NEC
ELECTRON DEVICE

P-CHANNEL JUNCTION FIELD-EFFECT TRANSISTOR

2SJ44

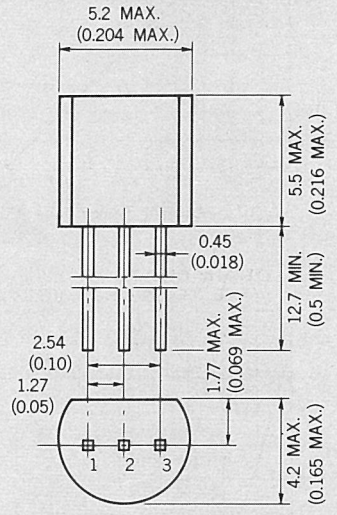
Phase-out/Discontinued

DESCRIPTION The 2SJ44 is designed for use in driver stage of AF low noise amplifier.

FEATURES

- Low Noise Figure
  e_n=1.5 nV/$\sqrt{Hz}$ TYP. (V_{DS}=−10 V, I_D=−1.0 mA, f=1.0 kHz)
  NV ≦ 20 mV
- High Voltage, High $|y_{fs}|$, and Wide Dynamic Range
  V_{GDO} ≧ 40 V
  $|y_{fs}|$=9.0 mS TYP. (V_{DS}=−10 V, I_D=−1.0 mA, f=1.0 kHz)
- Complementary to NEC 2SK163

PACKAGE DIMENSIONS
in millimeters (inches)



1. DRAIN
2. GATE
3. SOURCE

EIAJ : SC-43A
JEDEC : TO-92
IEC : PA33

ABSOLUTE MAXIMUM RATINGS

Maximum Temperatures

Storage Temperature . . . . . −55 to +125 °C

Junction Temperature . . . . . +125 °C Maximum

Maximum Power Dissipation (Ta = 25 °C)

Total Power Dissipation . . . . . 400 mW

Maximum Voltages and Currents (Ta = 25 °C)

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	−30	mA
I_G	Gate Current	−10	mA

* V_{GS} = −2.0 V

ELECTRICAL CHARACTERISTICS (Ta = 25 °C)

SYMBOL	CHARACTERISTIC	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
I_{DSS}	Zero-Gate Voltage Drain Current	−1.0	−9.0	−18	mA	V_{DS}=−10 V, V_{GS}=0
$\|y_{fs}\|_1$	Forward Transfer Admittance	7.0	9.0		mS	V_{DS}=−10 V, I_D=−1.0 mA, f=1.0 kHz
$\|y_{fs}\|_2$	Forward Transfer Admittance	7.0			mS	V_{DS}=−10 V, V_{GS}=0, f=1.0 kHz
C_{iss}	Input Capacitance		50		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
NV	Noise Voltage		16	20	mV	See test circuit
I_{GSS}	Gate Cutoff Current			1.0	nA	V_{GS}=20 V, V_{DS}=0
$V_{GS(off)}$	Gate to Source Cutoff Voltage	0.2		1.5	V	V_{DS}=−10 V, I_D=−10 μA

Classification of I_{DSS}

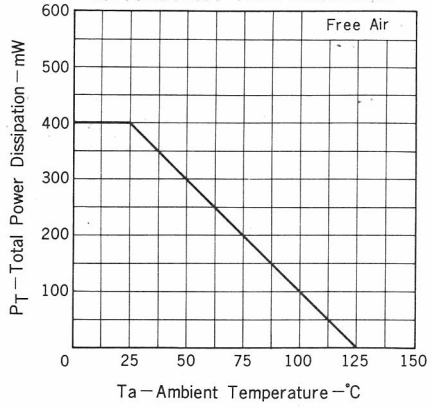
Rank	K	L	M	N
I_{DSS}(mA)	−1.0 – −6.0	−5.0 – −10	−9.0 – −14	−13 – −18

I_{DSS} Test Conditions : V_{DS}=−10 V, V_{GS}=0

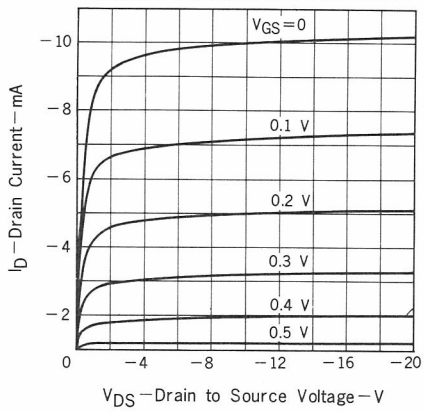
Phase-out/Discontinued

TYPICAL CHARACTERISTICS (Ta = 25 °C unless otherwise noted)

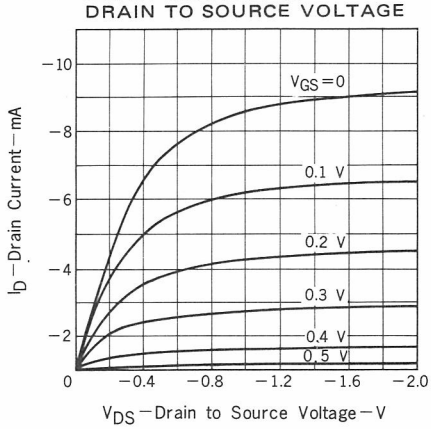
TOTAL POWER DISSIPATION vs. AMBIENT TEMPERATURE



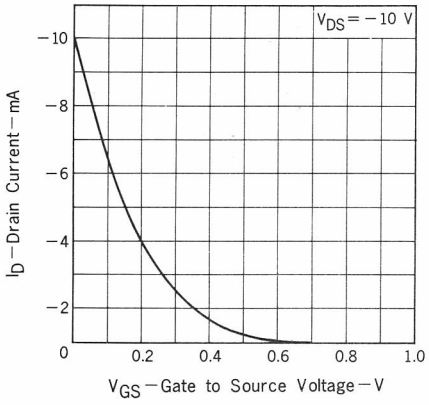
DRAIN CURRENT vs. DRAIN TO SOURCE VOLTAGE



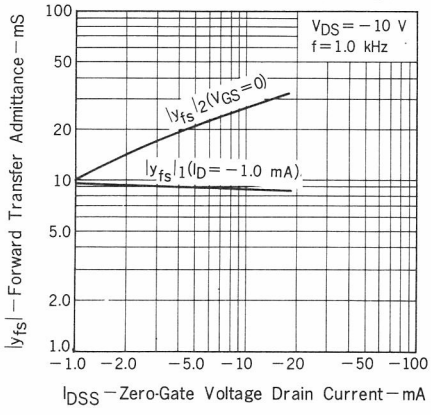
DRAIN CURRENT vs. DRAIN TO SOURCE VOLTAGE



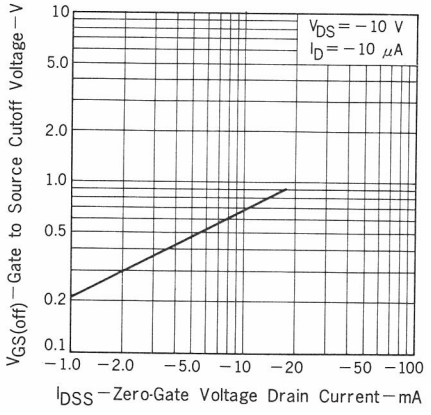
DRAIN CURRENT vs. GATE TO SOURCE VOLTAGE



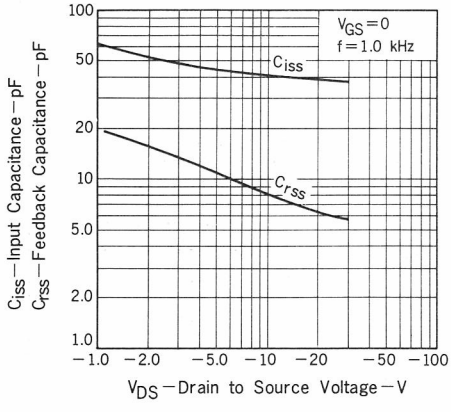
FORWARD TRANSFER ADMITTANCE vs. ZERO-GATE VOLTAGE DRAIN CURRENT



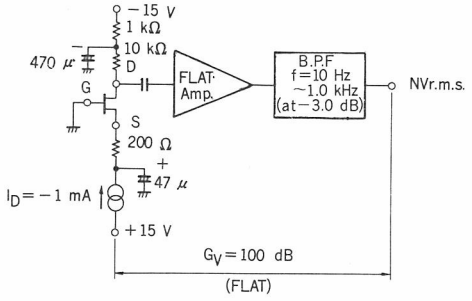
GATE TO SOURCE CUTOFF VOLTAGE vs. ZERO-GATE VOLTAGE DRAIN CURRENT



INPUT AND FEEDBACK CAPACITANCE vs. DRAIN TO SOURCE VOLTAGE



NOISE VOLTAGE TEST CIRCUIT



$V_{DS} \fallingdotseq -4$ V, $I_D = -1.0$ mA, $R_G = 0$, $G_V = 100$ dB,
f = **10 Hz – 1.0 kHz** (at −3.0 dB)

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