

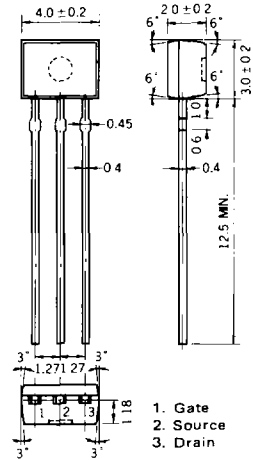
**DESCRIPTION** The 2SK193 is designed for use in FM tuner of a portable radio receiver.

- 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 ( $T_a = 25^\circ\text{C}$ )**

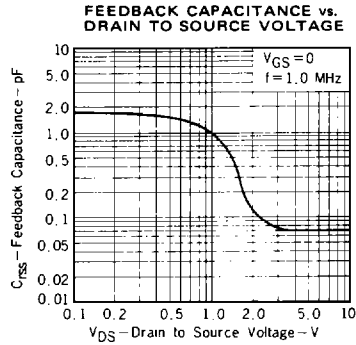
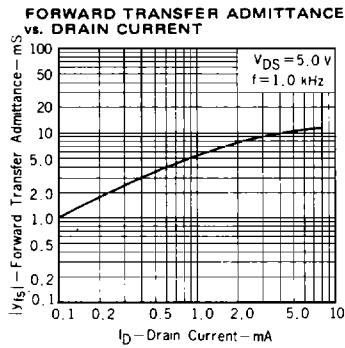
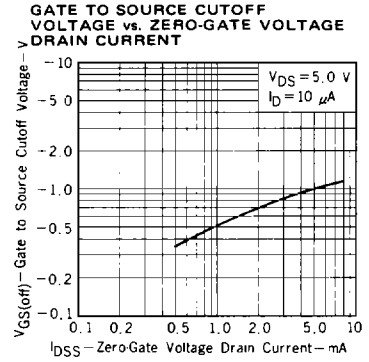
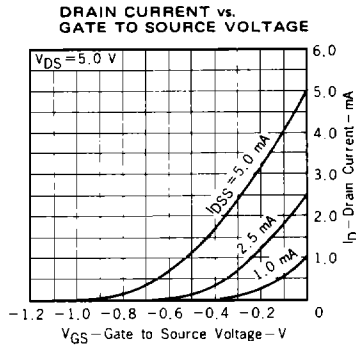
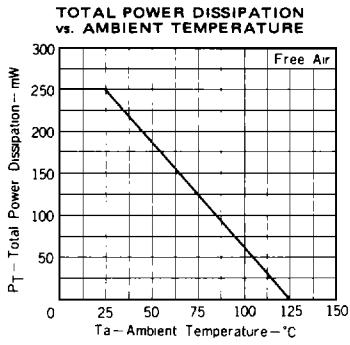
SYMBOL	CHARACTERISTIC	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
$I_{DSS}$	Zero-Gate Voltage Drain Current	0.5	2.5	8.0	mA	$V_{DS} = 5.0$ V, $V_{GS} = 0$
$ y_{fs} _1$	Forward Transfer Admittance	2.3	3.5		mS	$V_{DS} = 5.0$ V, $I_D = 0.5$ mA, $f = 1.0$ kHz
$ y_{fs} _2$	Forward Transfer Admittance	2.3	8.5		mS	$V_{DS} = 5.0$ 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 (Ta = 25 °C unless otherwise noted)



NOISE FIGURE and POWER GAIN TEST CIRCUIT (f = 100 MHz)

