

TOSHIBA Field Effect Transistor Silicon N Channel MOS Type

**2SK3756**

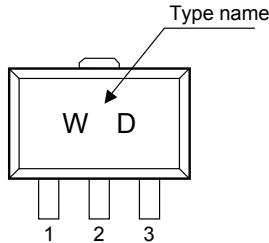
VHF- and UHF-band Amplifier Applications

- Output power:  $P_O = 32\text{dBmW}$  (typ)
- Gain:  $G_P = 12\text{dB}$  (typ)
- Drain efficiency:  $\eta_D = 60\%$  (typ)

**Maximum Ratings (Ta = 25°C)**

Characteristics	Symbol	Rating	Unit
Drain-source voltage	$V_{DSS}$	7.5	V
Gain-source voltage	$V_{GSS}$ (Note 1)	3	V
Drain current	$I_D$	1	A
Power dissipation	$P_D$ (Note 2)	3	W
Channel temperature	$T_{ch}$	150	°C
Storage temperature range	$T_{stg}$	-45~150	°C

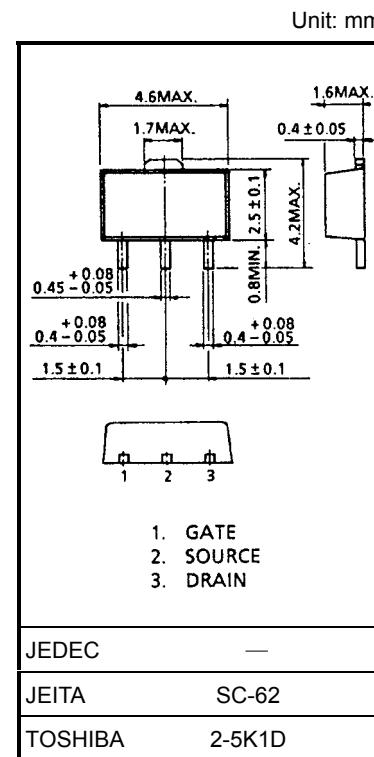
Note 1: Recommended Operation Condition: 0~3V

Note 2:  $T_c = 25\text{°C}$  (When mounted on a 0.8 mm glass epoxy PCB)**Marking**

1. Gate
2. Source
3. Drain

**Caution:** This device is sensitive to electrostatic discharge.

Please make enough tool and equipment earthed when you handle.



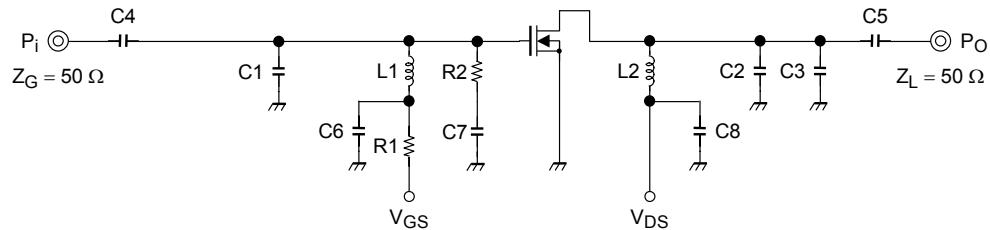
## Electrical Characteristics (Ta = 25°C)

Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Output power	P <sub>O</sub>	$V_{DS} = 4.5 \text{ V}$ , $I_{idle} = 200 \text{ mA}$ ( $V_{GS}$ = adjust), $f = 470 \text{ MHz}$ , $P_i = 20 \text{ dBmW}$ ,	31	32	—	dBmW
Drain efficiency	$\eta_D$		50	60	—	%
Power gain	G <sub>P</sub>		—	12	—	dB
Threshold voltage	V <sub>th</sub>	$V_{DS} = 4.5 \text{ V}$ , $I_D = 0.5 \text{ mA}$	—	0.95	1.45	V
Drain cut-off current	I <sub>DSS</sub>	$V_{DS} = 10 \text{ V}$ , $V_{GS} = 0 \text{ V}$	—	—	10	$\mu\text{A}$
Gate-source leakage current	I <sub>GSS</sub>	$V_{GS} = 3 \text{ V}$ , $V_{DS} = 0 \text{ V}$	—	—	5	$\mu\text{A}$
Load Mismatch (Note 3)	—	$V_{DS} = 4.5 \text{ V}$ , $f = 470 \text{ MHz}$ , $P_i = 20 \text{ dBmW}$ , $P_o = 31 \text{ dBmW}$ ( $V_{GS}$ = adjust), VSWR LOAD 10:1 all phase	No Degradation			—

Note 3: These characteristic values are measured using measurement tools specified by Toshiba.

## Output Power Test Fixture

(Test Condition:  $f = 470 \text{ MHz}$ ,  $V_{DS} = 4.5 \text{ V}$ ,  $I_{idle} = 200 \text{ mA}$ ,  $P_i = 20 \text{ dBmW}$ )



C1: 20 pF

L1:  $\phi 0.6 \text{ mm}$  enamel wire, 5.5ID, 5TR1: 6.8 k $\Omega$ 

C2: 17 pF

L2:  $\phi 0.6 \text{ mm}$  enamel wire, 5.5ID, 7TR2: 56  $\Omega$ 

C3: 1 pF

Line: 2mm

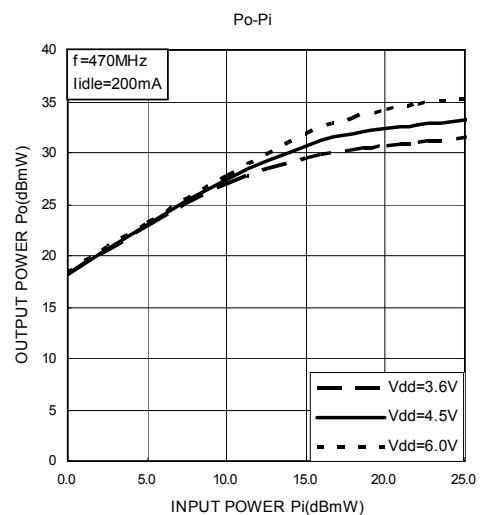
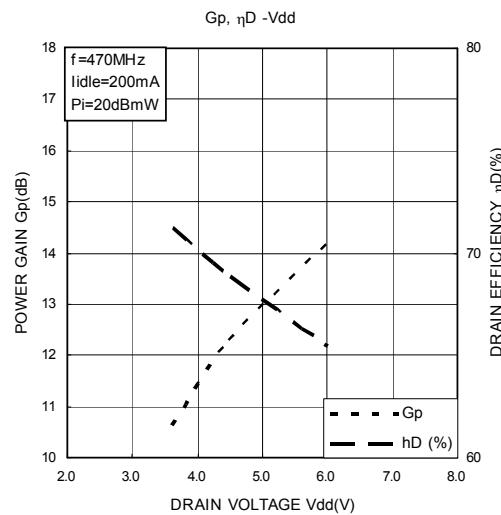
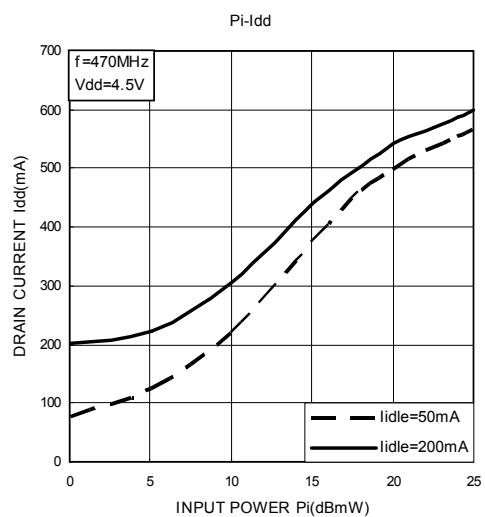
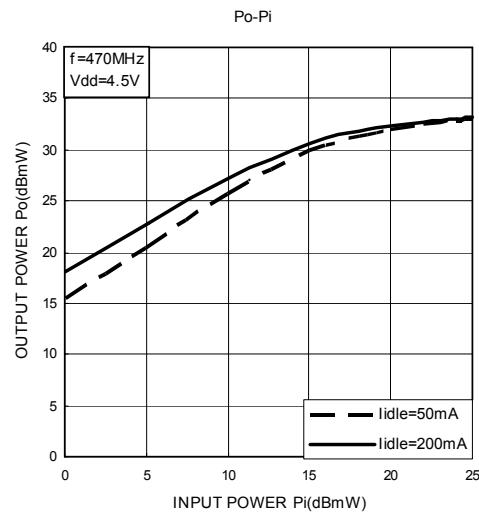
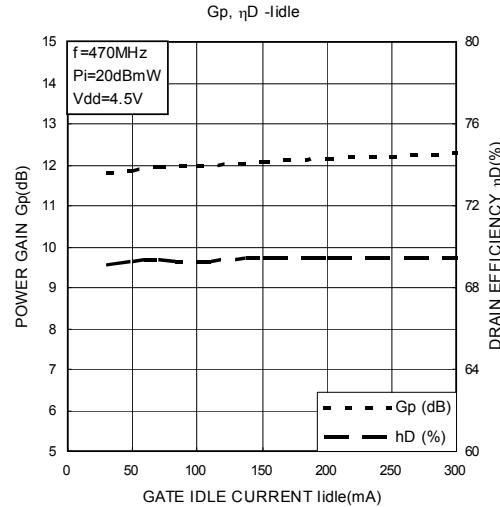
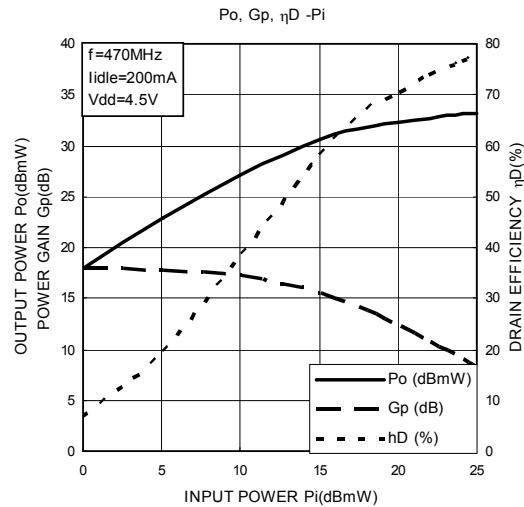
C4: 2200 pF

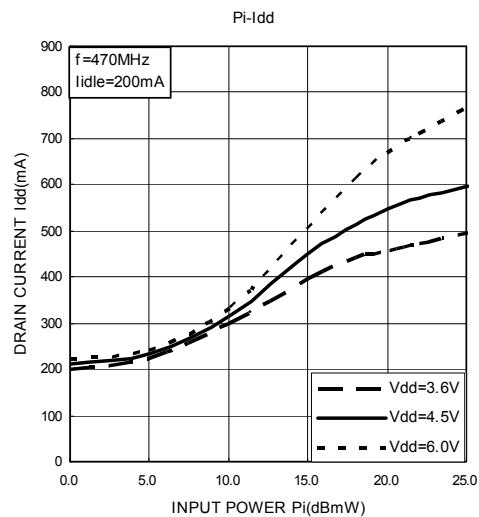
C5: 2200 pF

C6: 10000 pF

C7: 2200 pF

C8: 10000 pF





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