TOSHIBA Field Effect Transistor Silicon N Channel MOS Type

# 2SK302

### FM Tuner, VHF RF Amplifier Applications

Unit: mm

• Low reverse transfer capacitance:  $C_{rss} = 0.035 pF$  (typ.)

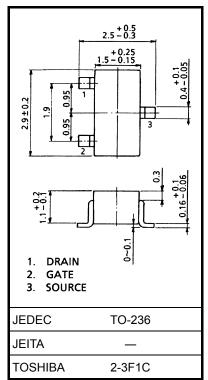
Low noise figure: NF = 1.7dB (typ.)
High power gain: G<sub>ps</sub> = 28dB (typ.)

• Recommend operation voltage: 5~15 V

## Absolute Maximum Ratings (Ta = 25°C)

Characteristics	Symbol	Rating	Unit
Drain-source voltage	$V_{DS}$	20	V
Gate-source voltage	V <sub>GS</sub>	±5	V
Drain current	ID	30	mA
Drain power dissipation	P <sub>D</sub>	150	mW
Channel temperature	T <sub>ch</sub>	125	°C
Storage temperature	T <sub>stg</sub>	-55~125	°C

Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) are within the absolute maximum ratings.



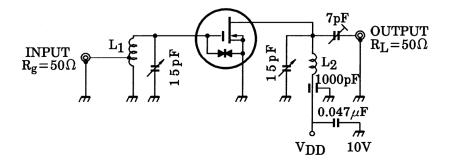
Weight: 0.012 g (typ.)

Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/"Derating Concept and Methods") and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

#### **Electrical Characteristics (Ta = 25°C)**

Characteristics	Symbol	Test Condition	Min	Тур.	Max	Unit
Gate leakage current	I <sub>GSS</sub>	$V_{DS} = 0 \text{ V}, V_{GS} = \pm 5 \text{ V}$	_	_	±50	nA
Drain-source voltage	V <sub>DSX</sub>	$V_{GS} = -4 \text{ V}, I_D = 100 \mu\text{A}$	20	_	_	V
Drain current	I <sub>DSS</sub> (Note)	V <sub>DS</sub> = 10 V, V <sub>GS</sub> = 0 V	1.5	_	14	mA
Gate-source cut-off voltage	V <sub>GS</sub> (OFF)	$V_{DS} = 10 \text{ V}, I_D = 100 \mu\text{A}$	_	_	-2.5	V
Forward transfer admittance	Y <sub>fs</sub>	$V_{DS} = 10 \text{ V}, V_{GS} = 0 \text{ V}, f = 1 \text{ kHz}$	_	10	_	mS
Input capacitance	C <sub>iss</sub>	V 10 V V 0 V f 1 MU=	_	3.0	_	pF
Reverse transfer capacitance	C <sub>rss</sub>	$V_{DS} = 10 \text{ V}, V_{GS} = 0 \text{ V}, f = 1 \text{ MHz}$	_	0.035	0.050	pF
Power gain	G <sub>PS</sub>	V <sub>DS</sub> = 10 V, V <sub>GS</sub> = 0 V,	_	28	_	dB
Noise figure	NF	f = 100 MHz (Figure 1)	_	1.7	3.0	dB

Note: I<sub>DSS</sub> classification O: 1.5~3.5 mA, Y: 3.0~7.0 mA, GR: 6.0~14.0 mA

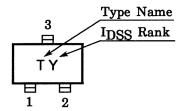


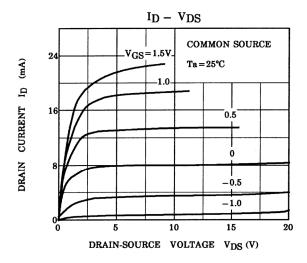
 $L_1{:}~1.0~mm\varphi$  silver plated copper wire 4.0 T, 8 mm $\varphi$  ID TAP at 1.0 T from coil end

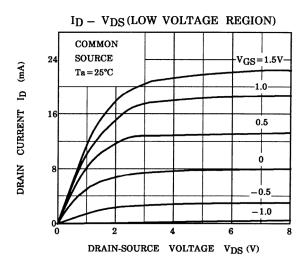
 $L_2$ : 1.0 mm $\phi$  silver plated copper wire 3.0 T, 8 mm $\phi$  ID, 10 mm length

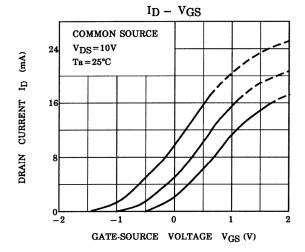
Figure 1 Gps, NF Test Circuit

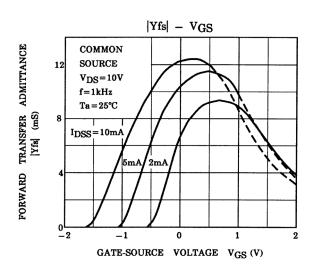
## Marking

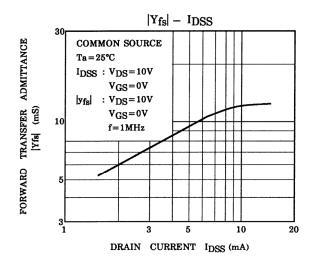


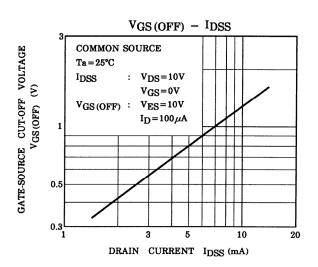


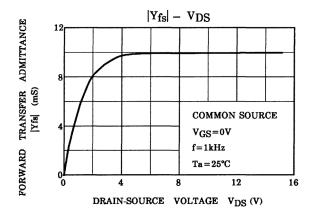


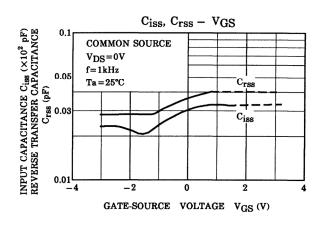


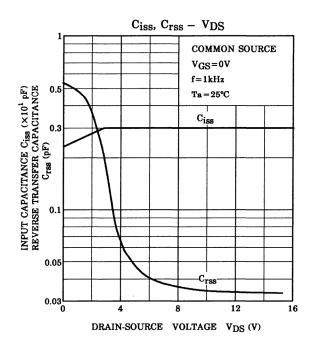


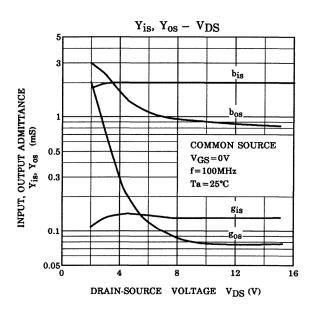


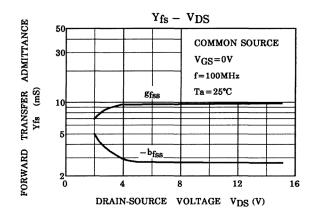


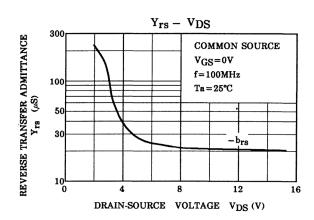


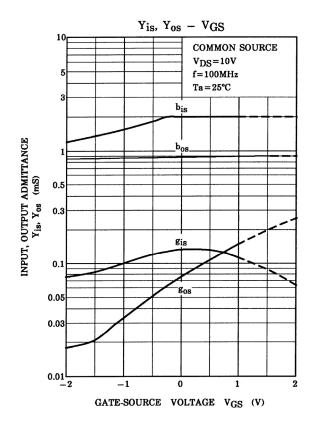


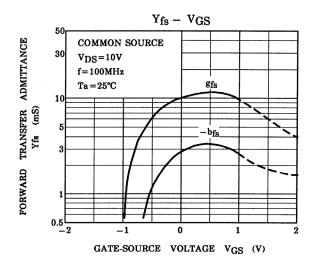


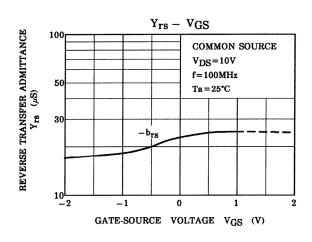


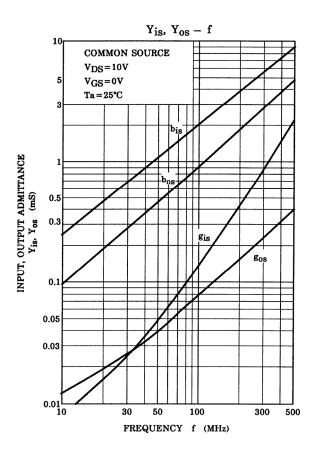


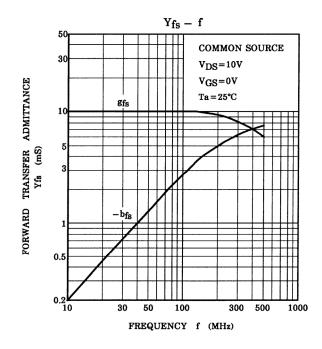


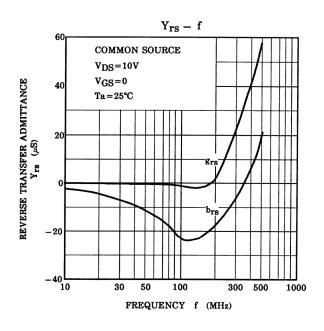


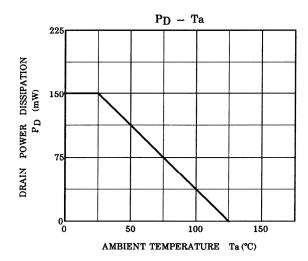












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