

TOSHIBA Field Effect Transistor Silicon N-Channel Dual Gate MOS Type

3SK232

TV Tuner, UHF RF Amplifier Applications

Unit: mm

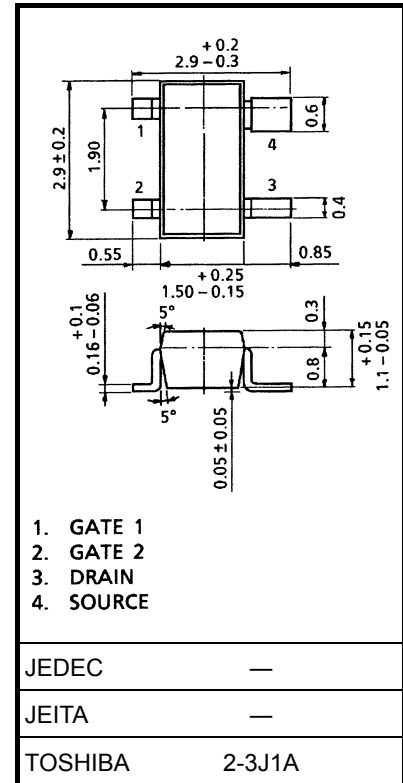
- Superior cross modulation performance.
- Low reverse transfer capacitance.: $C_{rss} = 20 \text{ fF (typ.)}$
- Low noise figure.: $NF = 1.5\text{dB (typ.)}$

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

Characteristics	Symbol	Rating	Unit
Drain-source voltage	V_{DS}	12.5	V
Gate 1-source voltage	V_{G1S}	± 8	V
Gate 2-source voltage	V_{G2S}	± 8	V
Drain current	I_D	30	mA
Drain power dissipation	P_D	150	mW
Channel temperature	T_{ch}	125	$^\circ\text{C}$
Storage temperature range	T_{stg}	$-55 \sim 125$	$^\circ\text{C}$

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.

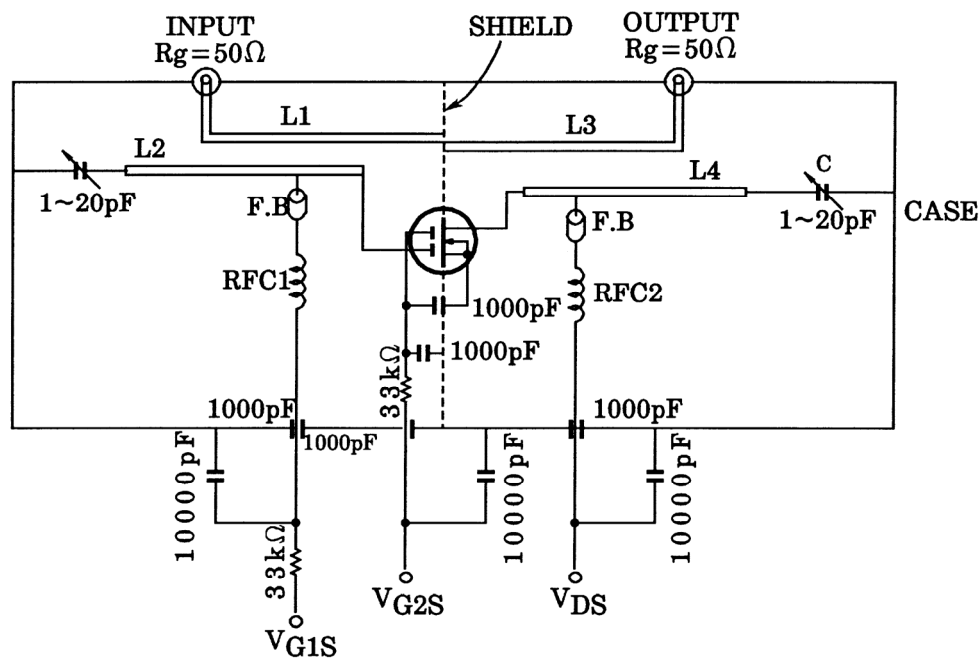
Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/"Derating Concept and Methods") and individual reliability data (i.e. reliability test report and estimated failure rate, etc).



Weight: 0.013 g (typ.)

Electrical Characteristics ($T_a = 25^\circ\text{C}$)

Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Gate 1 leakage current	I_{G1SS}	$V_{DS} = 0, V_{G1S} = \pm 6 \text{ V}, V_{G2S} = 0$	—	—	± 50	nA
Gate 2 leakage current	I_{G2SS}	$V_{DS} = 0, V_{G1S} = 0, V_{G2S} = \pm 6 \text{ V}$	—	—	± 50	nA
Drain-source voltage	$V_{(BR)DSX}$	$V_{G1S} = -0.5 \text{ V}, V_{G2S} = -0.5 \text{ V}$ $I_D = 100 \mu\text{A}$	12.5	—	—	V
Drain current	I_{DSS}	$V_{DS} = 6 \text{ V}, V_{G2S} = 4.5 \text{ V}, V_{G1S} = 0 \text{ V}$	—	—	0.1	mA
Gate 1-source cut-off voltage	$V_{G1S(OFF)}$	$V_{DS} = 6 \text{ V}, V_{G2S} = 4.5 \text{ V}, I_D = 100 \mu\text{A}$	0.4	0.9	1.4	V
Gate 2-source cut-off voltage	$V_{G2S(OFF)}$	$V_{DS} = 6 \text{ V}, V_{G1S} = 4.0 \text{ V}, I_D = 100 \mu\text{A}$	0.5	1.0	1.5	V
Forward transfer admittance	$ Y_{fs} $	$V_{DS} = 6 \text{ V}, V_{G2S} = 4.5 \text{ V}, I_D = 10 \text{ mA}$ $f = 1 \text{ kHz}$	17	21	—	mS
Input capacitance	C_{iss}	$V_{DS} = 6 \text{ V}, V_{G2S} = 4.5 \text{ V}, I_D = 10 \text{ mA}$	0.9	1.5	2.1	pF
Reverse transfer capacitance	C_{rss}	$f = 1 \text{ MHz}$	—	20	40	fF
Power gain	G_{ps}	$V_{DS} = 6 \text{ V}, V_{G2S} = 4.5 \text{ V}, I_D = 10 \text{ mA}$	18	20	—	dB
Noise figure	NF	$f = 800 \text{ MHz (Figure 1)}$	—	1.5	2.5	dB



L1~L4: $\phi 0.8$ mm silver plated copper wire

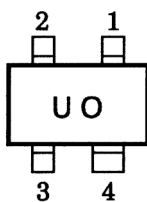
C: Air trimmer TTA25A200A (MURATA Manufacturing, Co., Ltd.)

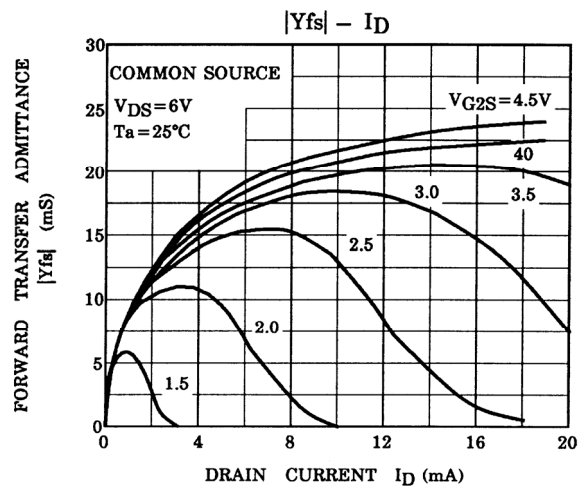
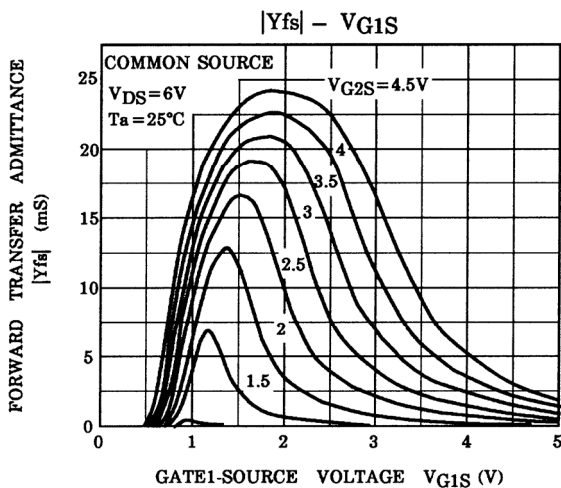
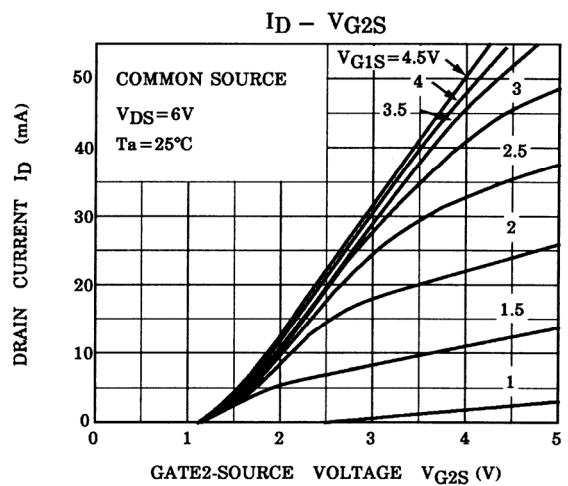
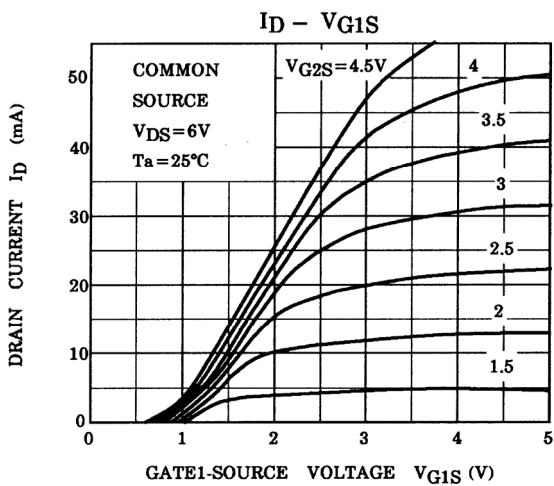
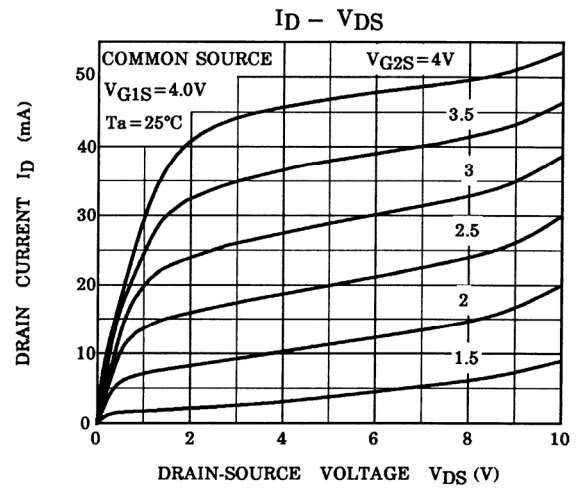
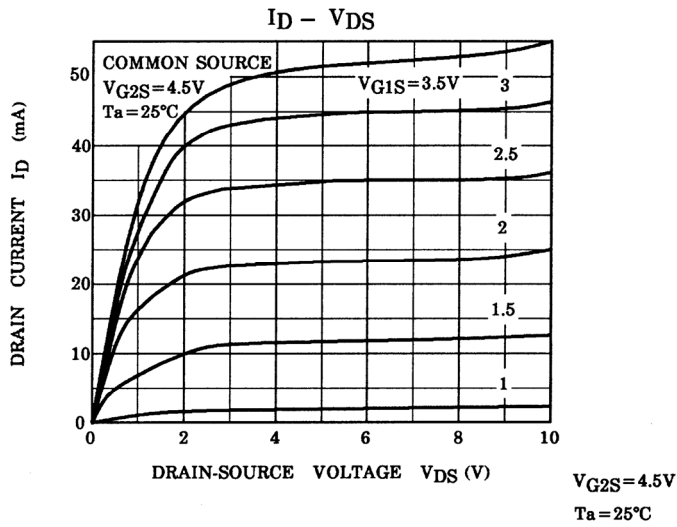
RFC 1: $\phi 0.35$ mm copper wire 3 mm ID, 7 T

RFC 2: $\phi 0.35$ mm copper wire 3 mm ID, 10 T

Figure 1 800 MHz G_{ps} , NF Test Circuit

Marking





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20070701-EN GENERAL

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