

3SK249

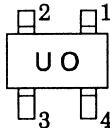
TV TUNER, UHF RF AMPLIFIER APPLICATIONS

- Superior Cross Modulation Performance.
- Low Reverse Transfer Capacitance : $C_{RSS} = 20\text{fF}$ (Typ.)
- Low Noise Figure. : $NF = 1.5\text{dB}$ (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}	± 8	V
Gate 2-Source Voltage	V_{G2S}	± 8	V
Drain Current	I_D	30	mA
Drain Power Dissipation	P_D	100	mW
Chanel Temperature	T_{ch}	125	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	$-55 \sim 125$	$^\circ\text{C}$

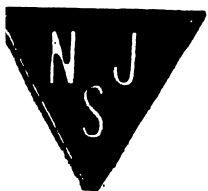
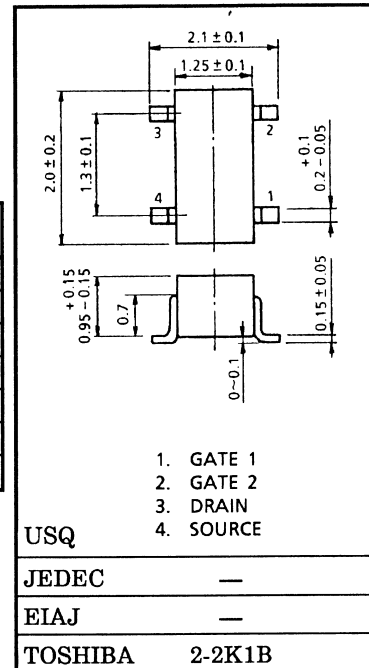
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ELECTRICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate 1 Leakage Current	I_{G1SS}	$V_{DS} = 0, V_{G1S} = \pm 6\text{V}, V_{G2S} = 0$	—	—	± 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	—	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}	$V_{DS} = 6\text{V}, V_{G2S} = 4.5\text{V},$ $I_D = 10\text{mA}, f = 1\text{MHz}$	0.9	1.5	2.1	pF
Reverse Transfer Capacitance	C_{rss}		—	20	40	fF
Power Gain	G_{ps}	$V_{DS} = 6\text{V}, V_{G2S} = 4.5\text{V},$ $I_D = 10\text{mA}, f = 800\text{MHz}$	18	20	—	dB
Noise Figure	NF		—	1.5	2.5	

Unit in mm



2SK1358

Electrical Characteristics (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current		I_{GSS}	$V_{GS} = \pm 25V, V_{DS} = 0V$	-	-	± 100	nA
Drain Cut-off Current		I_{DSS}	$V_{DS} = 720V, V_{GS} = 0V$	-	-	300	μA
Drain-Source Breakdown Voltage		$V_{(BR)DSS}$	$I_D = 10mA, V_{GS} = 0V$	900	-	-	V
Gate Threshold Voltage		V_{th}	$V_{DS} = 10V, I_D = 1mA$	1.5	-	3.5	V
Drain-Source ON Resistance		$R_{DS(ON)}$	$I_D = 4A, V_{GS} = 10V$	-	1.1	1.4	Ω
Forward Transfer Admittance		$ Y_{fs} $	$V_{DS} = 20V, I_D = 4A$	2.0	4.0	-	S
Input Capacitance		C_{iss}	$V_{DS} = 25V, V_{GS} = 0V,$ $f = 1MHz$	-	1300	1800	pF
Reverse Transfer Capacitance		C_{rss}		-	100	150	
Output Capacitance		C_{oss}		-	180	260	
Switching Time	Rise Time	t_r	<p>$V_{IN} : t_r, t_f < 5ns, V_{DD} = 400V$ Duty $\leq 1\%, t_w = 10\mu s$</p>	-	25	50	ns
	Turn-on Time	t_{on}		-	40	80	
	Fall Time	t_f		-	20	40	
	Turn-off Time	t_{off}		-	100	200	
Total Gate Charge (Gate-Source Plus Gate-Drain)		Q_g	$V_{DD} = 400V, V_{GS} = 10V,$ $I_D = 9A$	-	120	240	nC
Gate-Source Charge		Q_{gs}		-	70	-	
Gate-Drain ("Miller") Charge		Q_{gd}		-	50	-	

Source-Drain Diode Ratings and Characteristics (Ta = 25°C)

CHARACTERISTICS	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Continuous Drain Reverse Current	I_{DR}	-	-	-	9	A
Pulse Drain Reverse Current	I_{DRP}	-	-	-	27	A
Diode Forward Voltage	V_{DSF}	$I_{DR} = 9A, V_{GS} = 0V$	-	-	-2.0	V