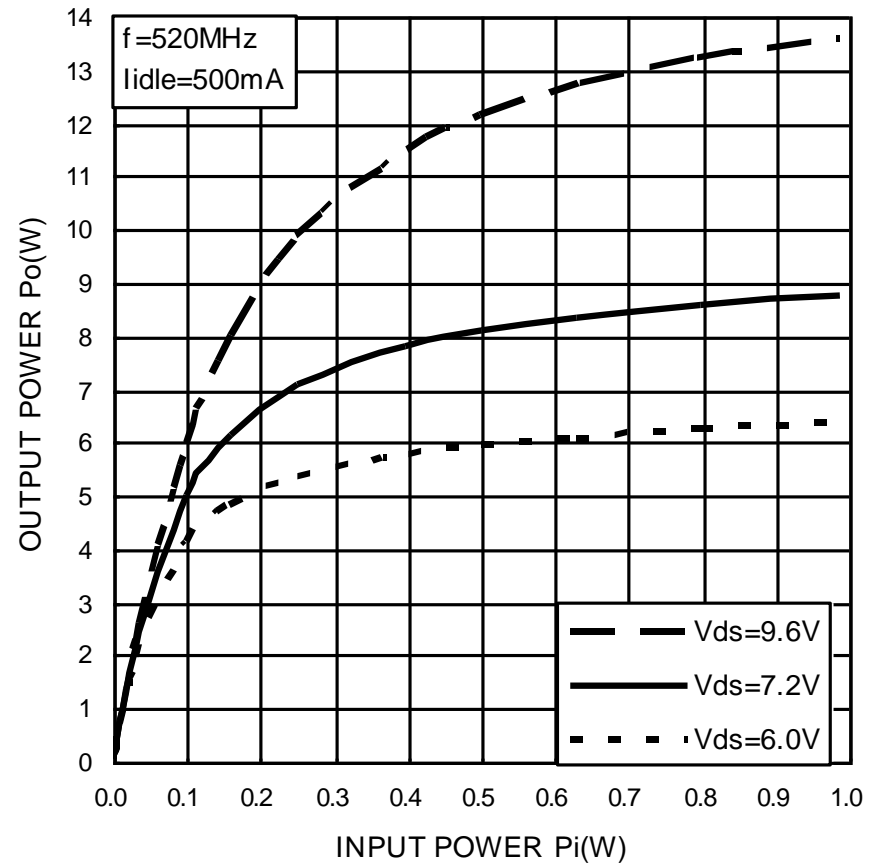
Schedule

MP: OK

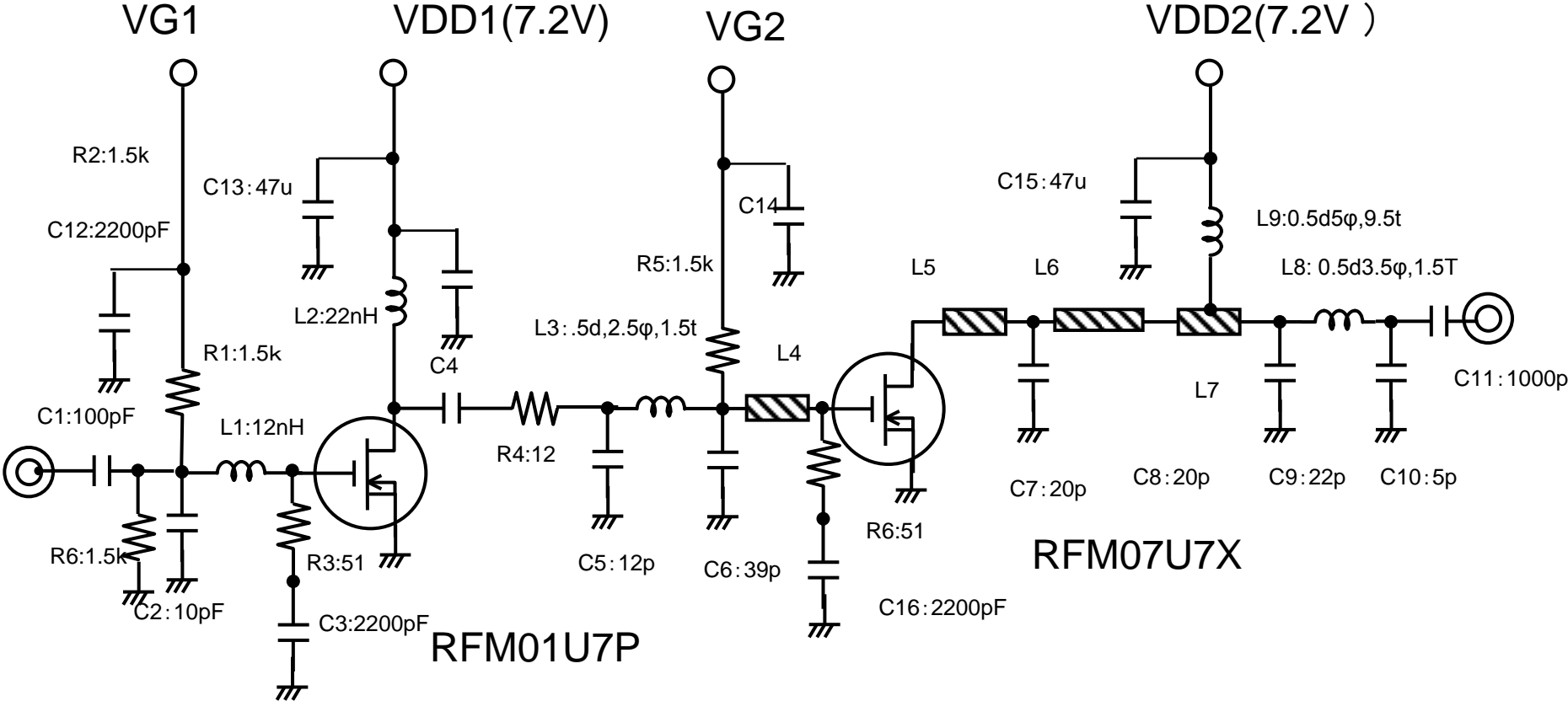
RFM07U7X f-Po,nD



Pi-Po

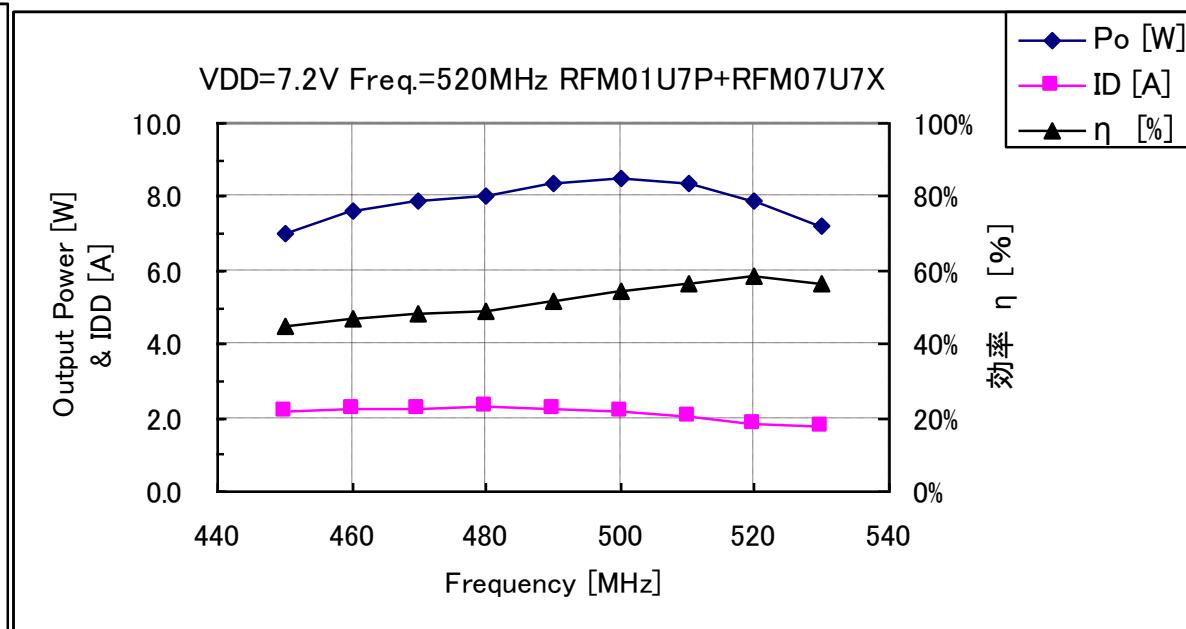
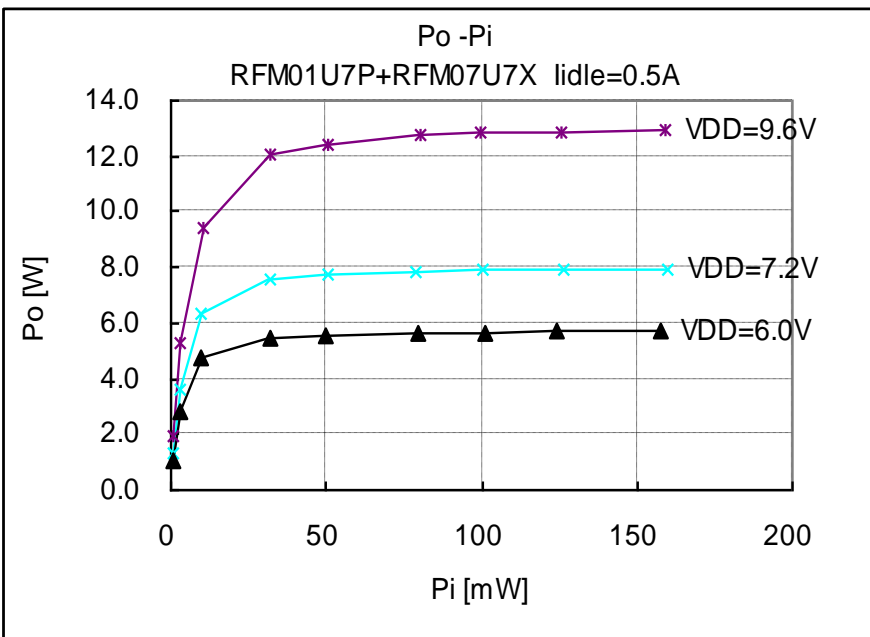


RFM01U7P+RFM07U7X (450 to 530MHz Po Matching)

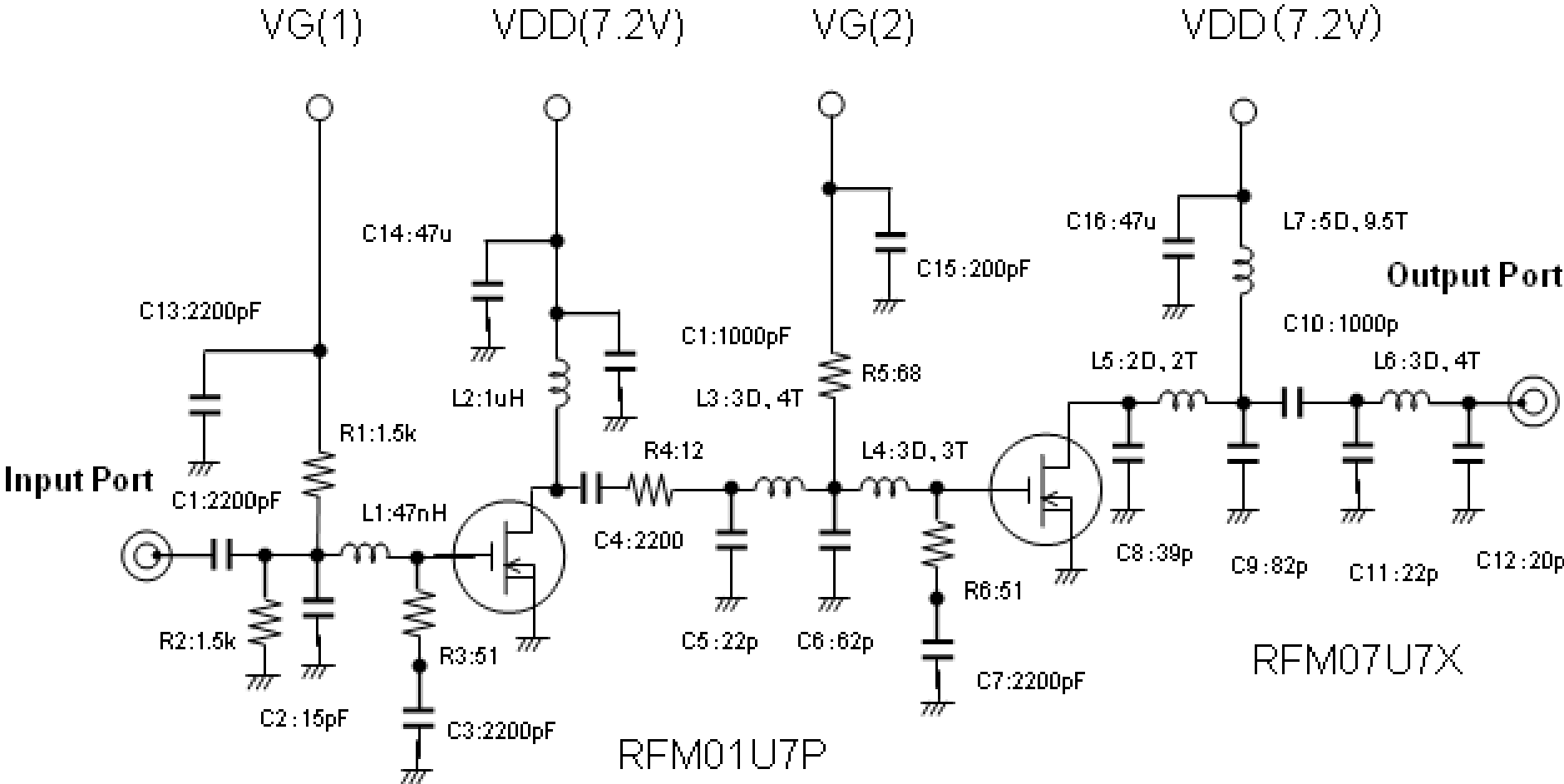


L1 LQG18HN12NJ
L2 LQW18A22NJ

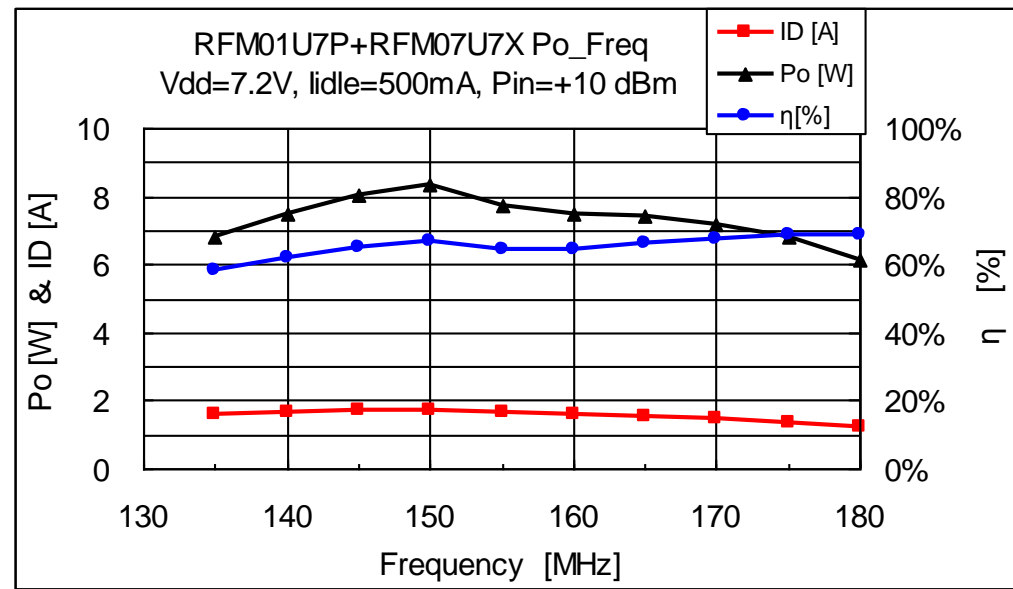
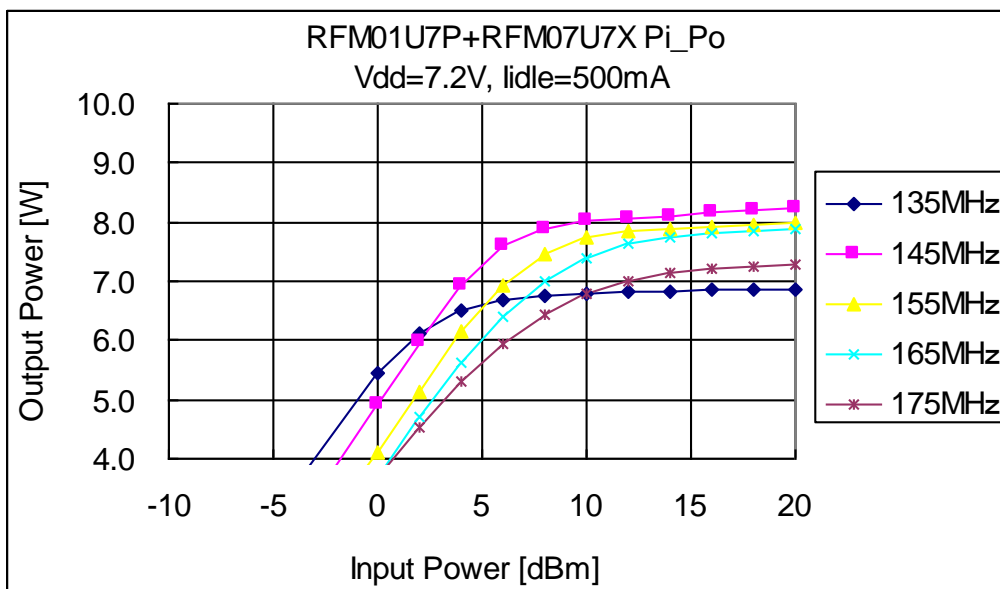
RFM01U7P+RFM07U7X (450 to 530MHz Po Matching)



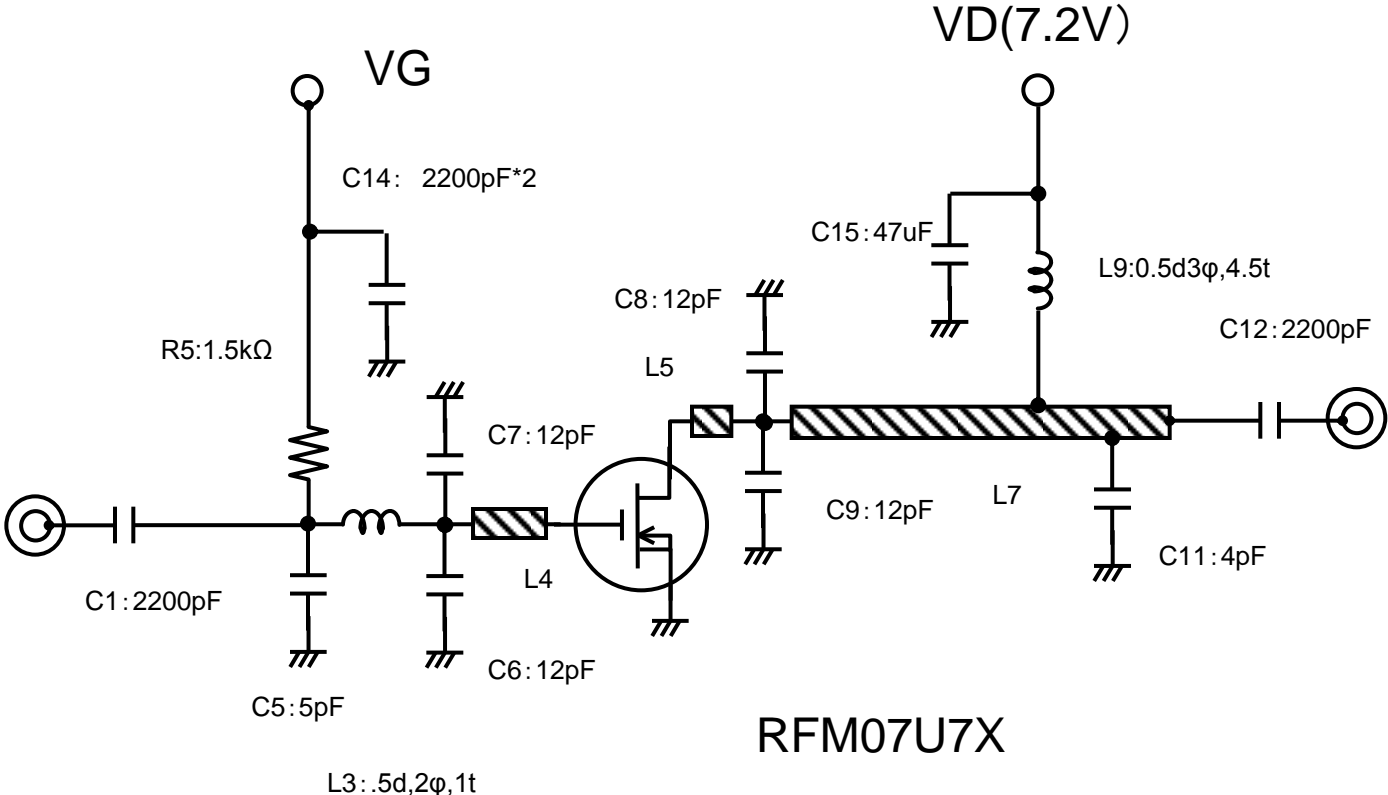
RFM01U7P+RFM07U7X (136 to 174MHz Po Matching)



RFM01U7P+RFM07U7X (136 to 174MHz Po Matching)

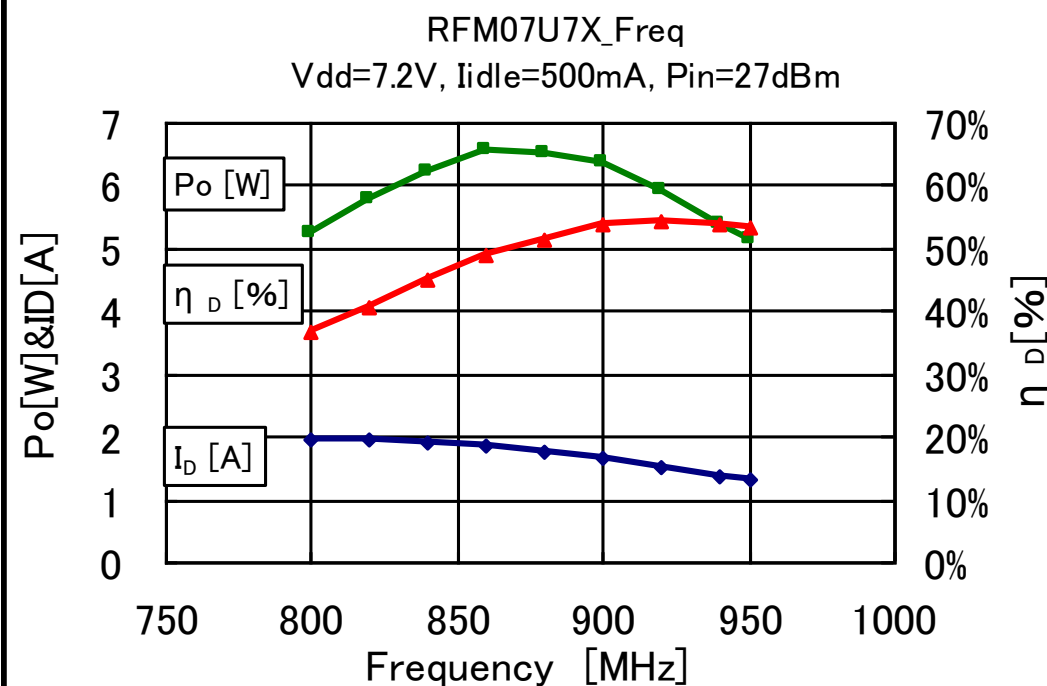
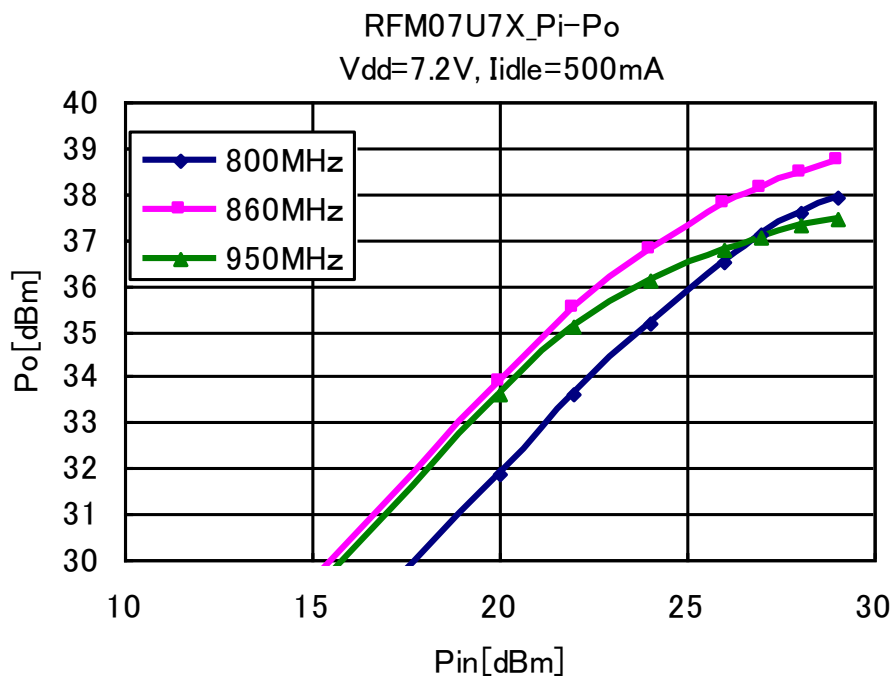


RFM07U7X (800 to 950MHz Po Matching)

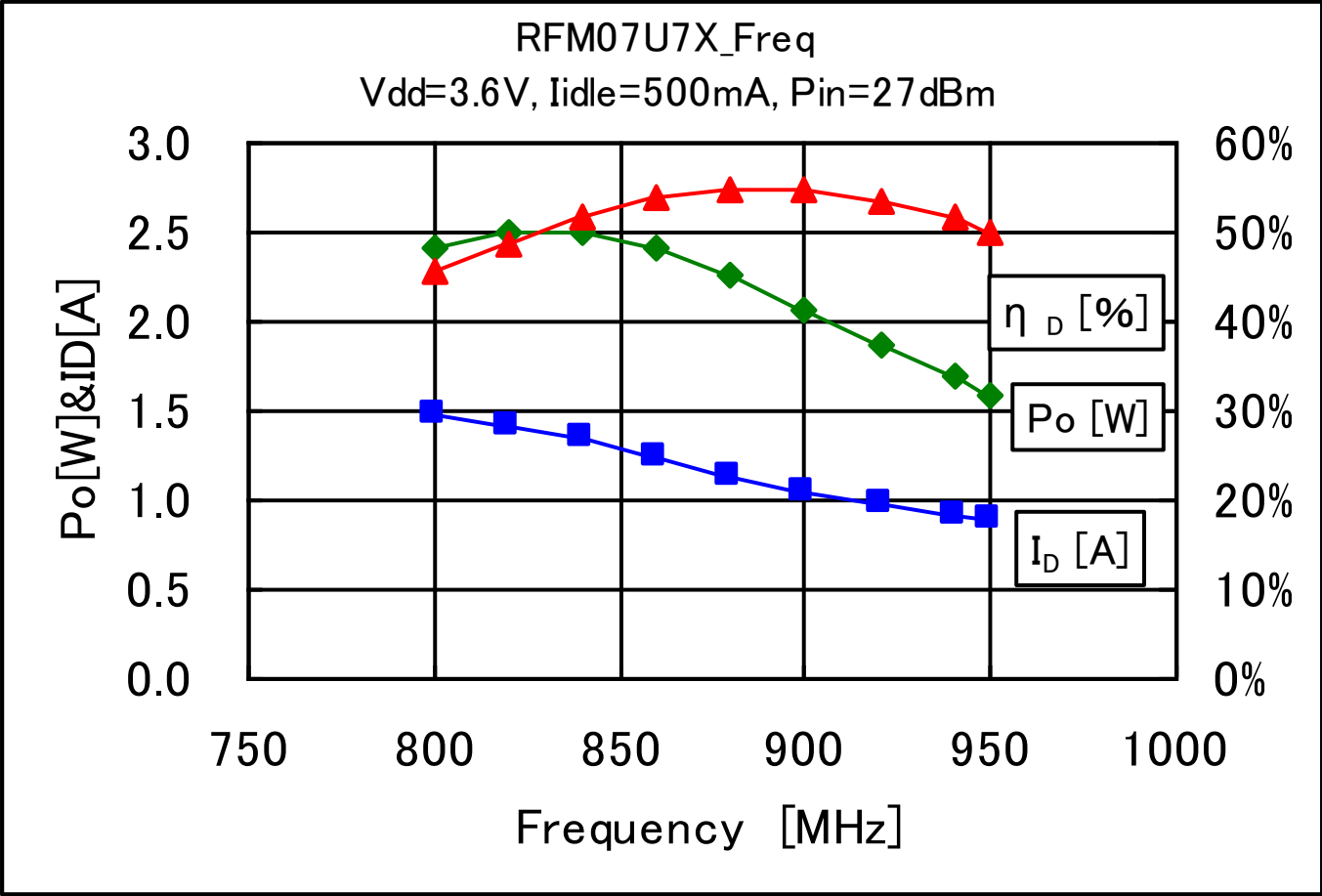


RFM07U7X

RFM07U7X (800 to 950MHz Po Matching)



RFM07U7X (800 to 950MHz Po Matching)



RFM07U7X Load mismatch test

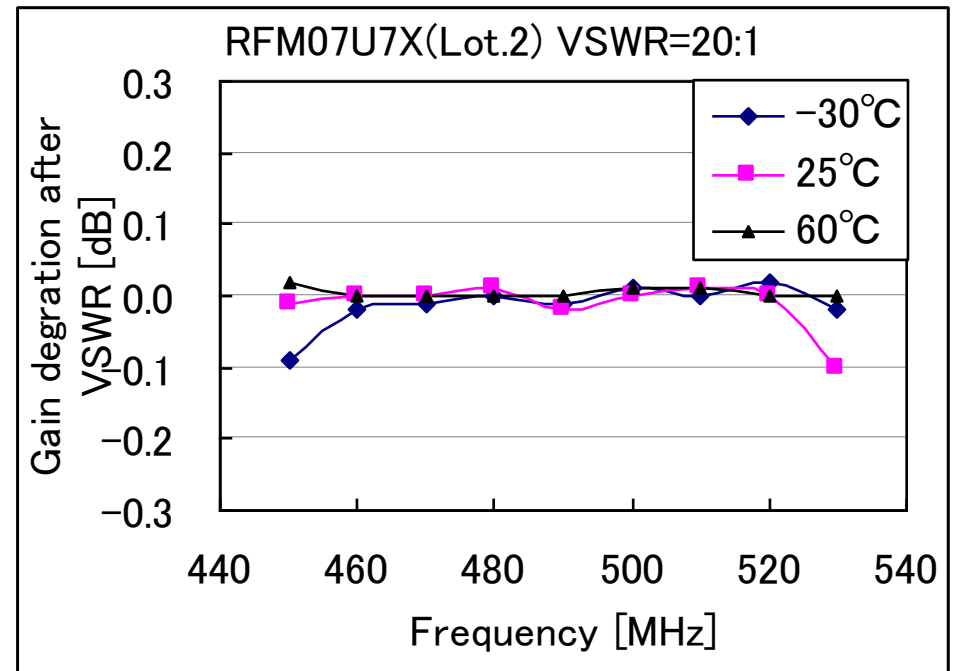
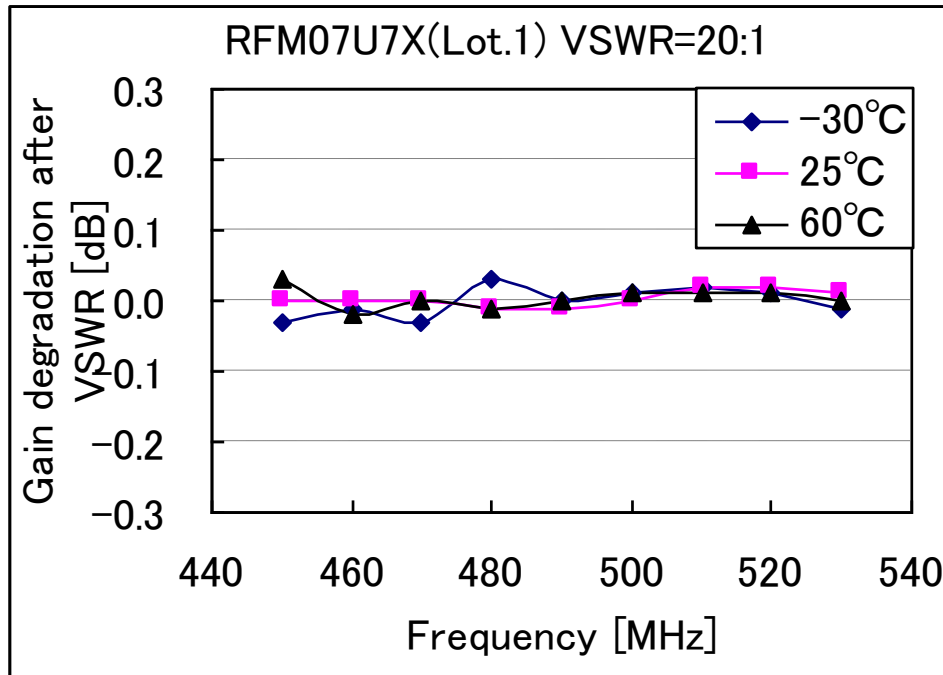
	Vds=7.2V	Vds=10V
Pi=0.2W	OK	OK
Pi=0.5W	OK	OK
Pi=1W	OK	OK

Test condition: LOAD VSWR=20:1(ALL PHASE)

, I_{idle}=500mA(V_{gs}=adjust), f=520MHz

The degradation didn't happen on Pi=1W

RFM07U7X Gain degradation after VSWRT



Test condition: $V_{ds}=7.2V$, $I_{idle}=500mA$ ($V_{gs}=\text{adjust}$), $P_i=0.5W$

, $f=450$ to $530MHz$, LOAD VSWR=20:1(ALL PHASE)

△ Gain became under 0.1dB

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