

N-CHANNEL JUNCTION FIELD-EFFECT TRANSISTOR

2SK163

DESCRIPTION The 2SK163 is designed for use in the first stage for AF Low Noise amplifier.

- FEATURES**
- Low Equivalent Noise Voltage.
 $e_n = 1.3 \text{ nV}/\sqrt{\text{Hz}}$ TYP. ($V_{DS} = 10 \text{ V}$, $I_D = 1.0 \text{ mA}$, $f = 1.0 \text{ kHz}$)
 - High Voltage and High $|Y_{fs}|$
 $V_{DSX} > 50 \text{ V}$ ($V_{GS} = -2.0 \text{ V}$)
 $|Y_{fs}| > 7.0 \text{ mS}$ ($V_{DS} = 10 \text{ V}$, $I_D = 1.0 \text{ mA}$, $f = 1.0 \text{ kHz}$)

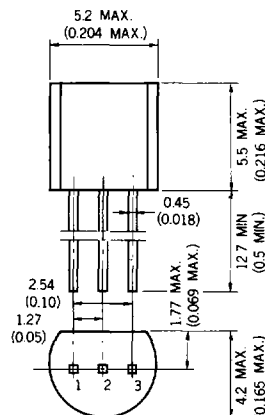
ABSOLUTE MAXIMUM RATINGS

Maximum Temperatures	
Storage Temperature	−55 to +125 °C
Junction Temperature	+125 °C Maximum
Maximum Power Dissipation ($T_a = 25 \text{ °C}$)	
Total Power Dissipation	400 mW
Maximum Voltages and Currents ($T_a = 25 \text{ °C}$)	
V_{GDO} Gate to Drain Voltage	−50 V
V_{GSO} Gate to Source Voltage	−50 V
V_{DSX}^* Drain to Source Voltage	50 V
I_D Drain Current	30 mA
I_G Gate Current	10 mA

* $V_{GS} = -2.0 \text{ V}$

PACKAGE DIMENSIONS

in millimeters (inches)



1. DRAIN EIAJ : SC-43
 2. GATE JEDEC : TO-92
 3. SOURCE IEC : PA33

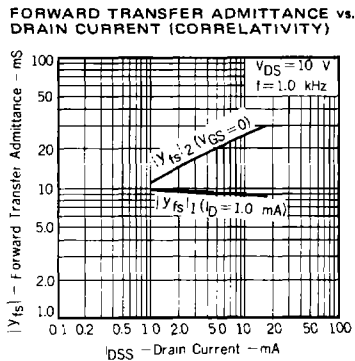
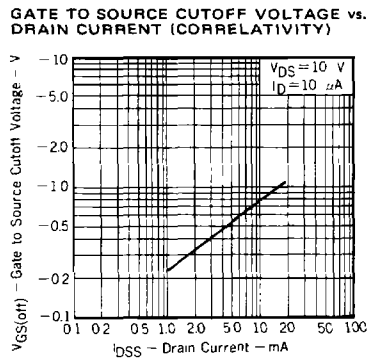
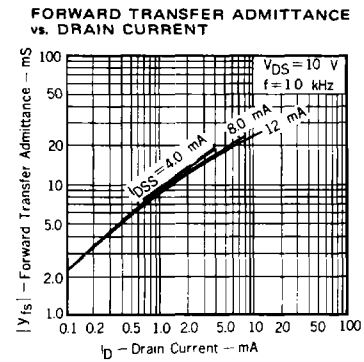
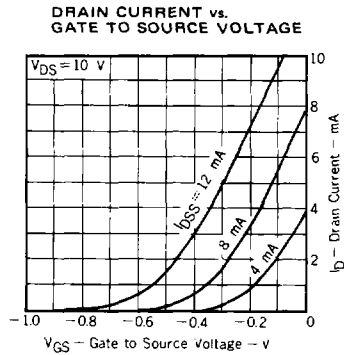
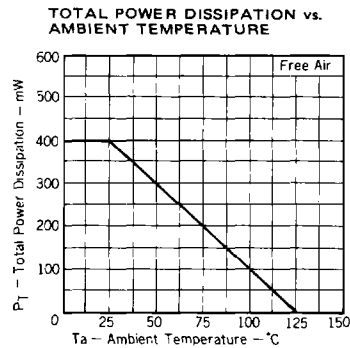
ELECTRICAL CHARACTERISTICS ($T_a = 25 \text{ °C}$)

SYMBOL	CHARACTERISTIC	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
I_{DSS}	Drain Current	1.0	8.0	18	mA	$V_{DS} = 10 \text{ V}$, $V_{GS} = 0$
e_n	Equivalent Noise Voltage		1.3		$\text{nV}/\sqrt{\text{Hz}}$	$V_{DS} = 10 \text{ V}$, $I_D = 1.0 \text{ mA}$, $f = 1.0 \text{ kHz}$
$ Y_{fs} _1$	Forward Transfer Admittance	7.0	9.0		mS	$V_{DS} = 10 \text{ V}$, $I_D = 1.0 \text{ mA}$, $f = 1.0 \text{ kHz}$
$ Y_{fs} _2$	Forward Transfer Admittance	7.0			mS	$V_{DS} = 10 \text{ V}$, $V_{GS} = 0$, $f = 1.0 \text{ kHz}$
NV	Noise Voltage			20	mV	See test circuit
C_{iss}	Input Capacitance		15		pF	$V_{DS} = 10 \text{ V}$, $I_D = 1.0 \text{ mA}$, $f = 1.0 \text{ MHz}$
C_{rss}	Feedback Capacitance		6.0		pF	$V_{DS} = 10 \text{ V}$, $I_D = 1.0 \text{ mA}$, $f = 1.0 \text{ MHz}$
I_{GSS}	Gate Cutoff Current			−1.0	nA	$V_{GS} = -20 \text{ V}$, $V_{DS} = 0$
$V_{GS(off)}$	Gate to Source Cutoff Voltage	−0.2		−1.2	V	$V_{DS} = 10 \text{ V}$, $I_D = 10 \text{ } \mu\text{A}$

Classification of I_{DSS}

Rank	K	L	M	N
$I_{DSS}(\text{mA})$	1.0 – 6.0	5.0 – 10	9.0 – 14	13 – 18

I_{DSS} Test Conditions: $V_{DS} = 10 \text{ V}$, $V_{GS} = 0$

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

NOISE VOLTAGE TEST CIRCUIT

