

# 2SK3475

## VHF- and UHF-band Amplifier Applications

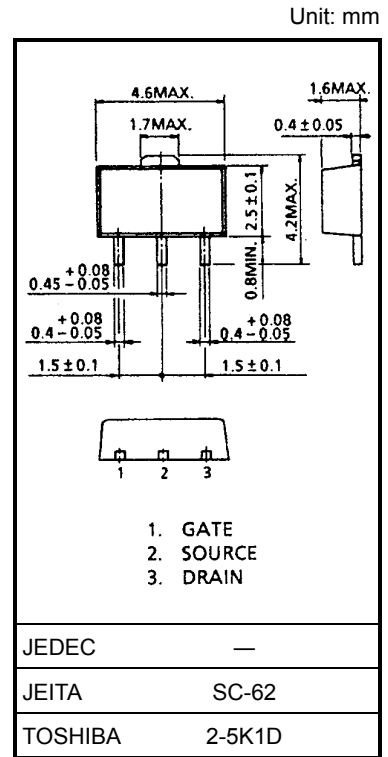
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- Output power:  $P_O = 630 \text{ mW (min)}$
- Gain:  $G_P = 14.9\text{dB (min)}$
- Drain efficiency:  $\eta_D = 45\% \text{ (min)}$

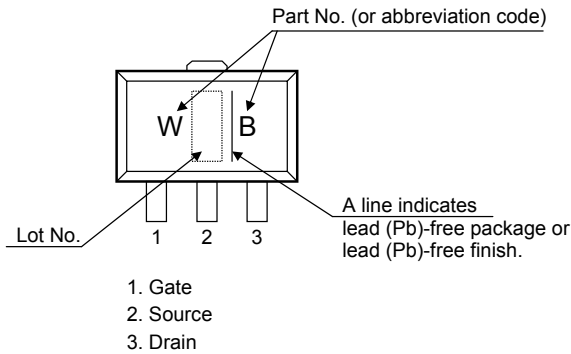
### Maximum Ratings (Ta = 25°C)

Characteristics	Symbol	Rating	Unit
Drain-source voltage	$V_{DSS}$	20	V
Gain-source voltage	$V_{GSS}$	10	V
Drain current	$I_D$	1	A
Power dissipation	$P_D$ (Note 1)	3	W
Channel temperature	$T_{ch}$	150	°C
Storage temperature range	$T_{stg}$	-45~150	°C

Note 1:  $T_c = 25^\circ\text{C}$  (When mounted on a 1.6 mm glass epoxy PCB)



### Marking



**Caution:** This device is sensitive to electrostatic discharge.  
Please make enough tool and equipment earthed when you handle.

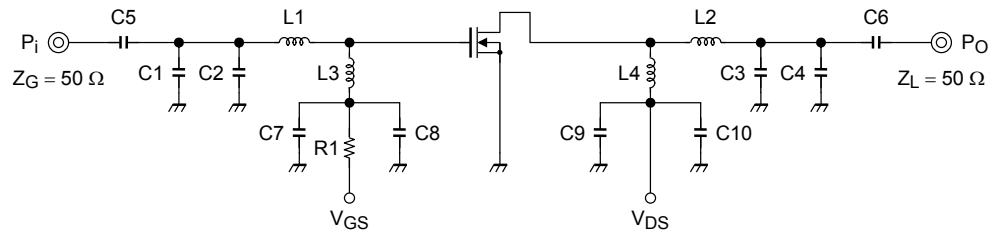
## Electrical Characteristics (Ta = 25°C)

Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Drain cut-off current	$I_{DSS}$	$V_{DS} = 20 \text{ V}, V_{GS} = 0 \text{ V}$	—	—	5	$\mu\text{A}$
Gate-source leakage current	$I_{GSS}$	$V_{GS} = 10 \text{ V}$	—	—	5	$\mu\text{A}$
Threshold voltage	$V_{th}$	$V_{DS} = 7.2 \text{ V}, I_D = 2 \text{ mA}$	1.9	2.4	2.9	V
Drain-source on-voltage	$V_{DS(ON)}$	$V_{GS} = 10 \text{ V}, I_D = 75 \text{ mA}$	—	87	—	mV
Forward transconductance	$Y_{fs}$	$V_{DS} = 7.2 \text{ V}, I_{DS} = 208 \text{ mA}$	—	260	—	mS
Input capacitance	$C_{iss}$	$V_{DS} = 7.2 \text{ V}, V_{GS} = 0 \text{ V}, f = 1 \text{ MHz}$	—	11	—	pF
Output capacitance	$C_{oss}$	$V_{DS} = 7.2 \text{ V}, V_{GS} = 0 \text{ V}, f = 1 \text{ MHz}$	—	12.5	—	pF
Output power	$P_O$	$V_{DS} = 7.2 \text{ V},$ $I_{idle} = 50 \text{ mA} (V_{GS} = \text{adjust}),$ $f = 520 \text{ MHz}, P_i = 20 \text{ mW},$	630	—	—	mW
Drain efficiency	$\eta_D$		45	—	—	%
Power gain	$G_P$		14.9	—	—	dB
Low voltage output power	$P_{OL}$	$V_{DS} = 6.0 \text{ V},$ $I_{idle} = 50 \text{ mA} (V_{GS} = \text{adjust}),$ $f = 520 \text{ MHz}, P_i = 20 \text{ mW},$	500	—	—	mW

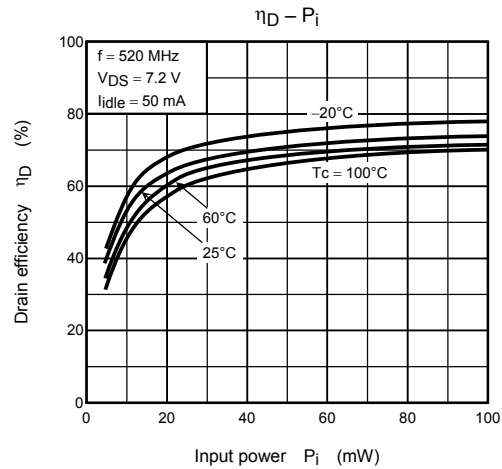
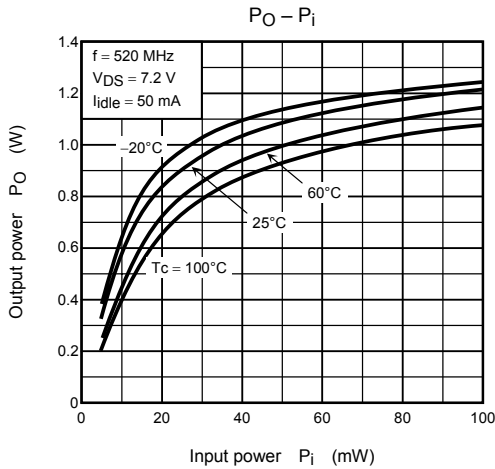
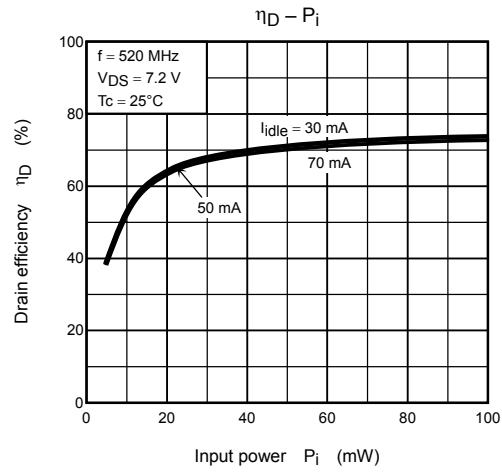
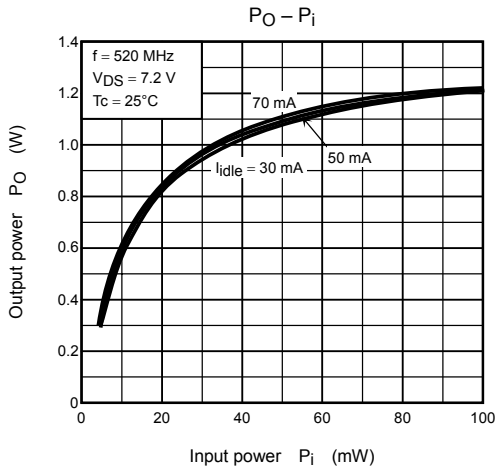
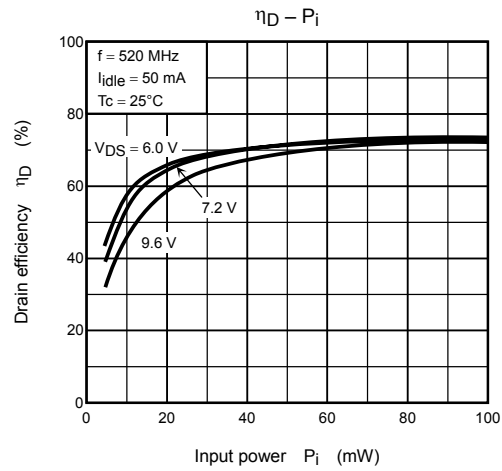
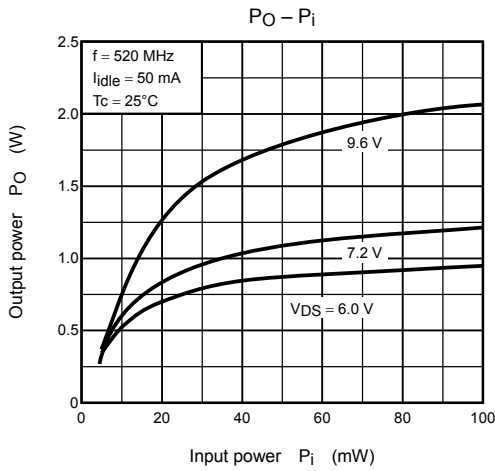
Note 2: These characteristic values are measured using measurement tools specified by Toshiba.

### Output Power Test Fixture

(Test Condition:  $f = 520 \text{ MHz}, V_{DS} = 7.2 \text{ V}, I_{idle} = 50 \text{ mA}, P_i = 20 \text{ mW}$ )



- |                      |  |                    |
|----------------------|--|--------------------|
| C1: 10 pF            | L1: $\phi 0.8 \text{ mm}$ enamel wire, 2.2ID, 1T | R1: 1.5 k $\Omega$ |
| C2: 10 pF            | L2: $\phi 0.8 \text{ mm}$ enamel wire, 2.2ID, 1T |                    |
| C3: 9 pF             | L3: $\phi 0.8 \text{ mm}$ enamel wire, 5.5ID, 4T |                    |
| C4: 6 pF             | L4: $\phi 0.8 \text{ mm}$ enamel wire, 5.5ID, 8T |                    |
| C5: 2200 pF          |  |                    |
| C6: 2200 pF          |  |                    |
| C7: 10 $\mu\text{F}$ |  |                    |
| C8: 10000 pF         |  |                    |
| C9: 10 $\mu\text{F}$ |  |                    |
| C10: 10000 pF        |  |                    |



Note 3: These are only typical curves and devices are not necessarily guaranteed at these curves.

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