

2SK3475

VHF- and UHF-band Amplifier Applications

(Note)The TOSHIBA products listed in this document are intended for high frequency Power Amplifier of telecommunications equipment. These TOSHIBA products are neither intended nor warranted for any other use. Do not use these TOSHIBA products listed in this document except for high frequency Power Amplifier of telecommunications equipment.

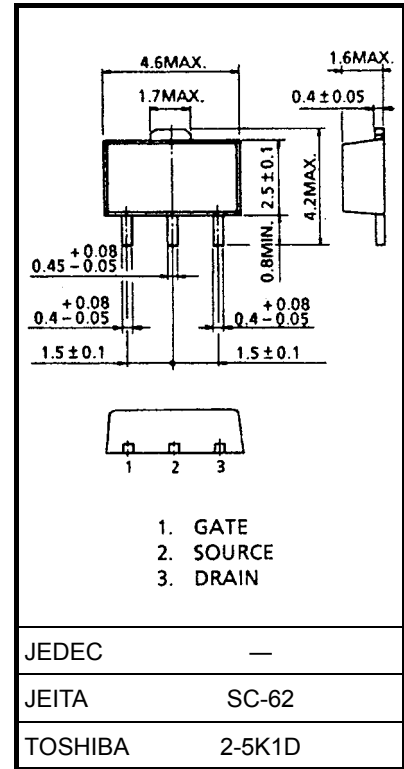
- Output power: $P_O = 630 \text{ mW (min)}$
- Gain: $G_P = 14.9\text{dB (min)}$
- Drain efficiency: $\eta_D = 45\% \text{ (min)}$

Maximum Ratings ($T_a = 25^\circ\text{C}$)

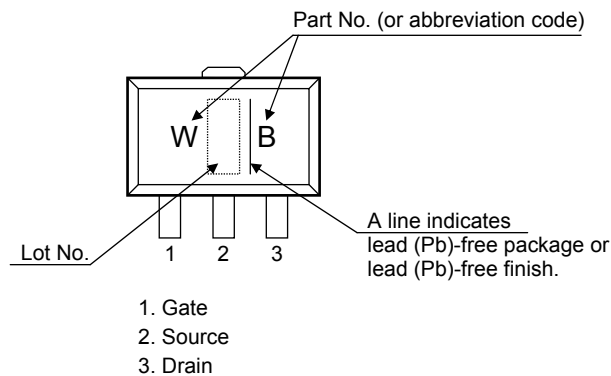
| Characteristics | Symbol | Rating | Unit |
|---------------------------|----------------|---------|------------------|
| Drain-source voltage | V_{DSS} | 20 | V |
| Gain-source voltage | V_{GSS} | 10 | V |
| Drain current | I_D | 1 | A |
| Power dissipation | P_D (Note 1) | 3 | W |
| Channel temperature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

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

Unit: mm



Marking



Caution: This device is sensitive to electrostatic discharge.

Please make enough tool and equipment earthed when you handle.

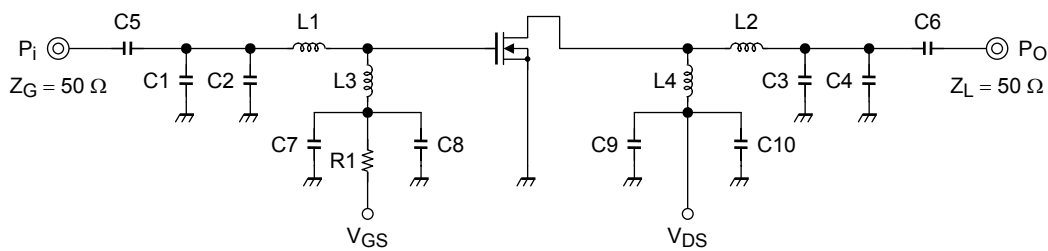
Electrical Characteristics (Ta = 25°C)

| 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 | μA |
| Gate-source leakage current | I_{GSS} | $V_{GS} = 10\text{ V}$ | — | — | 5 | μA |
| 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 | η_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 |

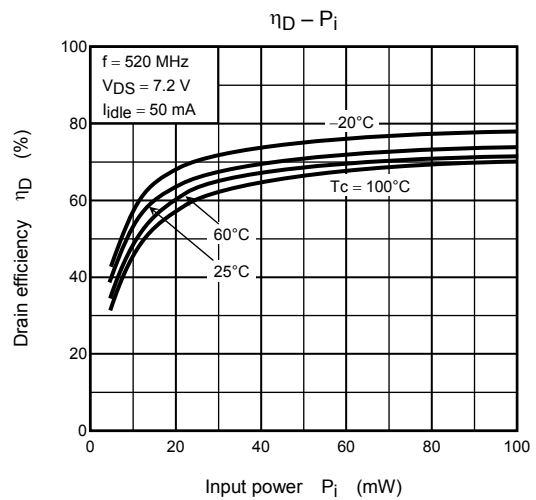
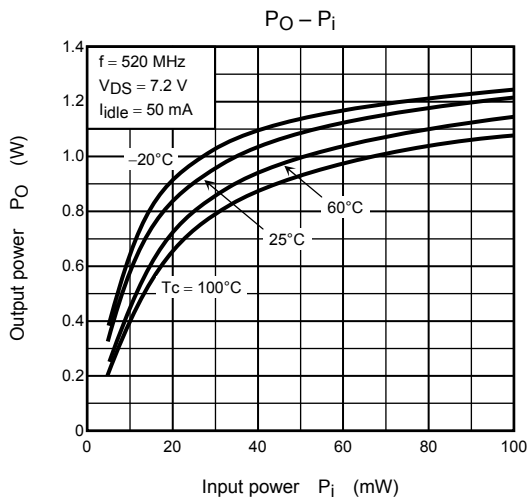
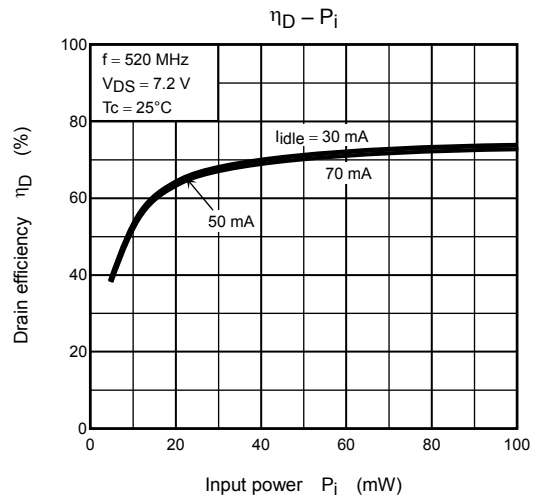
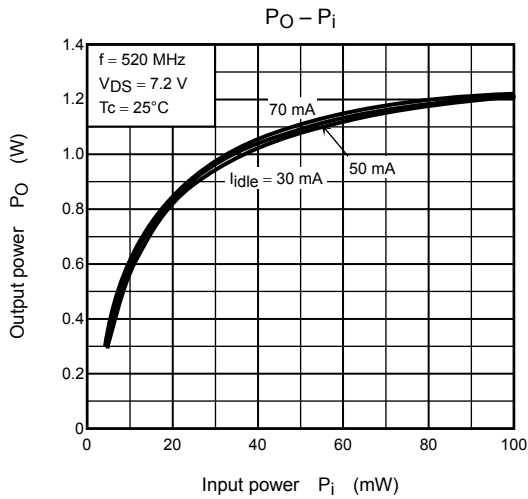
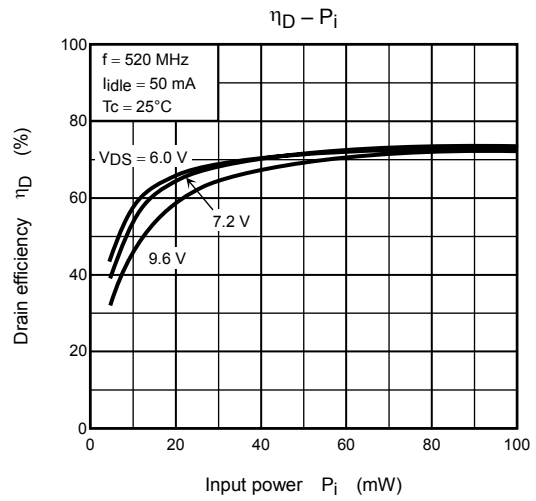
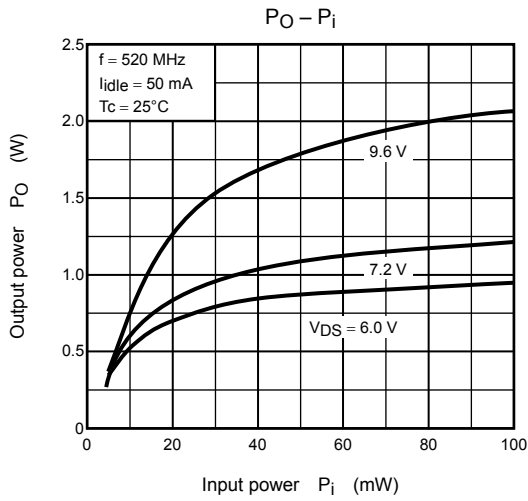
Note 2: These characteristic values are measured using measurement tools specified by Toshiba.

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 Ω |
| 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 μF | | |
| C8: 10000 pF | | |
| C9: 10 μF | | |
| C10: 10000 pF | | |



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

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