

TOSHIBA FIELD EFFECT TRANSISTOR SILICON N-CHANNEL DUAL GATE MOS TYPE

# 3SK294

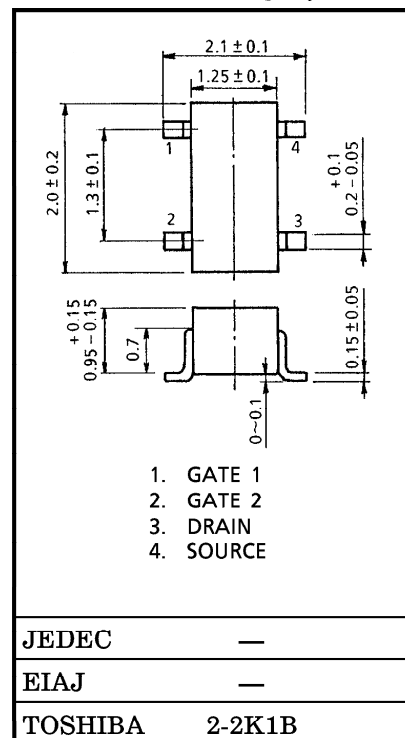
TV TUNER, VHF RF AMPLIFIER APPLICATION

Unit in mm

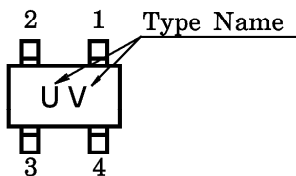
- Superior Cross Modulation Performance
- Low Reverse Transfer Capacitance :  $C_{rss} = 20\text{fF}$  (Typ.)
- Low Noise Figure :  $NF = 1.4\text{dB}$  (Typ.)

MAXIMUM RATINGS ( $T_a = 25^\circ\text{C}$ )

CHARACTERISTIC	SYMBOL	RATING	UNIT
Drain-Source Voltage	$V_{DS}$	12.5	V
Gate 1-Source Voltage	$V_{G1S}$	$\pm 8$	V
Gate 2-Source Voltage	$V_{G2S}$	$\pm 8$	V
Drain Current	$I_D$	30	mA
Drain Power Dissipation	$P_D$	100	mW
Channel Temperature	$T_{ch}$	125	$^\circ\text{C}$
Storage Temperature Range	$T_{stg}$	$-55 \sim 125$	$^\circ\text{C}$



MARKING



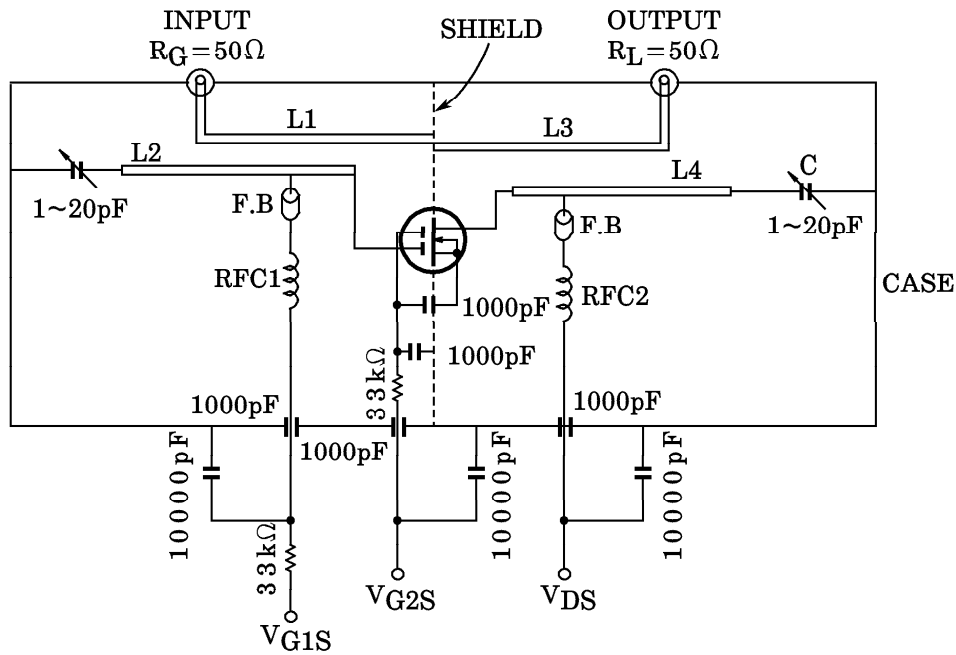
ELECTRICAL CHARACTERISTICS ( $T_a = 25^\circ\text{C}$ )

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate 1 Leakage Current	$I_{G1SS}$	$V_{DS} = 0, V_{G1S} = \pm 6\text{V}, V_{G2S} = 0$	—	—	$\pm 50$	nA
Gate 2 Leakage Current	$I_{G2SS}$	$V_{DS} = 0, V_{G1S} = 0, V_{G2S} = \pm 6\text{V}$	—	—	$\pm 50$	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	$I_{DSS}$	$V_{DS} = 6\text{V}, V_{G1S} = 0, V_{G2S} = 4.5\text{V}$	—	—	0.1	mA
Gate 1-Source Cut-off Voltage	$V_{G1S(OFF)}$	$V_{DS} = 6\text{V}, V_{G2S} = 4.5\text{V}, I_D = 100\mu\text{A}$	0.3	0.9	1.3	V
Gate 2-Source Cut-off Voltage	$V_{G2S(OFF)}$	$V_{DS} = 6\text{V}, V_{G2S} = 4.0\text{V}, I_D = 100\mu\text{A}$	0.5	1.0	1.5	V
Forward Transfer Admittance	$ Y_{fs} $	$V_{DS} = 6\text{V}, V_{G2S} = 4.5\text{V}, I_D = 10\text{mA}, f = 1\text{kHz}$	19.5	23.5	—	mS
Input Capacitance	$C_{iss}$	$V_{DS} = 6\text{V}, V_{G2S} = 4.5\text{V}, I_D = 10\text{mA}, f = 1\text{MHz}$	—	2.5	3.1	pF
Reverse Transfer Capacitance	$C_{rss}$		—	20	40	fF
Power Gain	$G_{ps}$	$V_{DS} = 6\text{V}, V_{G2S} = 4.5\text{V}, I_D = 10\text{mA}, f = 500\text{MHz}$	23.5	26.0	—	dB
Noise Figure	NF		—	1.4	2.5	dB

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Fig.1  $G_{ps}/NF$  TEST CIRCUIT



- L1~L4 :  $\phi$ 0.8mm SILVER PLATED COPPER WIRE
- C : AIR TRIMMER TTA25A200A (MURATA MFG, Co., Ltd.)
- RFC 1 :  $\phi$ 0.35mm VEW 3I.D.7T
- RFC 2 :  $\phi$ 0.35mm VEW 3I.D.10T

