NEC
ELECTRON DEVICE

N-CHANNEL JUNCTION FIELD-EFFECT TRANSISTOR

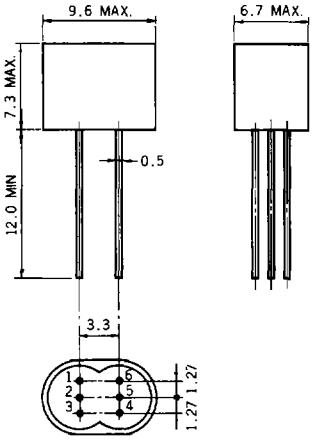
2SK194

DESCRIPTION The 2SK194 is designed for use in the first stage for differential amplifier.
Especially recommended Hi-Fi STEREO SETS.

FEATURES

- Super-Low Noise
  e_n = 0.65 nV/$\sqrt{Hz}$ TYP. @ V_{DS} = 5.0 V, I_D = 5.0 mA, f = 1.0 kHz
- High $|Y_{fs}|$
  $|Y_{fs}|$ = 45 mS @ V_{DS} = 5.0 V, I_D = 5.0 mA, f = 1.0 kHz
- Excellent pair balance
  ΔV_{GS} = 20 mV MAX.
  $|Y_{fs}|$ Ratio = 0.95 MAX.
  @ V_{DS} = 5.0 V, I_D = 5.0 mA

PACKAGE DIMENSIONS
(Unit : mm)



1. Source 1
2. Gate 1
3. Drain 1
4. Drain 2
5. Gate 2
6. Source 2

ABSOLUTE MAXIMUM RATINGS (Ta = 25 °C)

Maximum Temperatures
- Storage Temperature . . . . . −55 to +125 °C
- Junction Temperature . . . . . +125 °C Maximum

Maximum Power Dissipation
- Total Power Dissipation . . . . . 400 mW/Unit

Maximum Voltages and Currents

V_{GDO}	Gate to Drain Voltage	−40	V
V_{GSO}	Gate to Source Voltage	−40	V
V_{DSX}*	Drain to Source Voltage	40	V
I_D	Drain Current	50	mA
I_G	Gate Current	10	mA

*V_{GS} = −3.0 V

ELECTRICAL CHARACTERISTICS (Ta = 25 °C)

SYMBOL	CHARACTERISTIC	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
I_{DSS}	Drain Current	5.0		24	mA	V_{DS} = 5.0 V, V_{GS} = 0
$\frac{I_{DSS(S)}}{I_{DSS(L)}}$	Drain Current Ratio	0.9		1.0		V_{DS} = 5.0 V, V_{GS} = 0 $I_{DSS(S)}/I_{DSS(L)}$*
$\lvert Y_{fs}\rvert$	Forward Transfer Admittance	40	45		mS	V_{DS} = 5.0 V, I_D = 5.0 mA, f = 1.0 kHz
$\frac{\lvert Y_{fs}\rvert_{(S)}}{\lvert Y_{fs}\rvert_{(L)}}$	Forward Transfer Admittance Ratio	0.95		1.0		V_{DS} = 5.0 V, I_D = 5.0 mA, f = 1.0 kHz $\lvert Y_{fs}\rvert_{(S)}/\lvert Y_{fs}\rvert_{(L)}$*
ΔV_{GS}	Gate to Source Voltage Difference		3.0	20	mV	V_{DS} = 5.0 V, I_D = 5.0 mA $\Delta V_{GS} = V_{GS(L)} - V_{GS(S)}$*
NV	Noise Voltage		25	35	mV	See Test Circuit
C_{iss}	Input Capacitance		55		pF	V_{DS} = 10 V, V_{GS} = 0, f = 1.0 MHz
C_{rss}	Feedback Capacitance		10		pF	V_{DS} = 10 V, V_{GS} = 0, f = 1.0 MHz
$V_{GS(off)}$	Gate to Source Cutoff Voltage			−1.2	V	V_{DS} = 5.0 V, I_D = 10 μA
I_{GSS}	Gate Cutoff Current			−1.0	nA	V_{GS} = −20 V, V_{DS} = 0

*(S) : The Smaller Value, (L) : The Larger of pair

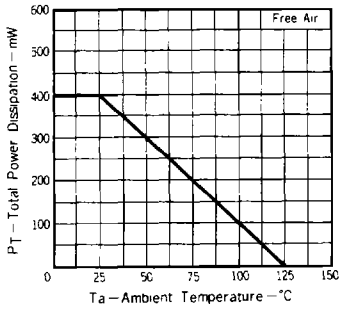
Classification of I_{DSS}

Rank	K	L	M
I_{DSS}(mA)	5.0 – 12	11 – 18	17 – 24

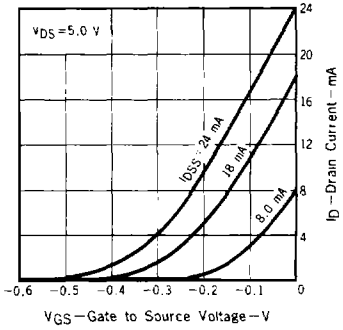
I_{DSS} Test Conditions : V_{DS} = 5.0 V, V_{GS} = 0

TYPICAL CHARACTERISTICS (Ta = 25 °C)

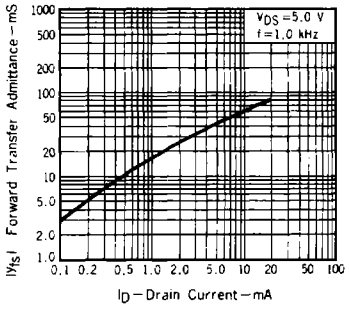
TOTAL POWER DISSIPATION vs. AMBIENT TEMPERATURE



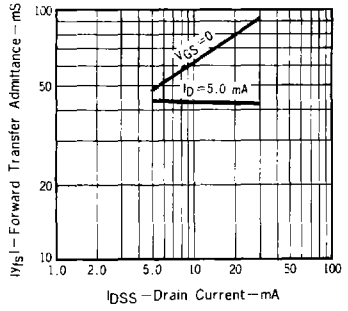
DRAIN CURRENT vs. GATE TO SOURCE VOLTAGE



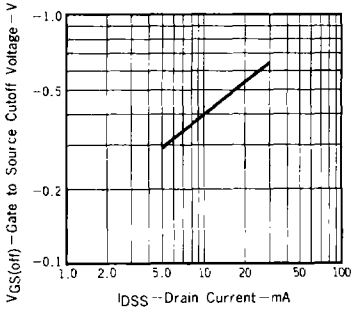
FORWARD TRANSFER ADMITTANCE vs. DRAIN CURRENT



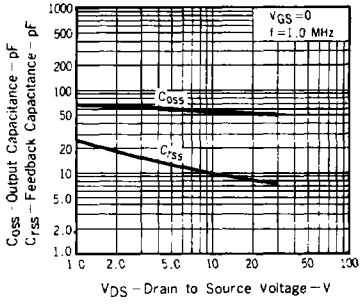
FORWARD TRANSFER ADMITTANCE vs. DRAIN CURRENT (CORRELATIVITY)



GATE TO SOURCE CUTOFF VOLTAGE vs. DRAIN CURRENT (CORRELATIVITY)



OUTPUT AND FEEDBACK CAPACITANCE vs. DRAIN TO SOURCE VOLTAGE



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NOISE VOLTAGE TEST CIRCUIT