

TOSHIBA FIELD EFFECT TRANSISTOR SILICON N CHANNEL JUNCTION TYPE

2SK117

LOW NOISE AUDIO AMPLIFIER APPLICATIONS

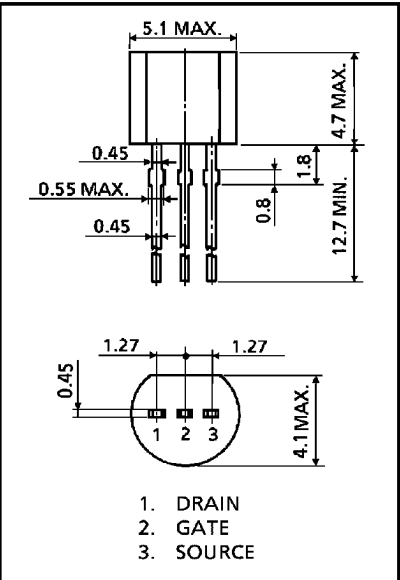
Unit in mm

- 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 (Ta = 25°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	°C
Storage Temperature Range	T_{stg}	-55~125	°C

JEDEC	TO-92
EIAJ	SC-43
TOSHIBA	2-5F1D



ELECTRICAL CHARACTERISTICS (Ta = 25°C)

Weight : 0.21g

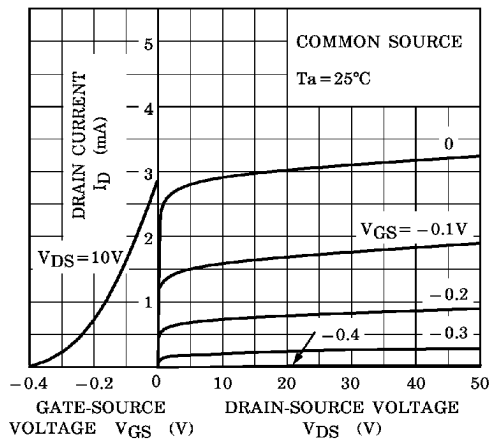
CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Cut-off Current	I_{GSS}	$V_{GS}=-30\text{V}$, $V_{DS}=0$	—	—	-1.0	nA
Gate-Drain Breakdown Voltage	$V\text{ (BR) GDS}$	$V_{DS}=0$, $I_G=-100\mu\text{A}$	-50	—	—	V
Drain Current	I_{DSS} (Note)	$V_{DS}=10\text{V}$, $V_{GS}=0$	1.2	—	14	mA
Gate-Source Cut-off Voltage	$V_{GS}\text{ (OFF)}$	$V_{DS}=10\text{V}$, $I_D=0.1\mu\text{A}$	-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

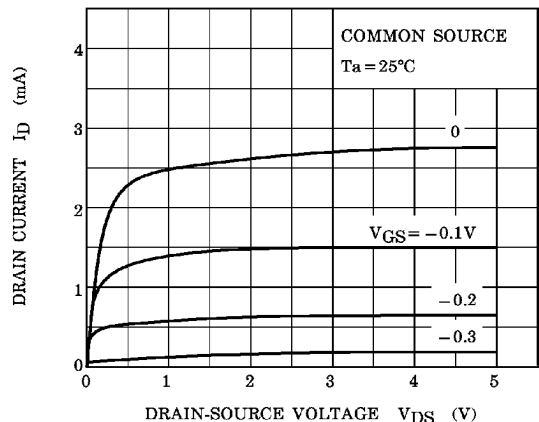
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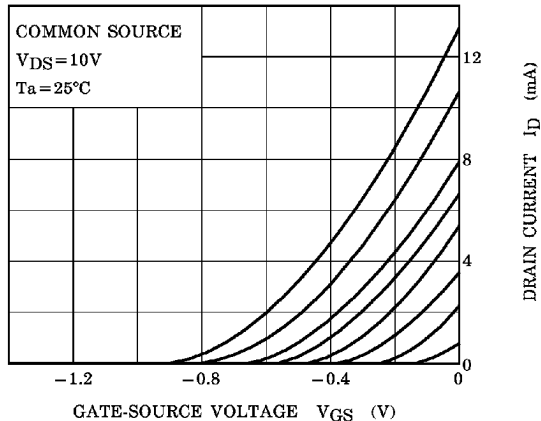
STATIC CHARACTERISTICS



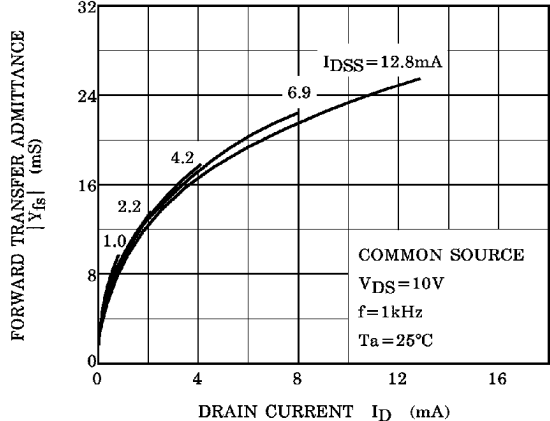
$I_D - V_{DS}$ (LOW VOLTAGE REGION)



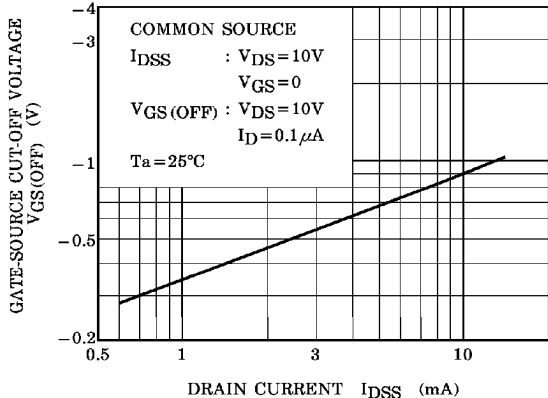
$I_D - V_{GS}$



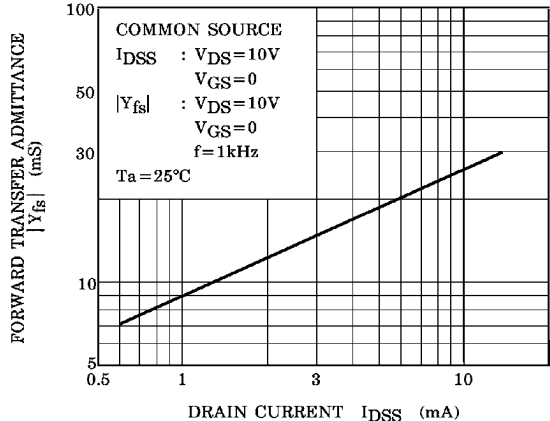
$|Y_{fs}| - I_D$



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



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



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