

TOSHIBA FIELD EFFECT TRANSISTOR SILICON N CHANNEL JUNCTION TYPE

2SK117

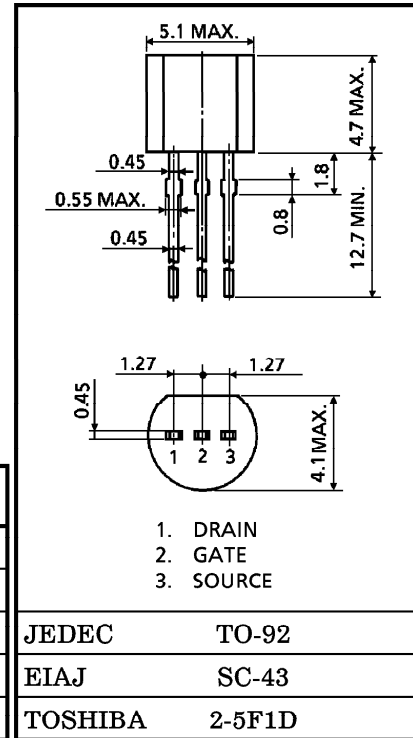
LOW NOISE AUDIO AMPLIFIER APPLICATIONS

Unit in mm

- High $|Y_{fs}|$: $|Y_{fs}| = 15\text{mS (Typ.)}$
 $(V_{DS} = 10\text{V}, V_{GS} = 0)$
- High Breakdown Voltage : $V_{GDS} = -50\text{V}$
- Low Noise : $NF = 1.0\text{dB (Typ.)}$ ($V_{DS} = 10\text{V}$,
 $I_D = 0.5\text{mA}$, $f = 1\text{kHz}$, $R_G = 1\text{k}\Omega$)
- High Input Impedance : $I_{GSS} = -1\text{nA (Max.)}$ ($V_{GS} = -30\text{V}$)

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

CHARACTERISTIC	SYMBOL	RATING	UNIT
Gate-Drain Voltage	V_{GDS}	-50	V
Gate Current	I_G	10	mA
Drain Power Dissipation	P_D	300	mW
Junction Temperature	T_j	125	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	-55~125	$^\circ\text{C}$



Weight : 0.21g

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

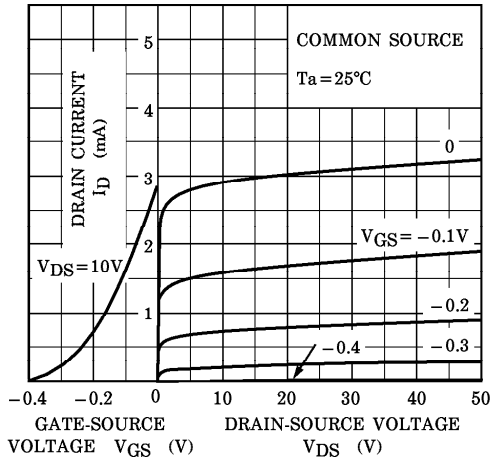
CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Cut-off Current	I_{GSS}	$V_{GS} = -30\text{V}, V_{DS} = 0$	—	—	-1.0	nA
Gate-Drain Breakdown Voltage	$V_{(BR)GDS}$	$V_{DS} = 0, I_G = -100\mu\text{A}$	-50	—	—	V
Drain Current	I_{DSS} (Note)	$V_{DS} = 10\text{V}, V_{GS} = 0$	1.2	—	14	mA
Gate-Source Cut-off Voltage	$V_{GS(OFF)}$	$V_{DS} = 10\text{V}, I_D = 0.1\mu\text{A}$	-0.2	—	-1.5	V
Forward Transfer Admittance	$ Y_{fs} $	$V_{DS} = 10\text{V}, V_{GS} = 0, f = 1\text{kHz}$	4.0	15	—	mS
Input Capacitance	C_{iss}	$V_{DS} = 10\text{V}, V_{GS} = 0, f = 1\text{MHz}$	—	13	—	pF
Reverse Transfer Capacitance	C_{rss}	$V_{GD} = -10\text{V}, I_D = 0, f = 1\text{MHz}$	—	3	—	pF
Noise Figure	NF (1)	$V_{DS} = 10\text{V}, R_G = 1\text{k}\Omega$ $I_D = 0.5\text{mA}, f = 10\text{Hz}$	—	5	10	dB
	NF (2)	$V_{DS} = 10\text{V}, R_G = 1\text{k}\Omega$ $I_D = 0.5\text{mA}, f = 1\text{kHz}$	—	1	2	

Note : I_{DSS} Classification Y : 1.2~3.0mA, GR : 2.6~6.5mA, BL : 6~14mA

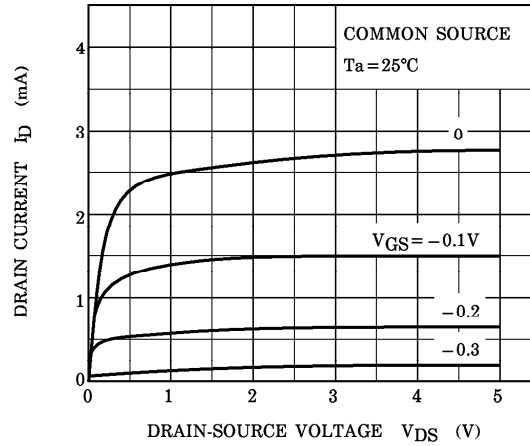
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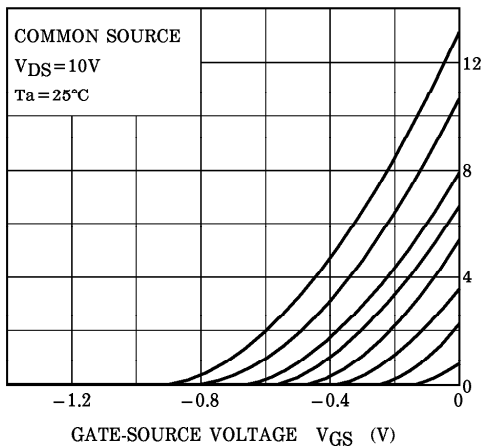
STATIC CHARACTERISTICS



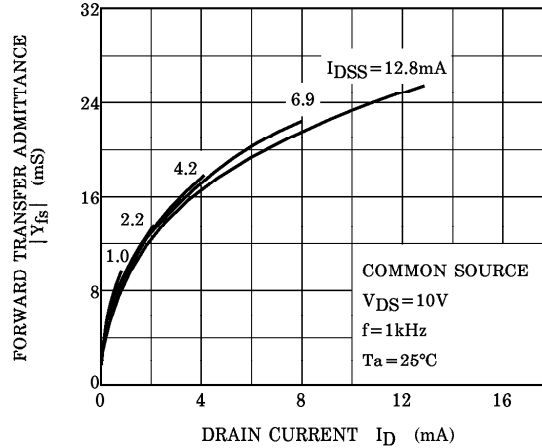
$I_D - V_{DS}$ (LOW VOLTAGE REGION)



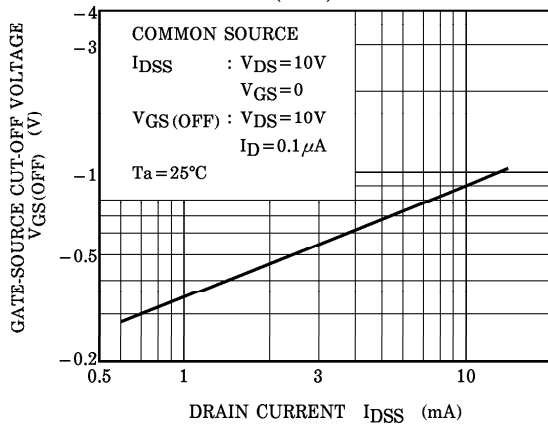
$I_D - V_{GS}$



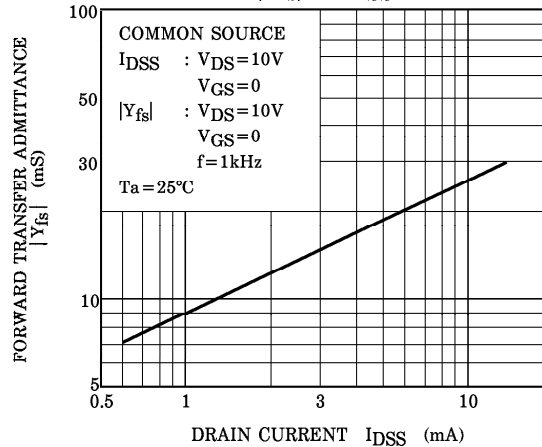
$|Y_{fs}| - I_D$



$V_{GS}(\text{OFF}) - I_{DSS}$



$|Y_{fs}| - I_{DSS}$



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