

N-CHANNEL JUNCTION FIELD-EFFECT TRANSISTOR

2SK193

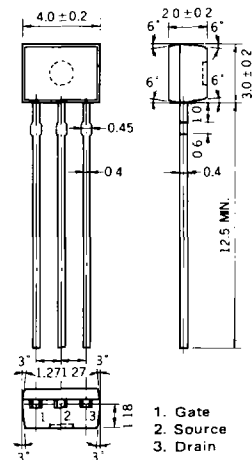
DESCRIPTION The 2SK193 is designed for use in FM tuner of a portable radio receiver.

- FEATURES**
- High $|Y_{fs}|_1$: 3.5 mS TYP.
 $|Y_{fs}|_1$ ($V_{DS} = 5.0$ V, $I_D = 0.5$ mA, $f = 1.0$ kHz)
 - Low C_{rss} : 0.07 pF TYP.
 C_{rss} ($V_{DS} = 5.0$ V, $V_{GS} = 0$)

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

Maximum Temperatures	
Storage Temperature	-55 to +125 $^\circ\text{C}$
Junction Temperature	+125 $^\circ\text{C}$ Maximum
Maximum Power Dissipation ($T_a = 25^\circ\text{C}$)	
Total Power Dissipation	250 mW
Maximum Voltages and Currents ($T_a = 25^\circ\text{C}$)	
V_{GDO} Gate to Drain Voltage	-20 V
V_{GSO} Gate to Source Voltage	-1.0 V
V_{DSX}^* Drain to Source Voltage	20 V
I_D Drain Current	10 mA
I_G Gate Current	10 mA
* $V_{GS} = -2.5$ V	

PACKAGE DIMENSIONS in millimeters



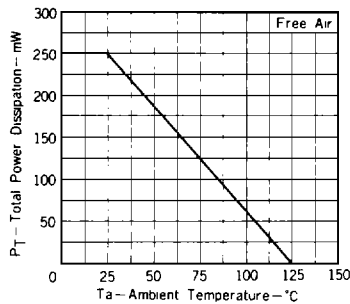
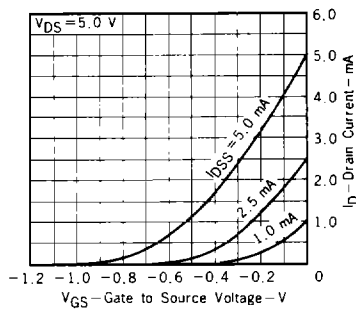
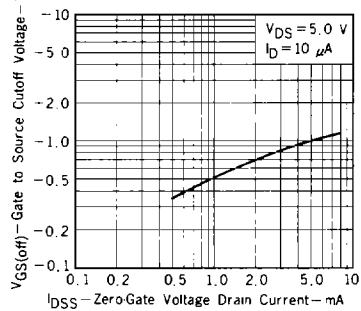
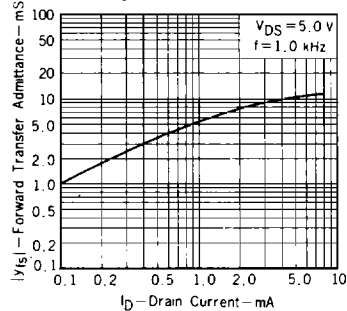
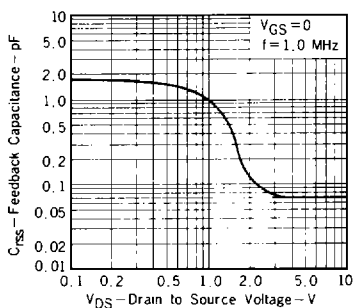
ELECTRICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$)

SYMBOL	CHARACTERISTIC	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
I_{DSS}	Zero-Gate Voltage Drain Current	0.5	2.5	8.0	mA	$V_{DS} = 5.0$ V, $V_{GS} = 0$
$ Y_{fs} _1$	Forward Transfer Admittance	2.3	3.5		mS	$V_{DS} = 5.0$ V, $I_D = 0.5$ mA, $f = 1.0$ kHz
$ Y_{fs} _2$	Forward Transfer Admittance	2.3	8.5		mS	$V_{DS} = 5.0$ V, $V_{GS} = 0$, $f = 1.0$ kHz
C_{iss}	Input Capacitance		5.0	6.5	pF	$V_{DS} = 5.0$ V, $V_{GS} = 0$, $f = 1.0$ MHz
C_{rss}	Feedback Capacitance		0.07	0.25	pF	$V_{DS} = 5.0$ V, $V_{GS} = 0$, $f = 1.0$ MHz
C_{oss}	Output Capacitance		4.5	6.0	pF	$V_{DS} = 5.0$ V, $V_{GS} = 0$, $f = 1.0$ MHz
G_{ps}	Power Gain	13	21		dB	$V_{DS} = 5.0$ V, $V_{GS} = 0$, Z_{in} , $Z_{out} = 50 \Omega$, $f = 100$ MHz, See test circuit
NF	Noise Figure		3.0	6.0	dB	$V_{DS} = 5.0$ V, $V_{GS} = 0$, Z_{in} , $Z_{out} = 50 \Omega$, $f = 100$ MHz, See test circuit
I_{GSS}	Gate Cutoff Current			-100	nA	$V_{GS} = -0.5$ V, $V_{DS} = 0$
$V_{GS(off)}$	Gate to Source Cutoff Voltage			-2.5	V	$V_{DS} = 5.0$ V, $I_D = 10 \mu\text{A}$

Classification of I_{DSS}

Rank	U	E	F	P	K	L	M
$I_{DSS}(\text{mA})$	0.5 - 1.0	0.75 - 1.5	1.0 - 2.0	1.5 - 3.0	2.0 - 4.0	3.0 - 6.0	4.0 - 8.0

I_{DSS} Test Conditions: $V_{DS} = 5.0$ V, $V_{GS} = 0$

TYPICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$ unless otherwise noted)TOTAL POWER DISSIPATION
vs. AMBIENT TEMPERATUREDRAIN CURRENT vs.
GATE TO SOURCE VOLTAGEGATE TO SOURCE CUTOFF
VOLTAGE vs. ZERO-GATE VOLTAGE
DRAIN CURRENTFORWARD TRANSFER ADMITTANCE
vs. DRAIN CURRENTFEEDBACK CAPACITANCE vs.
DRAIN TO SOURCE VOLTAGENOISE FIGURE and POWER GAIN
TEST CIRCUIT ($f = 100\text{ MHz}$)